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To Myrtali, Mariana, Andreas, Thalia, and Apollo figure

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To Myrtali, Mariana, Andreas, Thalia, and Apollo figure

Acknowledgments

The various topics on exactness and its relation to ethics that I discuss in this book have been debated by philosophers at least since the time of Socrates. A number of thinkers have articulated the problems, drawn the boundaries of the debate, and propounded important philosophical theories about these topics. For this reason, any contemporary discussion of exactness inevitably owes much to the work or ideas of many others. In my case, I owe much to the work of those who have produced translations or offered interpretations of Aristotle's texts throughout the centuries. In particular, the justly famous commentaries on Aristotle's ethical treatises that were written at the end of the nineteenth century and the beginning of the twentieth century have been invaluable guides. Recent years have seen a renaissance of interest in Aristotle's thought which has also resulted in a number of new translations and interpretations of Aristotle's works. Several distinguished philosophers and scholars have produced translations of or studies on Aristotle's texts which have aspired to the highest philosophical and scholarly standards and have thrown much light on the work of one of the great philosophers. I owe much to their work, even when I express disagreement with their views or propose views that they may find unacceptable.

As great as my debt is to the many students of Aristotle's thought who in a sense are remote in space or time, it cannot equal the debt I owe to those who are near to me

in space and who share my time. Without them this work would not have been possible, nor would it be what it is. I am grateful to Professor Marianne McDonald for her perceptive comments on chapter 4 and for her constant encouragement. Professor Gerasimos Santas has discussed with me some of the issues I focus on in this study and has offered invaluable advice and constructive criticism; I am deeply grateful to him, especially for his support. I also owe thanks to several

— xii —

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— xiii —

Anim.	de Anima
Ath.	Athenian Constitution
Aud.	de Audibilibus
Cael.	de Caelo
Cat.	Categories
E.E.	Eudemian Ethics

Abbreviations of Aristotle's Works

G.A.	de Generatione Animalium
Gen. et Corr.	de Generatione et Corruptione
H.A.	Historia Animalium
Interp.	de Interpretatione
М.М.	Magna Moralia
Mem.	de Memoria et Reminiscentia
Met.	Metaphysics
Meteor.	Meteorology
Mund.	de Mundo
N.E.	Nicomachean Ethics
<i>P.A</i> .	de Partibus Animalium
Phgn.	Physiognomica
Phys.	Physics
Poet.	Poetics
Polit.	Politics
Post. Anal.	Posterior Analytics
Pr. Anal.	Prior Analytics
Probl.	Problems

Protrept.	Protrepticus
Resp.	de Respiratione
Rhet.	Rhetoric
Somno	de Somno et Vigilia
Тор.	Topics

- 1 -

One Introduction

The Problems

Students of Aristotle's thought have, from antiquity to the present, pointed out that he is quite frequently concerned with questions about exactness or inexactness. Aristotle often speaks, for example, about the level of exactness his own investigations attain, the level that is desirable, or the level that is possible in a certain kind of investigation or discipline. At other times his concern is with the exactness/inexactness of the subject matter a discipline investigates and its relation to the exactness/inexactness of the discipline itself. At yet other times his attention is directed to different questions: Can inexactness be eliminated from the accounts a discipline gives of a certain subject matter? What epistemological consequences does inexactness have? Does it, for instance, affect the demonstrative character of a discipline?

Remarks that touch on issues pertaining to exactness/inexactness are to be found in all of Aristotle's works. But they figure most prominently in the treatises on conduct, especially in the *N.E.* Commentators have invariably argued that the remarks in the *N.E.*, unlike those in other Aristotelian treatises, say something quite important about Aristotle's conception of the nature of ethical inquiry or its epistemological character. To some, these remarks assert or imply that ethics is an inexact inquiry, a discipline that fails to attain that ideal of exactness we associate with the most pure and rigorous disciplines. To others, they assert or imply something even stronger: namely, that ethics is not a demonstrative discipline at all, that it cannot even be one of the demonstrative sciences that Aristotle recognizes.

These claims made by the commentators regarding the meaning and

— 2 —

epistemological implications of Aristotle's remarks on exactness in the *N.E.* may contain some truth. It may very well be that some types of inexactness in a discipline or its subject matter imply that the discipline cannot be as demonstratively pure or rigorous as some other disciplines. It may even be the case that certain types of inexactness in a discipline imply that the discipline is not demonstrative at all. However, other types of inexactness may have no such implication, or they may have only minor implications with respect to the epistemological character of a discipline.

In other words, it is difficult to say whether there is any truth in these general claims about the implications of Aristotle's remarks on exactness. The problem lies in part in

the fact that he identifies several quite different types of exactness—and, therefore, inexactness—and he attributes exactness/inexactness to various domains that may consist of things that are not necessarily of the same logical type. The term Aristotle uses most often when he speaks of exactness signifies a variety of things; the term is, if you like, inexact. Indeed, as we shall see, Aristotle uses a variety of terms to signify exactness or inexactness, and not all of them mean the same thing. The things that Aristotle is willing to characterize as exact/inexact are not necessarily the sorts of things we are willing to designate as such. Aristotle seems to have no difficulty in applying his terms for exactness/ inexactness to just about anything.

We tend to think of exactness/inexactness as being primarily features that can characterize our language or any system we use to describe, explain, or represent the world. The ancients, however, thought that some of these features could characterize many other things that may not necessarily be systems of representation. They may, for instance, characterize the world itself or the objects we aim at representing.

It is important, then, to recognize not only that the ancients designated a variety of features as being features of exactness/inexactness but also that they took these features to apply to things other than our systems of representation. The last point is of some significance. For, although the same feature may characterize both the object represented and the system by which it is represented, the reason why the feature characterizes the system could be that it characterizes the object. At times, our representations may be inexact because the things they represent are inexact. At least, the ancients, and especially Plato and Aristotle, thought so. This assumption on their part—namely, that a certain relation of congruence holds between the exactness/inexactness of the world and that of our systems of representation—may in part explain why they thought that certain types of inexactness could not be eliminated from our accounts of the world.

If it is true that Aristotle designates a variety of features as inexactness (exactness) and considers some to be features of our representations of

— 3 —

the world, others of the world itself, while still others of both our representations and the world, then it is quite possible that the epistemological consequences of inexactness themselves vary. It is possible that while some types of inexactness have important epistemological consequences, others do not. Indeed, as I shall argue below, in some cases the epistemological consequences that have been of concern to students of the *N.E.* are consequences of exactness rather than of inexactness.

My focus in this study will also be on Aristotle's remarks on exactness/ inexactness in the *N.E.* Despite their importance in the scholarly tradition, these remarks from the *N.E.* and the rest of the treatises on conduct have not been identified in their entirety. They are collected here for the first time and form the data of the present investigation.^[11] The investigation is, thus, data-driven; it is guided by the methodological principle of systematically collecting the relevant data and using them as the basis for any conclusions to be drawn about the issues pertaining to exactness. An additional methodological principle guiding the present investigation is that of providing the strongest textual support possible for any thesis attributed to Aristotle in the course of this discussion. As a consequence, I often give many references from Aristotle's works in support of a claim, thus assuring as much as possible that the claim is an incontrovertible component of Aristotle's thought. For, as students of Aristotle's writings know, it is often quite easy to misconstrue his intentions by relying on isolated textual evidence from his works.

I will, of course, use in my discussion remarks on exactness made by Aristotle in his works that are not concerned with matters of conduct. They will be very useful in the effort to explicate the meaning of Aristotle's remarks in the ethical treatises. In addition, what Aristotle says about exactness/inexactness in treatises other than those dealing with matters of conduct is of importance when determining why he takes inexactness to be more problematic for the disciplines dealing with matters of conduct than it is for the other kinds of disciplines.

I wish, nonetheless, to make clear at the outset that I shall not discuss in detail all the remarks Aristotle makes in his writings on exactness/ inexactness, nor shall I be concerned with every issue the ancients associated with exactness. My concern will be almost exclusively with the kinds of questions I have raised above. I will be focusing, then, primarily on those questions that are of the greatest philosophical interest—that is, questions about the various types of exactness/inexactness, the sources of inexactness, the kinds of things that can be exact/inexact, the relation between the exactness/inexactness of a thing and of the means we use to describe or explain or represent it (e.g., linguistic expressions, concepts, propositions), the epistemological consequences of inexactness, the elimi-

- 4 -

nability of inexactness from our accounts or other means of description or representation, and so forth.

It is evident, however, that these are not the only issues the ancients associated with the features of exactness/inexactness. To them, these matters had a significance that went beyond the philosophical concerns listed above. They had, for example, political significance. Thus, Xenophon associates exactness or accuracy with the aristocracy, implying perhaps that, in contrast to democracy and those who advocate it, the aristocrats are guided by a clear or exact vision of the moral and political ideals and do not deviate in their actions from such a vision.^[2] In this sense, exactness seems to be a trait of character, a quality that has moral and political significance. As we shall see below, both Plato and Aristotle at times see the pursuit of exactness in certain contexts as indicative of an undesirable quality in a person. In the hands of the tragic poets exactness even acquires a tragic dimension. Thus, Euripides in the *Hippolytus* has Phaedra's nurse urging her not to set standards that are too exact and therefore difficult to realize; and he contrasts the chorus of women (who wish not to have an accurate opinion about what is the proper thing to do in the situation in which the protagonists of the play find themselves) to Phaedra and Hippolytus who have accurate opinions—opinions that prove in the end catastrophic.^[3]

These political, ethical, or even tragic dimensions associated with exactness by the ancients are by no means unimportant. On the contrary, they are of considerable importance, and perhaps deserve a study of their own. Such aspects, however, need to be distinguished from the strictly philosophical ones, enumerated above, that I will focus on in the present study.

In addition to the kinds of philosophical problems I listed above—the kinds of problems that Aristotle himself recognizes—there are a number of other questions that I will be concerned with in this study. There are questions, for example, about (1) the philosophical significance of Aristotle's views on exactness, (2) the place of these views in the context of the philosophical tradition that forms the background to Aristotle's own thought, and (3) the truth or plausibility of Aristotle's claims about exactness.

With regard to questions of the first kind, we shall see that Aristotle's observations on exactness are of considerable philosophical importance. Many of them are not very different from the observations of some contemporary philosophers, and the problems in response to which he develops some of his views on exactness are at the center of many contemporary philosophical discussions. This is especially true, for example, of Aristotle's discussion of the indefiniteness or vagueness of matters of conduct, of the supposed failure of propositions about certain domains to be

-5universally true, of the problem associated with constructing explanations or demonstrative syllogisms with premises that are inexact, or of his proposal for a pragmatic account of some types of inexactness. The discussion of some of these problems forms an almost continuous thread in the Western philosophical tradition that extends from Plato and Aristotle to Frege, Russell, and Wittgenstein, and more recently to Gareth Evans and Saul Kripke.

In general, Aristotle's observations on exactness in ethics constitute some of the most important criticisms of an ideal of ethical knowledge that has fascinated philosophers from Plato to Spinoza, to some of the utilitarians, and to Rawls. The ideal, of course, is the one embodied in the view that ethics is or can be as exact a discipline as those that are considered to be the paradigms of exactness and demonstrative rigor: the mathematical disciplines. Indeed, as we shall see, some philosophers even think

that ethics can be more exact and rigorous than the mathematical disciplines. Although Aristotle himself espouses this ideal as strongly as anyone in relation to some domains or disciplines, his observations on the exactness of the subject matter and accounts of ethics provide us with some of the most perceptive criticisms of this ideal of ethical knowledge.

With regard to the second kind of question, I shall argue that Aristotle's remarks on exactness raise some fundamental questions about certain views that are central to the philosophical tradition which he inherited or accepted. In some of them Aristotle is questioning some of the deepest and most pervasive assumptions in Socrates' and Plato's as well as his own thought—for example, that essentialism can be extended to all domains, or that rigorous knowledge is possible in certain domains, or that such knowledge is needed for practical purposes.

In connection with questions of the third type, we are all aware that determining the truth or plausibility of any philosophical thesis is, of course, not an easy matter. In some cases there are obvious counterexamples to a thesis. In others the task may prove more difficult. But often what is of philosophical interest in a thesis are the assumptions that lie behind it, the assumptions that motivate it. Although I will be critically assessing the various claims Aristotle makes, often my main concern will be with uncovering the assumptions that lie behind some of these Aristotelian claims.

An Overview

The remainder of the book is divided into nine chapters, each dealing with some aspect of exactness or a related topic. The argument of each chapter is at times lengthy and complex, as is the overall argument of the book.

- 6 -

The brief overview that follows is offered in the hope that it will be of use to the reader.

The following chapter is devoted to an account of the philosophical background to Aristotle's thought, my aim being to isolate those features that are necessary for understanding Aristotle's remarks on exactness. The philosophical background in this case is, of course, the thought of Socrates and Plato. Socrates makes certain assumptions about the metaphysical character of matters of conduct or of the objects he is trying to define, about the nature and role of definitions, and about the nature of knowledge. These assumptions are also accepted by Plato, who considers the Forms that are related to matters of conduct to be some of the most perfect or exact objects, to be the sorts of things about which there can be knowledge of the most rigorous kind. Aristotle himself at times, especially when he speaks as a logician, embraces some of these assumptions—for example, the one concerning essentialism. But in some of his remarks on exactness, Aristotle questions whether essentialism of the kind advocated by Socrates, Plato, and at times himself obtains in the case of matters of conduct. Some, or perhaps all, matters of conduct lack a fixed and invariable essential structure; they are indefinite. In general, I argue here that many of Aristotle's remarks on exactness are aimed at some of these assumptions about the metaphysical character of things, the definability of certain things, or the possibility of exact knowledge in certain domains.

In chapter 3, I explore the nature of the goals Aristotle ascribes to ethical inquiry. This matter is of importance in part because Aristotle claims that some types of inexactness in ethics are due to the nature of its goals. There has been much dispute in the Aristotelian scholarly tradition about this matter, with some scholars claiming that the goals of ethics are purely cognitive and others claiming that they are almost indistinguishable from practice. I argue here that the strategy often used by Plato to eliminate certain goals—that is, the appeal to the transitivity of desires and goals—cannot be used to eliminate the cognitive goals of ethics. Aristotle himself accepts the transitivity of desires, pursuits, or goals, but he does not think that it can be used to eliminate the cognitive, although its ultimate goals are, according to Aristotle, practical. Aristotle, despite what he at times appears to be saying, assumes that ethics is an inquiry with certain cognitive objectives that are

subordinate to practical objectives. This supposed subordination of the cognitive goals of ethics to practical objectives is, according to Aristotle, the source of some types of inexactness in ethics. It also raises a question about the extent to which such subordinate cognitive objectives resemble the objectives of the theoretical disciplines. I argue here that in some respects they do, but not in all.

- 7 -

In chapter 4, I examine in depth some general issues about exactness/ inexactness that are presupposed by the discussion in the remaining chapters. I discuss in some detail the various terms Aristotle uses to designate the features of exactness or inexactness he identifies, and I argue that not all these terms signify the same thing, that there are different features of exactness or inexactness. I also show that Aristotle attributes exactness/inexactness both at the level of the subject matter a discipline studies and at the level of the discipline itself. I then explore the various sources of inexactness at the level of the discipline itself, seeking to identify types of inexactness which, on account of the sources that generate them, can be eliminated. I also formulate and explore Aristotle's thesis that some kind of congruence holds between the exactness/inexactness of the two levels. Although I argue against this Aristotelian thesis. I also show that in many cases Aristotle thinks that the inexactness of ethical accounts cannot be eliminated—that is, that any accounts of matters of conduct, not only his own, will be inexact.

In chapter 5, I explore the kind of inexactness Aristotle refers to as being in outline or lacking in detail. I show that this is a kind of inexactness that can characterize only a discipline; it is only formal. I further show that, although this type of formal inexactness has many sources, its primary source is the goals of ethics. Aristotle's conception of the (ultimate) goals of ethics as practical and his belief that practice deals with particulars lead him to the conclusion that, if ethics is to realize its goals, it has to reach the particulars. But this, Aristotle argues, cannot be done. Therefore ethical accounts are essentially inexact; their inexactness cannot be eliminated. With regard to the epistemological consequences of this type of inexactness, I argue that, contrary to what commentators have always assumed, what proves more problematic is the exactness Aristotle thinks ethics should achieve rather than the inexactness he is ultimately required to accept. If the exactness Aristotle thinks is required by the practical goals of ethics were to be attained, it would introduce propositions that could not function as premises in Aristotelian syllogisms.

In chapter 6, I discuss the kind of inexactness Aristotle characterizes as fluctuation or "being for the most part." This type of inexactness can apply to both the subject matter of a discipline and to the accounts the discipline gives of its subject matter. Aristotle argues that just as the subject matter of ethics fluctuates or is for the most part, so are the propositions about it true for the most part. I examine the scope of this kind of inexactness, according to Aristotle, and discuss the contrasts Aristotle draws between the necessary, that which is always, that which is for the most part, and the fortuitous. I argue here that Aristotle takes the for the most part to be contingent, but "being for the most part" does not simply mean

- 8 -

"contingent." The fortuitous is also contingent, as is what occurs by chance. What is for the most part is, according to Aristotle, a part of the causal regularities of nature, and therefore can be the subject of explanation or scientific understanding.

In chapter 7, I examine whether and how demonstration of what is for the most part is possible. Many scholars have, for a variety of reasons, argued that there is no demonstration of what is for the most part, that this type of inexactness implies that the disciplines whose subject matter is for the most part fall outside the class of demonstrative disciplines. I argue here that this is not so, that the disciplines whose subject matter is for the most part may not be demonstrative for many reasons, but not necessarily on account of the fact that their subject matter is for the most part. I give evidence that shows Aristotle did not infer that a discipline is nondemonstrative from the fact that its subject matter is for the most part. On the contrary, he insists that there is demonstration of what is for the most part.

The problem is, of course, to show how demonstration is possible in domains that are for the most part. That there is a problem with demonstration in domains that are for the most part was recognized by the ancient commentators, and the problem has never been solved. This problem is of importance not only in relation to ethics but also in relation to all the disciplines investigating nature, since most of nature is, according to Aristotle, for the most part. I identify here Aristotle's way of dealing with the problem of the validity of for-the-most-part syllogisms and assess its viability.

I argue first that Aristotle enlarges the conception of demonstration to include, in addition to the absolute or strict demonstration that he and Plato associate with certain disciplines and domains, some weaker forms of demonstration. Aristotle accepts as demonstrations proofs that consist of syllogisms whose premises are not necessary. I then explain how Aristotle construes for-the-most-part syllogisms in order to deal with the problem of validity. I argue that he assimilates such syllogisms into those that he considers to be unproblematic with respect to their validity—namely, the syllogisms that are about what is always or necessary—and relies on some nonformal means for reminding us that syllogisms about what is for the most part are deficient or inexact; they are not as good as those that are about what is always or necessary. Aristotle's way of dealing with the problem of the validity of these nonstandard syllogims has, as I point out, its limitations.

But the condition of validity is not the only one that demonstrative syllogisms have to meet. I argue that there is no reason why syllogisms whose premises are true for the most part cannot meet the other conditions Aristotle requires of demonstrative syllogisms. If they do meet these con-

- 9 -

ditions, then they are demonstrations of the weaker or less exact kind. This weaker or less exact kind of demonstration is not empty; it is the kind that, according to Aristotle, we encounter in our explanations in the domain of nature. An explanation, therefore, of how Aristotle conceives of demonstration in the domain of conduct is of the greatest importance—it is at the same time an explanation of how he conceives of demonstration in the domain of nature and the disciplines dealing with it.

Finally, I examine whether the kind of inexactness that generates the above problems with demonstration in certain domains can be eliminated from ethical accounts. I consider here two techniques Aristotle employs for eliminating this type of inexactness from accounts of natural phenomena—that is, the technique of restricting the scope of the logical subject of a proposition that is true for the most part and the technique of seeking exceptionless causal explanations; I assess the effectiveness of these techniques when applied to propositions that are about matters of conduct.

In chapter 8, I discuss another type of inexactness Aristotle attributes to matters of conduct, namely, that of vagueness or indefiniteness. This type of inexactness characterizes, according to Aristotle, the domain of nature as well. But matters of conduct are supposedly affected much more by this kind of inexactness than natural phenomena. They lack a fixed and well-defined nature or structure. I show here that Aristotle, in insisting that matters of conduct are vague or indefinite, is questioning Socrates' and Plato's assumption that strict essentialism obtains in every domain. Indeed, this is an assumption that Aristotle himself often accepts, especially when he, as a logician, attempts to explain the nature of definition and to determine the conditions that must be met by anything that is to be defined.

Now the feature of vagueness, whether it characterizes the world or our language, has always been considered to give rise to serious problems. Aristotle, of course, attributes the feature to both the world and to our accounts of it. He also recognizes the problems the feature generates, namely, the difficulty of defining vague or indefinite things or demonstrating with premises that are vague. Aristotle, however, does not go as far as Russell and Frege when they claim that the world cannot be vague, that vague concepts are not concepts at all, or that logic does not apply to anything that employs vague symbols. Finally, I explore here some techniques Aristotle employs elsewhere for dealing with vagueness, techniques that seem to be successful in avoiding to some extent vagueness in our definitions of natural phenomena. I show here that there are some reasons for being, as Aristotle is, less optimistic about the success of these

techniques when applied to ethical accounts than when they are applied to accounts of natural phenomena.

In chapter 9, I discuss Aristotle's attempt to link some types of inex-

- 10 -

actness to the goals of a discipline. Aristotle's attempt to do so parallels the recent attempts to link explanation to some pragmatic considerations. I explore the similarities and differences between the two attempts and show that the way Aristotle conceives of the goals of a discipline to which he relativizes exactness is guite different from the way neopragmatists conceive of the goals or purposes to which they relativize explanation. Aristotle takes the goals of a discipline to be fixed, to be part of the essence of a discipline. He also thinks that only a certain well-defined level of exactness will satisfy the goals of each discipline. Thus, exactness itself cannot be relativized to any individual interest or purpose but only to those that define the discipline. Given these assumptions on Aristotle's part, we can understand why he insists that in any discipline we must seek only that level of exactness required by the discipline. And given the assumption Aristotle makes about ethics being practical, we can see why he thinks that the exactness Plato demands of ethics is not required. But I argue that there are several problems with some of Aristotle's claims. It is difficult, for example, to fix the appropriate level of exactness for a discipline. More importantly, and in agreement with Plato, I argue that there are cases where practice may demand the utmost exactness, even more than required by the most rigorous theoretical disciplines.

In the last chapter I discuss in more detail whether Aristotle, given the kinds of inexactness he attributes to matters of conduct and to our accounts of them, leaves any place for universality or generality and truth in ethical theory. I argue here that, contrary to claims by some recent philosophers, Aristotle does not eliminate the role of universality or truth in ethical theory. Ethical theory must aim at the universal and at truth, but it must also, because of its ultimate practical goals, reach down to the particular and recognize that its propositions are not as true as the propositions in some other domains presumably are.

The Question of Method

Several of the issues I discuss in this study to some extent bear on the question regarding Aristotle's conception of the method of ethics. This is, as is well known, a rather perplexing question in Aristotelian scholarship. There is considerable disagreement among scholars as to what method Aristotle himself uses in his ethical investigation or advocates as the appropriate one for ethics.

Some interpreters of Aristotle's writings claim that Aristotle uses the demonstrative method. Others claim that he relies on the inductive method. Still others argue that he uses or advocates the dialectical method.^[4] Interest in the last method has increased considerably in recent years as a result of the work of G. E. L. Owen, who has argued that the dialectical

- 11 -

method encompasses not only the use of established opinions in any inquiry but also a form of conceptual analysis or investigation.^[5] There is no doubt that the dialectical method is important to Aristotle. Whether it is the method Aristotle himself uses in his ethical investigations or one that he identifies as the method of ethics are matters that have yet to be settled.^[6] For, as Owen points out, all of Aristotle's treatises, including the scientific ones (e.g., the *Phys.* and the biological treatises), rely to some extent on an examination of established opinions or of ordinary concepts; they use to some extent the dialectical method. Aristotle himself in the *Top.* advocates the dialectical method as the method by which the basic principles of all sciences are obtained or justified. How, then, does ethics differ from the rest of the disciplines?

However, my aim in this study is not to determine the method Aristotle uses or advocates in ethical inquiry. Rather, my concerns are the ones I listed earlier: namely, the nature of the exactness/inexactness in ethics and their epistemological consequences. In some cases, exactness or inexactness will seem to be more compatible with one method than another. For instance, Aristotle's demand that ethical inquiry, in order to be exact, needs to reach the individuals relevant to conduct would seem to imply that perception has a role to play in ethical inquiry or knowledge, since the individual is, according to Aristotle, known through perception. With other types of exactness/inexactness, however, something more than perception of individuals may be appropriate. For instance, an examination of the examples Aristotle gives of propositions that are inexact by failing to be necessary or by being true for the most part shows that the majority of them can best be treated as empirical or inductive generalizations.

The important point, however, is to realize that, in a way, the issues about exactness/inexactness that Aristotle raises will be of importance regardless of what we single out as the method Aristotle uses or advocates for ethics. Consider, for example, the kind of inexactness Aristotle attributes to matters of conduct or to our accounts or concepts of them which he designates as indefiniteness or vagueness. The problems such inexactness raises will be, most likely, problems for any method. If matters of conduct are vague or indefinite, formulating definitions of them or assigning truth values to propositions about them will be problematic. In other words, all methods—demonstration, induction, dialectic, perception—will encounter difficulties. Similarly, if Aristotle is correct in claiming that propositions about matters of conduct are inexact because they are only true for the most part, then syllogisms about matters of conduct, whether demonstrative or dialectical, will be problematic. But since the only method Aristotle identifies as the method of scientific knowledge is the demonstrative one, and since the kinds of inexactness he attributes to ethics have most often been taken to imply that demonstration is not

- 12 -

possible in its case, I will focus mainly on the epistemological implications of exactness/inexactness in relation to the demonstrative method. This, of course, does not mean that there are no implications in relation to other methods: There are, but often they are quite obvious. It also does not mean that I take Aristotle to use demonstration in his own inquiries into matters of conduct or to advocate such a method for ethical inquiry. Although I touch upon the question of method(s) as it relates to the issue of exactness/inexactness, I do not claim to have settled the problems concerning the method(s) Aristotle uses or advocates in ethical inquiry. These problems go beyond the concerns of the present investigation.

- 13 -

Two The Philosophical Background

Introduction

Aristotle was heir to a long and rich philosophical tradition. Generations of thinkers before him had already forged terms and concepts that they used in developing their philosophical views. He thus inherited a philosophical vocabulary and a conceptual framework within which he formulated his own theories—for example, the vocabulary of cause, opposites, form, universal and particular, and soul.

But beyond this kind of inheritance, which may be viewed as being inescapably common to all who use the same language and work in the same tradition, Aristotle more than any other of the Greek thinkers was indebted to specific views of his predecessors. He was influenced by the content of their theories and the particular views or solutions to various problems they put forth. Indeed, at times he is not only fully aware of his debt to the philosophical theories of his predecessors, but goes as far as to advocate, as well as to put into practice, a method of philosophical investigation that partly consists in the critical or constructive reexamination of the views a philosopher inherits. Truth, he at times argues, is to be attained by reflecting upon the views of our predecessors, separating what is of value in them, and building upon it.^[1]

Thus, Aristotle's own metaphysical views are formulated by joining the argument with his predecessors. At times he criticizes their accounts; at times he refines their claims and builds upon them; at still other times he develops his own well-known accounts of substance, matter and form, causality, and so forth, by abandoning their views and striking out in new philosophical directions. And, of course, he does the same in his ethical investigations: He criticizes and builds upon the theories of those before

- 14 -

him—including Anaxagoras, the Cynics, Socrates, Plato, and Eudoxus—as well as develops views quite different from theirs.

At times, both Aristotle's dialogue (constructive or otherwise) with his predecessors and the influence their theories have on him concern a substantive ethical view, some component of their respective normative ethical theories—for example, the nature of the good, of virtue, of pleasure and its relation to the good, or of moral weakness. At other times, however, they relate to what are likely to be construed as metaethical matters—for example: Is "good" univocal? Is there a (Platonic) Form of goodness?

Understanding the philosophical context and tradition within which the views of any philosopher develop is almost always of importance in understanding the work of that philosopher. And it is of special importance in the case of Aristotle, because he, more than any other philosopher in the Greek tradition, formulated many of his views by arguing against or in conformity with the inherited tradition. Indeed, it may be the case that some, if not all, of his views or claims cannot really be understood, or at least their significance cannot be fully appreciated, unless they are seen against the philosophical positions that dominated Greek philosophical thought before and during his time.

This is the case with Aristotle's remarks on exactness/inexactness in ethics and related disciplines. The content of these remarks has not been fully understood and their significance has not been appreciated. This is so despite the fact that from antiquity commentators on Aristotle's texts have insisted that the purported lack of exactness in ethics poses problems for Aristotle's conception of science.^[2] More recent commentators have pointed to these same problems that inexactness in ethics supposedly generates for Aristotle, but the importance of Aristotle's remarks and their relation to his thought still remain unclear.^[3] In part, this may be due to the fact that Aristotle's remarks do not constitute a systematic and comprehensive treatment of the subject of exactness/inexactness but instead form only a set of disjointed comments that are dispersed throughout Aristotle's ethical treatises. To be sure, this fragmentation has not been of help in understanding and appreciating the importance of these remarks, but I believe this is not the only source of difficulty.

Another reason is that the relation of Aristotle's remarks on exactness/ inexactness to the Socratic-Platonic conception of knowledge and its objects, as well as to his own views about demonstrative knowledge, has not been fully seen. In most cases where Aristotle argues that inexactness is to be encountered in the domain of ethics he is directly or indirectly raising doubts about the Socratic-Platonic conception of knowledge and its objects that is his own conception as well. To see what Aristotle means when, for example, he claims that there is inexactness or indefiniteness in matters of conduct, and to grasp the consequences of such a claim, one must view

- 15 -

it against the Socratic-Platonic and Aristotelian conception of essentialism and against the role such essentialism in turn plays in these philosophers' conceptions of knowledge. Again, the meaning of Aristotle's claim that things (or propositions) are inexact because they possess certain properties for the most part becomes clear only when it is seen against the Socratic-Platonic and Aristotelian view that things possess certain properties always (or that some propositions are always true).

Thus, soley for the purpose of providing the necessary context for understanding the nature and significance of Aristotle's remarks on exactness/inexactness, I wish to briefly discuss some aspects of Socrates', Plato's, and Aristotle's thought. This discussion will focus only on those aspects of their thought that are relevant for the present purposes and is not intended to be an exhaustive study of their views. It will concentrate on some

epistemological and metaphysical elements of their thought—for example, their views on definition, its objects, and its role in these thinkers' conception of knowledge—against which Aristotle's claims about exactness and its implications will be discussed.

Socratic Theory and Practice

Socratic practice is focused primarily on questions of conduct rather than on epistemological or metaphysical issues. For this reason, whatever interest Socrates shows in the nature of knowledge or reality has always been connected to his interests in matters of conduct. Epistemological, metaphysical, and other nonethical types of interests are presumably subordinate to ethical interests. This traditional account of the Socratic practice may be correct when viewed as a way of pointing to what motivates Socrates' persistent and almost endless searches for definitions or for knowledge of the nature of certain things in the domain of conduct. It should not, however, obscure the fact that Socrates is, after all, searching for knowledge of the nature or definitions of certain things, and that he has some conception of the type of knowledge he is searching for. Indeed, making Socrates' epistemological concerns subordinate to his ethical interests does not exclude such concerns but, on the contrary, acknowledges them. Thus, Socrates, while interested primarily for practical purposes in determining what virtue is or whether it is possible to act rightly without knowledge, develops the well-known distinction between knowledge and belief in the *Euthyphro* and the *Meno*.

In saying, however, that Socrates has some epistemological interests, whether subordinate to his interests in practical matters or not, I do not mean to imply that he propounds fully developed epistemological theories—only that he operates with some conception of knowledge, of definition and its uses (both theoretical and practical), and of the nature of

- 16 -

the objects of definition and knowledge. I shall argue below, but without going into detail or providing all the relevant textual evidence, that Socrates puts forth or simply presupposes certain views on knowledge, definitions, and their objects which constitute a conception of ethical knowledge and its objects. On this matter I will be following Aristotle's own assessment of the Socratic practice/theory, since he was the first to propound the view that Socrates' epistemological interests were subordinate to ethical concerns. But Aristotle was quick to point out that Socrates had some kind of epistemological picture in view, and in particular a picture of knowledge about matters of conduct and their nature. The objective here is to single out some of the central aspects or theses in Socrates' conception of the nature of ethical knowledge and of its objects. Ultimately, I wish to argue that, although Aristotle himself at times seems to embrace these very same theses, the target of some of his claims on exactness/inexactness in ethics is none other than certain components of this Socratic-Platonic conception of ethical knowledge and its objects.

Two preliminaries are in order at this point: First, when speaking of Socrates in the present context, I mean the Socrates that Plato presents in the Socratic Dialogues.^[4] Second, in speaking of both Socratic theory and practice, I mean to distinguish between the statements Socrates makes about the nature of knowledge, definitions, their objects, and so on-that is, his views or theories about such things-and what he actually does in some of these dialogues. For although there may be no major differences between Socrates' theoretical views and his own actual practice, there may be some . Socrates could, for example, espouse the theoretical claim that knowledge of the definition of F is necessary for knowing that F has some other property, and yet in his own practice proceed to claim that he knows that some F (e.g., virtue) has some property (it is beneficial) without knowing its definition. That is, Socrates' own practice may not be consistent with some of his theoretical pronouncements. Of course, what is of importance in the present context is the way Aristotle views Socrates; whether Aristotle focuses on Socrates' theoretical statements instead of his actual practice, or on the latter instead of the former, or even whether he distinguishes between the two at all.

Socratiac Definitions

That definitions occupy a central place in Socratic theory and practice has been recognized by almost everyone. This is in fact true, even though scholars may still disagree about the reasons for which Socrates sought definitions in his own practice or about the role definitions play in Socrates' own theoretical framework. After Plato, the first to recognize the centrality

— 17 —

of definitions within the Socratic theory and practice was, of course, none other than Aristotle himself, who also, as I shall argue below, identified the nature of Socratic definitions, their objects, and in part the role such definitions play in the Socratic conception of knowledge.

It is fitting, then, to begin with Aristotle's own comments on the Socratic theory and practice, since it is, after all, his own assessment of Socrates' views that becomes one of the targets of his discussion on exactness/ inexactness in ethics. And so, Aristotle writes in the *Met.*,

2.1 But when Socrates was occupying himself with the excellences of character, and i connection with them became the first to raise the problem of universal definition . . was natural that Socrates should be seeking the essence, for he was seeking to syllogize, and "what a thing is" is the starting point of syllogisms . . . for two thing may be fairly ascribed to Socrates—inductive arguments and universal definition, be of which are concerned with the starting-point of science. (1078bl8-30)

Aristotle's accounts of the thought of his predecessors have been looked at with considerable skepticism by many contemporary historians of philosophy. Such historians have often claimed that his accounts are not reliable because he tends to attribute to his predecessors his own philosophical views or, at least, to look at their philosophical achievements through his own philosophical assumptions or doctrines. Of course, one should not assume that Aristotle is infallible, as was at times done in the past. Not everything that Aristotle says about his predecessors needs to be true. But it need not be false either. I believe that in the above assessment of Socrates' theory and practice Aristotle is correct, despite the fact that he does presuppose some of his own philosophical views. For, at least in this particular case, Socrates' and Aristotle's views on the nature of definition and knowledge and the role definition plays in relation to knowledge are quite similar.

According to Aristotle, Socrates sought definitions, and his search was subordinate to his interests in the virtues or excellences of character. That Socrates sought definitions can be taken as one of the few claims about Socratic practice that is beyond doubt. However, there are doubts about Socrates' reasons for seeking definitions. Some scholars have raised questions about the purpose of the Socratic practice, often claiming that Socrates does not ultimately aim at obtaining definitions but rather at showing that others are ignorant or at simply refuting their views. Yet even the most superficial reading of the Socratic Dialogues will convince anyone that Socrates sought definitions and had some reasons for doing so that went beyond refuting others or reducing them to ignorance.^[5]

These reasons, as I shall discuss below, are both epistemic and practical. Definitions, according to Socrates, are to play a role in knowledge as well

- 18 -

as in practice. One epistemic reason for seeking definitions is identified by Aristotle when he tells us that Socrates sought definitions in order to syllogize. But, as shall be seen, Socrates himself gives additional reasons for seeking definitions, reasons which have little to do with refuting anyone or reducing anyone to ignorance. And although the latter may have been an element of Socratic practice, definitions were not sought primarily for the sake of refuting other persons.^[6] They were rather sought for more constructive practical or epistemic purposes.

The important point, however, is to recognize the primacy of definitions in the Socratic theory/practice. Socrates often insists that arriving at a correct definition is not only of the utmost importance for epistemic purposes in general but is also necessary for dealing with whatever practical problem immediately confronts him and his interlocutors (see the opening sections of *Euthyphro, Laches, Charmides*, and *Meno*). He insists and convinces his interlocutors that the immediate task is to obtain a definition, and he thus elicits from them a number of definitions and also provides some himself. Indeed, many of the Socratic Dialogues are either partly or entirely concerned with the search for definitions, explanations of the nature of definitions, examination and testing of the truth of definitions. On the contrary, he urges his interlocutors to renew their efforts in search of definitions (see the closing sections of *Euthyphro, Laches*, and *Charmides*). There is no evidence that he thought definitions to be impossible or his philosophical practice of searching for definitions nonviable.^[7]

Aristotle then seems to be correct in singling out the search for definitions as constituting, together with inductive arguments, the Socratic practice. But he tells us in addition that Socrates was after a special kind of definition—that is, a universal definition. The definitions Socrates himself gives, or that others put forth with his approval, have quite different characteristics. But he leaves no doubt that he is not interested in definitions by example, or in ostensive definitions that presumably give an accounts of nonparticulars.^[8] He aims at the types of definitions that presumably give an account of some characteristic, feature, kind, or property of a class of things—that is, of the sorts of things that have traditionally been considered to be universals. Such definitions, then, are viewed as being discursive accounts, explications, or analyses of the nature of characteristics, features, kinds, or properties—Aristotle's "what a thing is." They are considered to be nonsingular propositions that purport to give an account of the nature of universals.

Thus, Socrates seeks and examines proposed definitions of piety (*Euthyphro*), courage (*Laches*), temperance (*Charmides*), friendship (*Lysis*), beauty (*Hippias Major*), virtue (*Meno*), and justice (*Republic* I), and insists

- 19 -

that in all such cases he is after a definition of the nature common to the many particulars that are pious, temperate, beautiful, and so forth. He conceives these definitions as applying to or being true of every instance of the universal that they define. Although such definitions are almost always stated without quantifiers, and thus are indefinite in form—for example, "courage is . . .", "virtue is . . . ", "the beautiful is "and so on—he thinks of them as being or implying propositions that are really universal in form—"All virtue is . . .", "All cases of courage are . . .", "All beautiful things are . . ." He views them as being propositions that are universal in form and that, when successful, are universally true. The definition of piety is thought of as being true of every instance of piety.

Socrates' Conception of Knowledge

Aristotle tells us not only that Socrates sought definitions but also why he did so: he was "seeking to syllogize," and the definitions he sought were to be used for at least this purpose, as starting points of syllogizing or of knowledge (science). I shall focus in this section on the conception of Socratic knowledge and shall argue that what Aristotle says about Socrates on this matter is on the whole correct. One kind of knowledge that Socrates was seeking is a kind that can aptly be characterized in terms of Aristotle's words: "to syllogize." There are, of course, other kinds of knowledge. Aristotle is also correct in what he says about one use of Socratic definitions: namely, that they were viewed by Socrates as the starting point of knowledge. But I shall discuss this matter in the next section.

So, was Socrates seeking to syllogize? To be sure, the term Aristotle uses to characterize the goals of Socrates, "syllogize," is a term that we rightly associate with Aristotle's own philosophical thought. The term, in its various forms, has become the label for Aristotle's logical system or theory—his syllogistic or theory of deductive

inference—and for the account of scientific knowledge that he explicates in terms of this logical system. Commentators have, of course, focused on this fact and have used it as one more piece of evidence in support of their contention that Aristotle is always imputing his own doctrines to his predecessors. I doubt, however, that the particular instance under discussion provides evidence in support of the general claim that Aristotle was not an objective historian of philosophy.

For although Socrates hardly uses the term "syllogize," or any of its forms, and though there is no evidence that he had developed a theory of the syllogism, there is no reason to believe that Aristotle is attributing to him such a logical theory when he says that Socrates was seeking to syllogize.^[9] The term is often used by Aristotle himself to signify simply the making of an inference that is logically valid—the conclusion must be true

- 20 -

if the premises are true—without reference to any particular logical theory, syllogistic or otherwise.^[10] In all probability, what Aristotle is attributing to Socrates is the view that knowledge is in some sense demonstrative—that is, it consists of drawing valid inferences from some set of propositions that we know to be basic and true and thus proving some propositions on the basis of others. Aristotle does not need to attribute his own theory of demonstrative science to Socrates in order to describe the goals of Socrates in the way he does. We do not need to do that either.

Is the view that Aristotle attributes to Socrates supported by the evidence? To be sure, the demonstrative view of knowledge is not fully articulated in the Socratic Dialogues. But sufficient evidence can be gathered from the Socratic Dialogues to show that Socrates was operating with a conception of knowledge very much like the one Aristotle attributes to him. As early as the *Euthyphro* (11B-E, 15B-C), Socrates hints at a difference between knowledge and belief. The state of mind associated with the latter resembles the constantly moving statues of Daedalus, while that associated with the former is fixed and stable. Thus Socrates hints at the idea he develops in the *Meno* that knowledge consists in tying down things by giving their causes or explanations. He further argues there that the difference between the two cognitive states cannot be located solely on the truth value of what is known or believed—for both what we know and what we believe can be true. The difference, according to Socrates, lies in the fact that only in the case of knowledge do we have the reasons or causes (

figure

) for what we claim to know—the things, presumably, that tie down what we claim to know.^[11] Most probably what Socrates means when he speaks of causes or reasons in this context are premises from which a conclusion—what we claim to know—is deduced, just as Aristotle calls the premises that guarantee the truth of a deductive inference "causes."^[12] Indeed, the whole discussion of knowledge in the *Meno* makes it unequivocally clear that Socrates is thinking in terms of demonstration. When in his discussion of the slave boy example Socrates says that, despite his success in answering some of the geometrical questions correctly, the slave boy does not yet have knowledge. Socrates leaves no doubt as to what will be required in order for the slave boy to have knowledge: he would have to possess the proofs or demonstrations of those true propositions he now believes.^[13]

But perhaps clearer evidence in support of my claim that Socrates' conception of knowledge is quite similar to the Aristotelian conception of demonstrative knowledge can be found in his remarks in the *Meno* on the use of the method of hypothesis. He there tells us that

2.2 it seems we must inquire into a single property of something about whose essential we are still in the dark. . .. Allow me, in considering

- 21 -

whether or not it [virtue] can be taught, to make use of a hypothesis-the sort of th

16 of 362

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mean, that geometers often use in their inquiries. . . . Let us do the same about vir Since we don't know what it is or what it resembles, let us use a hypothesis in invest whether it is teachable or not. (86E-87B)

We need not concern ourselves at the moment with the question of whether Socrates' account of the use that geometers make of hypothesis is correct, but should focus instead on the use he himself proposes to make of hypothesis in his attempt to determine whether virtue possesses the property of being teachable or not.

So Socrates proposes two hypotheses about the nature of virtue—he assumes two accounts or definitions of its nature—and by adding some other premises he derives some conclusions concerning the teachability of virtue. He first proposes the hypothesis that virtue is a type of knowledge, and he thus constructs the following syllogism:

 P_1 : Virtue is a kind of knowledge

P₂ : All knowledge is teachable

C: Therefore, virtue is teachable

From his second hypothesis, that virtue is not a kind of knowledge, he constructs a different argument from which he derives the opposite conclusion:

 P_1 ': Virtue is not a kind of knowledge

P2 ': Nothing except knowledge is teachable

C': Virtue is not teachable

The hypothesis, then, in Socrates' illustration is to be used as a premise in a proof that presumably would demonstrate whether a property belongs or does not belong to virtue. It is quite clear from the above illustration that Socrates takes knowledge to have a certain structure or form. The conclusions—that is, the propositions about virtue being teachable or not—that the inquiry is trying to ascertain must follow deductively from the premises (the validity constraint). Indeed, the particular illustration of an inference or proof Socrates gives above even fits some of Aristotle's syllogistic forms quite nicely.^[14]

But clearly the validity constraint alone would not be sufficient for explicating knowledge, nor does it by itself capture Socrates' conception of knowledge. For, even if the conclusion about virtue were to follow from the premises Socrates provides (the formal condition of validity were to be satisfied), the premises could be false (soundness would not be satisfied) or the truth value of the premises might not be known (the epistemological condition would not be satisfied). Socrates himself sees this quite clearly, and thus points to the limitation of the method of hypothesis in this par-

- 22 -

ticular context.^[15] He leaves no doubt, however, as to what he takes for granted: namely, were the premises to be true and were he to possess knowledge of the premises of his syllogism about virtue, he would be able to infer deductively and therefore know other propositions about virtue. He would be able to prove, and thus know, that propositions other than those making up the premises are true.

In saying that Socrates has a conception of demonstrative knowledge in mind I do not mean to imply that he has a fully developed theory of such knowledge but rather that he works with such a conception, that he is guided by such a picture of knowledge. Those who followed him, primarily Aristotle, developed the Socratic picture into a detailed theory. There is no evidence that Socrates did. Indeed, as I shall argue below, it is not clear what are the domain and limits of demonstrative knowledge according to Socrates. Nor do I mean to imply that the demonstrative conception of knowledge exhausts his conception of knowledge. Aristotle himself, most probably, does not mean that Socrates takes demonstrative knowledge to be the whole of knowledge. There is no reason for thinking that Socratic definitions, for example, are themselves known by being demonstrated. To say then that Socrates has a conception of demonstrative knowledge is not to deny that, for him, there may be other kinds of knowledge, that some things may be known nondemonstratively.^[16]

Socrates on the Role of Definitions

Aristotle in the passage quoted above tells us that "it was natural that Socrates should be seeking the essence, for he was seeking to syllogize and 'what a thing is' is the starting point of syllogisms." Here Aristotle identifies a role that presumably Socratic definitions were meant to play: the definitions that captured the essence or stated what a thing is—for example, what virtue, piety, figure, and so on, are—were meant to be the starting points of syllogisms. Aristotle goes on to say such definitions are the starting points of knowledge or science.

The role of definitions within the Socratic theory/practice that Aristotle identifies complements the conception of knowledge that he attributes to Socrates. The latter was presumably seeking definitions that were to be used as the starting points of demonstrative knowledge. The definitions would specify the essence of a kind—they would tell us what the nature of the kind is—and from such definitions other properties would be shown to belong to the kind—other properties would be demonstrated of the kind.^[17] I shall therefore call this role of definitions "the demonstrative role."^[18]

That Aristotle should have focused on the demonstrative use of definitions within the Socratic theory/practice is perhaps not surprising given the conception of knowledge he attributes to Socrates. If knowing that

— 23 —

some property P belongs to a kind K is to be explicated in terms of demonstrating that P belongs to K, then the definition of K, which states what K is, will most likely play an important role in demonstrating that K is P. Aristotle would have good as well as obvious reasons for thinking along these lines. For the demonstrative role of definitions that he identifies within the Socratic theory/practice is precisely the role definitions play in his own conception of demonstrative knowledge or science. Definitions in the Aristotelian conception of knowledge are thought of as being among the starting points of knowledge.

But while Aristotle may be correct in identifying the demonstrative role definitions play within the Socratic theory/practice, definitions may play additional roles. And such roles could be either epistemic or practical. Definitions may, for example, figure in more than one way in Socrates' theoretical views about the nature of knowledge or in different ways in different kinds of knowledge. They may also have a role to play in practice. Socrates may consider definitions as either necessary or sufficient, or both, for making decisions or for acting. They may, thus, have practical uses.

But if definitions in the Socratic theory/practice have more than one use or role, it is important to identify them all. For there might be problems with all of these uses in relation to exactness/inexactness. Indeed, as we shall see below, some of the questions Aristotle raises about exactness/ inexactness in ethics have to do with the role definitions are supposed to play in the epistemic and practical aspects of ethics. When, for example, Aristotle raises questions about the level of exactness our accounts in ethics must reach, or the kinds of conclusions that can be drawn in our reasonings in ethics, he is in part concerned with these uses that Socrates assigns to definitions for ethical inquiry and practice. Aristotle asks, for instance, what level of exactness must the definition of a kind reach in order to function, as Socrates insists it can or must, as a tool for determining that some thing belongs to the kind? What must its nature be if conclusions of a certain type are to be drawn from it? What level of exactness must definitions or accounts of matters of conduct reach in order for them to function as guides to practice or action?

In addition to the demonstrative use, at least three other uses of definitions can be found in the Socratic Dialogues that are relevant for my purposes. Following Santas, I shall call the two additional epistemic ones the diagnostic and aitiological uses. I shall refer to the third as the practical use. In the following sections I will discuss each of these uses separately.

The Demonstrative Role of Definitions

Aristotle's statement concerning the demonstrative role of definitions is borne out by

what Socrates does and says. As Gerasimos Santas has argued, Socrates uses definitions as premises in deductive arguments on several

- 24 -

occasions (*Laches* 198B; *Protagoras* 358E; *Gorgias* 474C-475D).^[19] And when Socrates urges the use of the method of hypothesis in investigating whether virtue can be taught, he makes it clear that he intends to use the definition of virtue—what virtue is—to infer or prove whether it can be taught. At least one of the accounts of virtue he uses as a premise in his illustration of an inference or demonstration clearly has the form of a Socratic definition and is intended as such.^[20] Admittedly, Socrates has no definition have proved unsuccessful, and the search has been temporarily abandoned. But this does not affect what Socrates is saying about how he would like to use an actual definition if he had one, or how he proposes to use one that is merely assumed—one that is only a hypothesis.

Yet the examples of the demonstrative use of definitions found in the Socratic Dialogues do not really give a clear picture as to what Socrates has in mind. There are a number of questions that are difficult, or even impossible, to answer by relying solely on the few actual uses of definition for demonstrative purposes in the Dialogues. Is a definition of some F (e.g., virtue, courage, figure) sufficient for proving other properties of F? Is it necessary? And is this so for all properties of F or only for some? But perhaps the examples of the use of definitions for demonstrative purposes in the Socratic Dialogues can be useful in answering these questions when taken together with Socrates' own methodological remarks on the use of definitions as well as Aristotle's account of the Socratic theory/practice.

In all likelihood Socrates does not think that knowledge of the definition of some F is by itself sufficient for demonstrating that other properties belong to F-for example, that knowledge of the definition of virtue is sufficient for proving that virtue is teachable. Although at times he speaks as if all he needs for his demonstration is the definition of F (see, for example, Protagoras 361C), he assumes that other propositions will be used as premises in an inference or syllogism, premises that perhaps can be easily recognized to be true or self-evident. So in the illustration of the syllogism involving a hypothesis in the Meno, Socrates uses in addition to the definition of virtue what he probably takes as a self-evident proposition-namely, that all knowledge can be taught.^[21] And in all likelihood, when Aristotle says that definitions are the starting points of knowledge and Socrates sought definitions for just this reason, he does not mean that definitions are sufficient for demonstrations but only that they are the starting points. Of course, this by no means shows that definitions are not sufficient. Whether or not they are depends in part on the kinds of definitions one has and the kinds of inferences one's logical theory allows. For example, from a definition consisting of a number of conjuncts one could detach, and hence infer, one of them. But this would not be possible within Aristotle's syllogistic.

- 25 -

But perhaps what is of greater importance in the present context is whether the definition of some F is necessary for knowing or proving that other properties belong to F as well. It is, however, much more difficult to establish whether Socrates accepts this latter claim—whether he takes the definition of F to be a necessary condition for proving that other things belong to F. As Santas has pointed out, it is not clear what conclusion one is justified in drawing from examining the few instances where Socrates uses definitions demonstratively.^[22] Furthermore, are we to suppose that he meant that all properties of some kind are to be demonstrated, or only some? And, if the latter, how do we determine which is the set of properties that can be demonstrated from the definition of the kind, and possibly from additional propositions? But falling back on the scanty methodological comments Socrates makes on this matter may not resolve the issue in a decisive way either. As Santas quite perceptively observes, in some of the most crucial of these passages Socrates is very cautious; he does not even *assert* the thesis that the definition of F is necessary for demonstrating other properties of F. He merely puts it in the form of a question. This feature of the texts (a question is raised and no thesis is asserted), the scarcity of actual uses of definitions for demonstration on

the part of Socrates, and Socrates' unwillingness to generalize from these few uses has led Santas to conclude that Socrates was putting forth a much more modest view—that is, definitions are useful for demonstrating some properties, and one would benefit from having definitions in one's efforts to know other truths.^[23]

The moderate view Santas attributes to Socrates differs from the interpretations of other scholars^[24] I find myself more in agreement with those scholars who understand Socrates to put forth a strong and unrestricted thesis—the definition of F is a necessary condition for demonstrating or knowing what other properties belong to F. The fact that Socrates poses a question rather than states a thesis when he introduces the demonstrative role of definitions does not seem to me to imply that he does not hold such a thesis. In the *Meno* he asks, "So far I am from knowing whether it [virtue] can be taught or not, that I actually do not even know what the thing itself, virtue, is at all. . . . That which I do not know what it is, how could I know what qualities it has?" (71A). In the *Laches* he again asks, "Then it is necessary that this exists, the knowledge of what is virtue? For if we did not know at all what virtue is, how could we become consultants in the way one might best acquire it?" (190B).

Clearly, these are rhetorical questions whose answers are meant to be apparent to all. The question in the *Meno* and the last one from the *Lachts* are meant to be answered in the negative—as indeed they are, in the first case by Meno and in the second by Laches (Socrates' interlocutors in the two dialogues). The rhetorical question is used as a device for putting forth

- 26 -

a thesis that must have seemed obvious without asserting it. And whereas the thesis, as Santas correctly observes, is weakly stated in Book I of the *Republic* ("For if I don't know what the just is, I shall hardly know whether it is virtue or not, and whether its possessor is or is not happy"), the first question from the quotation from the *Laches* implies that knowledge of the definition is necessary. The answer to the question, "Then it is necessary that this exists, the knowledge of what is virtue?" is meant to be affirmative.

The thesis is, however, asserted without any qualifications, in contrast to being posed only as a question, in the *Protagoras* when Socrates says, "I should be surprised if you know just what a sophist is. And yet if you don't know that, you don't know to whom you are entrusting your soul, nor whether he represents something good or bad" (312C). Aristotle himself, I believe, attributes the thesis to Socrates in the passage from the *Met.* quoted earlier (9.1). Although not explicitly stated, what Aristotle most likely means when he says that Socrates sought definitions in order to syllogize is that Socrates believed definitions to be necessary for obtaining demonstrative knowledge. And after all, Aristotle's assessment is what is of primary importance in the present context.

But what is the scope of the Socratic thesis concerning the demonstration of the properties of F from the definition of F? Is the definition of a kind necessary for knowing any and every property of the kind? Are all properties of a kind known to belong to the kind by being demonstrated in some way or other? These are, unfortunately, difficult questions to answer with certainty. The reason for this is that Socrates most often focuses on some particular property of some one kind he is interested in and rarely speaks about the general problem of our knowledge of the properties of a kind or the use of definitions in our knowledge of properties in general. Thus, when concerned with some particular property of a kind, Socrates tells us explicitly that that property must be demonstrated from the definition of the kind, and he assumes that at least that property is demonstrable. For instance, he insists that we need to demonstrate whether courage can be acquired (*Laches* 190B), whether the sophist is someone good or bad (Protagoras 312C), whether virtue is teachable (316C), whether justice is a virtue and makes its possessor happy (Republic I), and so forth. But in at least one place Socrates appears to be willing to generalize the thesis to include all the properties of a kind, and in fact he appears to generalize the thesis to include all kinds. For, although in the Meno his concern is again with whether some particular property belongs to some specific kind—for example, with whether being teachable belongs to virtue—at 71A of that dialogue Socrates asks, "That which I do not know what it is how could I know what qualities it has?" Admittedly, this is not a statement of the thesis—it is not a statement

at all, but a question. But

- 27 -

it is, again, a rhetorical question whose answer Socrates assumes to be obvious—namely, the definition of the kind is necessary for knowing the qualities of the kind. And, as the subsequent discussion of the dialogue makes clear, the knowledge at issue is some form of demonstration of the qualities of the kind. But it is all the qualities of a kind that presumably can and must be demonstrated from its definition. There is no reason to think that Socrates restricts the thesis to only a subset of the properties of virtue, or for that matter that he restricts the thesis to a subset of kinds. The thesis presumably applies to all the properties of any and every kind.

The same view is, I believe, expressed by Aristotle in his account of the Socratic theory/practice. Although he does not explicitly state that Socrates thought that all properties of a kind can or must be demonstrated from the definition of the kind, the way he ascribes the thesis of the demonstrative role of definition to Socrates suggests that, according to Aristotle, Socrates understood the thesis in an unrestricted sense. Socrates did not distinguish between properties that can be demonstrated and those that cannot or between properties that must be demonstrated and those that need not in order to be known. (Aristotle himself, of course, later did distinguish between properties that cannot.)

The reason why the question concerning the scope of the Socratic thesis about the demonstrative role of definition is important is this: If the demonstrative thesis is correct, some or all of the properties of a kind belong to every member of the kind. Or, some or all of the propositions attributing properties to a kind are, if true, universally true. The way Socrates explicates our knowledge that some property P belongs to a kind K—that is, by way of demonstrating that K is P from the definition of K and other relevant propositions—implies that P belongs to K universally. If, for example, we can demonstrate that virtue is teachable from the propositions "Virtue is knowledge" (the definition of virtue) and "All knowledge is teachable," then the property of being teachable will apply to all virtue. If, in other words, the premises of a Socratic syllogism are universal in form and true, and the syllogism is valid, then the conclusion that asserts some property belongs to a kind will also be universally true of the kind. Thus, one implication of the thesis concerning the demonstrative role of definitions is this: Understood in a weak sense, at least some of the properties of a kind are universally true of the kind; understood in a strong sense, all the properties of a kind are universally true of the kind. But these, as we shall see later, are some of the assumptions, claims, or implications of the Socratic theory/practice that Aristotle calls into question when he attributes a type of inexactness to the subject matter of ethics and to our reasonings about it.

Now, in speaking of the demonstrative role of definition in Socratic

- 28 -

theory/practice, it is important to remember what I said earlier—namely, I do not mean to imply that Socrates never in actual practice claims to know that some property belongs to a kind without knowing the definition of the kind, for at times he does claim to know.^[25] It is precisely because such a discrepancy between theory and practice is encountered at times that I insisted above that a distinction be made between what Socrates says and what he (at times) does. Aristotle's own focus seems to be Socrates' theoretical pronouncements rather than his actual practice, which may at times violate his pronouncements.

The Aitiological and Diagnostic Roles of Definition

As I said above, in addition to the demonstrative use of definitions, there are at least two other epistemic uses that can be identified within the Socratic theory/practice: the aitiological and diagnostic uses.

The aitiological use of definitions is presented by Socrates at the beginning of the *Hippias Major* and at the end of the *Lysis*. As presented by Socrates, it consists in using the definition of F to defend, or justify, a judgment or a claim to know that some things

21 of 362

8/6/2006 1:15 PM

are F's. The definition that tells us the nature of F—what it is to be an F—is considered to be both a sufficient and a necessary condition in defending or justifying any claim to know that some x is F. It provides us, according to Socrates, with a means of showing that a judgment or claim that we know that something belongs to a kind is true. Thus, Socrates argues in the *Hippias Major* that knowledge of the definition of the beautiful is necessary and sufficient for justifying his claim to know that some speeches are beautiful; similarly, knowledge of the definition of friendship is necessary and sufficient for justifying the and his associates are friends of one another (*Lysis*). As Santas observes, the definition of F can become part of an argument for showing that a judgment that some x is F is correct. It provides one with the reasons or causes for the correctness of a claim to know that something is an F.

The diagnostic use of definitions is described by Socrates at the opening of the *Euthyphro* when he tells how he intends to use the definition of piety that he is seeking:

2.3 Tell me then what this form [idea] itself is, so that by looking at it and using it as a r [paradigm], I will be able to say that anything you or others do that is similar to it is and that which is not similar I will be able to say that it is not. (6E)

This description of a possible use of definitions is by no means clear or precise. Socrates, for example, speaks of using the definition of piety in order "to tell" or "to say" whether some particular action is a case of

— 29 —

piety. But what does Socrates mean by describing his purpose in this manner? How is a general definition of something as abstract as piety to be used for telling whether some particular act is a case of piety? And what is involved in "telling" or "saying" that some particular (an act) is of a certain kind (piety)?

In response to the last question, Santas has argued that we can distinguish at least two things Socrates might be saving when describing the use of definitions for diagnostic purposes: (a) a definition of a kind may be used in order to form a judgment or belief that some particular is of the kind; and (b) the definition of the kind is to be used for knowing that some particular is of the kind. Traditionally, commentators have focused on the second alternative as the use that explicates the diagnostic role of definitions: the definition of F is to be used for knowing that some x is F. There are, perhaps, good reasons for favoring this alternative. The context of the *Euthyphro*, as well as that of other dialogues where definitions are sought, makes it most plausible that Socrates is thinking of this alternative when he explains the diagnostic use of definitions in terms of using the definition of a kind in order "to tell" or "to say" that some particular belongs to the kind. Such contexts are invariably contexts of disagreement and dispute, and most often of quite deep and pervasive disagreements and disputes^[26] It is difficult to see what use the forming of another judgment or belief would be to Socrates and his interlocutors given such contexts within which the requests for definitions occur. Arriving at another belief or forming another judgment would not resolve the disputes or disagreements, unless of course a number of other assumptions are made^[27] What Socrates needs in these types of contexts is a means of determining, and hence of knowing, that some particular is truly of a certain kind. He needs to know that Euthyphro's proposed action is an act of piety or that it is not. He needs to know whether Euthyphro's act has the features that constitute piety or, in Socrates' language, whether it is similar to the form of piety. And the definition that gives us the nature of piety is to be used, according to Socrates, as a model for distinguishing correctly pious from impious actions (2.3).

Two other considerations speak in favor of the traditional interpretation of the diagnostic use of definitions. When Socrates explains the aitiological use of definitions he proposes to use a definition in order to justify a claim to know that some particular is of a certain kind. It is the claim to have knowledge that Socrates believes needs to be justified. And, therefore, what he needs is the means to obtain knowledge—that is, a diagnostic tool for knowing that some particular is of a certain type. The definition would presumably provide the means for knowing rather than merely forming a belief or judgment. There is also a question about the character of Socrates' insistence that a definition is needed for diagnostic purposes. It is

- 30 -

difficult to see why Socrates would be insisting as strongly as he does on a definition of, for example, piety for diagnostic purposes if his intention is to form a belief or judgment about some particular action. The demand seems to be rather excessive if the objective is not one of obtaining knowledge.

Yet, although I am inclined, in agreement with most commentators, toward the view that Socrates takes the diagnostic use of definition to be the use of the definition of F for knowing that some x is F, it must be admitted that the texts do not provide unequivocal support for this view. Santas, I think, is correct in insisting that Socrates' own words can best be interpreted as putting forth either the view that the definition of F is to be used for forming a belief or judgment that some x is F or the view that the definition of F is to be used for knowing that some x is F. Fortunately, however, it is not necessary for our purposes to choose between these two interpretations of the diagnostic use of definitions within the Socratic theory/practice. As I shall argue below, there are problems both with using the definition for forming a belief and with using it to gain knowledge that some particular is of a certain kind. It is such problems that Aristotle focuses upon when he raises questions about the exactness of our accounts in ethics. He is especially concerned with the degree of detail, and conversely of generality, that our accounts must possess in order to do the various functions they are supposed to do.

It is nonetheless important to distinguish between the two interpretations of the diagnostic use of definition, for they are quite different and do not necessarily imply each other. Something may be sufficient for forming a belief or judgment that x is F but may not be sufficient for determining or knowing that it is F. Some phenomenal property of water, for example, its being a colorless liquid, may be sufficient for forming a judgment or belief that this liquid is water, but it may not be sufficient for determining correctly or knowing that it is water. Forming a judgment or belief is weaker than knowing, and their respective requirements are different. Presumably, whatever is sufficient for knowing is sufficient for forming a judgment or belief.^[28]

Distinguishing between the two interpretations of the diagnostic use is important for another reason, a reason that in part motivates Santas's wish to keep the two interpretations apart. It is important, after all, to determine whether the definition of some F is needed not only for knowing that some x is F but 'also for believing or judging that x is F. If indeed Socrates thought that the definition is needed in both cases, then there might be quite serious problems with his enterprise of searching after definitions (see below).

This much, however, is quite certain: Socrates takes knowledge of the definition of F to be at least sufficient for forming a belief or judgment

- 31 -

and for knowing that x is F. He insists, in other words, that knowledge of the definition of a universal, character, or kind is sufficient for knowing or forming the belief that some particular is an instance of the universal, has the character, or is a member of the kind. Socrates may not explain how the definition is exactly to be used, but that he assumes it can be used for such purposes is made quite clear.

But does Socrates take the definition to be a necessary condition for diagnostic purposes? This question is quite difficult to answer, for Socrates does not explicitly state that the definition is a necessary condition for diagnostic purposes. In the above quotation from the *Euthyphro* Socrates appears to be primarily interested in justifying the search for a definition of piety in terms of its being a sufficient condition for believing or knowing that some particular action is pious or not. "Tell me what piety is," Socrates says, "that by looking at it and using it as a model I will be able. . . . "A definition of F, Socrates is at least saying, can be used, and is presumably sufficient, for determining whether any x is F. But he does not in this passage say that the definition of F is necessary for doing so.

The closest Socrates comes to stating that the definition is necessary for diagnostic purposes is in *Hippias Major* (286D) when he recounts how he was interrogated when he was judging or was claiming to know some things to be beautiful or ugly: "How, if you please, do you know, Socrates, what things are beautiful and what ugly? For, come

now, could you tell me what the beautiful is?" Again, Socrates does not say that the definition is necessary, but it is clear that the answer to the rhetorical question that is posed by Socrates' imaginary interrogator is a negative one—namely, that one cannot know what things are beautiful without knowledge of the definition of the beautiful. Knowledge of the definition of beauty, or of any F, is a necessary condition for knowing what things are beautiful, or are F.

There is additional evidence from Socrates' own practice rather than from his utterances. The problem in some cases is to determine whether some particular is of a certain character or kind—for example, whether Euthyphro's act is pious, whether Charmides is temperate, or whether some of Socrates' associates are friends with one another. Socrates, however, invariably focuses on the nature of the character or the definition of the kind—piety, temperance, friendship, and so on. This clearly suggests that he viewed the definition of a character or kind as a necessary condition for knowing whether some individual is of that character or kind. This type of evidence is by no means conclusive, but when it is taken together with Socrates' own utterances on the use of definitions for diagnostic purposes, it makes most plausible the claim that Socrates took the definition to be a necessary condition for such purposes. Many commentators—including Richard Robinson, W. D. Ross, Peter Geach, and Santas—

— 32 —

have so understood Socrates' remarks and practice. It is the insistence on such a requirement on the part of Socrates, that is, that knowledge of the definition of F is necessary for knowing that some x is F, that, according to some scholars, leads Socrates into committing the Socratic Fallacy^[29]

The Practical Role of Definitions

The uses of Socratic definitions that have been identified so far can be described as being epistemic. According to Socrates, definitions are to be used within the context of knowledge—to demonstrate propositions, to justify claims to know, or to determine that something is of a certain character or kind. Definitions, however, may have other uses that are not epistemic. Indeed, the epistemic uses themselves may be subordinate to other kinds of purposes or uses.

In most cases Socrates' quest for definitions is presented by Plato within a practical context. In such a context, a decision about conduct or action needs to be made, and the definition is to be used as a means for making the decision by determining the action to be done. Thus, in the *Euthyphro* the question is how Euthyphro should act—should he prosecute his father or not?—given the role his father has played in the death of one of the household workers. In the *Laches*, the immediate question facing Socrates and his companions is how and by whom can children be taught courage. Similarly, in the *Protagoras* the practical question concerning the merits of entrusting education to the sophists is the primary concern in the attempt to define the nature or give a definition of the sophist. The definitions are viewed as the means of making practical decisions, as providing us with the tools of deciding on particular matters of conduct. The definitions of the characters or kinds—for example, of piety, courage (or virtue in general), or the sophist—are presumably the means by which the practical questions confronting Socrates and his associates can be answered.

Indeed, in most cases the epistemic uses of definitions that Socrates identifies seem to be ultimately of practical importance to him. And it is quite plausible that such epistemic uses are ultimately subordinate to practical concerns within the Socratic theory/practice. Thus, the use of a definition diagnostically in order to determine whether some particular action is pious (*Euthyphro*) is a step toward determining whether the action should be done or which action should be done. Similarly, the demonstrative use of the definition of courage to determine whether courage can be taught (*Laches*) is viewed by Socrates as a step toward acting correctly in connection with the moral education of one's own children. And again, the demonstrative use of the definition of the sophist in order to determine whether the effects of the art of sophistry are beneficial (*Protagoras*) is a step toward deciding the course of one's conduct or, as Socrates sees it, deciding

whether to commit one's soul to the sophists. I do not wish to insist here that the epistemic uses are always subordinate to practical purposes, if this means that Socrates would have no interest in the former if they did not satisfy some practical objectives. This is a difficult matter to establish with any degree of certainty. What is important, as well as what is sufficient for the present purposes, is the fact that Socrates sees definitions as sufficient, and perhaps even necessary, for action or practice. For Socrates, definitions of the most abstract types of things—universals, characters, kinds, and so on—are means to making choices about particular matters of conduct. Knowledge about quite general and abstract things is in a way directly linked with particular and concrete actions or matters of conduct. Definitions of such things are all that one presumably needs to resolve the concrete and particular problems of action and conduct.

Reflections on the Socratic Theory and Practice

As I said earlier, the brief discussion of the Socratic practice above is not intended as an exhaustive study of Socrates' thought. The aim is rather to provide the background against which Aristotle's remarks on exactness/ inexactness in ethics can be better understood. To this end, I would like to reflect briefly upon those aspects of the Socratic theory/practice discussed above that are the target of Aristotle's criticisms in his remarks on exactness.

Socratic definitions are supposedly definitions of a set of entities. They aim at defining the entities that are designated by such abstract nouns as "piety," "beauty," "size," "figure," and so forth^[30] Such nouns are viewed as being the names of the entities to be defined. Socrates does not doubt that these entities, the objects of his definitions, exist. This may be called the "ontological thesis." The ontological thesis is accepted, in one form or another, by Plato and Aristotle as well. Of course, the three philosophers differ in their views about the nature of the existence of these entities. At least Aristotle thinks that Socrates did not suppose that the entities he was trying to define exist apart from the objects they characterize^[31] Plato on the other hand did believe that such entities exist apart (the Forms). Aristotle thinks that Plato is wrong, and that he himself can say as much as he does say about the Forms and use them for his own philosophical purposes without being committed to a separate existence in their case.

The ontological thesis, however, is not a target of Aristotle's remarks on exactness. It is, however, the target of many of his metaphysical discussions. Even in his ethical treatises he raises doubts about the Platonic Forms and questions whether such a Form exists in the case of goodness. He even raises doubts about the plausibility of the Socratic claim that there is a single universal in the case of goodness and whether such a universal,

- 34 -

a Platonic Form, or Plato's absolute Good is a goal of practice and hence whether it is of any practical use^[32] But the fact that Socrates takes the entities which he aims at defining to exist does not raise questions of exactness for Aristotle. Socrates views the ontological thesis as being true in the case of all general terms—for example, ethical terms, mathematical terms, or terms designating physical properties or natural kinds. The ontological thesis then does not differentiate among disciplines. If there were problems about exactness stemming from the ontological thesis, they would be common to all disciplines and would not single out ethics or any other discipline. However, the way these supposed entities are and the manner their definitions are to be used do, according to Aristotle, raise problems of exactness that differentiate ethics, and related disciplines, from some other disciplines.

We saw earlier that Socrates takes the definitions he seeks of these entities to be true in all cases. The definitions of piety, courage, virtue, and so forth, are, according to him, true of all cases of piety, courage, virtue, and so forth. They apply to all the instances of these features irrespective of the things such features characterize—acts, persons, states, and so on. And he thinks that this is so with all entities—the definition of any F is universally true of all instances of F. Let us call this Socratic thesis "the

universality of truth of definition thesis." It may appear that Socrates, in upholding such a thesis in an unrestricted form, is motivated by concerns that could easily be characterized as being formal or linguistic—that is, concerns about the meaning of terms, the nature of concepts or definitions, and so on. What lies behind the thesis of the universality of truth of definitions are presumably assumptions like the following: The meaning of a term must be the same in all its applications; the nature of our concepts is, or even must be, such that the definition of any F is true of all instances of F; or definitions must apply to all instances of the character they define if they are to be definitions or if they are to be of any use. Sometimes Socrates speaks as if he has some such concerns in mind, as, for instance, when he insists that if we apply the same term in a number of cases, they must have something in common that is designated by the term in all the cases^[33]

Yet it is quite evident that the primary motivation of Socrates stems from his conception of the objects he is trying to define. It is a conception of strict metaphysical essentialism, coupled with a type of general metaphysical realism, that primarily motivates him—the objects of definitions themselves possess certain characteristics or are of a certain nature, and it is not merely our language, concepts, definitions, and so on, that impose upon, or require of the world that it has, a nature or structure. His concerns then are primarily material and only secondarily formal. The objects of definitions themselves, irrespective of whether they are mathematical

- 35 -

(the geometrical figures in the *Meno*), physical objects or qualities (bees, strength, size in the *Meno*), or ethical characteristics (piety, courage, virtue in the *Euthyphro, Laches* , and *Meno*) are thought of as possessing a fixed and invariable nature that is to be captured by the Socratic definitions. Let us call this "the metaphysical essentialism thesis." This thesis is, as is well known, stated throughout the Socratic Dialogues; it is presupposed by the Socratic practice of searching for definitions. The locus classicus of the thesis is however to be found as early as the *Euthyphro* when Socrates, in trying to explain what kind of definitions he wants, asks the rhetorical question, "Is not piety always the same with itself [

figure

] in every action, and, on the other hand, is not impiety the opposite of all piety, always the same with itself and whatever is to be impious possessing the same form?" (5D). The answer to this question is, of course, "Most certainly, Socrates." This is essentialism of the strongest kind—piety, impiety, and presumably all other things designated by general terms have a fixed and invariant nature or structure. This nature is, of course, thought of as being prior and independent of our thought—it is there to be discovered.

It is quite evident that the two theses—metaphysical essentialism and universality of definitions—are really inseparable within the Socratic theory/practice, and go hand in hand with Socrates' conception of demonstrative knowledge. The first tells us what the nature of the objects to be defined is or perhaps must be—they possess a fixed and invariant nature, an essence. It is this nature or essence that is to be given in the definition, which clearly cannot, if adequate, fail to apply to all the cases of what is being defined. The nature of the objects to be defined guarantees that a Socratic definition will be when true, universally true. And it is in part this conception of the objects that explains why Socrates seems to have no doubt that definitions are possible—objects have a fixed nature and thus can be defined. There may, of course, be other reasons why definitions are difficult or even impossible to obtain, ^[34] but at least the nature of the objects to be defined does not pose any problems.

The two theses are also an integral part of Socrates' conception of demonstrative knowledge, for the idea that a kind has an essential structure is partly the idea that the rest of the properties of the kind are to be explained by reference to this essential structure. Hence, to know that certain properties belong to a kind is to show that they necessarily follow from its nature or its essential structure; it is to demonstrate the properties from the essence of the kind $^{[35]}$ But the way the essence of a kind figures in a demonstration is via the definition of the kind. The definition captures the essence and thus may function as the starting point of demonstration. A definition that is conceived as capturing an invariant structure must be universal in form, and if true, must be universally true. And all Socratic

- 36 -

definitions that are of the form Socrates approves are universal in form^[36] If, in addition, the other premises of a demonstrative syllogism are also universal in form, as Socrates supposes them to be, then the conclusion of a valid syllogism will assert that some property is universally true of a kind. From a syllogism of this type that has true premises, one would infer that some property belongs to every member of a kind, or that some or all properties of a kind belong to every member of that kind without exception.

The view that some or all properties of a kind belong to it universally can be looked upon as having two sources. It can be thought of as being part of the very intuitive idea we have of what it is to possess an essential structure—namely, that such a thing has some or all its properties because it has the essential structure it has, and therefore such properties belong to it without exception. There is no doubt that such an intuitive idea underlies much of what Socrates says. If virtue, courage, justice, and so forth, have each an essential structure that explains why each has the properties it has, then the properties each has must belong to them without exception. The case of matters of conduct and their properties: If a property belongs to a square because the square has the essential nature it has, then the property belongs to all squares .without exception.

Alternatively, we may look for the basis of this view in the means by which properties are shown to belong to a kind, namely, in the demonstrative syllogism. We may, that is, examine the syntactic and semantic features of a typical Socratic syllogism or inference that aims to show that some property belongs to a kind. Socrates takes the premises of such nonpractical syllogisms to have a certain syntactical form—they are universal in form. In such syllogisms he does not use propositions that contain proper names, make references to individuals, or use existential quantifiers. If a Socratic syllogism is valid and has premises that are universal in form (syntax) and true (semantics), then the conclusion demonstrated from it will also be universally true. From such a syllogism one will be able to show that a property belongs to all members of a kind without exception.

The connection seen within the Socratic theory/practice among Socrates' conception of the nature of the entities he is trying to define (strict metaphysical essentialism), the nature of definitions (universally true), and the nature of knowledge (demonstration of the properties that belong to a kind) is to be encountered again in both Plato (Forms and knowledge) and Aristotle (essentialism, definitions, and demonstrative knowledge). The connection plays a central role in their metaphysical and epistemological speculations and is never really questioned.^[37] At times, it is indeed difficult to separate the three elements, since they seem to always go together. Yet it is important to distinguish among them—first, because they are really

— 37 —

quite different elements or theses, and second, because we can then see the interconnections among them, that is, what happens to one or more of the theses when others are given up or modified. Indeed, in most cases where Aristotle is concerned with the problems of exactness/inexactness in ethics and related disciplines he is modifying or abandoning some of these elements. And, of course, modifying or abandoning any one of these elements is most likely to have consequences, which Aristotle, as shall be seen, does not fail to notice.

Thus, one problem about exactness/inexactness in ethics that Aristotle raises is the problem about the nature of the elements of conduct. Do they really possess the fixed and invariant structure that Socrates assumes? Is metaphysical essentialism to be extended to the elements of conduct? Socrates treats all objects alike, whether they are mathematical ones or elements of conduct. Regardless of what the object is—square, figure, size, virtue, courage, piety, beauty, and so forth—it is thought to possess a fixed and invariant nature—essentialism is all-encompassing. Aristotle thinks that this is not so. Essentialism may not be all-encompassing. It may be true of some objects—for example, the mathematical ones—but it may not be true of the objects dealt with by ethics. They, as well as the objects of related disciplines, exhibit a type of inexactness that he calls "variation"; they have a kind of indefiniteness. But again, as Socrates views

fixity or invariance of essential structure to be features of the world, so does Aristotle consider variation or indefiniteness to be features of the objects themselves. If our language or concepts also possess corresponding features, they do so because the objects themselves possess these features.

Again, just as Socrates couples his views about definitions to his conception of the nature of objects, so does Aristotle. The Socratic objects with a fixed and well-defined nature can presumably be defined, and their definitions will be true of all cases. What are we to expect in the case of matters of conduct which, according to Aristotle, exhibit variation and indefiniteness? Aristotle, following the Socratic line of coupling the nature of definitions to the nature of the objects they define, claims that definitions of the elements of conduct are difficult or even impossible to obtain. Such objects may not be definable precisely because they lack a fixed essential structure; they are indefinite. And where definitions are possible, they cannot be like the definitions Socrates has in mind—they are in some way deficient. Definitions may not apply or be true in all cases. They are, in Aristotle's view, inexact.

Aristotle also calls into question the Socratic thesis that some or all of the properties of a kind belong to every member of a kind. He questions, that is, the claim that some or all propositions asserting a property of a kind are universally true. He insists that matters of conduct exhibit either some or all of their properties for the most part, and that the propositions

— 38 —

asserting such properties are not universally true; they have exceptions. At times, Aristotle appears to doubt even the weak interpretation of the Socratic thesis—namely, that some of the properties of a kind belong to every member of that kind. He doubts that any property belongs without exception to every member of a kind or any statement asserting a property of a kind is universally true^[38] The phenomena of conduct and what we say about them are, according to Aristotle, inexact.

But abandoning or modifying the Socratic conception of the nature of matters of conduct (metaphysical essentialism), their definitions (universally true), and the propositions asserting properties of the elements of conduct (universally true or exceptionless) in the way Aristotle does is likely to have consequences for the kind of knowledge that is possible in the domain of conduct. This seems almost certain when we reflect upon the prominent role and central position Socrates assigns to definitions. If metaphysical essentialism fails in matters of conduct, it will be reflected in their definitions, and this in turn will most likely affect the demonstrative syllogisms that such definitions in part constitute.

Consider first the demonstrative use of definitions. Suppose a rather extreme case where if essentialism fails in matters of conduct, no definitions are possible. Then, clearly, definitions could not play the role Socrates assigns to them as starting points of demonstrative syllogisms. But perhaps definitions are impossible only in the case of some matters of conduct—or they are not really impossible, but merely difficult to obtain. Aristotle, however, sees problems for definitions even in this more moderate view if they are expected to play the demonstrative role that Socrates assigns to them—for how are definitions that are not universally true to be used for demonstrative purposes? What is the logical form of such definitions and what are their truth conditions? Whether valid demonstrative syllogisms are possible in the case of matters of conduct depends on the logical form of the propositions that constitute the premises of such syllogisms, including of course that of the Socratic definitions stating the nature of the various kinds Socrates is trying to define. But all or some of these propositions, Aristotle argues, may fail to be universally true, thus raising the question of how or whether syllogisms consisting of such premises could be valid. Aristotle seems to be quite certain that syllogisms about matters of conduct with premises that are not universally true cannot produce the kind of demonstrations that are possible elsewhere. One cannot, he argues, demonstrate that a property belongs to an element of conduct either in the strict sense advocated by Socrates or in the manner presumably possible in different domains (for example, the mathematical domain). Inexact subject matter and inexact premises in our syllogisms, he argues, will generate inexact reasonings, and hence inexact conclusions, in the domain of matters of conduct. Thus, some of Aristotle's remarks

— 39 —

on exactness/inexactness, which at times appear rather inconsequential, constitute a powerful attack on certain metaphysical and epistemological views in Socrates' thought, and, as shall be seen, in Plato's and his own thought.

Of course, what Aristotle says about the supposed inexactness of the subject matter and the propositions of ethics is likely to affect the other uses that definitions are assigned within the Socratic theory/practice. There are also problems, according to Aristotle, with the uses of the definitions Socrates proposes that stem simply from the abstractness of Socratic definitions. Such definitions, he argues, cannot do what Socrates says they are to do if they remain at the level of generality Socrates is willing to accept.

Consider, for example, the diagnostic use of definitions. Obviously, if definitions of matters of conduct are not possible, then there will be no definitions to carry out the diagnostic function. The definition of some element of conduct (for example, piety) cannot in this case be expected to be of use in determining (knowing) or judging/believing that some particular is an instance of this element (for example, this act is pious). Suppose, however, that definitions of matters of conduct are possible, but they are inexact in the sense that they are not universally true—they do not apply to all the instances of a kind. Again, such definitions could not for this reason be adequate diagnostic tools, if they are expected to work in all cases.

The situation, Aristotle thinks, would not be much better even if there were Socratic definitions of matters of conduct that did not suffer from the above inexactness. Such definitions would fail, according to Aristotle, because they are deficient in other ways-they are inexact in other ways. Suppose, for instance, that we have a Socratic definition of some element of conduct F. Socrates presupposes that the definition of F is sufficient for determining or judging/believing that some x is E Of course, there are many problems with the use of definitions in general and of definitions for diagnostic purposes in particular-for example, problems of interpretation, understanding, or following a rule. For the moment, however, I wish to focus on just this question: How can a Socratic definition of a kind be used to determine that some particular is of that kind, given the abstractness or generality of such a definition? Socrates appears, on the one hand, to set no limits to the abstractness or generality of definitions. On the other hand, however, he expects to use the definition by itself to determine whether a particular is or is not of a certain type. This clearly would not be as easy as Socrates presents it. Assuming that definitions are possible, knowledge of a definition of the type Socrates appears to be after would not be sufficient for diagnostic purposes. Consider, for example,

- 40 -

the following definitions that Socrates finds to be of the proper form: (a) That which the gods love is pious (*Euthyphro* 9D); (b) Courage is a certain endurance of the soul (*Laches* 192B); (c) Temperance is a kind of quietness (*Charmides* 159B); and, a definition that Socrates himself puts forth, (d) Fear is the expectation of future evil (*Meno* 198B). These definitions are, of course, informative—in some of the cases they at least identify the genus to which some element of conduct belongs—but it is far from obvious that definition (a) is sufficient for determining that some act is pious, (b) for determining that some act or person is courageous, and so on. Aristotle insists that these definitions lack the kind of exactness or specificity that is required if they are to do what Socrates wants them to do.

Similarly, definitions will not easily play the practical role Socrates expects them to play if they remain at the level of generality or abstractness at which Socratic definition seems to remain. Socrates expects the definitions of piety, courage, or sophistry, however abstract they might be, to provide practical answers to questions such as: What must Euthyphro do now? Should the children be sent for training to a sophist? Yet these definitions exhibit the same level of generality and abstractness that the definitions of figure, square, or color do. Socrates sees no difference between the kind of definitions, and therefore of knowledge, that is required in the case of practice and that which is required for nonpractical purposes. Aristotle again insists that there is a difference here—definitions and knowledge in matters of conduct cannot remain at the level of abstractness and generality that is sufficient in the context of mathematics if they are to be of use in practice. And they must be of use—this, he thinks, is the ultimate purpose for seeking knowledge in the domain of conduct. Ethics is, according to him, a practical discipline, and for this reason a certain level of exactness is required.

Conversely, Aristotle argues, if ethical investigation, unlike mathematical investigation, has practice or action as its ultimate goal, why should we demand from it the same exactness in terms of demonstrative rigor that we demand from disciplines whose goals are purely theoretical? The Socratic and, as we shall see, Platonic assumption that knowledge need not differ across types of disciplines is something Aristotle questions. He may be wrong himself in supposing that there is a difference in exactness among disciplines that is due to differences in their goals, but the Socratic assumption is not obvious either.

The above considerations show that often the targets of Aristotle's remarks on exactness are certain philosophical positions central to Socrates' thought and, to a considerable extent, to Plato's and Aristotle's own as well. In the subsequent discussion, I will explain in greater detail the variety of things Aristotle has in mind when he speaks of exactness/inexactness, and thus make the nature as well as the targets of his criticisms more

- 41 -

perspicuous. Before concluding this discussion of the Socratic thought, however, I wish to make some general comments about Socrates' conception of ethics as a discipline. It is quite clear that Socrates does not provide a detailed account of demonstrative knowledge, and it cannot be said that the available evidence shows that he has a clear conception of a demonstrative science or even of ethics as a discipline. It is therefore difficult at times to find answers to the many questions that arise about the Socratic conception of knowledge, science, and ethics.

Consider, for example, the question touched upon earlier: Does Socrates take the definitions he is seeking to be necessary truths? He does not say either that they are or that they are not. Consequently, it is not clear whether he thinks that demonstrative knowledge consists only of necessary propositions. Most probably Socrates does take definitions to be necessary. They state, according to him, the essences of the various kinds, and this would be, for Aristotle at least, sufficient to make definitions necessary. Aristotle then would have reasons for taking the Socratic conception of demonstrative knowledge to also encompass the assumption that demonstrative knowledge consists of necessary truths. At least some of its components would be necessary truths. It is also quite possible that Socrates takes universality of truth to imply necessity, as Aristotle himself seems to do (see chap. 6). In other words, if definitions are universally true, then they are necessary.

Even if Socrates takes his definitions to be necessary truths, we cannot conclude from this that he considers demonstrative knowledge to be necessary knowledge. Whether it is so depends on the nature of the other premises of his demonstrations or syllogisms—it depends on whether they are also necessary. Does Socrates take them to be so and does he draw the conclusion that, since all the premises of demonstrations are necessary, all demonstrative knowledge is necessary knowledge? It is difficult to respond to these questions, since Socrates not only gives us no answers but does not even address these matters. It is true that the premises he uses in the proofs to illustrate the use of hypothesis—that is, the two proofs in the *Meno* about virtue being teachable or not—are premises that could easily be taken as necessary. Each one of the proofs uses as a premise one of the propositional components of the biconditional "X is knowledge if and only if X is teachable." One could plausibly take the biconditional as stating a necessary truth. Socrates considers these statements to be universally true. And if he also takes universality of truth to imply necessity, then it is reasonable to assume that he takes these statements to be necessary too.

Yet the fact that it is plausible to take these premises to be necessary does not show that Socrates did so. Nor can it be assumed that if Socrates thought the premises to be necessary, he inferred that the conclusions of

30 of 362

his demonstration were necessary—that all demonstrative knowledge is necessary. Socrates may not have drawn the conclusion. Of course, Socrates may have taken all demonstrative knowledge to be necessary for guite different reasons. In a way, I am arguing here that, given the available evidence, one should take a rather agnostic attitude with regard to Socrates' views on these matters. At the same time, however, it is easy to see how someone, and in particular Aristotle, could take a positive stand and interpret the Socratic position in a straightforward fashion—that is, that Socrates takes the definitions of kinds, the additional premises (nondefinitional ones) of his proofs, and all demonstrative knowledge to be necessary. For clearly, the intuitions constituting the Socratic view are just those intuitions that have always led philosophers to the position that knowledge is demonstrative and that it consists of necessary truths—namely, that kinds have essences, properties of kinds can be proven from their essences, and so on. Aristotle in particular would see in the Socratic intuitions the very same intuitions that led him to his own views about the nature of knowledge, whether Socrates arrived at the same conclusions or not—and the way Aristotle saw the Socratic position is what is of primary importance for our purposes. If, indeed, he understood that position to hold that some or all properties of ethical elements are necessary, his emphasizing that properties belong to matters of conduct for the most part is an attempt to undercut this Socratic position. For, as shall be seen, Aristotle takes what is for the most part to be not necessary.

There are many other questions pertaining to Socrates' views on knowledge that seem to be equally difficult to answer in a definitive way. Does Socrates, for example, have a sufficiently clear idea of a demonstrative science? Does he identify the elements that a discipline must possess in order to be a demonstrative science? Does he give criteria for differentiating among the disciplines those that are independent or autonomous from those that are subordinate? Most often Socrates seems to be content with piecemeal investigations. At times his aim is to obtain a demonstration that could easily be considered as forming a part of a demonstrative science or at least of a well-defined discipline. But there is no real evidence that Socrates thinks that such demonstrations are a part of a science or that there is a discipline whose domain is such and such and contains some particular demonstration. For example, he concerns himself with proving, or thinks that one can prove, that courage or virtue is teachable, justice is beneficial, and so on, but there is no clear evidence that he views such proofs as being a part of the discipline of ethics that has its own proper elements. It is true that at times he claims disciplines differ in respect of their subject matter and/or function, but whether he thinks of these factors as providing adequate criteria for differentiating among disciplines or for determining which ones are independent is difficult to establish^[39] In one

— 43 —

place, however, he is presented by Plato as holding the view that all knowledge forms a continuous whole; all truths or propositions form an interconnected totality, so that by grasping one thing we can come to know everything else^[40] Is there really one demonstrative science that encompasses all truth and knowledge? Are the various disciplines in the final analysis not autonomous disciplines?

These are indeed important questions that are to be a central concern for Aristotle. But the point that needs to be stressed here is that Socrates sees no differences among the disciplines, or within the domain of knowledge, with regard to the nature of their objects and the type of knowledge that is possible. Mathematical and ethical elements are treated as exhibiting no differences that are relevant to their being objects of knowledge. They are thought to possess an essential nature that can be captured by definitions that are of the same kind. In addition, the disciplines concerned with the mathematical and ethical objects, and perhaps all other disciplines, have the same structure and form, just as their objects exhibit the same kind of metaphysical essentialism. Aristotle, as shall be seen, will question some of these explicit or implicit assumptions of Socrates and will insist that there are differences in exactness among disciplines.

Plato on Ethical Knowledge and its Objects

The line separating Plato's thought from Socrates' is difficult to draw. Where it is to be drawn with regard to some aspects of their thought, and whether there is a line to be drawn at all with regard to others, have been matters of controversy since antiquity. Naturally, the controversy has been greatest in connection with those elements that are central components of the views of both thinkers, such as the nature of the soul, the Forms, knowledge, virtue, and so forth. I shall not, however, enter into these controversies here, nor shall I take sides on any of them. Instead, I will make a few brief comments on some issues that bear on the main topics discussed in this essay.

Plato on several occasions in his works touches upon questions pertaining to exactness, and in some instances appears to anticipate some observations or claims that Aristotle himself later makes. Thus, in the *Theaetetus* (I62E) he suggests that different disciplines call for different types of justification or proof We cannot, he argues, use probabilistic forms of reasoning when doing geometry, thus anticipating Aristotle's well-known remark in the *N.E.* (I.iii), where he argues that the type of reasoning that is appropriate for a discipline is determined by the nature of the discipline itself and its subject matter.^[41]

Plato, however, speaks in considerably greater detail about differences among disciplines or arts and explicitly connects such differences to ex-

actness or inexactness in the *Philebus*. He argues that some disciplines, the most inexact ones, do not rise above the level of conjecture and experience-for example, music, medicine, agriculture, piloting, and strategy (56Aff.). Others that involve measuring and the use of instruments for measuring are more exact—for example, shipbuilding and housebuilding (56B). The most exact, however, are the mathematical arts or disciplines—for example, arithmetic and geometry (56C)—which, Plato goes on to argue, can be divided into two kinds: arithmetic and geometry of the many and arithmetic and geometry of the philosophers (56D). There are two distinct disciplines in each case, Plato claims, and the discipline or art pursued by the philosophers (pure mathematics) is more exact than that pursued by the many when they reckon, measure, or calculate in various contexts (applied mathematics, 57C-D).

- 44 -

There is no doubt that at some point in his philosophical career Plato came to reflect upon some questions about exactness/inexactness that were to concern Aristotle later. The evidence from the *Philebus* shows clearly that Plato was concerned with the problems of the variation of exactness across disciplines. Yet the *Philebus*, as well as the *Theaetetus*, are thought to be among Plato's late dialogues. It cannot, therefore, be concluded from the evidence provided by these dialogues that Plato was always concerned with the kind of questions about exactness/inexactness that puzzled Aristotle, Indeed, even in these dialogues Plato gives no indication that he thought ethics to be a problematic discipline with respect to its exactness. He does not single out ethics, or related disciplines, as posing any special problems. The evidence from these late dialogues, then, does not necessarily exclude the possibility that Plato had earlier taken ethics to be as exact as any other discipline or that he did not see anything problematic with the nature of the objects with which it deals. There is, indeed, evidence from the Middle Dialogues that supports these claims. In some of these dialogues, Plato's tendency is to view the study of matters of conduct as not being different from the study of other domains and as not posing any peculiar problems with respect of its exactness. It is the views of Plato associated with middle Platonism which most often form the target of the criticisms of Aristotle directed against Plato's thought. Aristotle, thus, might have had some reasons for targeting certain of his remarks on exactness/inexactness in ethics against some views of Plato. I shall turn next to a brief discussion of these views in middle Platonism that are explicitly or implicitly put forth in the *Phaedo* and the *Republic*^[42]

The centerpiece of middle Platonism is, of course, the theory of Forms. This theory, as Harold Cherniss has argued, is one of the richest and most economical philosophical theories.^[43] Plato uses it to formulate his answers to a variety of problems and to build upon it his views on the nature of knowledge, the soul, causes, and so forth. The Forms in the *Phaedo* and

the *Republic* are conceived as the objects of knowledge par excellence. They are at times introduced as being simply the only objects that are knowable, the only sort of entities that fit Plato's specifications of knowledge—they are fixed, invariable, unchanging, eternal, and so forth.^[44]

But what does the domain of the Forms encompass? Are there fixed, invariable, unchanging, and so forth, entities that are the objects of ethical knowledge? Examples of Forms that Plato gives in the *Phaedo* include: Size, Health, Strength (65E); the Equal (74B); Bigness, Smallness (100E); Two-ness, Oneness (101C); Tallness (102E); and Oddness, Evenness, the Hot, and the Cold (105A). However, the very first examples of Forms Plato gives are actually elements of ethical knowledge: the Just, the Beautiful, and the Good (65D). He asserts again the existence of these and adds to them the Pious (75C-D), and he repeats the claim (77A, 100B, 100C, and 100D). That Plato refers to Forms of matters of conduct frequently should not, however, be surprising for two reasons—first, because most often the paradigm Forms for Socrates and Plato are the ones they associate with matters of conduct; and second, because Plato, like Socrates, conceives of the theory of Forms as a general theory: "I am speaking of all things such as Size, Health, Strength and, in a word, the reality of all other things, that which each of them essentially is" (65E).

According to Plato, at least some part of ethical knowledge has as its objects these fixed and invariant entities, for whatever the requirements necessary for being an object of knowledge are, the Forms that constitute the ethical domain—the Good, Just, Pious, Beautiful, and so forth—presumably meet them. The objects of ethical knowledge do not differ from the objects of other kinds of knowledge as far as their epistemological character is concerned. Among the Forms that are the objects of the kind of knowledge Plato associates with the pursuit of philosophical inquiry are the Forms of matters of conduct—that is, the Good, Beautiful, Just, and so forth (65Aff.).

But what is the nature of the knowledge that has as its objects the Forms? Most often in the *Phaedo* Plato speaks of this knowledge in a way that makes it very much like knowledge by acquaintance. His model is often the model of perceptual knowledge: Just as we become directly acquainted with some physical object when it affects one of our sense organs, so we come to have knowledge when a Form "affects" our soul (65E, 66A). Plato seems to think that all Forms are known in this way: Each Form is grasped by itself. Indeed, at one point in the *Phaedo* he argues that the Forms are not composite things (

figure

); they have a single character (

figure

), and thus they do not undergo change or destruction because they are simple (78C-D). If indeed the Forms are such noncomposite, simple, or single-character entities, it is difficult to see how they could be known except by some type of direct acquaintance.

- 46 -

When, however, Plato comes to explain his elaborate theory of causes in the *Phaedo* he speaks of necessary connections or relations among Forms. Some Forms necessarily characterize other Forms, while others necessarily exclude some other Forms. Some of Plato's well-known examples are the following: Oddness necessarily characterizes Oneness and Threeness, Evenness characterizes Twoness, Heat characterizes Fire; Oneness necessarily excludes Evenness, Heat excludes Coldness, and so forth. There are, according to this view, some propositions about Forms that are universally and necessarily true: Forms have some necessary characteristics. With respect to the domain of the Forms, then, there are laws that are universally true and necessary.^[45] And, as many scholars have suggested, this conception of the relations among Forms makes it possible for Plato to think of knowledge more in terms of the demonstrative model. Indeed, the metaphysical superstructure of the Forms, with its essential attributes and necessary properties and its supposed relation to the natural world (hinted at in the *Phaedo*), makes it possible for Plato to think that some type of demonstrative knowledge about the natural world is possible. At least those types of natural phenomena that reflect the relations exhibited by the corresponding Forms

themselves can be known demonstratively.

Are there, then, also laws that pertain to the Forms associated with matters of conduct? Are there universally true and necessary propositions that state relations or characteristics of such Forms as Piety, Goodness, Justice, Temperance, and so forth? The examples Plato gives in order to illustrate the supposed necessary connections among Forms are from the mathematical domain (Oneness, Oddness, Evenness, Equality, and so forth) and from the domain of natural phenomena (Fire, Snow, Coldness, Heat, and so forth). Although Plato explicitly refers to the Forms of the Good and the Beautiful when explaining the presuppositions of his theory of causes (100B), he does not give an example of necessary connections among Forms of matters of conduct. Yet the theory of causes is a general theory. It is meant to apply to all Forms. There is no reason, then, to suppose that Plato restricts in any way the application of his theory of causes, and in particular that he thinks it does not apply to the Forms of matters of conduct. Most probably Plato thinks that there are necessary connections among such Forms and therefore that there are universally true and necessary propositions that state such connections among Forms of matters of conduct. Examples of such propositions may perhaps be the following: Justice is a virtue; Piety is good; Temperance is beneficial.

Plato's primary concern in the *Republic* is with matters of conduct, and it is therefore not surprising that considerably more is said in this work about knowledge of matters of conduct and the nature of its objects than is said in the *Phaedo*.^[46] Plato, for example, argues that since matters of

— 47 —

conduct are of the greatest importance, we should strive to attain the most exact accounts of them:

2.4	"There is not only something greater," I said, "but of these very things [i.e., the vin we need not merely to contemplate an outline [
	figure
] as now, but we must omit nothing of their most perfect elaboration. Or would it ne absurd to strain every nerve to attain the utmost exactness [
	figure
] and clarity [
	figure
] of knowledge about other things of trifling moment and not to demand the great exactness [figure
] for the greatest matters?" "It would indeed," he said. (<i>Republic 504E</i>)

Plato, of course, thought that the demand for the "utmost exactness" in the case of accounts of the virtues is not a demand for the impossible. He thought that such exactness could be attained in the case of matters of conduct.

In Book IV of the *Republic*, while embarking on his quest to provide definitions of the virtues in the individual, Socrates makes the following well-known remark: "And let me tell you, Glaukon, that in my opinion we shall never apprehend this matter accurately [

figure

] from such methods as we are now employing in discussion. For there is another longer and harder way that conducts to this. Yet we may perhaps discuss it on the level of our previous statements and inquiries" (435D). There are, then, according to Plato, ways by which exact knowledge about matters of conduct can be attained. Socrates asserts again that such knowledge is possible when he remarks, "Do you think that there is any difference between the blind and those who are really deprived of the knowledge of every reality, who have no clear model of it in their soul and cannot, as painters can, look to that which is most true, always refer to it, contemplate it as exactly [

figure

] as possible?" (484C). The evidence, in my judgment, leaves no doubt that Plato thought that knowledge of the "utmost exactness" is possible in the case of matters of conduct. There is a question, however, as to what Plato meant when he spoke of such

exactness.

Sometimes what Plato seems to have had in mind when speaking of exactness with respect to accounts of some matter of conduct is greater detail, elaboration, or completeness. This seems to be in part the point of the remark quoted above (2.4), where Socrates claims that we should not be satisfied with a mere outline of the virtues but should seek an account of greater exactness. It is exactness in the form of detail, elaboration, or completeness that Plato also has in mind when Socrates remarks that "such appears to me, Glaukon, the account of the selection and appointment of rulers and guardians as sketched in outline [

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], but not drawn out in detail [

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]" (414A). Plato, then, thought that exactness in the form of detail or completeness is possible in our accounts of matters

- 48 -

of conduct. It is true that he does not specify the level or degree of detail or completeness that he is aiming at or that is required, but it is quite evident that he thinks that whatever is the desired or required level, it is attainable.

However, at other times, when Plato speaks of exactness he has in mind something different from detail or completeness. He seems to be thinking of the character of our knowledge of matters of conduct. When Plato claims that the account of the virtues given in Book IV is not exact, and that the virtues cannot be grasped accurately by employing the methods he employs there, he is distinguishing between types of ways of knowing. There is, he argues in that passage from Book IV (435D), besides the type or way of knowing that has been achieved or followed in the account of the virtues given there, another longer and harder way that presumably produces exact knowledge. When Plato returns to this matter in Book VI and attempts to explain what is the harder, longer, and more exact way, he reminds us that what was said earlier might have been sufficient for the purposes at hand then, but it nevertheless falls short of giving an exact account of the nature of the virtues: "We spoke as best at the time, and we said that for the most perfect discernment of these things another longer way was requisite which would make them plain to one who took it, but that it was possible to deal with them on a level of proof compatible with what had been said up to then. You said that this was satisfactory; however, I thought that what was said then in that way was lacking in exactness [

figure

]" (504A).

It is clear from the passage quoted above that what Plato finds deficient in the accounts of the virtues he gives in Book IV, or where he locates their supposed inexactness, is the nature of the proofs that are utilized there. These are quasiempirical and informal proofs. They rely on some data of experience about the classes of the city and the parts of the soul, and clearly fall far short of even the ordinary mathematical proofs we encounter in geometry and arithmetic. The kind of proof that Plato thinks will produce the "utmost exactness" demanded by the importance of the virtues (504E) is a proof that relies solely on the Forms and has as its starting point the greatest of all Forms: the Good. These proofs or demonstrations constitute what Plato calls the method of dialectic, and they are superior to the proofs or demonstrations of ordinary mathematics, Plato argues in the final sections of Book VI, relies in its proofs on visible images and on hypotheses. But dialectic relies neither on sensible images nor ultimately on hypotheses:

2.5 Understand also that by the other section of the intelligible I mean that which reason grasps by the power of dialectic. It does not consider its hypotheses as first principle as hypotheses in the true sense of

35 of 362

stepping stones and starting points, in order to reach that which is beyond hypothes first principle of all that exists. Having reached this and keeping hold of what follow: it, it does come down to a conclusion without making use of anything visible at all, proceeding by means of Forms and through Forms to its conclusions which are Forunderstand, he said, but not completely, for you seem to be speaking of a migh task—that you wish to distinguish the intelligible reality contemplated by the scien dialectic as more exact [figure

J^[47] than the objects of the so-called sciences, for which their hypotheses are fin principles. (511E)

The above is one of those Platonic passages that seems to defy summarizing, paraphrasing, or explaining, and to some it may even defy understanding. I shall not try to summarize, paraphrase, or explain it at this point. Rather, I shall simply make the following observations: The kind of reasoning Plato designates as dialectical is the most pure and rigorous, and hence it produces the most exact knowledge. Its objects, Plato claims, partake of the greatest truth and reality and it is because of this that dialectic is most exact: "They [the various kinds of cognition] participate in exactness [

figure

] in the same degree as their objects partake of truth and reality" (511E). The Forms are the most perfect and exact objects, even more exact than the heavenly bodies that astronomy studies, which are considered "the fairest and most exact of material things" (529D). Among the objects of dialectical reasoning are, of course, the Forms associated with matters of conduct. Indeed, it is exclusively these Forms that Plato mentions in his discussion of the role of the Good in demonstration and of the nature of the dialectic. These Forms are as exact as any other Forms, and that of the Good is the most exact. The knowledge that is possible in the case of these Forms is also as exact as that of any other Forms; it is more exact than that of ordinary mathematics. Indeed, all disciplines whose domain is a subset of the realm of the Forms exhibit, according to Plato, the demonstrative rigor and purity he associates with dialectic, and their subject matter is characterized by the same kind of perfection and exactness. Ethics, then, in its purest form is as exact as the most rigorous disciplines. Its proofs satisfy the requirements of dialectic, and its objects meet the stringent requirements Plato considers necessary for all objects of knowledge—that they are Forms.

I have so far focused on some of the theoretical concerns raised by Plato's investigations in the *Republic*. The central question of this work, however, is about the nature of justice and the way it can be realized in society. It is, then, in part a practical investigation. Its aim is to inform us about the right or correct way of acting and of structuring human society. It is supposed to guide our conduct, both at the individual and social levels.

But how does Plato see the relation of his accounts of the virtues (both

- 50 -

in the soul and in the city) to our conduct? How do the rather abstract accounts of the virtues relate to our practical concerns, to particular problems of conduct? Quite often Plato speaks as if the relation is a rather strong and direct one, as if the accounts he gives can by themselves guide us in our conduct.

Let me explore a bit more this supposed direct link between Plato's accounts of some matters of conduct and our conduct in particular circumstances. Plato's accounts of the virtues are quite general and abstract. What he says about the virtues in the city in Book IV is clearly much more elaborate and detailed than what he says about the virtues in the individual. Plato's discussion on the latter is quite general and very cursory; it barely touches upon the most generic and abstract features of the virtues. Plato's account of the structure of a just society, however, is the most detailed exposition of any topic given in the *Republic*.

But are these accounts sufficient guides to individual conduct or adequate models for structuring a society? Plato sometimes expresses doubts as to whether what has been said about these matters is sufficient. He at times refers to his accounts as being mere
outlines (414A, 548C) and therefore as being in some sense incomplete. Yet Plato does not appear to have considered whether a certain level of detail is needed in order that the practical objectives of his inquiry, or of any inquiry into matters of conduct, be satisfied. And there is no evidence that he considered the question of whether, if a certain level of detail is required by the practical goals of the discipline, that level can or cannot be attained.^[48]

The problem of the relation of Plato's accounts to their practical uses becomes clearer when we consider what he says about the uses of those ideal accounts of matters of conduct he thinks are possible: that is, the accounts that utilize only Forms and that are arrived at by the use of dialectic alone. Accounts of this type in any discipline will constitute a body of knowledge that is not only most rigorous but also most abstract, a knowledge that has almost no contact whatsoever with the world of experience. Ethical knowledge of this type—one that stays at the level of the Forms, rests ultimately on our grasping of the Good, and relies on dialectic—will also be most rigorous and most abstract, and it will exclude all elements of the world of experience and of the particulars that seem to comprise the world of action and human conduct.

Yet again, even this most abstract type of knowledge that is the farthest removed from the particular context of action and conduct is supposed to be a guide to action, to be our means for structuring and realizing the best human association or city. It is, after all, the solution to one of the central questions of the *Republic*, which tells us that the best or most just society can be realized if and only if the rulers are philosophers and philosophers are rulers. The philosopher is, according to Plato, distinguished

- 51 -

from the nonphilosopher by the kind of knowledge he possesses. Philosophic knowledge is knowledge of the Forms; it is the rigorous and abstract knowledge described above. In part, then, Plato's solution to the question that concerns the possibility of the realization of the ideal city asserts that such knowledge is a necessary condition for bringing into existence, ruling, and functioning in such a city. Without this kind of knowledge the ideal city cannot come into existence and continue to exist. Thus, after introducing the Good and the role it plays in our knowledge of the other Forms, Plato remarks,

2.6 Can we allow a like blindness and obscurity in these best citizens to whose hands we to entrust all things? When it is not known how just and beautiful things come to good, these things will not find it much use to secure a guardian over themselves v does not have this knowledge. And I surmise that no one will understand those just beautiful things adequately before he knows this. Our constitution then will be perfe ordered when such a man looks after it—that is, a man who has this knowledge (506A-B)

Again, in his discussion of the allegory of the cave, the necessity of this most abstract knowledge for both the private and public domain of conduct is most unequivocally asserted.

2.7 In the region of the known the last thing to be seen and hardly seen is the Form of Good, . . . when seen it will necessarily point us to the conclusion that this is indeed cause for all things of all that is right and beautiful . . . while in the intelligible world itself the authentic source of truth and reason, and . . . anyone who is to act wisely private or public must have caught sight of this. (517B-C)

It may, however, be said in defense of Plato that taking knowledge of the Good and the rest of the Forms as a necessary condition for conduct in the individual and social sphere is really not that controversial. This may be to some extent true, although it does raise some questions that shall be discussed shortly. But, of course, Plato does not only take knowledge of the Good and the rest of the Forms to be necessary for acting in any sphere of conduct; he most often takes it to be sufficient as well. The claim that knowledge of the kind under consideration here is a sufficient condition for conduct forms the other half of Plato's solution to the question of the *Republic* mentioned above: The ideal city is possible if and only if philosophers are rulers. It is the possession of knowledge of the Forms, Plato argues, that makes it possible for the philosophers to bring about and rule in the ideal city.

More precisely, the picture Plato has of the way an agent uses knowledge of the Forms of matters of conduct in actual conduct is the way a painter moves from what he observes in a model to producing a painting like it.

- 52 -

What the painter observes in the model is presumably sufficient for guiding his activity; it is sufficient for doing a particular work of art. In conduct, Plato seems to think, the Forms that constitute the domain of ethical knowledge function like the model of the painter. Our knowledge of these abstract entities is presumably sufficient for doing what is required in particular circumstances.

2.8	Do you think, then, that there is any appreciable difference between the blind and who are veritably deprived of the knowledge of the veritable being of things, those have no vivid model [
	figure
] in their souls and so cannot, as painters can, fix their eyes on the absolute truth, always with reference to it and in the most exact contemplation of it establish in this
	also the laws of the beautiful, the just and the good, when that is needful, or guard

The answer to this question is, naturally, "No, by heaven, there is not much

difference." There are, of course, a number of other passages where Plato puts forth this same picture. He argues that by fixing our thoughts on the eternal realities we will make ourselves like them: "The man whose mind is truly fixed on eternal realities . . . fixes his gaze upon the things of the eternal and unchanging order, and seeing that they neither wrong nor are wronged by one another . . . will imitate them and as far as possible fashion himself in their likeness and assimilate himself to them" (500C). But this need not be the whole story, Plato argues. The one who has seen the eternal realities may try to use them to mold society: "If some compulsion is laid upon him to practice stamping on the plastic matter of human nature in public and private the patterns that he sees there, and not merely to mould and fashion himself, do you think he will prove a poor craftsman of temperance and justice and all forms of ordinary civic virtue?" (500D). The same picture is invoked again when Plato speaks of the philosophers who trace the lineaments of the city like artists from a heavenly model (500E), and when he argues that the constitution is sketched by frequently glancing at the Forms of justice, beauty, temperance, and so forth (501B). Finally, while describing the course of studies for the rulers, "We shall require them to turn upwards the vision of their souls and fix their gaze on that which sheds light on all, and when they have thus beheld the Good itself they shall use it as a model for the right ordering of the city and the citizens and themselves throughout the remainder of their lives" (540).

There is no doubt that the metaphor of the model, the artist, and his artwork that Plato uses to explain the way the Forms are used by an agent in his conduct must have seemed irresistible to him. There are perhaps similarities or analogies between the artist's use of the model and the

- 53 -

agent's use of the Forms. But there are also differences. For whereas the model of the artist is itself a particular, something that belongs to the same logical type as the work of art, the Forms and the particular constituents of conduct—that is, particular actions, constitutions, and social arrangements—are not of the same logical type. As a consequence, there seem to be problems here. Perhaps it is not difficult to see how one moves from using Socrates as a model to fashioning a statue of Socrates. But it is not obvious at all how one moves directly from the Form of the Good and related Forms, given that these are what Plato says, to acting or ruling as these dictate.^[49] And it is to these questions in particular, as well as to some more general questions about Plato's views on ethical knowledge relating to the issue of exactness/inexactness that I wish to

turn next.

Let us focus first on one half of the relation that Plato thinks holds between ethical knowledge and conduct—namely, that the most pure and rigorous knowledge of the Forms is necessary for ethical conduct. Assuming that such knowledge is possible, do the goals of ethical knowledge require that we attain the purity and rigor Plato demands? Do the practical goals of the discipline require that ethical knowledge be more pure and rigorous, and hence more exact, than mathematical knowledge? One question Aristotle raises is this: Do the ultimate goals of a discipline in some way determine the exactness that is appropriate for that discipline? Plato's demand for a level of exactness in ethical knowledge that surpasses that of mathematics may be excessive and inappropriate.

Aristotle raises, in addition, questions about the other half of Plato's conception of the relation of ethical knowledge and conduct—namely, that the most general and abstract knowledge is by itself sufficient for guiding our conduct. He insists, again, that if the goals of ethical knowledge are practical, such knowledge cannot remain at the level of generality and abstractness at which Plato thinks it can remain and still satisfy its practical goals. Ethical knowledge, Aristotle argues, must reach a certain level of exactness; it must reach a certain level of detail and specificity if it is to be of use in the particular circumstances of conduct. He even finds inexact, because it lacks the necessary detail, Plato's own account of the virtues in the city and of the structure of the city, the two topics that are given the most detailed treatment in the *Republic*. It is, then, not surprising that he questions Plato's claim that for private or public conduct it is sufficient to have grasped the Good and the other Forms. How is one to move from knowledge of such entities to what is required to do in a particular con-text-that is, to what is proper to do in relation to Socrates, at some particular time, place, circumstance, and so forth? Isn't there something needed to bridge the gap that separates the abstract and general Forms of the Good, Justice, Temperance, and so forth, and what I must do in this particular context in relation to this individual? Aristotle thinks there

- 54 -

is. Our knowledge of the Forms may be exact in the sense that it is pure and rigorous, but it may lack exactness when viewed—and it must, according to Aristotle, be viewed—as knowledge with practical goals: It may lack the detail required for satisfying its ultimate purposes.^[50]

But it might be said in defense of the Platonic position that Plato himself expresses doubts as to whether the type of ethical knowledge he describes in the *Republic* is possible, or whether the best human society that is modeled on this knowledge can be realized. It does not seem to me, however, that such doubts on Plato's part are intended to bring into question his views about the relation of abstract knowledge and about the prospects of our success in molding human behavior in the direction this knowledge dictates. The type of knowledge Plato describes may be beyond human reach, or humans may be such that what the Platonic knowledge of the "eternal realities" dictates cannot be realized in them. Plato, then, in raising these doubts is not necessarily questioning whether his ideal ethical knowledge provides us with that level of detail or specificity that is needed for practical purposes.

Elsewhere, however, Plato makes some remarks that seem to me to be more pertinent to the issue concerning the relation of his ideal ethical knowledge to conduct, although even these do not ultimately undermine his views on this issue that I sketched above. On a few occasions, for example, he adds to the knowledge of the Forms the factor of experience as something the rulers may use to carry out their function: "Shall we, then, appoint these blind souls [i.e., those who have no knowledge of the Forms] as our guardians, rather than those who have knowledge of every reality and are not inferior to the others in experience, or indeed in any other aspect of excellence? It would be absurd, he said, to choose others if these are not inferior in other respects, for in this respect they are superior in what is probably the most important matter" (484D). Is Plato, then, admitting that the rather abstract knowledge of the Forms is not sufficient for practice? Is he saying that this abstract knowledge must be supplemented by knowledge of particulars that is provided by experience in order that it can be used in practice? This is by no means clear. For when Plato returns to this same theme in his discussion of the training of the guardians (539E), the role he appears to assign to experience is that of testing or strengthening the character of the guardians rather than in augmenting the knowledge they presumably have of the Forms. Indeed, Plato goes on to argue there that, after they have gone through the required experience, they shall turn to the Forms for the model to be used in ruling.

- 55 -

2.9 For after that you will have to send them down into the cave again, and compel the hold commands in war and the other offices suitable to youth, so that they may not short of the other type in experience either. And in these offices, too, they are teste see whether they will remain steadfast under diverse solicitations or whether they flinch and swerve . . . and at the age of fifty those who have survived the tests . must be brought at last to the goal. We shall require them to turn upwards the visic their souls and fix their gaze on that which sheds light on all, and when they have t beheld the Good itself they shall use it as a model for the right ordering of the city themselves. (539E)

The closest Plato comes to addressing the issue of the sufficiency/insufficiency of general and abstract knowledge for practical purposes is in his discussion of law in the Statesman. He argues in this work, as will Aristotle later, that law may not be an adequate guide in dealing with particular circumstances because of its generality.^[51] Law, Plato claims, does not include or make reference to the particular cases with which the one who applies the law is confronted; it does not address the peculiar circumstances that surround each case, but instead speaks in general terms. Surprisingly, Plato even here does not opt for supplementing the law with more and more particular information, and thus for bridging the gap that presumably exists between the generality of law and the particular circumstances. His preference is, rather, for dispensing whenever possible with law altogether, so that one is not hampered by the inflexibility of the law in dealing with the particulars but instead relies solely on the abstract and general knowledge of "the eternal realities."^[52] Aristotle, then, may have had good reasons for focusing on the issue of the generality and abstractness of our accounts of matters of conduct and their intended use as guides to practice. Both Socrates and Plato must have seemed to him to have either overlooked the issue or assumed the position I sketched above—namely, that the most abstract and general knowledge is necessary and sufficient for practice.

It is clear, however, that the question concerning the relation of Plato's type of ethical knowledge to practice is of importance on the assumption that there is knowledge of the kind Plato describes in the *Republic* —that is, knowledge that is most rigorous and demonstratively pure, that deals with fixed entities, and that explains the necessary connections among such entities. Aristotle found almost all the claims that Plato makes about ethical knowledge problematic and, in some of his remarks on exactness/ inexactness, his target is most likely some of these claims of Plato about the nature of ethical knowledge, its objects, and the connections among them.

Is there, then, ethical knowledge that is as rigorous and demonstratively

— 56 —

pure as Plato claims? Such knowledge may not only be unnecessary for the purposes that, according to Aristotle, are served by the discipline of ethics, but it may also not be possible at all. Ethics is not more rigorous and demonstratively pure, and hence more exact, than mathematics; it is not even, Aristotle argues, as exact as mathematics. Its subject matter, the elements of conduct, does not have the kind of nature that Plato and Socrates attribute to the Forms. Matters of conduct are not fixed and invariant; they do not exhibit the kind of essential structure that perhaps the domain of some other disciplines exhibit.^[53] The subject matter of ethics, Aristotle claims, is inexact, and the necessary connections among its elements that Plato speaks of in the *Phaedo* and the *Republic* are not to be found. The propositions constituting ethical knowledge are not only inexact by lacking necessity; they are even inexact by not being universally

true.

Aristotle, Demonstrataive Knowledge, and Essentialism

I said at the beginning of this chapter that Aristotle's remarks on exactness can best be understood against the philosophical background that occasioned them. So far, I have examined briefly a central component of the philosophical background to Aristotle's thought: Socrates' and Plato's thought. I wish to turn now to an even more brief discussion of some of Aristotle's views on the nature of knowledge and its objects. More will be said about these topics in the course of this study.

It may seem somewhat puzzling that a discussion of the background to Aristotle's thought includes a discussion of Aristotle's own thought. Yet it is not as odd as it may at first appear. My strategy here has been to set out those elements in Socrates' and Plato's thought to which Aristotle most often responds when he speaks of exactness/inexactness in ethics. Aristotle himself accepts some of these elements or, at least, modified versions of these elements. His views on the nature of knowledge, for example, are something that Socrates and Plato would have easily recognized as quite similar to their own views. They would have felt, most probably, the same about his essentialism. Thus, if Aristotle is responding to the epistemological and metaphysical views of Socrates and Plato when speaking of exactness/inexactness, he is to some extent also responding to some elements of his own thought.

In the *Post. Anal*. Aristotle develops his well-known account of demonstrative knowledge. In Book I, chapter ii of that work, Aristotle claims that we know something absolutely or *simpliciter* when we have an explanation for it, and, further, that explanation is to be understood in terms of a syllogism that is a demonstrative syllogism. When Aristotle speaks of a syllogism, he often means simply a deductive inference, which he thinks

— 57 —

can be analyzed (or formalized) according to the logical theory he elaborates in his *Pr. Anal*.—a theory that provides us with the valid forms of reasoning by which we can test the validity of any deductive inference or argument.^[54] Thus, the Socratic and Platonic intuition that knowing in some cases consists in infering that which we know from appropriate things is captured by Aristotle's systematic treatment of valid deductive inference in terms of his syllogistic forms.

But it is not the case that any deductive inference provides us with knowledge or is a demonstrative syllogism, even though it may be valid. As shown earlier, Socrates had recognized this already. A deductive inference may satisfy the condition of validity, and thus be a syllogism, but it will not be a demonstrative syllogism—it will not provide us with knowledge. To do the latter the premises of a deductive inference must meet a set of conditions.

2.10	Now if knowledge is as we posited, demonstrative knowledge [
	figure] must proceed from premises which are true, primitive, immediate, more familia than, prior to and causative [figure] of the conclusion Syllogism indeed will be possible without these conditions, not demonstration [figure]; for the result will not be knowledge [figure]. (<i>Post. Anal. 71b20</i>) ^[55]

Some of the conditions Aristotle lists above may very well look intuitive—for example, the truth condition. Others, however, are less obviously intuitive, and in fact raise a number of problems. But I shall not discuss Aristotle's conditions and the problems they might give rise to at this point, except to say what they omit.^[56]

The list Aristotle gives of the conditions to be satisfied by the premises of a

demonstrative syllogism does not include anything about the modality of the premises. Are the premises necessary, contingent, or even of some other modality? Yet, when Aristotle gives the first account of demonstrative knowledge, he insists that what is known absolutely or *simpliciter* cannot be otherwise (

figure

) 71b12) and "that of which there is knowledge absolutely [simpliciter -

figure

] cannot be otherwise [

figure

]" (71a15). We may be inclined to think that, when Aristotle claims that what we know cannot be otherwise, the impossibility he has in mind is the kind we associate with the relation between the premises and the conclusion of a valid inference. If the premises of a valid deductive inference are true, then its conclusion must be true; it is impossible for it to be false. In other words, the impossibility, and hence the necessity, we associate with validity of reasoning does not characterize either the premises or the conclusion of a piece of reasoning. It rather characterizes the corresponding conditional claim that we can construct out of any argument by using the conjunction of its premises as an antecedent and

- 58 -

its conclusion as a consequent. But from this it does not follow that either the premises or the conclusion is necessary or that it is impossible for them to be otherwise. Yet the necessity or the impossibility of being otherwise that Aristotle seems to have in mind is of this last kind—a necessity that attaches to the premises and the conclusion of such a syllogism. Both the premises and the conclusion of such a syllogism, Aristotle argues, are necessary; it is impossible for them to be otherwise.

Thus, Aristotle argues as follows: "Since it is impossible for that of which there is knowledge [

figure

] in the absolute sense to be otherwise, that which can be known by demonstrative knowledge will be necessary [

figure

]. . .. Demonstration, therefore, is a deduction [figure

] from what is necessary [

figure

]" (73a20). Aristotle's argument infers the necessity of the premises of a demonstrative syllogism from the supposed necessity of its conclusion, the necessity of that which is known. This argument, however, may not prove what Aristotle claims it proves. As Jonathan Barnes has argued recently, the argument is not valid as is, and Aristotle seems to have recognized this elsewhere.^[57] But whether Aristotle's argument is valid is not our concern at the moment. What is of importance is that Aristotle takes the premises of demonstrative syllogism to be necessary, and that he therefore takes the domain of demonstrative knowledge to be the domain of the necessary. Aristotle reiterates this point on several occasions—for example, in the *Post. Anal*.: "Now if demonstrative knowledge depends on necessary principles (for what one knows cannot be otherwise)... it is evident that demonstrative syllogism will depend on things of this kind [i.e., necessary premises]" (74b5). He also argues that the difference between opinion and knowledge is that whereas the latter proceeds from necessary propositions, the former does not: "Knowledge and its object differ from opinion and its object in that knowledge is of the universal and proceeds by necessary propositions; and that which is necessary cannot be otherwise" (88b30).

The aspect of necessity, then, which at times is not explicitly identified by Socrates and Plato, is explicitly identified by Aristotle as an essential aspect of knowledge. In addition, Aristotle follows the line established by his predecessors with regard to the role he assigns to definitions. I argued above that one use definitions have in the Socratic/Platonic conception of knowledge is as starting points of demonstration. There is no doubt that definitions play the same role in the Aristotelian conception of demonstrative knowledge. This is asserted throughout the *Post. Anal*. and elsewhere in Aristotle's writings: Definitions are among the principles of demonstration (72a21); Definitions are the things from which demonstrations proceed and are not known by demonstration but in some other way (72b20-25); Mathematical demonstrations proceed from definitions (78a13); Demonstrations are effected through definitions (89a17); The

- 59 -

starting points of demonstrations are definitions (90b24); The primitive (principles) are nondemonstrable definitions (90b25); All sciences proceed through definitions (99a23; see also *Met* . 998b5, 1034a20; *N.E.* 1142a26, 1143a26); and so forth.^[58]

The Aristotelian definitions that are pertinent to demonstration are, like their Socratic/Platonic counterparts, real definitions; they define what a thing is or the nature of a thing. Aristotle draws a clear distinction between nominal and real definitions in the *Post. Anal*., and it is the latter kind that is of importance for demonstration (*Post. Anal*. 92b7, 26; 93b30ff.).^[59] Real definitions for Aristotle, as for Socrates and Plato, capture the essence of what they define. This Aristotelian claim is to be encountered throughout Aristotle's works and it is certainly found in the *Post. Anal*., thus highlighting the fact that the foundation of Aristotle's views on demonstrative knowledge is a strict metaphysical essentialism: "Definition is generally held to be of what a thing is [its nature,

figure

]" (90b4); "If definition is the way to know the essence [

figure

] . . ." (90b18); "For definition is of what a thing is and of its essence [

figure

]" (90b31).[60]

The brief sketch above of Aristotle's views on some epistemological and metaphysical issues shows unmistakably how strongly they parallel the views of Socrates and Plato on these same issues. And if what is said above about the targets of Aristotle's remarks on exactness/inexactness is correct, then these remarks will also call into question some of Aristotle's own claims about the nature of knowledge, definitions, and their objects. If, for instance, Aristotle is questioning the Socratic or Platonic view that there is demonstrative knowledge of the most rigorous kind for matters of conduct when he argues that knowledge of matters of conduct is in some sense inexact, he is also questioning whether the strict type of demonstrative knowledge that he himself elaborates in the *Post. Anal*. is possible in the case of matters of conduct. Similarly, if Socratic definitions and essentialism raise questions of exactness/inexactness, so will Aristotelian definitions and essentialism when applied to matters of conduct.

Consider first the matter of definitions and their object. As noted above, the definitions required for demonstration are real definitions. According to Aristotle, such definitions capture the essence of a type of thing by specifying the genus and specific differentiae of the type. In the *Post. Anal*. Aristotle speaks of definitions of such things as point, line, triangle, and so forth. However, he thinks that these rather paradigmatically well-defined entities are not the only things that have an essential structure and can be defined. He also speaks of definitions of such things as man, animal, eclipse, deciduousness, thunder, and so forth. Indeed, when Aristotle speaks as a logician or as someone attempting to explicate the nature of knowledge or of definition, he seems to think that definitions of the

- 60 -

strict kind are possible and that essentialism holds in every domain. It is interesting to point out that, when Aristotle speaks in this way, he includes among the things that can be given exact definitions and that exhibit essences sorts of things that he himself recognizes as problematic. Therefore, when speaking as an investigator of matters of conduct or of natural phenomena, these same things seem to him to be difficult or impossible to define precisely because they lack a fixed essential structure.

Thus, speaking as a logician concerned with the essential features of a definition, Aristotle insists, in a passage from the *Top*., that the definition of ambitiousness must specify the quality and quantity of honor that the ambitious man desires; the definition of avariciousness must specify the quantity of money the avaricious man desires; that of incontinence the quality and quantity of pleasure; those of night, earthquake, cloud, and wind the quality and quantity of shadow, movement of the earth, condensation of air, and movement of air respectively. Aristotle concludes that passage by saying, "and, similarly, in all cases of this kind; for the omission of' any differentia involves a failure to state the essence" (146b20).

However, these are precisely the kinds of phenomena—for example, virtues, vices, and in general the various human states of character, as well a variety of physical (including biological) phenomena—that in the ethical and scientific treatises he finds to be lacking in exactness. These kinds of phenomena, he argues, are difficult or impossible to define because they are indefinite; they lack a well-defined nature. The strict metaphysical essentialism that Aristotle presupposes in his conception of definition may not obtain in every domain.^[61] Even when definitions are possible, such definitions are inexact. They show the same deficiencies that the phenomena they define exhibit. And this is bound to have epistemological consequences. For if, as Aristotle claims, all science proceeds from definitions, either no demonstrative knowledge is possible in the case of these phenomena, or the demonstrative knowledge that is possible in their case is deficient in the way the phenomena and their definitions are deficient. They are all inexact, Aristotle insists.

There are, however, additional problems when we try to extend the application of strict demonstrative knowledge to matters of conduct, or even to the domain of biological phenomena. Aristotle's account of strict demonstration is meant to explicate the nature of knowledge; it is meant to apply to all domains that are knowable. The examples Aristotle gives in the *Post. Anal*. of disciplines that are demonstrative include the standard mathematical ones (geometry and arithmetic), astronomy (76b11, 78b39), optics (75b15, 76a24), harmonics (75b16), mechanics (76a24), and medicine (88b13). Although Aristotle does not say that strict demonstrative knowledge is possible in all domains, he does not say that it is not possible in all domains either, nor does he identify any domains where it is not possible.

- 61 -

But is every domain, or the subject matter of every discipline, characterized by the sort of universal and necessary connections that strict demonstration, according to Aristotle, requires? Aristotle questions whether such connections are to be found in matters of conduct or the subject matter of related disciplines (e.g., medicine). The subject matter of such disciplines, he argues, is inexact by being for the most part, by not exhibiting universal and necessary connections. And if matters of conduct, or any domain, are not characterized by universal and necessary connections, they could not be part of what is demonstrable in the strict sense. This need not imply, however, that they are not part of the demonstrable at all, for they might be demonstrable in a sense that is less strict than absolute demonstration.

Indeed, despite the fact that strict or absolute demonstration is the focus of and dominates Aristotle's discussion in the Post. Anal., we find even in that work reference to a less strict kind of demonstration. Admittedly, the references are only few and the explanation Aristotle gives of how this kind of demonstration is possible is almost nonexistent. In Book I, chapter xxx of the Post. Anal., Aristotle argues that there are at least two kinds of demonstrative syllogisms: One kind has as premises necessary propositions, and hence its conclusions are necessary also; the other has as premises propositions that are true for the most part, and hence its conclusions are of the same kind. These two types of demonstrations are distinguished on several occasions throughout Aristotle's works, and are invariably presented as being the only types of demonstration that are to be used in understanding or explaining all that is demonstrable. I shall argue later that, when Aristotle speaks of inexact reasoning or proof or knowledge in practical disciplines, what he has in mind is demonstrations whose premises are true for the most part. I shall also argue that he, thus, in the end enlarges his conception of demonstration so that it is possible to speak of demonstration of things that neither the Socratic/Platonic conception of demonstrative knowledge nor his own conception of strict demonstration considers as falling within the demonstrable. He allows, that is, for a less exact demonstrative knowledge that can accommodate domains which, like that of ethics and related disciplines, may be inexact.

Exactness and the Development of Aristotle's Thought

To say, however, that in some of his remarks on exactness/inexactness Aristotle is raising questions about some of his own epistemological and metaphysical views is to imply that there is some change or evolution in his thought. For to say what was said above is to admit that the remarks on exactness/inexactness call into question, criticize, or modify views that

- 62 -

Aristotle must have held prior to his questioning, criticizing, or modifying them.

Other scholars have, indeed, looked at Aristotle's remarks on exactness/inexactness as a means of determining the direction of change in Aristotle's thought and possibly as a means of determining the chronological order of some of Aristotle's works. Werner Jaeger, for instance, associates Aristotle's concerns with exactness/inexactness with the supposedly declining Platonism and increasing empiricism in the philosopher's thought. Jaeger sees the E.E. as demanding of ethics the exactitude that in the Protrept . Aristotle requires of the most exact knowledge, a conception of knowledge which, according to Jaeger, is thoroughly Platonic.^[62] On the other hand, according to this view the N.E. moves away from this Platonic conception of ethical knowledge, acknowledges the inexactness of our knowledge of matters of conduct, and utilizes methods that are clearly more empirical than the axiomatic-demonstrative approach of the E.E. More recently, Christopher Rowe has elaborated on and defended Jaeger's thesis that there is a difference in methodology in the two Aristotelian ethical works.^[63] He has further argued that the recognition on Aristotle's part in the N.E., that ethical knowledge is not as exact as the almost Platonic demonstrative knowledge supposedly advocated by the E.E., indicates that the latter work is chronologically prior. The view that the E.E. sees ethical knowledge along the lines of the type of strict demonstration we associate with mathematical knowledge has also been defended by Donald J. Allan.[64]

Questions concerning the matter of development in Aristotle's thought—for example, whether there is development or what is its direction—have exercised the minds of Aristotelian scholars since the publication of Jaeger's pioneering work. There is hardly anyone who has not been convinced that Jaeger's book succeeded in laying to rest a view about Aristotle's thought that in the first place appears to be implausible—namely, that Aristotle's thought is a monolithic and static system that underwent no development.

Yet the specific theses that Jaeger advanced about the direction of Aristotle's development have come under strong criticism by many scholars. Some have criticized his claims about the chronological ordering of some works. Others have questioned his overall thesis that Aristotle's development can be understood in terms of the relation of his thought to Platonism: that is, the thesis of the three stages in Aristotle's thought that Jaeger characterizes as strict adherence to Platonism, development of the key Aristotelian philosophical doctrines (Substance, Four Causes), and a period dominated by empirical researches.^[65]

Obviously, the problems of the stages or the direction in Aristotle's development are, as some scholars have been arguing, rather complicated matters. Perhaps there is no linear development of the kind Jaeger sup-

— 63 —

poses. And perhaps it may be impossible to determine the direction, if there is one, of his development by relying solely on the different treatment some item receives throughout his work. Other evidence will be needed to fix the direction, to determine which treatment is prior and which comes later. For these reasons one has to be cautious about the particular item under consideration here, that is, exactness/inexactness, and its importance for resolving some of these thorny issues about Aristotle's development. In this spirit here are some rather cursory observations.

In some of Aristotle's works there is little or no concern with the issue of exactness/inexactness. If we take as our measure of Aristotle's concern the occurrence of some of the key terms for exactness/inexactness, we observe that the key term

figure

occurs only once in the *Cat*. (8b12), twice in the *Pr. Anal*. (24b14, 46a29), and not at all in *Interp*. In contrast it occurs nine times in the *Anim*., ten in *G.A.*, fifteen in *H.A.*, and so forth. But it may be difficult to base claims about development or the direction of such development by simply looking at this variation in the occurrence of the term for exactness/inexactness. It may be that in part the reason for the absence of any or frequent references to exactness in the *Cat.*, *Pr. Anal.*, and *Interp*., all supposedly early works, has to do with the kinds of topics discussed in these works.

But the topics discussed in the *E.E.* and *N.E.* are identical, and the same kind of topics are also discussed in the *Polit*. In these works we find that the key term figure

in its various grammatical forms occurs as follows: six times in the *E.E.*, twenty-four times in *N.E.*, and twelve times in the *Polit*. Furthermore, two other key terms Aristotle uses to speak of specific types of inexactness that pertain to the subject matter of the ethical treatises and our accounts of it show considerable variation in the frequency of their occurrences. The term

figure

(outline) does not occur at all in *E.E.*, has eleven occurrences in the *N.E.*, and appears four times in the *Polit*. The term Aristotle uses to signify being for the most part,

figure

, is to be found six times in the E.E. , five in the N.E. , and two in the Polit .

What conclusions should be drawn from the above observations? I do not think that by themselves these observations settle the question of the chronological order of the treatises in a decisive way.^[66] Although terms for exactness/inexactness occur more frequently in the *N.E.* than in the *E.E.*, we need to know independently of this fact what greater frequency in the occurrence of these terms signifies. It is not obvious that greater frequency in one work signifies that it is later than another. The *Polit*, after all, is though to have been written later than the *N.E.*, and yet there seem to be far fewer occurrences of the terms under consideration.

The variation, however, in the frequency of the occurrences of these terms seems to me to signify something about the relation between the

- 64 -

ethical treatises. The rather big difference in the frequency of the occurrences of the terms

and

figure

figure

found between the *E.E.* and *N.E.* suggests that Aristotle at some point came to recognize that his own accounts lacked the required exactness, or that they could not be exact, or that no accounts of matters of conduct could be exact, or that no accounts of matters of conduct need to be exact. He came, in other words, to realize that the problem of exactness/inexactness is much more centrally connected to ethics than the *E.E.* appears to indicate.

But one can accept the above observations and still remain skeptical as to what further conclusions should be drawn from them about the methods Aristotle thought to be appropriate in ethical investigation. In particular, one should be cautious about moving, on the basis of the above considerations, to the conclusion that Aristotle espouses some type of empirical investigation in the case of ethics. Of course, Aristotle may espouse empirical investigation as the way of inquiring in ethics for other reasons. However, this would not show that such a method is in some way connected to Aristotle's claims about exactness/inexactness in ethics. To show that, one would have to show that the characteristics of exactness/inexactness Aristotle attributes to ethical accounts and their subject matter imply an empiricist approach—or at least, that Aristotle himself took these characteristics to imply such an approach. Naturally, my concerns here are partly focused on these issues about the implications of Aristotle's remarks on exactness/inexactness and about any implications that Aristotle himself might have drawn from the supposed inexactness of ethical accounts and their subject matter. - 65 -

Three The Goals of Ethical Inquiry

Introduction

Understanding Aristotle's conception of the goals of ethical inquiry may be important for a variety of reasons. It may, for example, be important simply for its own sake—for just seeing what ethical inquiry aims at, according to Aristotle, and how its goals may differ from the goals of other inquiries. But it may also be of importance in view of the connection that Aristotle thinks holds between the exactness possible, desirable, or necessary in a discipline and the nature of the goals of that discipline. Much of what he says about exactness/inexactness in ethics rests on his conception of the goals of the discipline. Certain types of exactness are, according to him, required by the goals of ethics, while certain levels of inexactness are permitted by the same goals. In addition, some of the difficulties Aristotle sees with trying to eliminate even the types of inexactness that have their sources in things other than the goals of ethics also stem in part from his conception of the goals of the discipline.

The relation that Aristotle thinks holds between the goals and the exactness/inexactness of a discipline will be discussed in several of the subsequent chapters. In this chapter, I wish to focus only on the question of the nature of the goals of ethical inquiry. In particular, I wish to examine the well-known Aristotelian contention that the goals of ethics are practical, and to explore the extent to which this view of the goals of the discipline excludes any theoretical interest in matters of conduct.

The well-known Aristotelian claim that ethics is practical has at times been understood as implying that ethics aims only at action or practice and therefore has no cognitive interests. I argue that, contrary to this view, ethics may be practical, but this does not imply that it has no cognitive

- 66 -

interests. Despite some statements Aristotle makes in which he appears to deny that in ethical inquiry we aim at knowledge and to assert that we aim instead at action or practice, ethics to a certain extent aims at knowledge. I draw the distinction in this connection between the ultimate and the immediate or proper goals of a discipline and show that in the case of ethics, while the former kind of goals may be practical, the latter kind are cognitive. I further argue that the transitivity principle of desires, pursuits, or goals that Plato uses to eliminate subordinate desires, pursuits, or goals is not used by Aristotle in the same way. Therefore, even if ethics is subordinate to politics and the goals of the latter are practical or even if its own proper goals that are cognitive are subordinate to practical goals, the cognitive goals of ethics are not thus eliminated.

The question, however, still remains as to the character of the cognitive goals of ethics or the kind of knowledge it aims at achieving. There are those who equate ethical knowledge with practical wisdom and understand the latter very narrowly to be a type of deliberation about particular practical affairs. I argue that Aristotle's own inquiry and his conception of ethical inquiry in general cannot be equated with this narrow conception of practical knowledge. If ethical inquiry is to be equated with any form of practical knowledge it has to be a form of practical knowledge that does justice to Aristotle's own inquiry and to his conception of ethical inquiry in general. To do that our conception of practical knowledge has to be quite wide; it has to resemble the knowledge we seek in the typical disciplines that aim at giving accounts of a certain domain or subject matter.

Finally, I explore Aristotle's views on the differences between theoretical and practical knowledge. I suggest that Aristotle bases the distinction between theoretical and nontheoretical disciplines on a variety of factors. Although the most prominent of these factors is the nature of the goals of a discipline, there are also such factors as the

degree of demonstrative rigor of a discipline, its level of generality or abstractness, its being an explanatory, discipline, and so forth. Thus, a discipline may, indeed, have as its ultimate goals practice, but it may not necessarily differ from theoretical disciplines with respect to the rest of these factors. Ethics itself, like other practical disciplines, may thus be quite similar to theoretical disciplines, and it may be said to have a theoretical component.

The Goals of Ethical Inquiry

There is considerable diversity of opinion in the Aristotelian scholarly tradition about the way Aristotle conceives of the goals of ethical inquiry. The opinions form a kind of a spectrum, one end of which is occupied by the view that ethics is practical in a quite narrow sense of this term and the other end by the view that ethical inquiry aims at a theoretical un-

- 67 -

derstanding of the phenomena of conduct. Views of the former kind tend to minimize or eliminate the cognitive aspect from ethical inquiry, while those of the latter kind tend to minimize or eliminate the practical aspect.

Consider first the kind of view that stresses the practical nature of ethics. The sources of this view are some of Aristotle's own remarks where he appears either to deny that ethical inquiry is aiming at knowledge or to assert that it is aiming instead at action or practice. This interpretation of Aristotle's conception of the goals of ethics can be found in the works of some of the ancient commentators, and it is, therefore, their views I wish to consider first. In particular, I want to briefly touch upon an analogy they saw between the practical and the productive disciplines or arts, which they used to determine the goals of ethics and to analyze the relation of exactness in a discipline to its subject matter and its goals. As shall be seen in later chapters, the use of this analogy enabled the ancient commentators to see quite easily that some types of inexactness Aristotle associates with ethics are primarily features of the subject matter of the discipline and only secondarily of its accounts. The analogy will, thus, be of some importance for understanding the various levels of exactness Aristotle attributes to ethics and the various levels.

The ancient commentators found the basis for the analogy between productive and practical disciplines or $arts^{[1]}$ in what Aristotle says in the *N.E.*:

3.1	Our treatment [of ethical and political matters] will be adequate, if it achieves the
	amount of precision that belongs to its subject matter. The same exactness must no
	sought in all accounts, as it is not in all products of art. (1094b13)

The most detailed discussion of these remarks is to be found in Eustratius's commentary on the *N.E.*, although the rest of the ancient commentators give quite similar interpretations. Eustratius argues that by focusing on a productive art we can see more clearly the relation among subject matter, goal, and exactness, since the elements of the relation in the case of such an art become easily apparent to us through the senses.^[2] The example he chooses is that of the art whose task, goal, or end is simply to imitate, or to produce imitations of, the human form. He divides such an art into painting or drawing and sculpture, and he further subdivides the latter into wax molding and the various kinds of carving—for example, wood carving or stone carving. Now, Eustratius claims, the exactness we aim at and which is possible in painting is greater than the one we aim at in the case of wax molding, since the materials used in the former are better suited for the purposes of the art than those used in the latter. But the exactness possible in the case of wax molding is greater than that possible in the various types of carving, since the material of the former

is more pliable than the material used by the latter. Thus, the following claims in Eustratius's example of the productive arts can be identified: The goal of the above kind

of productive arts is imitation of the human form—that is, creating products that imitate the human form—and not knowledge or explanation of how to imitate the human form or of the human form itself; exactness depends on the materials an art uses (paint, wax, wood, stone, and so forth) and on the goals it has, and it will therefore vary from one art to the other as the materials and goals vary.

Now, if we were to assume, as the ancients did, that there is an analogy between the productive arts and ethics, we would conclude, as they did, the following about ethics: The goal of ethics is practice—that is, doing some thing or action, and not knowledge or explanation of practice; exactness in ethics depends on its subject matter (materials) and its goals. I shall leave the questions of the nature of exactness, the relation it bears to goals and materials, and even that of the usefulness of the analogy for understanding these matters aside for the moment. The point I wish to stress is that the way the ancients understood the analogy between the productive arts and ethics eliminates the cognitive component in both of these types of arts or disciplines, that is, in both productive and practical ones.

The problem with this way of looking at the goals of some disciplines is not that it is too narrow or restrictive, that it leaves out some other things that ought to be included among the productive or practical goals of these disciplines. The problem, for instance, with the claim that the goal of the productive arts Eustratius mentions is the imitation of the human form is not that it excludes other things that can be imitated. Of course, many other things can be imitated, and can therefore be a part of the goals of these arts, although we can understand why the ancient commentators focused on the human form. The problem lies rather in the fact that this way of looking at the productive arts fails to recognize any nonproductive goal that may be associated with them; it overlooks any cognitive goals or aspects these arts or disciplines may have. It looks, for example, at the discipline of medicine as being simply whatever produces health.

By analogy, the difficulty with identifying the goal of ethical inquiry with action does not lie with the fact that such an identification excludes several other things that can reasonably be included, along with action, among its practical goals. It is reasonable, for instance, to argue that action has no more of a claim to being the goal of ethics than states of character (virtues), states of affairs, kinds of wants or desires, motives, purposes, interests, types of human association, and so forth. The wish to enlarge the list of things comprising the practical goals of ethics is perhaps understandable, although it is also understandable why priority is given to

- 69 -

action. The latter has often been thought to be essentially connected to ethics, as health is thought to be connected to medicine. However, even if we were to grant that all the other practical things mentioned above, that is, states of affairs, virtues, motives, and so forth, are to be included among the goals of ethics, still the difficulty would not be resolved. Again, the difficulty lies with the fact that by equating the goals of ethics with some practical end or other, we blur the identity of the discipline of ethics as we normally understand it. The identity or nature of the discipline is confused with some end or ends it might serve. I shall return to this matter and discuss the reasons why, in my judgment, the goals of ethics cannot be completely equated with practice. First, however, I wish to examine some of the reasons that have led some students of Aristotle's thought to completely identify ethics with practice.

The tendency to look at ethics as something that lacks a cognitive component appears to have a basis in some remarks Aristotle himself makes throughout his treatises on conduct. Here are some of them:

3.2	The end of this study [i.e., politics] is not knowledge [
	figure] but action. (<i>N.E.1095a5)</i>
3.3	As then our present study [
	figure

49 of 362

], unlike the other treatises, is not for the sake of theoretical knowledge [figure
], for we are not investigating the nature of virtue for the sake of knowing what it is in order to become good, without which result our investigation would be of no ben we must examine the nature of actions, namely how we ought to do them. (1103b
3.4	Or perhaps, as we say, the end of the studies about things to be done is not to stud- contemplate, theorize about—
	figure] and know [
	figure] the various things, but rather to do them. (1179b)
3.5	For you aim is not to know [
	figure] what courage is but to be courageous, not to know what justice is but to be just, ir same way as we want to be healthy rather than to know what health is, and to be good condition of body rather than to know what good bodily condition is. (<i>E.E.1216b20</i>)

In addition, there are the well-known remarks where Aristotle argues that ethics is subordinate to politics and where he distinguishes among theoretical, practical, and productive disciplines in terms of their goals:

3.6 It would seem [the highest good of man] to belong [as an object of study] to the m authoritative science and that which is most truly the master art. And politics appea be of this nature; for it is this that ordains which of the sciences should be studied state. . .. Now since politics uses the rest of the sciences, and since, again, it legisle as to what we are to do and what we are to abstain from, the end of this science m include those of the others, so that this end must be the good of man. (*N.E. 1094*)

- 70 -	
3.7	For the end of theoretical knowledge is truth, while that of practical knowledge is ac (<i>Met. 993b20</i>)
3.8	But although this does happen in the case of the theoretical sciences, inasmuch a astronomy and natural science and geometry have no other end except to get to kr and to contemplate the nature of the things that are the subjects of the sciences the end of the productive sciences [
	figure] is something different from science and knowledge, for example the end of medicinhealth and that of political science ordered government, or something of that sor different from mere knowledge of the science. (<i>E.E. 1216b12</i>)

The above remarks may easily lead one to the conclusion that in the case of ethics, as well as other practical or productive disciplines, there is no room for the pursuit of knowledge. This is so especially with remarks 3.2-3.5, where Aristotle appears at times to deny that we aim at knowledge at all in ethics and politics and to assert emphatically that our aim is action or practice. Thus, Allan has recently stated that "practical reason differs from theoretical reason by its end; its aim is *action*, not knowledge of the truth"^[3] And Aristotle does not help matters by subordinating ethics to politics and thus claiming that ultimately the goal of the former is the goal of the latter, which according to 3.2 and 3.8 is action or the establishing of "ordered government, or something of that sort."

The move of obliterating, so to speak, the cognitive function of some disciplines perhaps derives some support from a principle Aristotle enunciates in the opening chapter of the N.E.:

3.9 Now in cases where several such arts are subordinate to some single faculty—as bri making and the other arts concerned with the equipment of horses fall under the ar riding, and this and every military action under strategy, in the same way other arts under yet others—in all of these the ends of the master arts are to be preferred to the subordinate ends; for it is for the sake of the former that the latter are pursue (1094a10)

Where arts, disciplines, or pursuits are subordinate to some master art or discipline or pursuit, that is, where they form an architectonic structure, the end of the subordinate ones is really the end of the master one. This may be called the transitivity principle, which states that if A is desired for the sake of (or has as its end) B, and B is desired for the sake of (or has as its goal) C, then A is desired for the sake of (or has as its goal) C. The transitivity principle seems to imply that the subordinate goals, that is, B, drop out of the picture altogether. When we apply the principle to the case of ethics it seems to imply that all we are left with is practice or action. For, if ethics is, as Aristotle claims, subordinate to politics and the goal of the latter is action (3.2, 3.8), then the goal of ethics is action. But

- 71 -

when we apply the transitivity principle in this same way to politics itself, or to any other nontheoretical discipline, we also obtain similar results: whatever other goals politics might have drop out of the picture, since they are subordinate to some practical end. Only in the case of the theoretical disciplines, where the ultimate end is knowledge itself, will the application of the transitivity principle yield a cognitive end for a discipline.

But upon reflection, we see that this cannot be the way to apply the transitivity principle, and that Aristotle did not apply it in this way, although Plato clearly did. To apply the principle in this way is to eliminate all the goals or ends of the subordinate arts; it is to eliminate what are clearly the immediate or proper goals of the arts which need to be distinguished from any other ends these arts may serve. Consider, for instance, Aristotle's own example of the art of bridle making (3.9). The immediate or proper end of this art is bridle making, although the activity itself may have, because it is subordinate to the military arts, as its ultimate goal military victory. But even if its ultimate goal is that of the master art, its own peculiar end cannot be eliminated. To assume otherwise, to apply the transitivity principle in the way we did above, is to suppose not only that desires or goals are transitive but also that the subordinate desire, pursuit, or goal is canceled out whenever there exists a higher desire, pursuit, or goal. Plato clearly made such a move: "Then isn't it just the same in every case? If everyone does something for the sake of something, he doesn't want the thing he does, but the thing for the sake of which he does it" (*Gorgias* 467D).^[4] But Plato's move is clearly problematic, for it eliminates the desires or goals that must be there in order for the transitivity principle to hold or even in order for the principle to be stated.

And this, of course, is no accident. What Aristotle intends to say by the transitivity principle is that the art of bridle making has as its proper end the making of bridles, although the reason we have such an art with such an end is because we have another end, that is, military victory. But the art of bridle making is defined by its own proper end, as is any other art which may be subordinate to some master art. Thus, shipbuilding is defined by its own proper end, and so is strategy, medicine, economic management, and so forth.^[5] What bridle making does, then—what activity it is—is determined by its own proper goal and not by that of the master art it ultimately might serve. The identity and essential nature of an art is fixed by its own proper goals and not by whatever else it serves. The goals of the subordinate and master arts can be altogether different—bridles are not military victories—and the activities constituting the two can also be altogether different—making bridles is not fighting or winning a battle. It is also clear that, although we may continue to pursue the master art and its goals, we may cease to pursue the subordinate activity and its goals. We may, for instance, continue to pursue military victory but not bridle

- 72 -

making, either because we have no need of horses for the purpose of winning a battle or because we can control horses without the use of bridles—for example, by remote control or by training them to follow verbal commands. Therefore, not every means of controlling cavalry horses is part of the art of bridle making. The latter has a nature that is constituted by its own peculiar activities and proper goal.

But what does this tell us about ethics, politics, or medicine and their goals? It tells us that, even though these disciplines may be subordinate to some master discipline, and consequently their ultimate end may be that of a master discipline, they have their own end and activity in terms of which their nature is defined. If, for example, economics is, as Aristotle says, subordinate to politics, it is nonetheless the case that it has its own end and activity which define its nature. The same is true with ethics, which Aristotle takes to be subordinate to politics.

Let us leave aside, then, this matter of the subordination of one discipline to another and examine instead some of these disciplines by themselves. Consider, for instance, medicine, a discipline that Aristotle often compares to ethics. There is no doubt that Aristotle takes the ultimate goals of medicine to be health, that is, the attainment, restoration, preservation, and so forth, of health, rather than the contemplation of it (3.7, *N.E.* 1094a). Aiming at health in part constitutes the nature or essence of the discipline—it defines in part what medicine is (*Top* . 143a5). But this practical goal is not all there is to medicine; it is not sufficient for defining medicine. Not everything that aims at or attains health is medicine. If, for instance, gymnastics also aims at or produces health, it is not necessarily to be identified with medicine. And if someone restores health accidentally or by luck, or heals by some superhuman power, he is not necessarily doing so through medicine. I⁶]

The reason why not everything that produces, restores, or maintains health is to be identified with medicine is that, according to Aristotle, medicine is a discipline; it is an inquiry or investigation that aims at or obtains a certain body of knowledge. Like other disciplines, it has its own domain and principles.^[7] Its genus, then, to use Aristotle's language, is knowledge, since medicine is a species of a cognitive activity. Thus Aristotle includes medicine among the disciplines (sciences,

figure

) that investigate a certain domain and have their own principles, for example, arithmetic and geometry (*Post. Anal* . 79a15, 88b13).^[8] He also includes it among the disciplines or sciences at *Met* . 1064a: "Every science [

figure

] seeks certain principles and causes for each of its objects—e.g., medicine and gymnastics and each of the other sciences, whether productive or mathematical." And at *Met* . 1025a he writes, "For while there is a cause of health and of good condition, and the objects of mathematics have first principles and elements and causes, and in general every thinking, or

- 73 -

thought-partaking, science deals with causes and principles, more or less precisely." There is no doubt that when Aristotle speaks of a discipline that is concerned with the cause of health and of good condition he has in mind medicine. Finally, he refers to medicine as an inquiry, discipline, or science (

figure

) at *N.E.* 1180b10-30, where he compares it with the discipline that studies moral education and legislation.

Medicine, then, like the other cognitive disciplines, aims in part at knowledge, at understanding or explaining a certain domain, that is, the causes of health and of good condition. We may identify, then, in its case the goal that fixes the genus to which medicine belongs, that tells us what kind of thing it is—that is, that it is a kind of knowledge or a cognitive discipline. And we may designate the cognitive goals of medicine as its immediate or proper goals and thus distinguish them from its ultimate practical goals—that is, the production, restoration, or maintenance of health. Medicine, then, aims at and attains its ultimate goals through a cognitive activity or discipline, through knowledge of its own special domain.

The above is, of course, true of all practical and productive disciplines, for they all belong to the genus *discipline* or *inquiry*; they all are cognitive activities. Their proper or immediate goals are therefore cognitive, while their ultimate ones are, according to Aristotle, practical or productive. This is what Aristotle intends to say by designating some disciplines as theoretical, others as practical, and still others as productive. Not that practical and productive disciplines do not aim at knowledge or are non-cognitive; rather, they have goals that go beyond the cognitive ones and which are nonetheless attained through the cognitive ones. This is made clear in what Aristotle says in 3.8, when he states that "the end of productive sciences is something different from science and knowledge, for example the end of medicine is health. . . . [It is] different from mere knowledge of the science." Thus, Aristotle does not doubt that the proper end of medicine is knowledge—he takes it for granted that it is. What he wishes to make certain is that we do not mistake it for the ultimate end, that we recognize that the latter (the ultimate end) is different from science or knowledge (the proper end). Only in the case of theoretical disciplines, Aristotle argues, is the proper or immediate end identical with the ultimate end. What Aristotle intends to say in 3.7, when he insists that the end of theoretical knowledge is truth while that of practical knowledge is action, is that the ultimate end of the former is truth while that of the latter is action. He is not identifying the proper end of practical disciplines with action, but only the ultimate one.

It is important to recognize, then, that while a discipline may be practical (or productive) in virtue of the nature of its ultimate goals, this does not rule out that its immediate goals are cognitive. Similarly, a discipline is theoretical in virtue of its ultimate goals, but this does not rule out the

- 74 -

possibility that such a theoretical discipline (e.g., arithmetic) has practical uses (see below). Yet arithmetic, although it has practical uses, differs from a practical discipline—its ultimate goals, the ends for which it is pursued, are presumably purely cognitive. And although Aristotle and others classify disciplines on the basis of their ultimate goals—for example, theoretical, practical, productive—one must not overlook their immediate or proper goals, which may be different from the ultimate ones.

Now ethics is, according to Aristotle, a practical discipline and, therefore, as is the case with all productive and practical disciplines, its ultimate goal is something different from knowledge or science. As in the case of politics, which, according to 3.8, aims at something "different from mere knowledge"—that is, it aims at the realization of "ordered government or something of the sort"—ethics aims at something beyond knowledge. Indeed, when we examine closely 3.2-3.5, we see that in all these remarks Aristotle's intention is to underline his contention that ethics has a goal that is different from and goes beyond knowledge, and not to deny that its proper goal is a cognitive one.

Consider, to begin with, what he says in 3.2. While he insists that the (ultimate) end of politics is action and not knowledge, he also assumes that politics is a study, that it is an inquiry (

figure

, N.E. 1094b11), that it is one of the sciences (

figure

, 1094a27), that it aims at the knowledge of the highest good (1094a23), and so forth. And while in 3.3 Aristotle denies that his own endeavors in the N.E. are for the sake of theoretical knowledge, he nevertheless characterizes his own activity as an inquiry or study (

figure

), as a discipline that, although "not investigating the nature of virtue for the sake of knowing what it is," is *investigating* it in order to become good. Again, in 3.4 Aristotle is concerned with making clear what are the ultimate goals of studies of matters of conduct: They are *studies* for the sake of action. Finally, in 3.5 Aristotle applies to ethics the general thesis he propounds in 3.8 about the difference between theoretical disciplines on the one hand and practical and productive ones on the other—namely, that the former aim ultimately at knowledge, whereas the latter aim at action or production. In ethics, according to 3.8 and 3.5, as in medicine and politics, we aim at a kind of knowledge, for example, knowledge of what courage or justice is, but we do not

stop there, for our ultimate goal is to be courageous or just and do what courage or justice requires.

Indeed, a careful examination of what Aristotle says shows that what Allan asserts in the remark quoted above is wrong when said in the way it is said there. Practical reason or intellect *does* aim at truth, "For truth is the function of every [kind] of intellect" (*N.E.* 1139a30) and "Hence the function of both parts of the intellect [i.e., practical and theoretical] is truth" (1139b11). Of course, Aristotle does not mean in these remarks

- 75 -

to deny that the ultimate goal of practical thought is practice or action. He distinguishes theoretical thought from it by saying that theoretical thought is not concerned with action or production (1139a28), clearly implying that practical thought is concerned with or ultimately aims at action or production. We must not, however, overlook the fact that Aristotle takes practical thought to be aiming at the truth, that its proper goal is cognitive.

If what has been said above is correct, it is clear that ethics cannot just be whatever results in certain actions or produces certain states of character. It cannot, for example, just be a skill, knack, or good fortune that results in the correct action or the proper state of character. Ethics, according to Aristotle, is practical knowledge or a type of discipline that alms at achieving some practical ends through its own cognitive activities. These kinds of activities are necessary elements of its nature; they in part define what ethics is.

To recognize that Aristotle takes ethics to be an inquiry or investigation, despite what he at times appears to be saying, is no doubt quite important, for to do so is to identify correctly the kind of thing he assumes ethics to be; it is to identify the genus to which he assigns ethics and related disciplines. Yet this does not tell us everything about ethics. It does not tell us what kind of knowledge ethical inquiry attains—whether, that is, it differs in its character or structure from the knowledge that theoretical inquiry attains. It also does not answer the question of why there cannot be theoretical knowledge about matters of conduct—why we cannot, for example, have knowledge for the sake of knowledge about matters of conduct—or, if theoretical knowledge differs in its structure or character from practical and productive knowledge, why there cannot be knowledge about matters of conduct that has the epistemological nature of theoretical knowledge. These are the questions I wish to consider next, and I shall do so by addressing first the question concerning the relation between ethical inquiry and practical wisdom.

Ethical Inquiry and Practical Wisdom

I have argued above that Aristotle takes ethics to be an inquiry or investigation whose proper end is cognitive. We may further characterize Aristotle's view in the following way: Ethics is a study of a certain subject matter or domain, that is, that of matters of conduct. Such a characterization may seem to be too superficial or empty of content to be sufficient for distinguishing ethics from other inquiries or investigations. But at this point I wish to characterize Aristotle's view in the most neutral way. Even the claim that ethics is an inquiry or investigation is a controversial one in Aristotelian scholarship, for it obviously implies or assumes that Aristotle

— 76 —

takes ethics to resemble to some extent—namely, to the extent that it has a subject matter that it studies and seeks to understand or explain—those inquiries or investigations that he often views as being well-defined disciplines or sciences.

There are those in the Aristotelian scholarship tradition who are willing to accept that ethics has some cognitive objectives, that it aims at some knowledge, or that it aims at its ultimate practical ends through knowledge, but are unwilling to concede that the knowledge ethics seeks resembles at all the knowledge we seek in the well-defined disciplines or that ethics itself resembles any of these well-defined disciplines. This view has its basis in Aristotle's discussion of the intellectual virtues in Book VI of *N.E.* and, in

particular, in his account of practical wisdom or prudence (

figure

). On the assumption that ethics is the practical knowledge we attain by the excellence of practical wisdom, these scholars have argued that the knowledge we aim at or attain in ethics consists primarily of that associated with practical intellect or reason. Ethical inquiry, according to this view, cannot be the activity of inquiring or investigating that Aristotle associates with theoretical reason or intellect, the activity presumably proper to the disciplines that are neither practical nor productive.

Thus, William E R. Hardie has recently insisted that, although Aristotle at times makes reference to ethical or political theory in his work, we should not be misled "into thinking that Aristotle thought of the *Ethics* and the *Politics*, or indeed the *Poetics*, as exercises of the 'theoretical' intellect. . . . For Aristotle the *Ethics* itself, being a political treatise (1094b11), is an exercise of the practical intellect. . . . His inquiry is directed to finding out how happiness can be achieved. Analogously the *Poetics* is a manual on playwriting."^[9] Hardie goes on to add, "It is not, of course, to be assumed that what Aristotle, or any other thinker, says he is doing is necessarily an accurate or adequate account of what he achieves." He thus leaves room for meeting the obvious objection that Aristotle's own inquiry in the ethical treatises and *Politics* is more of a theoretical investigation than his own characterization of it would seem to imply.

Yet, as Hardie seems to recognize, there are problems with the practical interpretation of ethical inquiry that go beyond the discrepancy, if there is one, between Aristotle's own inquiries and his own characterization of them. Consider first the problem with appealing to the distinction between theoretical and practical intellect in order to elucidate the nature of ethical inquiry. Aristotle, of course, speaks at times of these two kinds of intellect, but the disagreements among scholars as to what these supposedly distinct intellects do are notorious. Hardie suggests that in general the practical intellect is concerned with the finding or determining of means, and in the case of ethics it is concerned with "finding out how happiness can be

- 77 -

achieved." But is there a productive intellect that is concerned with the means of production, and is it different from practical intellect? Again, if I am seeking the geometrical means of bisecting the angle, which intellect am I using: the theoretical, practical, or productive one? It is also not clear that we succeed in elucidating the nature of ethics by insisting that it is a manual for practice in the way presumably "the *Poetics* is a manual for playwriting." Geometry too is a manual for drawing circles, bisecting angles, determining areas of figures, and so forth, and arithmetic is a manual for adding, subtracting, multiplying, and so forth. In a sense, any discipline can be a manual.

The problem seems to me to be this: If we assume that Aristotle identifies ethical inquiry with practical wisdom (or reason, or prudence,

figure

), then our view of the nature of ethical inquiry will depend on what we take practical wisdom (reason, prudence) to be. If, on the one hand, we interpret practical wisdom in such a way that it is restricted to deliberating about means (the narrow view), then clearly ethical inquiry will have little in common with the typical disciplines. If, on the other hand, we interpret practical wisdom in a way that goes far beyond a kind of calculative or deliberative activity—for example, if it reasons about the nature of the elements of conduct, it proves certain propositions about them or it explains certain things on the basis of others (the wide view)—then perhaps ethical inquiry will not be very different from other disciplines.

Now there is evidence from Aristotle's texts that seems to support the narrow view of practical wisdom. As Allan remarks, "The fact is that he [Aristotle] makes some statements which, to a superficial view, imply that practical reason—or what comes to the same thing, *phronesis*—deliberates about means *and does nothing more*."^[10] And Allan refers to Aristotle's remarks at *N.E.* 1139a21, 1142b31, and 1152b1 as the passages that, to a superficial view, imply the narrow view of practical reason. There are, of course, more passages than the ones Allan cites suggesting the narrow view of practical wisdom. Among them we would include Aristotle's account of deliberation in Book III, where practical reason is viewed primarily as deliberating or calculating about

means. And his discussion of practical reasoning in Book VI.i., where he equates it with deliberation, contrasts it to scientific reason, and argues that it is calculative in nature: "These two faculties may be designated the scientific and the calculative faculty respectively; since calculation [

figure

] is the same as deliberation [

figure

]" (1139a12). Again, Aristotle identifies, perhaps even more explicitly, practical wisdom with knowledge of or deliberation about the means to an end: "Also the function of man is achieved by practical wisdom [

figure

] and virtue; for virtue makes the end right, while practical wisdom ensures the correct means" (1146a6).^[11]

It is not surprising, then, that scholars have at times accepted the narrow

- 78 -

view of practical wisdom. Whenever they have also assumed that ethical inquiry is to be identified with practical wisdom, they have concluded that ethical inquiry is quite different from ordinary disciplines. This seems to be the case with the accounts J. Donald Monan gives of practical wisdom and ethical inquiry.^[12] John Burnet also sides with the narrow view of practical wisdom but he does not identify altogether ethical inquiry with practical wisdom.^[13] In this he was following the Aristotelian scholar Julius Walter of Jena, who was the first to introduce in recent times the narrow view of practical wisdom, but who at the same time refused to equate it with ethical inquiry.

According to Allan, in much of the Aristotelian scholarship of the previous century, and in particular in the works of Gustav Teichmüller, Friedrich Trendelenburg, and Eduard Zeller, the dominant view of practical wisdom was the wide one.^[14] These scholars assigned to practical wisdom or reason a role much wider than calculation or deliberation about means. They assigned to it the role of grasping or understanding the basic principles and the rest of the propositions or judgments of ethics. Thus practical wisdom or reason in their view was not much different from theoretical reason. Since they also equated ethical inquiry with practical wisdom, ethical inquiry itself was thought to be quite similar to all the other disciplines that investigate into the nature of a particular domain—it was thought to be not very different from the theoretical disciplines. Toward the end of the nineteenth century, however, Walter argued that the scope of practical wisdom in Aristotle is far more restricted than the scholars mentioned above take it to be, and he thus introduced the narrow view. The sphere of practical wisdom, according to Walter, is deliberation, the discovering of means to ends that have already been established. Since Aristotle's own inquiry is primarily about the nature of ends, since it is almost theoretical, he concluded that ethical inquiry cannot be equated with practical wisdom or reason.^[15] Consequently, according to Walter, ethical inquiry does not differ essentially from other disciplines. This time, however, the conclusion was reached not by conceiving practical wisdom as something similar to theoretical reason and then equating it to ethical inquiry, but by narrowing the scope of practical wisdom and dissociating it from ethical inquiry.

Walter's view, according to Allan, was very influential. It affected either directly or indirectly much of the subsequent scholarship on Aristotle's ethics with regard to the issues of the nature of practical wisdom and ethical inquiry. It influenced Zeller directly and to such an extent that in the third edition of his history of Greek philosophy he abandoned his earlier account of practical wisdom in terms of the wide view and accepted Walter's view. Zeller's views, in turn, had an impact on many of the important commentaries on Aristotle's ethics in the English language, especially that of Burnet.

- 79 -

But Walter's view itself was destined to meet the fate awaiting every interpretation of a classical text—namely, being questioned, criticized, and almost abandoned by Aristotelian scholars in recent years. Criticisms of Walter's views, although rather moderate ones, are to be found in the work of Allan himself and in Rene A. Gauthier and Jean Y. Jolif's commentary on the *N.E*.^[16] Several of the most recent discussions of

56 of 362

these issues can be looked upon as attempts to correct what is perceived to be a mistaken account of practical wisdom given by Walter and accepted by many other scholars. They are attempts to enlarge Walter's conception of practical wisdom and, therefore, to reinstate in a way the wide view that was held by the other nineteenth-century scholars mentioned above.

Thus, David Wiggins has argued that deliberation and practical reason are not only concerned with instrumental means, that their scope is wider than the narrow view makes it out to be.^[17] John Cooper accepts the interpretation that deliberation goes beyond instrumental means, but thinks it does not determine by itself the highest or ultimate end (happiness) Aristotle is concerned with in his own ethical inquiry. This is done, Cooper claims, by practical wisdom, which is more than deliberation since it includes dialectical reasoning and some kind of intellectual intuition by which the ultimate end (or ends) is (are) grasped.^[18] Thus, Cooper's view is in one respect similar to Walter's. Cooper argues that there is some theoretical component to ethical inquiry that cannot be captured by the instrumental conception of deliberation, the component that consists of dialectical reasoning and the grasping of some propositions by intellectual intuition. Terence Irwin has gone even further by making dialectical reasoning a part of deliberation.^[19] Although this move appears to deny that there is a theoretical component to ethical inquiry, it does so by making deliberation or practical wisdom as wide, and in a sense as theoretical, as the nineteenth-century scholars made it out to be.

My aim, however, is not to investigate the nature of deliberation or practical wisdom, if indeed they turn out to be different. My concern is rather with Aristotle's conception of ethical inquiry. I shall, therefore, restrict myself to giving some arguments in support of the view that ethical inquiry cannot be identified with the narrow view of deliberation or practical wisdom. I will thus be partly in agreement with Walter's position: If deliberation or practical wisdom is interpreted narrowly, it cannot be equated with either Aristotle's own ethical investigation or with ethical inquiry in general. This is, in a sense, acknowledged by those who insist upon the wide interpretation of deliberation or practical wisdom.

Does Aristotle identify his own inquiry or ethical inquiry in general with deliberation or practical wisdom? It is interesting to point out that the term for practical wisdom (

figure

) occurs only three times prior to Book VI of the N.E. , and in none of these occurrences is it identified with

- 80 -

Aristotle's own investigation or ethical inquiry. Aristotle uses the term to refer to wisdom in general in order to argue against Plato that there is one Form of goodness: "But of honour, wisdom [

figure

], and pleasure, in respect of their goodness, the accounts are distinct and diverse" (1096b23). While attempting to show that his own account of happiness in terms of the function of man is consistent with most of the opinions about it, he remarks, "for some identify happiness with excellence [virtue,

figure

], some with practical wisdom [

figure

], others with a kind of philosophic wisdom, others with these, or one of these, accompanied by pleasure or not without pleasure" (1098b23). Finally, Aristotle uses the term when he offers examples of the two kinds of excellences or virtues: "Excellence [or virtue] too is distinguished into two kinds in accordance with this difference; for we say that some excellences are intellectual and others moral, philosophic wisdom and understanding and practical wisdom being intellectual, liberality and temperance moral" (1103a5). The last two quotations show that Aristotle takes practical wisdom to be a virtue and a part of happiness. To equate ethical inquiry with it would imply that ethical inquiry is a virtue and a part of happiness, which is odd if not paradoxical. Although Aristotle identifies happiness with contemplation or moral practice, he does not equate it with ethical inquiry.^[20]

The term for practical wisdom occurs most frequently in Book VI, a Book devoted to

a discussion of the intellectual virtues. Indeed, in its first occurrence in that Book the term is used to refer to one of the intellectual virtues (1139b15). The closest Aristotle comes to identifying practical wisdom with ethical inquiry is when he equates at least some component of politics with practical wisdom.

3.10	Politics [or Political Science,
	figure] and practical wisdom [figure] are the same state, though their essence is different. Of the practical wisdom concerned with the city, one part, the one which is controlling, is legislative scien- the other part, the one dealing with particulars, has the name "political science" t belongs to both parts in common. This part is concerned with action and deliberat (for a decree is a thing to be done, being the last step in a deliberation); and this is reason why these people are the only ones said to be taking part in politics, for th alone do things as the craftsmen do. (1141b23)

Now, while it is clear that in this passage Aristotle is willing to identify politics with practical wisdom, it is also clear that he makes every effort to distinguish practical wisdom understood in the narrow sense from what is, strictly speaking, political science. He insists that there are two kinds of practical wisdom, each of which he assigns to one of the two parts of politics that are often referred to by the same name. The kind that is concerned with particulars, actions, and deliberation he assigns to political

- 81 -

practice, something he equates with any practice in the domain of crafts. The other kind of practical wisdom must be then what is not concerned with actions, particulars, or deliberations—this is the kind he assigns to the controlling part of politics, legislative science, or political science or inquiry.^[21]

But why does Aristotle refer to both kinds as practical wisdom? I think in this context he uses

figure

in the sense the term has for him in the *Protrept*. and the *E.E.*, as well as in the sense the term has for Plato—namely, that of some type of theoretical wisdom with which they identify political knowledge and inquiry.^[22] Aristotle is, then, in the *N.E.* enlarging this notion of practical wisdom to also include that which he assigns to political practice—that is, the activities concerned with particulars, actions, and deliberations—practical wisdom in the narrow sense.

One may, then, be willing to accept that Aristotle identifies political inquiry with practical wisdom, provided one understands that the practical wisdom required for such an identification is not that of the narrow view—it is not deliberation in the context of action or about particulars. Indeed, if one follows Aristotle's remarks quoted above, one will be justified in assuming that the required practical wisdom is not deliberation at all.^[23] This is what Aristotle's contrast between the two kinds of practical wisdom and the two components of politics he associates with them seems to imply.

The same can be said about ethics. The practical wisdom associated with practice is that of the narrow kind—that concerned with particulars, action, and deliberation. If we insist that ethical inquiry itself is a kind of practical wisdom, then it must be that which Aristotle associates with political inquiry-it cannot be that which is concerned with particulars, action, and deliberation. In a sense, Walter's observations about the character of Aristotle's own inquiry and about the way he conceives ethical inquiry in general is basically correct. Neither Aristotle's own inquiry nor what he says about it can be made to fit into the narrow conception of practical wisdom.

For we see that what Aristotle does in the *N.E.* is not an ordinary kind of deliberation. It is not, as Hardie says, simply the "finding out how happiness can be achieved," if it is meant by this that Aristotle is deliberating about the means to happiness. His activity does not fit the kind of reasoning that he at times characterizes as practical and which must meet certain conditions—for example, its premises include one that is universal, one that is particular, and one that asserts a desire for some

end—and which issues in an action. Although Aristotle extends somewhat the scope of practical wisdom by admitting that it deals not only with the particular but also with the universal (1141b15), even this extended notion of practical wisdom will not be sufficient for adequately characterizing his own activity.^[24] The universal Aristotle has in mind in this context seems to fall

- 82 -

short of the kind of universality or generality found in his own investigation. The universal Aristotle has in mind in the context of practical wisdom is most probably that which he associates with the rather modest level of generality of some normative principles. Although his examples come from medicine—for example, light meat is wholesome, chicken is wholesome (1141b20), heavy water is unwholesome (1142a22)—we can imagine what general ethical principles would be like—A son never ought to disown his father (1163b20), One ought to pay back a debt (1165a3), and so forth. If this is the level of universality or generality Aristotle associates with practical wisdom, then it is clear that it cannot match that which characterizes most of his own objectives or accounts in his ethical treatises.

There is no doubt that Aristotle's concerns in his own ethical treatises are with the most universal or general aspects of matters of conduct. Consider, for example, the sorts of things that Aristotle focuses upon in the *N.E.* Beginning with a brief explanation of the teleological structure of pursuit or action, he elaborates on some formal properties of the good and distinguishes among types of goods—perfect, more perfect, most perfect, self-sufficient, and so forth. These are clearly concerns with highly general or abstract matters, and so is his investigation about the relation among being an end (goal), being good, and happiness. The aim is, of course, to explicate the nature of the human good or happiness—this is as specific or particular as Aristotle gets—and not the pood or happiness of some individual or some particular group. His own account of the human good and happiness is, as is well known, also given by relying on the very general and abstract notion of function. Equally general and abstract are Aristotle's accounts of the virtues, which are his focus in most of the *N.E.*

Now it is true, as shall be seen, that Aristotle often considers his own accounts to be incomplete or lacking in detail and that he frequently insists that, since ethics is practical and practice and deliberation deal with particulars, our ethical accounts must also reach the particulars. Even if the diagnosis of his own accounts as lacking in detail is correct and the degree of specificity he requires for ethical accounts is justifiable, they would not imply that Aristotle's focus is not the universal or abstract aspects of conduct. By admitting that his own accounts are not about particulars or that they are lacking in detail, Aristotle correctly recognizes that what he has been dealing with all along are the universal, general, or abstract elements of conduct. His point is, of course, that dealing with only such elements is not sufficient for the purposes of ethics. According to him, one has to reach down to the particulars.

But suppose we were to do so; suppose we were to attain the specificity Aristotle thinks is necessary for the practical purposes of ethics. Even then

— 83 —

we would not necessarily have made all of ethics into something that is concerned only with the kind of thing we are, according to Aristotle, concerned with in the context of action—that is, particulars. There would still be the component of ethics that deals with those aspects of matters of conduct that constitute the focus of Aristotle's own treatise—that is, the general or abstract aspects. Similarly, reaching the level of specificity Aristotle requires in ethics does not necessarily make ethics an activity like deliberation of the narrow kind. What he has in mind in the contexts where he insists upon making our accounts more specific is not that we deliberate about particulars with regard to some action or other, but rather that we proceed with our investigation in order to attain more detailed or specific accounts. The account of virtue in general will not be sufficient, he argues; we must give an account of each one of the virtues, and perhaps we should reach even greater specificity than that. But we can do the same thing in geometry or biology: we can give accounts of the kinds of *triangle* or *viviparous* , and we also can give accounts of the species *isosceles* or *dog* , and perhaps even of

more narrow kinds. But the accounts of these latter sorts of things are not necessarily deliberations, at least they are no more deliberations than the former. And I see no point in making a deliberation out of everything.^[25]

There is no doubt that there are problems with what Aristotle says with regard to attaining a level of specificity that reaches the particular or individual. As I shall argue below, he does at times have some such level of exactness in mind. But, first, he does not say that we reach such a level of exactness by deliberating in the narrow sense of this term.^[26] Second, he thinks that a level of specificity that reaches the narrow particulars or individuals cannot be attained by ethical inquiry, and therefore whether it is to be arrived at by deliberation or by some other way does not seem to affect the nature of ethical investigation.

The above is true even though we may be willing to accept what Aristotle says in 3.1 and 3.2 about the goals of ethical or political inquiry. According to what he says there, the goals of politics is action (3.1), and the reason why we pursue ethical investigation is in order to become good (3.2). It is quite possible that, while the reason for pursuing ethical (political) inquiry is action or becoming good—this involves deliberation or practical wisdom in the narrow sense—ethical (political) inquiry itself is not identical with or even part of practical wisdom in that sense. Applied mechanics may be pursued for the sake of building structures, but it does not follow from this that the inquiry of applied mechanics itself is identical with that for the sake of which it is ultimately pursued.

It is not, however, only what Aristotle does in his own ethical treatises that is different from practical wisdom in the narrow sense. What he says about his own ethical inquiry, or the way he characterizes it, shows that

- 84 -

he also thought of it, or of any ethical inquiry, as being different from this kind of practical wisdom. What Aristotle does and what he says he does need not, as Hardie observes, agree. But they need not disagree either. In this case they agree: Not only what he does but also what he says about his own activities in the *N.E.* do not fit the narrow conception of practical wisdom.

On several occasions prior to Book VI (i.e., prior to where practical wisdom becomes the focus of Aristotle's concerns), Aristotle refers to, describes, or characterizes his own activities. Invariably on these occasions Aristotle does so by using terms that signify "inquiry," "investigation," or "discipline/science"—that is, by terms he often uses to characterize typical inquiries or investigations that may have little to do with practical wisdom. Thus, Aristotle refers to his own activity as a figure

(1094b10, 1098a28),^[27]

figure

(1103b25, 1105a5, 1105a10),

figure

(1102a12, 1129a4, 1155b8)—that is, as an inquiry or investigation into the nature of a certain domain. Indeed, in the opening sections of the *N.E.* Aristotle is willing to call ethics, along with politics, disciplines, or sciences,

figure

, that is, the inquiries into, among other things, the nature of the highest good (1094a25, b3). This is, of course, not surprising. As discussed earlier, he also considers medicine to be a discipline that investigates a certain subject matter in the way other disciplines, for example, geometry, physics, or optics, investigate a certain subject matter.

The comparison of ethics to medicine is an important one. Aristotle often sees the two disciplines as being similar in many respects: Their respective subject matters exhibit the same kinds of inexactness; they are both practical disciplines; and they share the same epistemological character.^[28] What we say, then, with regard to Aristotle's conception of the one discipline must also fit the other. If medicine is not an inquiry that resembles the typical disciplines, then neither is ethics, and vice versa. Conversely, if medicine is an inquiry that resembles the typical disciplines, the typical disciplines, so is ethics, and vice versa. It is not surprising, then, that those who tend to look at ethics as something that falls far short of the typical disciplines, as something that is to be

equated with practical wisdom in the narrow sense, tend also to look at medicine along the same lines—that is, as something that is concerned primarily with practice or with knowledge only to the extent that is required for dealing with the particulars of practice. But this is not supported by the texts. The problem with what Aristotle says about ethics and medicine is not, I shall argue here, that they are considered not to be like the other disciplines, but rather that they are thought to be continuous with practice.

There are, indeed, times when Aristotle stresses the practical aspect of medicine and emphasizes the need to know the particulars or the superiority of knowledge of particulars. And at times he appears to exclude

- 85 -

from ethics any component that goes beyond practice or knowledge of the particulars within a practical context.

3.11	In fact it does not appear that the physician studies even health in general, but tha the human being—or rather of some individual human being, for it is individuals the has to cure. (1097a10)
3.12	These [matters of conduct] come under no art [or science,
	figure] or professional tradition, but the agents themselves have to consider what is suit to the circumstances on each occasion, just as is the case with medicine and navigation. (1104a6)

However, as we saw above, Aristotle takes medicine to be a kind of discipline or science (

figure

), to have its own subject matter and principles (basic elements), and to prove or explain whatever pertains to health or disease. Being such an activity, it is concerned with the universal.

3.13	No art [or discipline,
	figure] has the particular in view, medicine for instance what is good for Socrates or Call but what is good for this or that class of persons (for this is the sort of thing tha comes within the province of an art) Similarly, therefore, rhetoric will not consider what seems probable in each individual case, for instance to Socrates o Hippias, but that which seems probable to this or that class of persons. (<i>Rhet.</i> <i>1356b29</i>)
3.14	For the doctor does not say what is healthy in the case of the individual eye, but eil of every eye, or determining some sort [of eye]. (<i>Post. Anal. 97b28</i>)

Of course, what is true of medicine is true of every discipline. Every art or discipline deals with the universal (see *Met* . 1003a14, 1059b24, 1060b19; *Post. Anal* . 87b38, 88b30). As 3.12 states, "No art [or discipline] has the particular in view."

Obviously, there is a difficulty here. It cannot be the case both that medicine is concerned only with the individual and there is no art or science dealing with matters of health (3.11, 3.12), and that there is a discipline or science dealing with the general or universal aspects of medical phenomena (3.13, 3.14). There are at least two ways out of this difficulty. One way is to argue that when Aristotle characterizes medicine as a discipline or science he uses the term

figure

rather loosely and does not mean to say that it resembles in any significant way the typical disciplines or sciences.^[29] Another way is to argue that the term is not used loosely, but that Aristotle applies it only to some theoretical investigation of medical

61 of 362

phenomena and not to the discipline ordinarily called medicine. When he thus says that medicine is a discipline or a science, he is not speaking about ordinary medicine but about a kind of theoretical study of matters of health.

- 86 -

Yet despite the fact that either of these suggestions would go a long way toward resolving the apparent difficulty mentioned above, I find little textual support for either one. Consider, to begin with, the first suggestion. Indeed, Aristotle uses the term figure

,and even more frequently the verb

figure

, rather loosely at times to simply mean knowledge of the ordinary kind that may have little or even nothing to do with scientific explanation or demonstration—that is, knowledge that exhibits none of those features in terms of which he defines

figure

elsewhere. This is, however, not the way he uses the term in the remarks quoted above, where he characterizes medicine as a discipline or science. Almost all of the above remarks occur in contexts where Aristotle is explicitly concerned with scientific knowledge, explanation, or demonstration, and where he uses the term figure

rather strictly.

For example, when Aristotle includes medicine among the sciences at *Post. Anal* . 79a15 and 88b13, the context is one where the term

figure

is used in the strict sense. The context at *Met* . 1025, where Aristotle groups medicine with mathematics as being a discipline that aims at attaining knowledge of certain principles, elements, and causes, is also one where the term is applied to standard Aristotelian sciences, for example, physics or harmonics.

In addition, if it were true that Aristotle uses the term

figure

in relation to medicine in such a way that he does not mean to say it is a discipline or a science, the same would also have to be true in the case of the rest of the practical or productive "disciplines." Indeed, it would be more so in the latter case. As a result, nothing other than the theoretical ones would be disciplines or sciences. But this would make it impossible for Aristotle to distinguish between theoretical and nontheoretical disciplines and to draw the contrast among theoretical, practical, and productive disciplines or sciences.

What about the suggestion that Aristotle differentiates completely between a kind of theoretical activity that he characterizes as the science of medicine and a practical activity that remains solely at the level of practice? Perhaps there are good reasons for differentiating between such activities, and it is quite possible that some of the problems Aristotle raises about ethics and medicine that presumably stem from their practical character could be avoided if we were to distinguish sharply between theory and practice in ethical and medical affairs. Aristotle does not, however, think of medicine as consisting of two totally different and distinct kinds of activities. There are perhaps good reasons for not doing so.

For example, when he insists that the subject matter of medicine is, like that of ethics and politics, characterized by inexactness, he is not speaking about one of these activities and not the other. The medicine he has in mind is something that encompasses both the scientific or explanatory

- 87 -

accounts he associates with any other discipline as well as the concern with practice—that is, restoring, producing, or maintaining health in an individual. This is what in part it means for him to be a practical discipline: It is to be a discipline that reaches the level of practice, and as a consequence never really to become disconnected from the particular or the knowledge that is appropriate to the particular. The discipline, then, that Aristotle calls "medicine" includes both activities distinguished above. It is hard to see how we could completely divorce practice in medicine from all knowledge

62 of 362

that goes beyond the particular case that confronts us in a particular context. Perhaps it is easier to see how we could have theoretical knowledge without any connection to practice. However, for Aristotle the reason we pursue knowledge of medical matters is for the sake of practice.

The way Aristotle conceives of disciplines like medicine, ethics, or politics is, of course, not without its problems; for looking at a discipline by focusing primarily on its ultimate goals, which may happen to be noncognitive, can easily lead to difficulties. As Hardie has observed, "He [Aristotle] does not distinguish clearly, when he says that the end is action, between the nature of the inquiry (methodology) and our motives for pursuing it (psychology)."^[30] Although I remain somewhat skeptical as to whether Aristotle does not distinguish between methodology and psychology, it is clear that his emphasis on the noncognitive ends of some disciplines leads him often to view such disciplines completely from the perspective of these kinds of ends, and thus to underestimate or overlook their cognitive objectives. He argues, for example, that since ethics is required to reach a certain level of detail due to the fact that it is a practical discipline, then every account of it is inexact if it fails to reach that level. Thus, he tends at times to evaluate the exactness of a discipline solely from the perspective of its noncognitive goals and to pronounce the whole discipline to be exact/inexact without considering its cognitive functions. As shall be seen later, many of the things he says about the pervasiveness of inexactness in ethics follow from his way of looking at a discipline primarily through its ultimate goals.

Ethics is for Aristotle, as is medicine, a discipline. It has a cognitive component that is, according to him, subordinate to its practical ends. This cognitive component, I have argued, cannot be identified with the narrow conception of practical wisdom if we are to do justice to Aristotle's conception of ethical inquiry or to his activities in his own ethical treatises. But, as I have also said above, the question whether ethical inquiry is to be identified with practical wisdom depends on what we take the nature of practical wisdom to be. If we take the latter to be the same as philosophical inquiry, then clearly ethical inquiry and practical wisdom could turn out to be the same after all.

- 88 -

Theoretical and Practical Knowledge

Let us, then, assume with Aristotle that ethics is a practical discipline whose ultimate goal is practice but whose immediate or proper goal is knowledge. The question naturally arises as to the kind of knowledge we should, can, or in fact do attain in ethical investigation or in any other investigation with goals similar to those of ethics. Does the knowledge acquired in such disciplines differ from knowledge obtained in the theoretical disciplines and, if so, how? Finding answers to these questions may be of some use in our efforts to understand why Aristotle most often thinks that the only kind of knowledge we have about matters of conduct is practical.

In many instances, scholars, undoubtedly influenced by Aristotle's frequent remarks on the existence of three kinds of disciplines (theoretical, practical, and productive), assume that there are differences among these three kinds and that the differences are obvious. But when they attempt to specify the differences they simply point to the differences in the goals of these three types of disciplines: Practical and productive ones aim ultimately at something that is different from knowledge—that is, practice and production—while theoretical ones aim presumably at no other purpose than knowledge itself.

The ultimate goals of a discipline, then, determine whether the discipline belongs to the theoretical, practical, or productive kind. They provide us with a criterion for placing each discipline in one of Aristotle's three classes. But are these classes mutually exclusive? Can a discipline belong to two or more of these classes? It seems that Aristotle takes these classes to be mutually exclusive, and that, for him, no discipline can belong to more than one class. Yet whether a discipline belongs to one of these three classes seems to depend solely on whether there is more than one kind of goal in relation to the subject matter which that discipline studies. Whether, for example, there could be theoretical knowledge in relation to medical matters would seem to depend on whether we could aim at knowledge for its own sake about such matters. Could we aim at knowledge for its own sake in relation to matters of conduct? I shall return to this question shortly.

Even if we were to agree with Aristotle that in some cases inquiry or knowledge is pursued for its own sake, whereas in others it is pursued for the sake of something different from knowledge, it is not clear what we should conclude from this supposed difference in the goals of our inquiry; for the familiar distinction Aristotle draws among three types of knowledge that differ with respect to their goals does not by itself specify a difference in the nature of the disciplines that belong to these types. It only specifies a difference in their goals or the uses to which they are put. But differences in the goals may or may not imply differences in the nature or structure

of the knowledge a discipline attains. Conversely, it is not evident that identity of goals implies epistemological identity. Is all theoretical knowledge epistemologically identical?^[31] Is all practical knowledge of the same type? Are applied mechanics and applied geometry epistemologically identical and are both of them to be taken as being the same types of knowledge as ethics and politics are?

- 89 -

So pointing only to the different uses of knowledge does not tell us what the basic or essential differences between types of knowledge are or even whether there are any epistemologically significant differences between theoretical and nontheoretical knowledge. One naturally wants to know how an item of theoretical knowledge differs epistemologically from one that is a part of practical knowledge or why some thing that is an item of theoretical knowledge can't have a use beyond itself.^[32] And if no such difference in the essential character of the two types of knowledge can be found, then the distinction between practical and theoretical knowledge, which rests only on use, does not tell us much about the knowledge we aspire to in ethical investigation. For all we know, ethical knowledge may be practical but rigorous in the way geometry and optics are (both of which are demonstrative, according to Aristotle), or practical in much the same way rhetoric or other less rigorous types of knowledge are.

It may, nonetheless, be the case that the supposed difference among the uses or goals of practical, productive, and theoretical knowledge itself rests on something more fundamental. It may, for example, rest on differences in the respective objects or faculties of these types of knowledge, and it is perhaps factors such as these that in turn imply some epistemological differences: objects or faculties affect the nature or structure of knowledge itself.

Indeed, we find in the Aristotelian writings a number of remarks pointing to some differences among disciplines or types of disciplines. Thus on at least two different occasions theoretical disciplines are distinguished from practical and productive ones not on the basis of their ultimate goals—knowledge, action, and production, respectively—but on a supposed difference in the objects they study. The nontheoretical ones deal, according to Aristotle, with things which are such that the principle of movement or change is not in them but in the producer or agent. Theoretical knowledge "deals with the things that have *in themselves* a principle of movement."^[33] The attempt to differentiate types of disciplines on the basis of an internal or external source of movement in their objects has its difficulties. To begin with, as Aristotle himself clearly sees, there is mathematics which is a theoretical discipline dealing with what has no movement or is at rest.^[34] This is also the problem with the highest theoretical knowledge which, according to Aristotle, studies what can exist apart and is immovable.^[35] Another question arises about the discipline that studies the

- 90 -

nature of the moral agent or agent in action. According to Aristotle's distinction of the sources of movement, the discipline must be a theoretical one, since to be an agent is to have a source of movement from within.^[36] If one takes the discipline that studies the nature of the agent to be ethics, then ethics must be, on the basis of this distinction at least, a theoretical discipline.

Setting aside the above kinds of problems, it is clear that there are additional ones which are more pertinent to our present purposes. Suppose we were to assume that the

distinction in terms of the sources of movement is a meaningful one—that is, that there are two classes of objects which are to be distinguished in terms of whether their source of motion is internal or external and that indeed there are two types of disciplines (theoretical and nontheoretical) that correspond to these two classes. What does this tell us about the epistemological nature of these two types of disciplines? It is not clear that this distinction, taken in the simplest possible way to merely signify a difference in the source of motion, has any important epistemological consequences or that it has consequences that are sufficient for distinguishing between theoretical and nontheoretical disciplines in terms of their epistemological nature. Thus, the distinction in terms of the kind of motion/change in the subject matter, like the distinction in terms of the goals of a discipline, fails to yield an epistemological difference among disciplines.

Yet there may be a way of construing Aristotle's distinction about internal and external sources of movement that makes it epistemologically relevant. It is probably some such construal Aristotle has in mind in connecting the source of movement (change) to the theoretical/nontheoretical division among disciplines. We may, for example, interpret Aristotle's distinction as asserting that in one class of objects, or in the case of the subject matter of some disciplines, the movement (change) is inherent in the nature of the objects (subject matter). It is part of, or necessarily connected to, their essential nature, whereas in the case of the others it is not. Thus in *N.E.* :

3.15 All art is concerned with coming into being, i.e., with pursuing or studying how something may come into being which is capable of either being or not being, ar whose origin is in the maker and not in the thing made; for art is concerned neith with things that are, or come into being, by necessity, nor with things that do so accordance with nature (since these have their origin in themselves). . .. Both [art lack of art] are concerned with what can be otherwise. (1140a15)

But ethics itself, and presumably all practical disciplines, are concerned with things that can be otherwise: "The class of things that can be otherwise includes both things made and actions done" (1140a; see also 1140b3).

- 91 -

If indeed there are differences of the kind Aristotle speaks between the things with which theoretical and nontheoretical disciplines deal, then perhaps there is reason to think that there are also epistemological differences between theoretical and nontheoretical disciplines. At least, Aristotle's belief that there are such differences in the subject matter of theoretical and nontheoretical disciplines would have provided him with good reasons for concluding that there are epistemological differences between theoretical and nontheoretical disciplines. The assumption that the nature of knowledge in some sense corresponds to the nature of its object would have given him sufficient reason for moving from differences in the subject matter to epistemological differences in the disciplines dealing with such subject matter.

The idea that differences in the nature of the subject matter correspond to differences in types of cognition and even to differences in the cognitive faculties goes at least as far back as Plato. As is well known, Plato in the *Republic* attempts to differentiate the various faculties of the soul and types of cognition in terms of the nature of the objects they apprehend. Aristotle utilizes this idea and often bases his claims about supposed differences in the nature of knowledge that is attainable in the various disciplines on differences in the nature of the subject matter they deal with. At times he totally embraces the Platonic idea and goes as far as to assert that differences in the nature of the objects in the parts (or faculties) of the soul that cognize them.^[37]

3.16 And let it be assumed that there are two rational faculties, one whereby we contemplate those things whose first principles cannot be otherwise, and one where we contemplate those things which can be otherwise: since, on the assumption the knowledge is based on a likeness or affinity of some sort between subject and objet the parts of the soul adopted to the cognition of objects that are of different kind must themselves differ in kind. (1139a5)

Let us, however, set aside for the moment this Platonic-Aristotelian idea of the putative correspondence between parts of the soul (or cognitive faculties) and the nature of the objects they cognize. Let us focus instead on Plato's and Aristotle's claim that the nature of knowledge which is possible in a domain corresponds in some way to the nature of the subject matter of this domain. This claim can be used to partly show why there must be some epistemological differences among the various disciplines; for Aristotle thinks that the subject matter of practical (and indeed of all nontheoretical) disciplines exhibits some characteristics that have important epistemological consequences. He thinks that the subject matter of ethics and similar disciplines is characterized by or suffers from certain deficiencies; it suffers from various kinds of inexactness, which affects the

— 92 —

knowledge that is possible in such nontheoretical domains. It may very well be true then that there are important epistemological differences between practical and theoretical knowledge and not merely differences in their goals. Whether there are in fact such differences depends on what these characteristics of the subject matter Aristotle refers to as inexactness are and whether they do indeed affect the nature of knowledge.

Unfortunately, the supposed inexactness of the subject matter of practical disciplines may not be sufficient for the purpose of distinguishing them with respect to their epistemological character from the theoretical disciplines. Contrary to what many scholars have supposed, these features of inexactness that Aristotle attributes to the subject matter of ethics, medicine, and the rest of the practical disciplines he also attributes to the subject matter of some theoretical disciplines.^[38] As shall be seen, he takes the whole of nature to be characterized by these kinds of inexactness. Thus, whatever epistemological consequences these kinds of inexactness have, if they have any, will also affect the disciplines that study nature. These disciplines are, according to Aristotle, theoretical ones.^[39]

We cannot, therefore, assume that the supposed inexactness of the subject matter of practical disciplines and its epistemological consequences are sufficient for setting apart these disciplines from the theoretical ones. At best they may set apart only theoretical ones whose subject matter is not inexact from all else—that is, from the theoretical ones whose subject matter is inexact and the practical and productive ones. Or perhaps the practical and productive ones are inexact in a much more pervasive way than are those theoretical ones that deal with nature. It may be the case that the practical and productive disciplines are even less exact than the theoretical ones dealing with nature or inexact subject matter. Yet even if this were true we would still be left only with differences of degree, rather than of kind, among the various types of disciplines.

This last point is of considerable importance, for it questions the widespread assumption that the inexactness Aristotle attributes to the subject matter of ethics and other practical disciplines has such drastic epistemological consequences that it makes them altogether different from the theoretical ones. It questions the assumption that the method of the disciplines whose subject matter is inexact is different from that of the theoretical disciplines on account of the inexactness of the subject matter of the former kind of disciplines. The method of the practical disciplines may very well be different, but it need not be so because of the inexactness of their subject matter. I shall argue later that this assumption is not obvious at all. Although the inexactness of the subject matter poses some problems, Aristotle does not conclude that the method of the disciplines with inexact subject matter is different in kind from that of the disciplines whose subject matter is exact. Hence, he does not infer from the inexactness of the — 93 —

subject matter of the practical disciplines that their method is different in kind from that of the theoretical disciplines.

But if theoretical and practical knowledge cannot be adequately differentiated on the basis of the character of their goals, the source of movement (change) in their subject matter, or the exactness/inexactness of their subject matter, then how is it done? I suspect there are no major epistemological differences between the types of knowledge Aristotle identifies, and that may be the reason why he does not offer any detailed explanation of this matter. Yet there are some differences, and they seem to stem from the goals of the various kinds of knowledge Aristotle identifies. Thus, the claim we encounter almost throughout the Aristotelian scholarship tradition-that differences in goals imply epistemological differences—is to some extent correct. However, the way the claim is to be understood and the reasons justifying it have never been made clear, or even identified.

Thus, although pointing only to the differences in the goals of practical and theoretical disciplines may not by itself help in identifying in what way the character of practical knowledge differs from that of theoretical, the implications the goals have may do so. For, as I shall argue at some length in subsequent chapters, Aristotle thinks that the goals of practical disciplines impose certain conditions on the knowledge that is possible, desirable, or required in such disciplines. They require, for instance, that we reach a level of specificity or detail that may be far greater than that which the theoretical disciplines require. One difference, then, between practical and theoretical disciplines is this: While the latter kind of disciplines can be solely constituted by general or abstract accounts, those of the former kind must, in virtue of their goals, also include particular, specific, or detailed accounts. At least one difference, then, would be in their generality/abstractness and particularity/specificity. Whether the introduction of particular/specific accounts in a discipline has any additional epistemological consequences is a much more controversial matter that I will discuss later (chap. 5).

However, the above may not be the only way the goals of a discipline affect the knowledge the discipline aims at or obtains. Aristotle argues that the goals also fix or determine the degree of rigor that is proper to a discipline; the rigor which is proper for disciplines whose goals are practical is less than that which is proper for those whose goals are purely theoretical.

The above considerations that connect the required level of specificity and the desirable rigor in a discipline to its goals provide, when spelled out in detail, some explanation as to how and why the goals of a discipline affect its epistemological character. In the case at hand, they would provide some explanation of how and why practical disciplines in general, and

- 94 -

ethics in particular, may differ epistemologically from theoretical disciplines.

Still elsewhere Aristotle takes theoretical knowledge to be the sort of knowledge that aims at or provides knowledge of causes or of the "why" (*Met* . A i, ii). The theoretical study of any field or the philosophical approach in any domain is that which seeks to understand the causes (*E.E.* 1216b35).

We may summarize, then, Aristotle's views on the differences between practical and theoretical knowledge as follows: (a) Practical knowledge aims ultimately at something beyond knowledge, that is, practice, while theoretical knowledge aims ultimately at knowledge; (b) Practical knowledge may use to a certain extent the method theoretical knowledge uses, but it may be deficient in its demonstrative rigor on account of the inexactness of its subject matter; (c) Practical knowledge may be more specific than theoretical knowledge on account of its goals; and (d) Practical knowledge may not aim at knowing the causes.

Keeping in mind the variety of features Aristotle uses for the purpose of differentiating between practical and theoretical knowledge, we want to ask whether it is possible to have theoretical knowledge about matters of conduct. As noted earlier, Plato thinks there is no difficulty in having such knowledge. Indeed, most often he sees knowledge of matters of conduct as occupying the highest place among the theoretical disciplines. Among those who have shared Plato's conviction, Benedict de Spinoza is perhaps the best known. His *Ethics* is the best example we have of a moral geometry. More recently, John Rawls has expressed sympathy with the Platonic ideal and has assumed that it can be realized: "One should note also that the acceptance of these principles [of justice] is not conjectured on a psychological law of probability. Ideally anyway, I should like to show that their acknowledgement is the only choice consistent with the full description of the original position. The argument aims eventually to be strictly deductive. . . . We should strive for a moral geometry with all the rigor which this name connotes."^[40]

What about Aristotle? As seen earlier, he takes the interest or desire for knowledge of matters of conduct to be subordinate to our interest or desire for practice. What does this subordination relation imply? It at least implies that we desire or have an interest in knowledge of matters of conduct for the sake of practice. Aristotle holds in addition that the relation of subordination is asymmetrical: If A is desired for the sake of B, then B is not desired for the sake of A.^[41] Assuming asymmetry, if it is true that the ultimate goal of ethics is practice, if knowledge of matters of conduct is pursued for the sake of practice, then practice is not pursued for the sake of knowledge. Aristotle also holds that the subordination relation is not irreflexive: if A is desired for the sake of B, then it is not the case that

— 95 —

A is not desired for the sake of A. The best known example Aristotle gives of this is that of the subordination relation virtue has to happiness: virtue is desired or pursued for the sake of happiness but it is also desired or pursued for the sake of itself. We cannot conclude, then, that because we desire or pursue A for the sake of B we cannot desire or pursue A for the sake of itself. We cannot, that is, conclude that because we desire or pursue knowledge of matters of conduct for the sake of practice we cannot pursue knowledge about such subject matters for its own sake, or that there is no theoretical knowledge about matters of conduct. Thus, if what lies behind the difference between practical and theoretical knowledge is that the desire to know about matters of conduct is subordinate to practice, that is, our condition (a), then it does not follow from this subordination relation that there is no desire for knowledge for its own sake about matters of conduct.

Aristotle, however, seems most often to think that one does not, and perhaps cannot, aim at knowledge for its own sake about matters of conduct and, therefore, that there is no theoretical knowledge, in the sense we are presently discussing, about the domain that consists of matters of conduct. This seems to be the intent of the remarks quoted earlier, especially 3.3-3.5 and 3.8—that is, to deny that one aims at or desires knowledge for its own sake about matters of conduct. The supposition is that unless one had an interest in action or in doing certain things, one would not be interested in knowing about them. If one did not desire, aim at, or need to be just or act justly, one would not desire, aim at, or need to know what justice is; as presumably one would not desire, aim at, or need to know what health is if one did not desire, aim at, or need to be healthy (3.5). For Aristotle, there is not, and presumably cannot be, a desire for knowledge about such matters that is independent of practical goals.

The example of medicine is, of course, the example used most often in this connection. It seems obvious to almost everyone that our interest in knowing about health is solely practical; it exists only insofar as we have an interest in being healthy. This completely practical conception of medical knowledge goes at least as far back as the Hippocratic tradition, and it has been preserved in quite unequivocal language by the author of the treatise *Tradition in Medicine* : "In the first place, the science of medicine would never have been discovered nor, indeed, sought for, were there no need of it. If sick men fared just as well eating and drinking and living exactly as healthy men do, and no better on some different regimen, there would be little need for the science."^[42]

The assumption that in the case of medicine and ethics our interest in knowledge can only be subordinate to our interest in some practical goal or other is, however, not obvious. For suppose that we all were to become healthy. Why are we certain that we would then have no interest in matters of health, that we would not be interested in knowing what health is or what produces it, maintains it, and so forth? But perhaps it could be said that such cognitive interests would still be subordinate to practical ones—we would be interested to know these things because we would be interested in maintaining health or in some such practical objective. But suppose not only that we were healthy, but that in addition we had reasons to believe that we would remain healthy, that there would be, as far as we knew, no practical use for medical knowledge. Would we, then, cease to have any interest in knowing how the human body works, how its parts function, how they sustain themselves, how they attain their excellence or optimal state, and so forth?

What is puzzling about the view that denies there is or can be any cognitive interest in matters of medicine or conduct that goes beyond some practical objectives is this: Those who accept the distinction between theoretical and practical knowledge on the basis of the nature of their respective goals (and this includes Aristotle himself) are willing to admit that we can have a theoretical interest in relation to just about anything, except to things such as the nature of the virtues, of pleasure, of the relation between virtue and pleasure, of health, and other such things. Why such things fall outside the domain of theoretical interests is indeed puzzling, if one considers that they are as much a part of our world as anything is. The puzzling character of the Aristotelian position that denies the possibility or the value of a theoretical interest in matters of conduct was most forcefully described by Harold H. Joachim:

And why, finally, should a speculative inquiry into the phenomena of conduct be rejected as worthless? Might we not say to Aristotle: "Is not the study of the forms of moral consciousness, the conception of the moral ideal (in short, the growth and development of the moral structure of civilized society), at least as valuable—and at least as much entitled to a place in your subdivision of theoretical science—as the study, for example, of the fabric of the lower cosmos, or of the 'meteorological' phenomena, or of the species of animal and their properties?"^[43]

I suspect what lies behind the view that denies any theoretical interest in medicine or ethics is the undeniably great importance that the practical goals of these disciplines have for us—that is, the importance of attaining, maintaining, or restoring health (medicine) or of doing the correct thing or realizing the correct dispositions (ethics). These practical objectives are of such importance that they overshadow or almost eclipse any possible theoretical interest in matters of medicine or of conduct. But it may be a mistake to conclude from the importance that the practical objectives of medicine or ethics have that there cannot be any theoretical interests in the case of these disciplines. For the fact that we pursue A for the sake of B and B is of great importance does not imply that we cannot pursue

— 97 —

A for the sake of A. According to Aristotle, we aim at virtue for the sake of happiness and the latter is of the greatest importance, but it does not follow from this that virtue cannot be pursued for its own sake. We should not, therefore, conclude that we cannot have theoretical interests in relation to the subject matter of a discipline just because the practical goals of that discipline are of great importance.

Plato and, at times, Socrates do not draw such a conclusion. Although they assign a great importance to practice, they do not thereby eliminate the theoretical interest in knowing about matters of conduct. Indeed, as seen earlier, they often claim that our theoretical interest in matters of conduct is, or at least should be, as great or greater than the interest we have or should have in any other domain, and this is so precisely because of the importance matters of conduct have for us.

Aristotle, however, is often critical of the emphasis Socrates and Plato place upon our theoretical interest in matters of conduct. Yet even Aristotle does not ultimately deny that there is such an interest. His criticisms of the Socratic and Platonic positions are not so much criticisms of the impossibility of a theoretical interest about matters of conduct as they are of the usefulness or efficacy of such interest or knowledge. According to Aristotle, to emphasize theoretical interest or knowledge about the ethical domain to the extent that Socrates and Plato do may lead to a failure to understand how we act correctly or become good. To have such a theoretical interest or knowledge about the ethical domain, he argues, is neither sufficient nor necessary for acting correctly or having the proper state of character (*N.E.* 1105b15, 1179b10; *E.E.*

1216b20).

Aristotle at times recognizes the theoretical interest and knowledge that Socrates and Plato so often emphasize. Thus, in the *Protrept*., a work that perhaps reflects the Platonic influence more than others, Aristotle speaks of the theoretical knowledge of the excellences of the soul (B73). In the E.E. he again asserts the importance of theoretical investigation in matters of conduct: "And in every investigation, proofs stated in philosophical form are different from those that are non-philosophical; hence we must not think that theoretical study of such a sort as to make manifest not only the nature of a thing but also its cause is superfluous even for the student of politics, since that is the philosophic procedure in every field" (1216b35). In Polit . he distinguishes between the theoretical and non-theoretical investigation into the nature or justification of slavery (1254a20). Later in *Polit*, he warns the reader about the dangers of a narrow, practical view: "But it is necessary to say at a little greater length what each of these constitutions is; for the question involves certain difficulties, and it is the special mark of one who investigates any subject philosophically, and not solely with regard to its practical aspect, that he does not overlook or omit any point, but brings to light the truth about

- 98 -

each" (1279b10). Finally, Aristotle urges that we should study most subjects not simply for their practical uses, for "to seek utility everywhere is entirely unsuited to men that are great-souled and free" (1338b).

It is clear that Aristotle does not altogether deny that we can have a theoretical interest in matters of conduct and that theoretical inquiry about such matters may be of some importance. Yet there is no doubt, as I noted earlier, that he takes ethics to be a practical discipline, and he takes the cognitive goals of ethics to be subordinate to its practical ones. How, then, could we have a theoretical interest within a discipline that is practical, an interest to know for the sake of knowledge within a discipline where the interest to know is subordinate to practice? There is a problem here, for the subordination of the cognitive interests in matters of conduct to practical ones implies, according to Aristotle, two things: (1) the extent to which knowledge is pursued about matters of conduct is determined by practical objectives; (2) the practical goals of the discipline define in part the nature of the discipline—they define ethics as a discipline pursued for the sake of practice. I shall discuss both of these things at some length later (chap. 9). I only wish to point out here how difficult it is for Aristotle to allot a place for theoretical interests within an inquiry like ethics (or medicine) which he construes as having practical goals and whose identity is almost determined by these goals. Perhaps any theoretical interests about matters of conduct cannot even be part of the discipline of ethics as he most often understands it.

One might argue, however, that what is of importance in this context is not whether there is, or could be, a theoretical interest in relation to matters of conduct, but whether the knowledge we obtain about matters of conduct, regardless of its goals, meets certain conditions that theoretical knowledge also meets; for, although we should not minimize the importance Aristotle attaches to the nature of the goals of a discipline for determining whether it is theoretical, we often make such determinations on the basis of whether a discipline meets the sort of conditions we mentioned earlier—that is, whether it uses the method or methods theoretical disciplines use to a sufficient degree and achieves an adequate level of demonstrative rigor, whether it deals with its subject matter at a certain level of abstractness or generality, or whether it deals with the basic elements or causes of a certain domain. These are, of course, Aristotle's own conditions in terms of which he at times distinguishes theoretical from non-theoretical disciplines; they are conditions (b), (c), and (d) identified above.

Does ethical inquiry, then, meet some or all of these conditions? It is easier to answer this question with respect to some of these conditions than with respect to others. Indeed, our answer with respect to some of these conditions will not emerge until the end of this study. Take, for instance, condition (b). Does the method(s) of ethical inquiry resemble sufficiently the method(s) of theoretical disciplines? There is a need to distinguish here between two things this question may be asking—namely, whether the method(s) of Aristotle's own inquiry, in contrast to the method(s) of ethical inquiry in general, resemble those of theoretical disciplines. There is, as is well known, much dispute as to what method(s) Aristotle uses in his own inquiry. If the method of theoretical disciplines is, according to Aristotle, demonstrative and if the method of his own inquiry is, as some scholars insist, also demonstrative, then his own investigation may be to some extent theoretical. The extent or degree to which his inquiry is or can be demonstrative partly depends on the epistemological implications of the kinds of inexactness Aristotle identifies in ethics. These matters will be focal points of discussion in subsequent chapters'. However, if the methods Aristotle uses in his inquiry are, as some scholars insist, altogether different from that used by the theoretical disciplines, then Aristotle's inquiry will not be theoretical.

Whatever we conclude about the method(s) Aristotle uses in his own ethical inquiry does not, however, settle the question about the method(s) of ethical inquiry or even the method(s) Aristotle identifies as the proper method(s) of ethical inquiry. Hence, we cannot conclude from what Aristotle does in his own investigation that ethical inquiry in general is non-theoretical. Scholars, however, are not in agreement about the method(s) Aristotle identifies for ethical inquiry. But it can be said at this point that whether ethics is theoretical depends in part on what the implications of the inexactness Aristotle attributes to matters of conduct and our accounts of them are and whether these kinds of inexactness can be eliminated: For, if these kinds of inexactness imply, as some scholars insist, that ethics cannot be demonstrative, and if demonstration is the method of theoretical disciplines, then ethics falls outside the class of theoretical disciplines.^[44] Whether this is so, of course, remains to be seen.

Most often, however, the characteristics in terms of which we judge whether a discipline is theoretical are those captured by Aristotle's conditions (c) and (d). Beginning with (c), we consider a discipline to be theoretical if it is concerned with things that are general, universal, or abstract, if it achieves a certain level of generality or abstractness in its accounts. By doing so, a discipline presumably goes beyond what is of practical interest, namely, the specific or the particular. Thus, despite possible differences in their methods or even their exactness, we can and do view components of physics, economics, or anthropology as theoretical.

But as pointed out earlier, Aristotle's own inquiry is primarily concerned with the most general or abstract aspects of matters of conduct. This is also the way he sees all inquiry—whether ethical, political, medical, and so forth—that is, as being concerned with the general or universal. This is true, despite Aristotle's frequent pronouncements that ethics or medicine

-100 -

must reach a level of detail or specificity that includes the particular, for the following reasons: first, because the prospects for reaching such a level of specificity are, according to Aristotle, not good; second, because even if such a level of specificity were to be attained, it would still leave intact that part or component of ethical inquiry that deals with the general or abstract aspects of matters of conduct in the way Aristotle's inquiry does. Ethical inquiry, then, could not be such that it had no component that was concerned with the general or abstract. Some part or component of it would thus be theoretical by dealing with the general, universal, or abstract aspects of matters of conduct.

What of Aristotle's condition (d)? Does ethics seek causes or explanations in terms of causes, and is it therefore theoretical in that sense? This is a rather complicated matter that has been discussed recently by a number of philosophers (e.g., Gilbert Harman, Annette Baier, Bernard Williams). I shall have something to say about Aristotle's views on this matter as well as the views of these recent philosophers in subsequent chapters. All I wish to say at this point is that Aristotle does not take ethics to be a discipline that is not explanatory or that does not seek causes. His views on explanations or causes may be different from ours, but these same views also constitute his conception of a theoretical discipline. Thus, ethical inquiry must, according to Aristotle, explain why the end is the good, why there must be some end that is pursued for its own sake, why a certain activity is the good or happiness, why a certain disposition is a virtue, and so forth. Ethics, or at least a component of it, is theoretical in this sense. This is what the remark quoted earlier from *E.E.* means to assert—namely, that "we must not think that theoretical study of such a sort as to make manifest not only the nature of a thing but also its cause is superfluous even for the study of politics."

The above discussion shows that the emphasis Aristotle, as well as many students of his works, often places on the nature of the goals as the mark that distinguishes theoretical from nontheoretical disciplines obscures the fact that he at times draws the theoretical/nontheoretical distinction on other grounds. When focusing on these grounds, disciplines that are determined to be practical or productive, and hence nontheoretical, on the basis of the nature of their goals have much in common with theoretical disciplines. Indeed, when judged by these other factors they are theoretical, since they share the same epistemological character despite the fact that their ultimate goals may not be cognitive.

Ethics, then, may be practical in virtue of its goals, but this does not imply that it does not share some important features with the disciplines whose goals are theoretical. Thus, it is, by virtue of sharing these features, similar in some important respects to the theoretical disciplines—it is, as Aristotle reminds us, a philosophical discipline or a discipline using philo-

- 101 -

sophic method. To recognize that ethics has, as Aristotle understands it, some theoretical component is to recognize something that may not be trivial. For example, it may be useful for assessing whether some of the features of exactness/inexactness that Aristotle attributes to ethics apply to the whole of the discipline, that is, to the most as well as to the least theoretical aspects of it, or only to some aspects of it, that is, to those aspects that are the closest to particular practical concerns.

- 102 -

Four Exactness: Some Basic Questions

Introduction

In this chapter, I will focus on a number of general issues about exactness/ inexactness that bear on most of the topics I will discuss in subsequent chapters. First, I will identify and examine in some detail the various terms Aristotle uses to designate certain features as exactness/inexactness. These terms, I shall argue, do not necessarily signify the same thing, although at times a number of them form a group or cluster whose members signify almost the same thing. Some of the features these terms signify are quite important in relation to some disciplines, but are not equally important in relation to others. I will explain why this is so.

Another general issue concerns the things that can be exact or inexact. I shall argue here that Aristotle attributes features that he designates as exactness/inexactness to both the subject matter a discipline studies and the accounts, descriptions, or explanations a discipline gives. I shall refer to the former as material and to the latter as formal exactness/inexactness. Material inexactness has, presumably, its source in the nature of the world, but this need not be the case with formal inexactness. The sources of the latter vary; they may include our wish to avoid the burdensome task of seeking exact accounts, lacunae in classification, or our goals in seeking an account, explanation, or description.

Naturally, a question arises about the relation between these two levels of exactness/inexactness: the material and the formal. Aristotle, I will argue here, thinks that a rather strong relation holds between the two levels. He thinks that exactness/inexactness at one level implies or is implied by exactness/inexactness at the
other level, that there is some kind of congruence between these kinds of features in the subject matter of a

— 103 —

discipline and in the accounts by which a discipline describes, explains, or in general represents its subject matter.

Last, I will examine briefly what Aristotle says in the N.E. about eliminating inexactness from ethical accounts. Sometimes Aristotle characterizes an account as being inexact, but suggests that its inexactness can be eliminated or reduced. At other times, however, he claims that the inexactness cannot be eliminated either from the accounts he himself gives or from any possible accounts of matters of conduct. Some accounts are essentially inexact.

Terms of Exactness/Inexactness

As I mentioned earlier, Aristotle's concern with exactness is encountered practically throughout all of his extant works. The term he uses most often for this purpose is

figure

. It occurs in a variety of grammatical forms and often as part of some standard phrases.^[1] When Aristotle wishes to claim, as he often does, that exactness is not possible, necessary, or desirable, or that a kind of inexactness is present, appropriate, or unavoidable he again uses frequently one of the forms of

figure

with the appropriate negative modifier. There are good reasons, then, why the use of this term in its various forms has traditionally been identified by commentators as the term that indicates Aristotle's concern with exactness and inexactness.

Aristotle, however, uses a number of other terms when he speaks of exactness or inexactness. One such term is

figure (clarity, articulation, precision). Again, Aristotle uses it in its various grammatical forms either to assert that something exhibits exactness or with the appropriate negative modifier to assert that something lacks exactness or exhibits inexactness.^[2] That Aristotle takes

figure or any of its forms to signify a type of exactness is made clear in a number of passages. Thus in Top .: "Moreover, there is the commonplace of substituting for a term one that is more familiar, for example, using

figure figure

instead of

figure figure

in speaking of a conception" (111a8). Aristotle must view the terms as being almost identical in meaning, otherwise this statement would make little sense.^[3] That the two terms share some common core of meaning is brought out again in N.E. where Aristotle tells us that "our treatment will be adequate if it achieves that degree of clarity [or precision,

figure

] which belongs to the subject matter, for the same exactness [

fiaure figure

] shall not be sought in all areas" (1094b11). In *Rhet*. he contrasts being unclear (non-precise,

) to being exact (

figure

figure

figure): "And we must regard our definitions as sufficient in each case, provided they are neither unclear [

] nor too exact [

]" (1369	figure 9b31). The term
in one o	figure f its forms is also contrasted to two other terms that signify inexactness:
1	- 104
and	figure
(<i>Polit</i> . 1	figure 1341b39; <i>Ath</i> . 9.2.1; <i>M.M.</i> 1.4.10.4, 1.12.1.5). These same terms are also red to
concrast	figure
Arist	otle uses the term
rather fi type of i	figure requently to signify some type of inexactness. At some times he contrasts this inexactness to exactness (figure
) and at	others he equates having this type of inexactness to not having exactness (figure figure
). Here	are some examples:
4.1	But let it be granted to begin with that every account of matters of conduct is bound be in outline [
	figure] only and not exact [figure figure]. (<i>N.E.1104a1)</i>
4.2	Let this much distinction suffice for us, since we do not propose to give the exact
	figure] account of any of them but merely wish to describe them in outline [figure]. (<i>Top. 101a22)</i>
4.3	If one supposes him to be speaking in outline [
	figure] and not wish his words to be taken exactly [figure figure] (<i>Probl. 916a35)</i>
4.4	For the present then we describe these qualities in outline [
	figure] and summarily [figure] but they will be more accurately [figure] defined later. (<i>N.E. 1107b14</i>) ^[4]

In the first three passages (4.1, 4.2, 4.3) Aristotle seems to equate the inexactness of an account that he refers to as

to lack of

. And in 4.4 being in figure is contrasted to being more exact (figure). ^[5] Another term Aristotle uses to signify inexactness is the term figure in the appropriate grammatical form or phrase. ^[6] The term signifies something like "summary" and thus appears to be related in its meaning to figure . Although Aristotle uses this term less frequently than he does figure , there is no question that it is part of his vocabulary for referring to inexactness. This has hardly been noticed in the literature. ^[7] Yet in 4.4 above Aristotle contrasts both figure and figure		figure
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figure

, and he makes a similar contrast in *Resp* .: "The position of the heart relative to the gills should be studied visually from dissections and with exactness [

figure

] by reference to the *Researches* ; but to speak in summary [

figure figure figure

] for our present purpose, the facts are as follows" (478b).^[8]

There are however additional terms that signify inexactness. Although Aristotle uses these less frequently than the terms we discussed above, we should identify them at this point. One such term is

figure

. This term in the Aristotelian corpus is used primarily to signify the universal in contrast to the particular, but Aristotle uses it at times to characterize an account that stays at the level of the universal or consists in a general treatment. Such an account is, according to Aristotle, inexact and is contrasted to one that is exact. Thus in *N.E.*, while speaking of the diversity of the accidents of life, Aristotle says, "To distinguish between them in detail would clearly be a long and indeed endless undertaking, and a treat-

- 105 -

figure

ment that is general [

] and in outline [

,

figure

], may perhaps be enough" (1101a26). The two types of inexactness, general treatment and outline (

figure

figure

), are contrasted in this passage to an account that is more specific or in detail. Again, in *Polit* . he tells us, "But while we have now given a general account [

figure

] of these various branches [of industry], yet a detailed account [

figure

] of each part, though useful for the practice of industries, would be illiberal" (1258b34). He again contrasts a general treatment to an exact one when speaking about the elements of a constitution: "It is impossible that it [the structure of the state] should have been framed exactly [

] in all its details; for it must of necessity be described generally [or in universal terms,

figure

], but our actions deal with particular things" (1269b10).^[9] Sometimes Aristotle contrasts

(more exact) or	ngure
(more exact) of	figure
(exactly) to	5
(softer) or	figure
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figure

(softly). Thus in *Met* .: "Of the sciences just mentioned each determines what the nature of some class of things is and tries to prove the other truths more or less exactly [

figure figure figure

]" (1064a5). The two terms are contrasted again in *Rhet*. where Aristotle is also concerned with the cogency of arguments or proofs (1396a33). In *Gen. et Corr*. he contrasts the adverbial forms of the two terms as applied to proofs, definitions, or postulates (333b24). The form of exactness Aristotle has in mind in these contexts is clearly something that can be primarily applied to arguments or proofs, and most probably he is thinking of exactness in terms of cogency, certainty, or necessity.

Another term signifying inexactness that Aristotle uses is

figure

. The term means something like "simple" and in its various forms is contrasted to both figure

and

figure

. Thus in $\it E.E.$, after Aristotle gives definitions of a number of vices, he remarks, "Let us then define them simply [

figure] in this manner, and with greater exactness [

figure

] when we are speaking about the opposite dispositions" (1221b8). In $\it Met$., Aristotle contrasts a simple account (

figure figure

) of the meaning of a name to a more exact one (

figure

) (1030a15), and he speaks of a science dealing with its causes and principles more or less precisely (

figure	
figure	
figure	

) (1025b7). He contrasts the term to

figure in *Polit* . (1341b39) and *Ath* . (9.2.1) (see also *M.M.* 14.10.4 and 1.12.1.5). In one passage Aristotle contrasts

figure

to the term

figure : "We have spoken about these at the beginning briefly [figure

], but in the *Analytics* with exactness [

figure

figure

]" (*E.E.* 1227a11). This term, signifying something like "being brief," is quite similar in meaning to

figure

(concise, brief) which Aristotle takes to be almost synonymous to

· "Concisely [figure	
	figure	
] and summarily [] we have reviewed what those before us	figure s have said" (<i>Met</i> . 988a17).	
Finally, Aristotle contrasts the term	figure	
to	figure	
: "These thinkers		
-	- 106	
grasped two of the causes vague	ely [or faintly or dimly, figure	
] and not clearly [or precisely,	figure	
]" (<i>Met</i> . 985a12). Also, he contrasts	figure	
to	figure	
: "From it [duration] derive the being and life which other things, some more articulately [
] but others obscurely [figure	
], enjoy" (<i>Cael</i> . 279a29). We may add h	figure here the terms figure	
and	figure	
("to sketch," "draw in outline") which Aristotle at times uses to mean something like the inexactness he refers to by using the term		
("outline")—for example, a sketch (figure	
) of the good which is an outline (figure	
N = 1098a19) a sketch (figure	
) of the nature of the soul which is an ou	figure	
	figure	
, <i>Anım</i> . 413a9).		

The variety of the terms Aristotle uses when he speaks of exactness or inexactness raises the question whether a single feature is asserted or denied when such terms for exactness or inexactness are predicated of something. Whether, that is, one characteristic is signified by all the terms for exactness and one by all the terms for inexactness. It is logically possible that all the terms for exactness or inexactness are synonymous and univocal, that they all signify one and the same thing. Although this is possible, it does seem unlikely. It appears even more unlikely when we realize that these terms of exactness or inexactness are applied by Aristotle to many and quite different types of things. Thus the term

figure

alone is applied in the appropriate grammatical form to accounts (*Pr. Anal*. 24b 14, 46a29; *N.E.* 1094b24), proofs (*Post. Anal*. 86a17; *Met*. 1064a7), definitions (*Cael*. 279a29; *Met*. 986a13, 990b15, 1031a7), sciences (*Post. Anal*. 87a31; *Anim*. 402a3; *Met*. 982a27), arguments (*Rhet*. 1369a33), intellect (*Post. Anal*. 100b8; *Top*. 141b13), units of measurement (*Met*. 1053a1), senses (*Anim*. 421a12, 22; *H.A.* 494b16; *P.A.* 656b4), sounds (*Aud*. 804a28, a31), some elements of the heavenly bodies (*Cael*. 287b19), the law (*Polit*. 1282b5), and so forth.

The variety of things to which Aristotle's favorite term for exactness is applied and

its possible consequences have been recognized by Barnes, who is perhaps the only one to have done so in the recent literature. However, he goes on to claim," 'sharp,' 'precise,' 'exact,' 'rigorous' seem, in different contexts, to give an appropriate sense [of

figure

].... The different uses are perhaps held together by the notion that what is *akribés* is unlikely to lead to error, and that supposition explains my choice of 'certain.'"^[10] Is there a notion that holds the apparently different meanings together? Is there a common thread running through all the uses of the term under discussion? The term seems to be used at times by Aristotle to signify something like certainty. But it is not always used in this sense—for example, when Aristotle calls an account dealing with particulars exact and contrasts it to one dealing with universals (the inexact one). Indeed, according to Aristotle, it is the latter account, the one dealing with universals (the inexact one), and not the former, that is more certain.

- 107 -

It may be possible to stretch the notion of certainty to the point where it makes some sense to speak of certainty in relation to most things, for example, the law, sounds, or physical elements.^[11] But then it is not clear that one is left with a notion of certainty that is of much use. I am inclined to think that it is preferable not to assume that there is a common thread in all of the uses, and that in the end it will prove more profitable to study each use on its own and examine the consequences it may have. I thus find myself in partial agreement with Alexander Grant who saw clearly that Aristotle's favorite term for exactness signifies quite different things but did not seek a common element that runs through all of them. In his nineteenth-century commentary on the *N.E.*, Grant points out that the term

figure

signifies quite a variety of things: It may signify mathematical exactness, metaphysical subtlety, minuteness of detail, definiteness of articulation, and in the case of the products of art, finish or delicacy.^[12]

There is no doubt that Grant is correct in singling out the above meanings signified by Aristotle's term; and, as shall be seen, the aspects of mathematical exactness, minuteness of detail, and definiteness of articulation are of special importance in relation to the discipline of ethics. Yet Aristotle's term seems to be even wider in signification than Grant takes it to be—a fact that in a way shows that Aristotle is concerned with a variety of differences among objects, descriptions, accounts, or disciplines. We cannot assume, however, that all, or even any, of these other meanings of the term

figure

are relevant in the case of ethics. I want therefore to discuss briefly some of them in order to see whether any one of them is of particular importance in relation to ethics.

For instance, Aristotle says that disciplines may differ, and therefore be more or less exact, in respect of the priority or simplicity of their basic principles. Thus he claims that the most exact of the sciences are those that deal with the first principles (*Met*. 982a25), having in mind in such contexts primarily wisdom or the highest type of knowledge, whose principles are presumably the first. He adds that "those which involve fewer principles are more exact than those which involve additional principles, e.g., arithmetic than geometry" (982a26). The difference between arithmetic and geometry is again brought out in *Post. Anal*. when the connection between accuracy or precision and fewer principles is reasserted: "One science is more accurate [

figure

—Barnes translates it as 'more certain'] than another and prior to it . . . if it depends on fewer principles [or factors] and the other on an additional factor, e.g., arithmetic and geometry. I mean by an additional factor, e.g., a unit is a positionless reality, and a point a reality having a position—the latter depends on an additional factor" (I.xxvii). Aristotle is concerned here with the characteristic of simplicity as it applies to the number of those entities that comprise the basic elements of a discipline, and perhaps in some of these

simplicity.

This feature of simplicity is brought out rather explicitly in another passage from the Met. where Aristotle identifies simplicity and exactness: "In proportion as we are dealing with things which are prior in definition and simpler [

figure

], our knowledge has more accuracy [

], i.e., simplicity [

figure

figure

]" (1078a10). Exactness here is not merely something that results from simplicity; it is simplicity. And he proceeds to explain that a science that abstracts from spatial magnitude is more precise than one that takes it into account; and one that abstracts from movement is more precise than one that takes it into account. However, if the science deals with movement, it is most precise if it deals with the primary movement, for this is the simplest form; and again of the various kinds of primary movement, uniform movement is the simplest form. There are obviously different kinds of simplicity involved here, and it is questionable whether Aristotle distinguishes among them or if he does so to a sufficient degree. He applies the kind of simplicity or exactness he associates with abstracting from something to the case of harmonics and optics; the former discipline, he claims, does not treat of voice qua voice but rather qua number, and the latter does not treat of sight qua sight but qua lines (*Met*. 1078a15). The contrast is brought out again in the passage from *Post. Anal*. guoted above, where Aristotle compares sciences that deal with what is said of or inheres in an underlying subject (harmonics) with those that deal with what is not said of or does not inhere in an underlying subject (arithmetic). In the case of this last comparison, he probably has in mind applied harmonics in contrast to pure harmonics, the latter of which, as the *Met* . passage indicates, treats its objects as being very much like the objects of arithmetic. Last, in the above passage from the Post. Anal., Aristotle introduces another aspect that affects the accuracy (or certainty, as Barnes puts it) and priority of a discipline—namely, whether the discipline provides knowledge simultaneously of the fact and reason why and not of the fact separately from the reason why. Aristotle most probably has in mind here the contrast between empirical harmonics (collection of data) and mathematical harmonics, or even the contrast between the latter and pure harmonics (see below for a discussion of these matters).

It is clear that these remarks raise a number of interesting questions about the notion of exactness or precision and its role or roles in science—questions that touch upon aspects such as the simplicity of a science, whether it abstracts what it studies from certain subjects, whether it is only concerned with facts and not explanations of facts, and the like. And they suggest that Aristotle views the various disciplines as exhibiting differences as well as forming a kind of hierarchy, with the sciences that are most

— 109 —

simple, or abstract, perhaps occupying the highest positions. These remarks obviously deserve to be treated in detail and on their own merits in the interest of explaining what Aristotle has in mind when he speaks of such differences among the sciences, but our concerns here are quite different. All we wish to examine, if it can be done without discussing these remarks in detail, is what they tell us about the kinds of exactness or inexactness that are characteristic of ethics and whether they have any significant epistemological consequences.

The first aspect Aristotle singles out as being relevant in connection to the exactness of a discipline is its dealing with first principles. This aspect is not likely to be found in ethics, unless we take ethical principles to apply to everything, as Plato seems to suggest at times.^[13] The basic principles of ethics need not (and probably could not) be the first. Aristotle does not take them to be the first principles of all other disciplines or of the subject matter of all other disciplines.^[14] He thinks this is true of all of the ordinary disciplines. Ethics then is not exact or most exact in this sense: Its basic principles are not first. But although such exactness singles out wisdom, metaphysics or first philosophy—which in a sense are not ordinary sciences^[15] —it does not differentiate among the rest of the sciences. Thus, although ethics may not be similar to

79 of 362

wisdom, or even arithmetic, it could nonetheless be similar to optics or mechanics.

Although the basic principles of a discipline may not be first, they may be prior in relation to some other discipline. It may thus be the case that a discipline is not the most exact because its principles are not first but it is nonetheless more exact than some other because its principles are prior in relation to these other disciplines. Such presumably is the case when some disciplines are, according to Aristotle, subordinate to another one. The latter discipline and its principles are prior in relation to the subordinate ones are explained by the principles of the discipline to which they are subordinate. Arithmetic bears this relation to harmonics and geometry to optics, according to Aristotle. Both of the mathematical sciences would then be prior to and more exact than optics or harmonics.

There is no evidence that Aristotle takes ethics to be prior to other disciplines or that there are disciplines that are subordinate to it. The more important question is whether ethics is subordinate to some other discipline or disciplines. This is especially so given Aristotle's remarks about the relation of ethics to politics on the one hand and of ethics to psychology on the other.

Beginning with the relation of ethics to psychology, Aristotle does not say that the former is subordinate to the latter. Psychology does not prove the principles or theorems of ethics and, of course, neither does ethics prove the theorems of psychology. What he says rather is that ethics and politics use some propositions or theorems of psychology. Aristotle ex-

-110 -

plicitly states that the student of politics studies matters of psychology only to the extent needed for his purposes (*N.E.* I.xiii). These include the nature of the soul—its parts, faculties, activities, affects, and so on. Although Aristotle views the teachings of psychology as indispensable in giving an account of the good, happiness, and virtue—all of them key elements in his ethical theory—he does not consider ethics to be subordinate to psychology.

Even though Aristotle does not assert that ethics is subordinate to psychology, the question still remains whether it nonetheless has to be viewed as being subordinate on account of the way Aristotle derives some of its basic propositions. As Irwin has recently argued, there is a question as to whether ethics is autonomous given the use Aristotle makes of propositions from other disciplines, or from sources outside of ethics, in developing his accounts of the good and of virtue.^[16] Aristotle, as is known, relies on certain conceptions of, for example, rationality, function, the nature of the soul, and the teleological character of action in developing his accounts of the good and virtue. Such conceptions are clearly part of his psychological, biological, and physical theories as well as of his wider metaphysical views.

The relation of ethics to politics is of course more complex. Aristotle considers politics to be the most authoritative (

figure

) practical discipline, a sort of master science (

figure

). It is the discipline or art that directs, according to him, many other disciplines and arts and its end includes their ends. The end of politics includes the human good (*N.E.* I.iii), but Aristotle does not say that the propositions of ethics are derived or proved from the basic principles of politics. The emphasis is rather on politics being the master science or art that utilizes some other disciplines or arts for the sake of attaining the ends of the political association.^[17]

Even if we were to assume that ethics is subordinate to psychology, or politics, or possibly to other disciplines, and therefore that it is inexact, it is not clear what epistemological consequences such inexactness has. Obviously, much would depend on the epistemological character of the discipline to which ethics is subordinate. If ethics were subordinate to arithmetic or geometry, if its propositions were derived from those of arithmetic or geometry, its demonstrative character need not be affected by this type of inexactness, other things being equal. The propositions of psychology and even those that are of greater generality—such as the propositions about the nature of function (*N.E.* I.vii; *E.E.* II.i), the teleological character of all pursuit (*N.E.* I.i), or the divisibility

of any continuum (*N.E.* II.vi)—that Aristotle uses in deriving some of the basic propositions about the good and virtue have as plausible a claim to being necessary as any. For example, the proposition that explicates the human function defines in

- 111 -

part the essence of a species and therefore is, according to Aristotle, necessary. Aristotle, however, views the propositions of politics, like those of ethics, to be not necessary (*N.E.* I.iii; VI.i, iii, iv, v). This supposed feature of the propositions of ethics is not due to the fact that ethics is subordinate to politics. On the contrary, Aristotle makes clear that it is due to the nature of matters of conduct, the nature of the subject matter ethics and politics deal with. If the propositions of ethics are not necessary, or if the discipline exhibits demonstrative deficiencies, it is due to the nature of the subject matter and not to its being subordinate to politics. Inexactness, then, that relates to being subordinate to another discipline need not always affect or determine by itself the epistemological character of a discipline, and, more specifically, it need not affect negatively the demonstrative character of a discipline.

The same may be said of exactness that relates to simplicity—its epistemological consequences are by no means obvious. Exactness understood in terms of simplicity is really comparative in nature, and this seems to be what is foremost in Aristotle's mind. We can of course think of an absolutely exact or simple discipline, one that posits one basic element or rests on a single principle (axiom). Thus Aristotle, as we saw above, claims that whereas arithmetic posits or deals with one element—the unit, geometry posits or deals with more than one—the point and position (*Post. Anal.* 87a35). Whether arithmetic is indeed an absolutely exact (simple) discipline would depend on whether the unit is absolutely one element. And Aristotle thinks that this is so: "Now where it is thought impossible to take away or to add, there the measure is exact (hence that of number is most exact; for we posit the unit as indivisible in every respect)" (*Met.* 1053a). Arithmetic would seem then to be, at least according to Aristotle, an absolutely simple (exact) science.

Most often, Aristotle's concern is with comparative simplicity or exact-ness—for example, the greater simplicity or exactness of arithmetic when compared to geometry. The emphasis is on arithmetic being more exact (figure

) or having fewer (

figure

) basic elements than geometry (*Met.* 982a27; *Post. Anal.* 87a37). At times he speaks as if he has in mind some kind of comparative ordering or ranking of the disciplines in terms of their simplicity which will in turn yield a comparative ordering in terms of their exactness.

Where in such a comparative ordering of the disciplines in terms of simplicity would we place ethics? Does its position in such an ordering have any significant epistemological consequences? Geometry may involve more principles than arithmetic, and perhaps it is reasonable to suppose that ethics involves more principles than geometry or even more principles than many disciplines having a greater number of principles than geometry in our ordering of disciplines based on simplicity. It is difficult to know

- 112 -

where ethics would be placed in such an ordering. Aristotle does not provide such an ordering and, although he at times insists that ethics is not as exact as some other disciplines, it is quite clear from the context that the reason ethics is less exact than these other disciplines is not due to its being less simple or to its having a greater number of basic elements than they do.^[18] Thus perhaps the position of ethics in our hypothetical ranking of the disciplines in terms of simplicity is not of great consequence (although this may not be the reason why Aristotle does not give us such a ranking specifying the position of ethics). Even though there may be reasons for preferring or ranking higher a simpler discipline, simplicity in the way Aristotle understands it does not affect the epistemological nature of the discipline. Speaking within the Aristotelian framework, simplicity does not seem to essentially alter the demonstrative character of

a discipline. Geometry is as much a demonstrative discipline as arithmetic and so are, according to Aristotle, harmonics and optics. If a discipline fails to be demonstrative, or its demonstrative character is in some sense inferior to that of others, that is so not because it is not simple or it is not as simple (and therefore not as exact) as these other disciplines, but because of other reasons. There must be other factors, including perhaps other kinds of inexactness, that affect its demonstrative character.

The situation is only partly similar in the case of exactness understood in terms of abstraction. The mere presence of abstraction may not be sufficient for differentiating among the disciplines—for presumably all disciplines, according to Aristotle, can or should abstract. The presence of abstraction then would not single out ethics or any other discipline. The degree however to which a discipline does or can abstract may differentiate among disciplines and it may have important epistemological consequences. Indeed the degree of abstracting seems to be of special importance in the case of ethics and all practical disciplines, precisely because they are practical. Although these disciplines, like all nonmathematical ones, abstract less than the mathematical disciplines, they may abstract, according to Aristotle, less than even the rest of the nonmathematical ones because they are practical. The goals of these practical disciplines impose some restrictions on the degree to which one can abstract in such disciplines.

It is not clear, however, what Aristotle means when he speaks of abstraction or of a science abstracting from some subject matter. Here are some of his examples: A science abstracts from spatial magnitude or movement; optics does not treat of sight qua sight, but by abstracting treats it qua lines; harmonics does not treat of voice qua voice, but by abstracting studies it qua number (*Met.* 1078a10 ff.). In the case of optics and harmonics, each of these sciences abstracts from its subject matter (optical phenomena and voice) the mathematical attributes (lines and numbers),

— 113 —

and "those latter attributes," Aristotle claims, "are attributes proper to the former [i.e., optical phenomena and voice]" (*Met.* 1078a16). Aristotle attempts to explain further his model of abstraction by describing what he takes mathematicians to do: "Each question will be best investigated in this way: by setting up by an act of separation what is not separate as the arithmetician and the geometer do" (1078a21). Thus the arithmetician considers a man to be an indivisible thing and studies whether any attribute belongs to a man qua indivisible. The geometer on the other hand considers a man neither qua man nor qua indivisible, but as a solid (*Met.* 1078a20-26). The mathematician then abstracts or isolates from any object the mathematical attributes and is concerned with them: He inquires, that is, into the properties that things have in virtue of possessing the mathematical attributes, for "there are also attributes which belong to things merely as lengths or planes" (*Met.* 1078a9).

Aristotle's use of the supposed practice of the mathematicians to illustrate abstraction in the sciences may suggest that all abstraction is mathematical abstraction: In all instances of abstracting, one isolates mathematical attributes from a kind in order to inquire about the other properties that belong to it in virtue of these mathematical attributes. This is not, however, Aristotle's intent. His point is that in investigating we should isolate those attributes that, although not separate, are proper to the investigation at hand just as the mathematicians do when they isolate and fix upon the attributes proper to the mathematical disciplines.^[19] The similarity between what is done in mathematics and what is best to do in all investigations is in the "act of separated in this manner are mathematical. Thus, Aristotle claims, "it is true to say of the other sciences too, without qualification, that they deal with such and such a subject . . . with the healthy if it treats its object qua healthy, with man if qua man. . . . Many properties attach to things in virtue of their own nature or possessed of each said character; e.g., there are attributes peculiar to the animal qua female or qua male (yet there is no 'female' nor 'male' separate from animals)" (*Met.* 1078a).

Abstraction, then, does not by itself differentiate among the disciplines, for it seems to be present in all of them; at least Aristotle recommends that we follow the example of the mathematicians and practice abstraction in all disciplines. There is no reason to think that ethics is different from the other disciplines, that it excludes abstraction altogether. Aristotle does not suggest that it does so. Biology, or some component of it, isolates for its study the animal qua female and male, and medicine the animal qua healthy. There is no reason why ethics is not like these disciplines, especially medicine to which Aristotle often compares it. The two disciplines, ethics and medicine, are often viewed as being epistemologically identical as well

- 114 -

as sharing analogous goals: the study of the excellences of the body and their causes in the case of medicine and the study of the excellences of the soul, their final ends and causes in the case of ethics.

Yet there is a difference among the disciplines in relation to abstracting, namely, a difference in the degree to which they abstract. This could very well have some epistemological consequences. All disciplines may, or perhaps should, abstract or isolate and fix on their proper object of inquiry, but the mathematical ones abstract or fix upon a subject matter which is abstract in nature: It, as Aristotle says, does not inhere in or is not said of a substrate; it consists only of forms (*Post. Anal.* 79a10, 87a32; *Met.* 1078a4). Thus, both arithmetic and harmonics abstract (*Met.* 1078a15), but only arithmetic deals with mathematical attributes not in relation to any substrate (*Post. Anal.* 87a24). It is therefore, according to Aristotle, more exact than harmonics. Thus the degree of exactness of a discipline depends on the degree to which it isolates and deals with what does not inhere in or is not said of a substrate. Thus a discipline that abstracts from spatial magnitude is, Aristotle claims, more exact than one that does not and a discipline that abstracts from motion is more exact than one which takes it into account.^[20]

Aristotle's contention that there is a difference between the abstraction possible in or appropriate to the mathematical sciences, on the one hand, and the rest of the disciplines, on the other, provides him with some basis for differentiating among the sciences in terms of exactness. Those which abstract from a substrate, the mathematical ones, are the most exact; those that do not are less exact. What consequences does this supposed difference in exactness in terms of abstractness have? Does it have any significant epistemological implications? It is by no means easy to say. We have Aristotle's remark in *Met.* which suggests, although not in unequivocal terms, that there is some epistemological difference between disciplines which abstract from matter and those which do not: "The accuracy (

figure

) of mathematics is not to be demanded in all cases, but only in the case of things that have no matter. Hence its method is not that of natural science; for presumably, the whole of nature has matter" (995a15).

In this case, it is difficult to say what accuracy consists in. '

figure

may very well mean something like certainty, as Barnes suggests, but it could also mean the demonstrative rigor, or the necessity of demonstration, or the exactness of definitions that we encounter in mathematics.^[21] The supposed difference in accuracy between the mathematical disciplines and those that do not abstract from matter could rest on any one of these and perhaps even additional characteristics. It could rest on those kinds of characteristics invariably associated with the mathematical disciplines but not with the disciplines about nature, or at least on those encountered

— 115 —

to a greater degree in disciplines of the former than of the latter kind. Furthermore, Aristotle does not in the passage from *Met.* quoted above identify a feature (or perhaps more than one) of matter which presumably gives rise to some type of inaccuracy in the accounts of those disciplines that have as their subject matter the domain of nature or that do not abstract from matter. Is there something about matter or the domain of nature that gives rise to a kind of inaccuracy? It may, for instance, be that propositions about the domain of nature have certain logical or epistemological features and it is such features that give rise to the epistemological differences in the disciplines dealing with nature.^[22] The supposition is, of course, that mathematical propositions do not have such features precisely because the domain of mathematics does not exhibit the

deficiencies that the world of nature or matter exhibit. These questions will be discussed later when I identify the various levels of inexactness and characteristics Aristotle attributes to the subject matter of a discipline and to the discipline itself.

Whatever it is that Aristotle has in mind when he claims that there is some epistemological difference between the mathematical disciplines and those that do not abstract from matter, it is clear that ethics is not a mathematical discipline.^[23] This of course is true of all the nonmathematical disciplines such as physics, biology, optics, medicine, and so forth.^[24] Ethics, as is presumably the case with these other disciplines, does not abstract from matter. If there are no reasons for thinking that ethics abstracts less than these other disciplines do, then it could be a bona fide discipline like them.^[25] Although it may be true that ethics and these other disciplines differ from the mathematical ones, they may not differ among themselves epistemologically on account of abstracting.

Aristotle seems at times to think that ethics does not, or even cannot, abstract from its subject matter in the way some other disciplines can and do. For instance, he seems to think that it cannot abstract to the degree required in order that its accounts not be affected by the features of inexactness that he thinks affect its subject matter. Whereas he takes these same features of inexactness to characterize the subject matter of non-practical disciplines, for example, the biological ones, he is confident that in most cases such disciplines can abstract to the point that such features are not problematic.

Why does Aristotle think that ethics is not able to abstract away from these features that supposedly characterize its subject matter, whereas the biological disciplines can? One reason may be his belief that these features of inexactness are most pervasive in the case of the subject matter of ethics. Another reason may be his belief that the goals of ethics impose a limit on the level of abstraction that is possible. Such limits do not presumably

— 116 —

restrict the level of abstraction in the case of biological disciplines, since such disciplines are presumably theoretical and not practical.

In the final analysis, then, what matters in the case of ethics is not so much the question whether it abstracts from its subject matter as the question of the degree to which it can abstract from its subject matter, which seems to depend, according to Aristotle, on the goals of the discipline and the nature of its subject matter. If there are epistemological differences between it and the rest of the nonmathematical disciplines, and if indeed it is less accurate or exact, this, as shall be seen, rests on the supposed nature of its subject matter and its goals.

Finally, the type of exactness Aristotle attributes to a discipline needs to be considered in light of the kind of knowledge it obtains: knowledge of the fact and the reason why, in contrast to knowledge of the fact only. It seems that Aristotle wishes to distinguish between disciplines that aim exclusively at collecting data and disciplines that aim at giving explanations. If such a distinction is a meaningful one, then the type of exactness Aristotle associates with it could have important epistemological consequences. If one equates the giving of reasons or explanations with the giving of demonstrations, as Aristotle does, then his distinction between explanatory and data-collecting disciplines.^[26] The exact or more exact disciplines will be those that give explanations or demonstrations and they will therefore be epistemologically different from those that consist solely in the collecting of data.

Is Aristotle's distinction between explanatory and data-collecting disciplines a meaningful one? Is ethics inexact because it is exclusively a data-collecting discipline? When in *Post. Anal.* Aristotle attempts to explain how some sciences provide knowledge of the fact while others provide knowledge of the reason why and what the relation between such sciences is, he identifies three kinds of disciplines (I.xiii). At the lowest level are the disciplines which only collect data. In this class Aristotle includes acoustical harmonics (79a2), stargazing (79a), nautical astronomy (79a2), the study of the rainbow (79a10),^[27] and medicine (70a15). The practitioners of these disciplines, according to Aristotle, know the facts, while the practitioners of other, although at times related, disciplines know the reasons or explanations. Thus in connection with the first three disciplines: "In these cases it is for the collectors of data to know the fact, and for

the mathematician to establish the reason" (79a4). In connection with the fourth discipline: "To know the facts [about rainbows] is for the natural scientist; to know the reason why is for the optician, either simply as such or as a mathematical" (79a13). In relation to medicine: "It is for the doctor to

— 117 —

know the fact that circular wounds heal more slowly, but it is for the geometrician to know the reason for the fact" (79a15).

The distinguishing feature of these disciplines, then, is that they do not provide the reasons why or explanations, but instead are concerned with the collection of empirical or observational data. Perhaps the clearest example we have from the surviving Aristotelian treatises of what a data-collecting discipline may look like is Aristotle's H.A. This treatise is primarily concerned with the collection of data about animals, and Aristotle describes its nature and goals in a way that places it squarely into the class of disciplines which, according to the Post. Anal., are concerned with the collection of facts about a certain subject matter: "Our object [is] to determine first of all the differences that exist [among kinds of animals] and the actual facts in the case of all of them. Having done this, we must attempt to discover the causes" (H.A. 491a10).^[28] When speaking of data or facts in this context, Aristotle does not of course mean that these disciplines collect facts about some particular. As the example about medicine clearly shows, the physician knows the general statement or fact that circular wounds heal more slowly. This is also what Aristotle does in his own data-collecting treatise: In the H.A. he collects data about the various animal species (lion, deer, horse, etc.) and even wider classes (vivipara, ovipara, etc.). These disciplines then, although presumably nonexplanatory, may arrive at empirical generalizations about a subject matter.

The other two classes of disciplines are explanatory. They deal, according to Aristotle, with the causes of the facts; they provide demonstrations of the facts and their causes. Although both of these classes consist of explanatory disciplines, they are nonetheless to be distinguished from each other. One class consists, according to Aristotle, of those disciplines that treat of their subject matter as mathematical objects—for example, arithmetic treats acoustical phenomena (e.g., voice) qua number and geometry treats optical phenomena qua lines. These are purely mathematical disciplines that give explanations or demonstrations of acoustical or optical theorems. The other class of explanatory disciplines consists of the sciences that we may best characterize as being applied mathematical disciplines. Ross, following Thomas Heath, describes these as borrowing their major premises from the purely mathematical disciplines and their minor premises from the data-collecting disciplines to explain the facts the latter disciplines discover.^[29] Thus, Aristotle recognizes in addition to geometry and the empirical study of optical phenomena the discipline of mathematical optics (Post. Anal. 78b37, 79a10). Similarly, besides arithmetic and acoustical harmonics there is mathematical harmonics (78638, 79a2, 87a38). Following Barnes, we may represent schematically some of the examples Aristotle gives from the three classes of disciplines.[30]

	- 118 -	
Nonexplanatory	Explanato	ory
Acoustical Harmonics	Mathematical Harmonics	Arithmetic
Empirical Optics	Mathematical Optics	Geometry
Empirical Astronomy	Mathematical Astronomy	Solid Geometrya

	Mechanics	Solid Geometry
Medicine	(Medicine)	Geometryb

a There are some problems with determining the three levels or types of discipline in the case of Astronomy. The three levels presented here are the ones Ross identifies. Barnes points to some problems with what Aristotle says about the first and third levels.

b This is indeed a problematic case. Aristotle speaks as if there is a purely mathematical proof of the supposed medical fact that circular wounds heal slowly. But, as Barnes points out, a demonstration needs an empirical premise that connects the speed of healing with some mathematical property of circular wounds. The introduction of such premises, however, violates Aristotle's restriction against kind-crossing (see Barnes, *op. cit.*, p. 153). I place medicine in both the explanatory and nonexplanatory groups in order to indicate the ambiguity in Artistotle's own statements.

According to Aristotle, the disciplines in the first class then are less exact than the disciplines in the other two classes. For they are presumably nonexplanatory; they do not give the reason why, whereas those in the latter classes presumably do. It is evident that this type of exactness has clear epistemological consequences, for where a discipline is one of the less exact or inexact disciplines in the above sense of the term "exact," it is a nonexplanatory or nondemonstrative discipline. Consequently it has an epistemological nature or structure that is essentially different from the nature of those disciplines that possess the demonstrative/explanatory structure that Aristotle takes to be an essential feature of scientific knowledge.

These rather drastic consequences of the above type of inexactness should make us pause. If a discipline is inexact on account of being non-explanatory, it is not merely the case that it exhibits to a lesser degree some characteristic that the more exact of the disciplines possess (e.g., detail, clarity, certainty). Rather, it seems to lack altogether the characteristic that all disciplines that have a claim to being scientific must, according to Aristotle, possess—namely, their giving causal explanations or demonstrations. It seems as if there is not sufficient similarity between nonexplanatory and explanatory disciplines on the basis of which we can compare them in terms of their exactness/inexactness. What is after all the status of these nonexplanatory disciplines?

I have so far abstained from referring to these disciplines as sciences precisely because their status is unclear and because I did not wish to prejudge the issue. Aristotle, however, sees no difficulty in referring to them as sciences and does not seem to be concerned about whether there is sufficient similarity between them and the explanatory disciplines for

- 119 -

the purposes of comparison: "But there is another way in which the fact and the reason why differ, viz, in each being studied by a different science [

figure

]" (78635). Among the examples of sciences that study the fact or the reason why and are so related that the one is subordinate to the other he includes stargazing and astronomy. Both are referred to as sciences. He goes on to add that "some of these sciences [

figure

] have practically the same name; e.g., both mathematical and nautical astronomy are called astronomy and both mathematical and acoustic harmonics are called harmonics" (79a). Similarly he sees no difficulty in referring to both medicine and mathematical medicine (or perhaps geometry) as sciences and in comparing them with respect to

their exactness: "Many of the sciences [

figure

] which are not strictly subordinate stand in this relation; e.g., medicine to geometry" (79a15).

There is obviously a problem here that casts doubt on Aristotle's distinction between nonexplanatory and explanatory sciences. If what makes the latter disciplines sciences is, as Aristotle insists, their giving explanations/demonstrations, then the former cannot be sciences. Ross sees this clearly in his commentary on the *Post. Anal.* when he writes about the nonexplanatory disciplines: "The third [class of disciplines] which is only by courtesy called a science, collects certain empirical facts."^[31] Barnes, on the other hand, perhaps following Aristotle closely, just remarks that "the observational sciences bring forward propositions based upon perception and induction (e.g., 'The rainbow contains six hues')."^[32] Thus, Aristotle's distinction between explanatory and nonexplanatory sciences (on which one type of exactness rests) is problematic within his own framework, which views science as being essentially explanatory in nature.

Regardless of whether the nonexplanatory disciplines are sciences or not, the question still remains as to whether Aristotle thinks that ethics is such a nonexplanatory discipline. Is ethics like the *H.A.*? Is it a data-collecting discipline? There is no evidence that Aristotle thinks of ethics as being a discipline that is concerned only with the collection of data about conduct. Neither is there evidence that he takes his goal in his own ethical treatise to be solely the gathering of data about conduct. This of course is not inconsistent with the idea that data are at times gathered, but they are data presented in order to be explained. Thus Aristotle points out, for example, that cowardice, which is a vice of deficiency, is more opposed to courage than is rashness, which is a vice of excess. In general, he claims that "in some cases the defect, in others the excess, is more opposed to the mean" (*N.E.* 1109a). His task is not merely to report this supposed fact, but rather to explain it; indeed, he goes on to argue that "this results from either of two causes [

figure

]" (1109a5) and proceeds to spell out the two causes. Similarly, Aristotle thinks that the supposed fact that children cannot be happy is in need of an explanation and he goes

— 120 —

on to offer the "cause" [

figure

] why they cannot be happy (1100a).^[33] Most important for the purposes at hand is the overall picture that guides Aristotle in his ethical treatises. This picture is essentially that of an explanatory discipline—that is, the goal is to explain why happiness is the ultimate goal, why it is the only ultimate goal, why some dispositions are virtues and others vices, why and how weakness of the will is possible, and so forth. Indeed in relation to the last case, Aristotle sees his task as clearly being that of providing an explanation in terms of the causes of the occurrence of the phenomena of weakness of the will: "Again, one may study the cause [

figure

] of weakness of the will scientifically" (1147a24).

In general, Aristotle in the *N.E.* distinguishes clearly between knowing certain facts—knowing "the that"—about matters of conduct in contrast to knowing their reasons or causes—knowing "the why" or "the because." Although he allows for the possibility of an agent knowing only "the that," he sees his own task as being primarily one of providing "the why" or "the because" (109562).^[34]

Of course to say that ethics is to be included among the explanatory disciplines is not to say that it is one of the mathematical disciplines. It may not even have a mathematical counterpart in the way acoustical harmonics has mathematical harmonics and the study of the rainbow has mathematical optics. Although Aristotle does speak in at least one instance of there being a purely mathematical study of aspects of ethics (traces of Platonism?),^[35] just like he speaks of geometry proving matters of medicine, there is no reason to introduce mathematical but nonetheless be explanatory in the way Aristotle takes the biological disciplines as presented in his own treatises (e.g., *G.A.*, *P.A.*) to be nonmathematical but explanatory. The situation is the same in the case of medicine, Aristotle's remark in the *Post. Anal.* about the relation between medicine and geometry notwithstanding. In that remark he gives the impression that medicine is nonexplanatory, that facts like the one Aristotle cites, for example, that circular wounds heal more slowly, and presumably others as well, are explained by a discipline altogether different from medicine—geometry. Yet he presents quite a different picture elsewhere. As we saw in the previous chapter, in *Met.* he includes medicine among the disciplines that seek causes: "While there is a cause of health and of good condition . . . and in general every thinking, or thought-partaking, science deals with causes and principles" (1025b). Again he tells us that "every science seeks certain principles and causes for each of its objects—e.g., medicine and gymnastics and each of the other sciences, whether productive or mathematical" (1064a). It is indeed difficult to see how Aristotle views medicine when he remarks that it studies the fact that circular wounds heal more slowly, but

- 121 -

geometry proves the cause. It is perhaps even more difficult to see how the nonexplanatory view of medicine that seems to be implied by this remark is consistent with the view presented in the above quotations from *Met.*, but perhaps no such view is implied. Aristotle may not wish to assert that medicine is nonexplanatory, but rather that some medical facts can be explained by another science. Extrapolating from the example of the healing wounds he cites, some medical facts can be explained by certain geometrically. He may think that such medical facts can be explained by certain geometrical properties of the physical objects—in the case of the healing of the circular wounds the explanation might be given in terms of the ratio of the area to the periphery of the wound. The rest of the medical facts however are to be explained by medicine.

I have raised doubts here as to whether Aristotle's distinction between explanatory and nonexplanatory sciences is a meaningful one given his own understanding of what a science is. Equally important, I have argued that ethics, like medicine, is not a nonexplanatory discipline. So even if Aristotle's distinction between two types of sciences is to be accepted, it should not raise any special problems as far as the exactness of ethics is concerned. For ethics need not be considered an inexact discipline on account of its being nonexplanatory. This type of exactness, although it has the most drastic epistemological consequences, does not differentiate ethics from those disciplines that Aristotle takes to be demonstrative. For example, it does not differentiate ethics from the disciplines that study the natural phenomena, and in particular those that study the biological phenomena, all of which are disciplines Aristotle considers to belong to the class of theoretical sciences.

The aim of the above discussion was in part to isolate certain types of exactness/inexactness for the purpose of finding out whether any one of them is of importance in the case of ethics. Some of them are of little importance to ethics. Others however are of some importance to ethics—for example, the type Aristotle associates with the relation of subordination a discipline may have to another discipline, or the level to which a discipline abstracts from its subject matter, or the explanatory versus the data-collecting character of a discipline. Some of these shed light on Aristotle's way of seeing the problem of exactness/inexactness and its broader implications for all disciplines, including ethics. Commentators have been wrong in excluding all of them.

The above discussion also aimed at giving an indication of the variety of things Aristotle means when he speaks of exactness or inexactness. It is indeed somewhat ironic that Aristotle expresses his concerns about exactness by using a term or several terms that seem to be themselves inexact. Why this is so, and whether it should be so, are matters that are difficult to answer and I do not wish to speculate about them at this point. It might

- 122 -

be useful when thinking about such matters to begin by seeking to identify the sorts of things in a discipline that can be, according to Aristotle, exact or inexact: to seek to identify, that is, the various components or levels of a discipline to which Aristotle

attributes exactness or inexactness. This is the matter I wish to discuss next.

Levels of Exactness/Inexactness

When we speak of exactness in relation to a discipline, we tend to think primarily of a set of features that can characterize that discipline's components—for example, its definitions, propositions, explanations, and proofs. We tend, that is, to think of these features as being formal in contrast to material, and we take them to characterize the components of a discipline in contrast to what the discipline is about—the accounts or propositions that make up the discipline in contrast to what these accounts or propositions are about. Thus, exactness is thought of as being a property not of the subject matter of a discipline but rather of a way or means of describing, defining, explaining, and so on, the subject matter. It is not a property of plants, animals, or numbers, but of what is said about them. Naturally we think the same is true in the case of inexactness: it is also a formal feature. This is not surprising, for it is precisely those things that can be exact that can also be inexact. This view, that exactness and inexactness are formal features, is aptly captured in Gottlob Frege's justly famous remark that he has never seen a vague pea.

Aristotle however has a different view: exactness and inexactness can be either material or formal features. They can characterize either the subject matter of a discipline or what we say about the subject matter. They may, that is, be properties of either the objects a discipline studies and their attributes—for example, of animals or numbers and their attributes—or of the means a discipline uses to define, describe, or explain such objects and their attributes. Thus, when Aristotle speaks of exactness/inexactness in relation to a discipline at times he is speaking of a formal feature while at other times he is speaking of a material one. These different levels of exactness/inexactness have not been distinguished by the commentators. But it is, as shall be seen, important to do so. In part because what exactness/inexactness is in a certain case depends on whether it is a formal or material characteristic. It is also important because Aristotle believes that a relation holds between the two levels: exactness/inexactness at one level may imply exactness/inexactness at the other level.

The distinction between formal and material exactness/inexactness in a discipline is most clearly seen in the case where the subject matter of the discipline—for example, animals, psychological phenomena, numbers, geometrical figures—is of a different logical type than the constitutive

- 123 -

elements of the discipline-that is, its terms, definitions, axioms, theorems, proofs, explanations, and so on. There are instances, however, where both the subject matter and the constitutive components of a discipline are of the same logical type. That this can be so is easily seen when we consider second-order disciplines, for the subject matter of such second-order disciplines is the constitutive components of first-order disciplines—the former study the terms, propositions, theorems, and so forth, of the latter. However, the second-order discipline itself consists of such things as terms, statements, theorems, explanations, and so forth. In such cases, one often distinguishes between object language and metalanguage, even though both are of the same logical type. Thus, it is clear that one can differentiate between the two levels, even in the case of those disciplines whose subject matter and constituents are of the same logical type. It is also evident that the distinction between levels of exactness/inexactness is not necessarily a distinction between types of exactness/inexactness. The same type of exactness/inexactness may characterize both levels of a discipline (both its subject matter and its constitutive elements), and hence there may be no difference in the type of exactness/inexactness but there may be a difference of levels.

The disciplines that Aristotle is concerned with and in connection with which he raises the problem of exactness/inexactness are mostly first-order disciplines.^[36] They are the disciplines that investigate biological, physical, and psychological phenomena, disciplines that study mathematical properties, disciplines that inquire into matters of conduct, and so forth. Ethics is such a first-order discipline. I cannot discuss here the various problems connected with the identity of the subject matter of ethics, but there

is no doubt that Aristotle takes it to consist of the phenomena of conduct. In *N.E.* Aristotle clearly indicates that the accounts of ethics are accounts of actions and emotions. The subject matter of ethics, the objects it investigates, are such things as actions and emotions: "Hence, as has been frequently remarked already, discussions [or accounts] about emotions and actions only admit such degree of definiteness as belongs to the matters with which they deal [

figure

]" (1165a13). Where Aristotle is concerned with the exactness possible in our accounts given the nature of the subject matter of ethics, the subject matter is taken to consist of such things as wealth and courage (1094b13). In the case of ethics then, as in the case of the other first-order disciplines, two levels of different logical types that may be characterized by exactness/inexactness can be easily identified.

Indeed Aristotle speaks of both formal and material exactness/inexactness in connection with several disciplines and, as to be expected, speaks of the former type in connection with almost all of the disciplines. Thus he speaks of the formal exactness/inexactness of a discipline, knowledge,

- 124 -

or science (*Post. Anal.* 87a31, 99b27; *Anim.* 402a3; *Met.* 982a15, 25, 1025b10, 1078a10), of an account (*Pr. Anal.* 24b15, 46a30; *Cael.* 269b23; *G.A.* 716632, 728b14, 753b15, 784b37; *H.A.* 488b28, 491a8, 493b, 509b23, 511a13; *Met.* 986a13), of arguments or proofs (*Post. Anal.* 86a17; *Cael.* 288a; *Met.* 1064a5, 1079a13, 1080a10; *Rhet.* 1396a34), of definitions (*Met.* 1030a16, 1035a13; *Rhet.* 1369b32), and so forth. The concern, however, is different in other passages where Aristotle is focusing not upon some formal features of a discipline, but rather upon features of its subject matter—where he is concerned with material exactness/inexactness. Thus he speaks of the objects the philosopher studies as being exact (*Protrept.* B48), ^[37] of sounds being exact (*Aud.* 804a30), of the elements of earth being not capable of the exactness of those of heaven (*Cael.* 287620), of the menstrual period not being accurately fixed (*G.A.* 738a18), of the unit, and in particular that of number, being exact (*Met.* 1053a), of beams of light not being exact (*Probl.* 912625), of the lack of exactness in the periods of gestation of animals due to the indefiniteness of matter (*Met.* 995a15).

The situation is similar with respect to the disciplines whose subject matter is the domain of conduct: in some cases Aristotle takes exactness/ inexactness to be formal while at others material. Thus he speaks of formal exactness/inexactness in relation to our accounts (N.E. 1094b13, 14, 1098a27, 1104a, 1107b15, 117464; E.E. 1222b40, 1227a10, 1236b15; Polit. 1258b39, 1331b19, 1341b30), our definitions (N.E. 1159a3, 1164b28; E.E. 1221b9, 1231b; Polit. 1276b25), our laws or rules (Polit. 1265b3, 1274b8, 1282b5), and so forth. He also speaks of material exactness/inexactness of the phenomena of conduct. Thus Aristotle tells us that virtue is more exact than any art (N.E. 1106b14), that a certain kind of fluctuation or inexactness is exhibited by the good things (for example, wealth and courage, 1094b13) and that matters of conduct and that which is beneficial have no fixity or exactness any more than matters of health (1104a). He insists that formal exactness in matters of conduct should correspond to material exactness: "Hence, as has been frequently remarked already, accounts of our emotions and actions admit only of such degree of definiteness as belongs to the matters with which they deal" (1165a13; see also 1094b13, 1104a). Similarly, formal inexactness in the case of the law is related to material inexactness—the characteristics of the things law is about. The deficiencies or problems of the law, Aristotle argues, do not lie so much with the law as with "the nature of the thing: the material of conduct is essentially irregular" (1137b15). The indefiniteness of the law, he insists, lies with the indefiniteness of its subject matter: "For that which is itself indefinite, there is also an indefinite rule, like the leaden rule used by Lesbian builders" (1137b30).

- 125 -

It is evident that, contrary to modern conventional thought, Aristotle sees no problems in speaking of material exactness/inexactness. It is important to recognize that in many instances Aristotle is concerned with such exactness/inexactness, a fact that has been altogether overlooked by recent commentators. It has not been adequately recognized or appreciated that often it is material exactness/inexactness that is primary and that formal exactness/inexactness is due to it. Clearly these two levels of exactness are different and cannot be reduced to each other, for, as shall be seen, it is possible to have the one without the other. Failure to recognize that Aristotle thinks in terms of two levels of exactness/inexactness may partly explain why his reasons for taking ethics to be essentially inexact have not been understood, for, as shall be seen, he thinks that some kinds of formal inexactness cannot be eliminated because they are implied by material inexactness; they are implied by the very nature of the subject matter of ethics.

The ancient commentators, however, had no difficulty in recognizing and indeed emphasizing the idea of material exactness/inexactness in Aristotle's thought. In this they may have been aided by the analogy we mentioned earlier—namely, the analogy they thought to hold between ethics, its subject matter, and exactness on the one hand, and the productive arts, their materials, and exactness on the other—an analogy they attributed to Aristotle. Whether Aristotle accepts the analogy is not really important. What is important is whether the analogy is instructive. It clearly is instructive and the ancients concurred. It makes clear or almost forces one to recognize something that one may be rather strongly inclined to overlook or misinterpret despite the fact that Aristotle speaks guite emphatically about it-namely, that in some cases the primary exactness/inexactness lies with the material of an art or discipline. The ancients thought that it was easy to see by using the senses that the materials of the various productive arts (such as wood, stone, and marble) exhibit different characteristics, that they vary in their "exactness," and therefore that the products created by using them also vary in their exactness or precision. The analogy also helped them to see more clearly Aristotle's claim that some instances of formal inexactness cannot be eliminated, for they are by analogy like the inexactness of the products of art which the ancients thought could not be eliminated if the source materials possessed the different characteristics they possessed. This does not, of course, imply that the ancient commentators or Aristotle is correct. In some cases perhaps formal inexactness can be eliminated. It is important, however, to recognize that Aristotle speaks of features of exactness/inexactness at both the material and formal levels and that he thinks that the features of the two levels are related.

- 126 -

Some Sources of Formal Inexactness

The remarks above make it evident that Aristotle not only thinks that features of exactness/inexactness can characterize both the formal and material levels of a discipline but also that in some cases such features at the formal level are due to similar ones at the material level. At this point I wish only to state Aristotle's position that some kinds of formal inexactness result from material inexactness and proceed to identify some other factors that Aristotle thinks give rise to formal inexactness. I shall explore the relation between formal and material exactness/inexactness in the next section.

Aristotle identifies a number of sources of formal inexactness by singling out some factors that he thinks can, should, or must produce it. Not all of them are equally significant but it is nonetheless important to briefly touch upon them for at least two reasons. First, some of these sources will be encountered later when I discuss in some detail Aristotle's remarks on exactness in the *N.E.* Second, knowing the source of a particular type of formal inexactness is at times important in determining whether such a type is a necessary feature of a discipline and therefore cannot be eliminated, or whether it is not necessary and therefore can be eliminated. Here then are the sources of inexactness Aristotle himself identifies.

The Burdensome Task of Seeking Exactness

In several places Aristotle considers some degree of inexactness as acceptable or appropriate for the purpose of avoiding the burdensome task of seeking exactness. He tends in these passages to view exactness as something toilsome and as something that

reflects the kind of pettiness or meanness that he elsewhere associates with the behavior of the illiberal person. Thus in *Polit.* : "Of the several divisions of wealth-getting I now speak generally; a minute consideration [

figure

] of them might be useful in practice, but it would be tiresome [or toilsome-

figure

] to dwell upon in study" (1258638).^[38] In *N.E.* he claims that to pursue the subject under investigation with greater exactness would be a more laborious task (

figure

) (1102a26). Finally, in *Met.* he describes exactness as having something in its nature that approaches the mean or illiberal: "Others are annoyed by exactness either because they cannot follow the connection of thought or because they regard it as mean [or petty—

figure

]. For exactness has something of this character, so that as in trade so in argument some people think it illiberal [

figure

]" (995a).^[39] Aristotle's belief that exactness possesses such characteristics—concern with minutiae, pettiness, illiberality—may very well motivate his calling the behavior opposite to that of the magnificent person a form of

figure

: "Moreover he [the magnificent person] will spend gladly and

— 127 —

lavishly, since minute calculations [

figure

] is a petty thing. . . he will therefore be a liberal person" (*N.E.* 1122b8).

Inexactness and Lacunae in Classification

Throughout his works Aristotle often observes that there are gaps in our classifications. In many instances things lack names, something which is most apparent where there is a principle of classification that is not fully applied—only some of the things to which the principle applies have names, the others remaining nameless (

figure

). Hence, although Aristotle speaks of things without names in practically all his works, the concern with nameless things is most prominent in the practical and biological disciplines—disciplines where classification plays an important role or where name giving is often based on obvious principles of classification.

Thus Aristotle finds that his principle of classification of the virtues and vices which rest on his conception of virtue as a mean disposition between the two extremes of excess and deficiency (vices) encounters many instances where one or more of the following is the case: (a) the mean disposition or the extreme ones are nameless; (b) the character of the person who exhibits either the virtue or the vices is nameless. ^[40] For example, in *E.E.* (1221a3) he observes that in relation to the virtue of righteous indignation only one of the extremes has a name (envy), but the other does not. ^[41] Similarly, with the virtue of temperance—one extreme is named (profligacy), but the other not (1231a39). ^[42] The character of the person who can endure all pain (one of the extremes related to the virtue of hardiness) is strictly speaking nameless, but by metaphor is called hard, patient, or enduring (1221a29). Similarly, there is no name for the character of the person who spends to excess (one of the extremes related to the virtue of magnificence, 1233a39).

Aristotle's discussion of the virtues and vices in the *N.E.* shows that gaps in classification are even more pervasive—he points to more instances where his scheme for classifying virtues, vices, and their corresponding characters encounters difficulties because the disposition or the character implied by the principle of classification is nameless. Aristotle embraces the general principle stating that "where there is excess and deficiency there must also be a mean" (1125b18).^[43] Yet the mean state (the virtue), the extremes (vices), or the corresponding characters may have no names. Thus the mean (the virtue) and one of the extremes relating to the seeking of honor as

well as the character corresponding to the virtue have no name (1107b29, 1125b25). In connection with the emotion of anger, "virtually all dispositions are nameless, but as we call a person of the middle character gentle, let us name the mean gentleness, while of the extremes he that exceeds may be styled irascible and his vice irascibility, and he that is deficient, inirascible, and the deficiency inirascibility" (1108a5). Yet, Ar-

- 128 -

istotle finds the proposed terms not altogether satisfactory, for when discussing the dispositions and corresponding characters in relation to anger he remarks, "There is as a matter of fact no recognized name for the mean, as well as the extremes, so we apply the term gentleness to the mean though really it inclines toward deficiency, which has no name. The excess may be called a sort of irascibility, for the emotion is anger, while its causes are many and various" (1125b26). The same is true, according to Aristotle, of the dispositions relating to truthfulness in speech and in action (1108a16) and of boastfulness (1127a15); and of the characters in relation to fear (1107b1, 1115b25), to pleasure (1107b6), and to social agreeableness (1126b20)—the mean or the extremes lack names. This, Aristotle claims, "is true in the case of many [virtues, vices, and corresponding characters]" (1107b3, 1115b25).

As I pointed out earlier, Aristotle finds that gaps in classification occur as frequently in relation to the biological domain as they occur in relation to the domain of conduct. He points out in the biological treatises, and in particular in *H.A.*, many instances where there are no names.^[44] What sorts of problems does the existence of these gaps in classification pose? There are several problems that Aristotle recognizes, although it is not clear that these are problems of exactness or that he takes them to be so.

Thus, in *P.A.* Aristotle remarks that "There is no common name which is applied to all animals that have lungs. But there ought to be: because the possession of a lung is one of their essential characteristics" (669b10). The lack of a name for all animals with lungs is, according to Aristotle, not trivial, for classification in this instance fails to provide a marker for a kind whose members share an essential feature. Our classification fails to represent accurately the natural groupings of animals according to their essential attributes.

The lack of names for some of the virtues or corresponding characters poses different problems. It raises problems in connection with two central elements in Aristotle's theory of virtue. The first element is the familiar Aristotelian thesis we mentioned earlier—namely, that moral virtues are mean states or dispositions between two extreme states or dispositions, and the same relation presumably holds between the corresponding characters. The second element, which. we may call "the opposition thesis," posits an additional relation among the mean and extreme dispositions as well as among the mean and extreme characters: It claims that the mean and extreme dispositions are all opposed to each other, and a relation of opposition presumably holds between the opposition of each virtue to its two related vices and of each vice to the other as follows: "There are then three dispositions—two vices, one of excess and one of deficiency, and one virtue which is the mean; and each of them is in a certain way

— 129 —

opposed to both the others. For the extreme states are the opposite both of the middle state and of each other, and the middle state is the opposite of the extremes" (1108b10). The lack of names for some virtues may lead us to the unwarranted conclusion that the Aristotelian thesis that virtue is a mean is false. Also because of the fact that some virtue (or vice) is nameless, the opposition between it and the vices (or virtue) relating to it will not be represented at the formal level and this may even have practical consequences at times.

Consider first the problems generated by the lack of names for the Aristotelian thesis that virtue is a mean between two extremes. Aristotle is clearly aware of how important the examination of the nameless virtues, as well as the nameless extremes, is for the purpose of saving the validity of his thesis that virtue is a mean between two extremes.^[45] "We shall do as well to examine the unnamed virtues . . . since we shall also confirm our belief that the virtues are means, if we notice how this holds good in

every instance" (1127a16). For despite what the linguistic representation tells us about the facts concerning the virtues or excellences and the vices, there are indeed a mean and two extremes even in the case where the mean or the extremes have no names. The formal or linguistic representation of the facts by way of classification or naming does not represent the facts accurately.

There are also problems, according to Aristotle, that relate specifically to the thesis of the opposition between each of the extremes on the one hand and the extremes and the mean on the other: These problems may be either theoretical or practical. Thus, commenting on the fact that in the case of social agreeableness the mean has no name but the extremes do, Aristotle says, "However, the extremes seem to be opposite [only] to each other, because the mean has no name" (1127a11).[46] Here again the existing linguistic data or actual names do not give an accurate representation of the facts, for the opposition is twofold: There is opposition between each one of the extremes and the other, but also between each of the extremes and the mean. It is this latter opposition that separates virtue from vice. But in addition to this theoretical problem, Aristotle sees a practical one. Thus, commenting on the fact that the mean disposition and characters in relation to seeking honor have no name, he remarks, "But the middle character has no name and the dispositions of these persons are also unnamed, except that that of the ambitious man is called 'ambitiousness'. Consequently, the extreme characters put in a claim to the middle disposition, and in fact we ourselves sometimes call the middle person ambitious and sometimes unambitious: we sometimes praise a person for being ambitious, sometimes for being unambitious" (1108a). In this case we are misled, according to Aristotle, because there is no name for the virtue or the virtuous character. We mistake the extreme dispo-

- 130 -

sitions and characters for the virtuous ones and we therefore praise non-virtuous dispositions and characters. Yet doing so is surely a mistake.^[47] Aristotle offers a more elaborate explanation of the tendency to be misled in this case.

4.5 But where there is excess and deficiency there must be a mean. . . . It is therefore in nameless mean in regard to honor that we praise. Compared with ambition it appear unambitiousness, and compared with unambitiousness it appears ambition: compare with both, it appears in a sense to be both. This seems to be true of the other virtur also; but in the present case the extremes appear to be opposed only to one anoth because the middle character has no name. (1125620)

We are misled here not because the mean resembles either one of the two extremes when compared to the other one—this is, Aristotle claims, true of all the virtues^[48]—but rather because the mean is unnamed, the facts are misrepresented: It appears as if the extremes are only opposed to each other, thus each taking the place of the mean, whereas the facts are otherwise.

It would not be true however to say that Aristotle himself speaks of the above examples of nameless entities in the biological and ethical treatises in terms of exactness or inexactness. He doesn't actually use any of the terms that signify exactness or inexactness for him in connection with these examples of gaps in classification. It is clear that the lacunae in naming pose problems of exactness that are quite similar to ones Aristotle discusses elsewhere and that he has no hesitation in designating as cases of exactness/ inexactness. As shall be seen, these are problems concerning the representation of the ethical (and biological) phenomena in terms of propositions that do not exactly fit them.

There is however at least one place where Aristotle seems to me to come close to designating the lacunae in naming and the problems they give rise to as phenomena of exactness/inexactness. While discussing the dispositions and characters associated with truthfulness of speech and behavior in *N.E.* he remarks: "Most of these are also unnamed, but in these as in other cases we must attempt to make names for them ourselves, for the sake of clarity [

figure] and easiness of comprehension" (1108al6). The term figure Aristotle uses in explaining his purposes for coining names for the unnamed dispositions and characters has been rendered as "clarity" by almost all translators.^[49] There is no doubt that this is one of the meanings of the term and at times Aristotle himself uses it to mean something like clarity. But, as I pointed out earlier, the term and those that share the same root (

figure

) are at times used throughout Aristotle's works to signify more or less the same things figure

(in its various forms) signifies. And Plato seems to have no problem in speaking

of the differences in

— 131 —

figure

among sciences where the context makes it clear that he means accuracy or exactness and indeed interchanges the term with

figure

(*Philebus* 57C-E). Now clarity itself can be taken to be a form of exactness, but since "clarity" is quite a vague term I wish to point out that the context in which Aristotle supposedly speaks about coining names for the unnamed elements of conduct for the purpose of clarity is such that he cannot mean simply for the purpose of making a term clear. These elements of conduct do not have names, hence it cannot be the case that the terms denoting them are unclear. His purposes include at least what we spoke of above: Giving (correct) names would be a way of representing the facts accurately, differentiating precisely between virtues and vices, and showing the opposition between the mean and the extremes accurately and clearly, and so forth.^[50]

Inexactness and Rhetorical or Methodological Purposes

In several instances Aristotle speaks of types of inexactness that are due either to his own way or to what is considered to be the best way of proceeding with the investigation in a certain domain, organizing a subject, or presenting material for instructional purposes. He often views his own treatises as being instruments for teaching and he is at times motivated by pedagogical considerations.^[51] It is therefore understandable that he would raise questions about the form of our accounts if they are to fulfill their instructional function. All of these concerns—the way of investigating, organizing, or presenting material—may give rise to certain types of inexactness. At least Aristotle seems to think that they do.

Thus, in at least the following instances Aristotle speaks of such sources of inexactness:

4.6	Let this account then serve to describe the good in outline—for we must presumably
	figure] begin by making a rough sketch and then to fill it in afterwards. If a work has bee well laid down in outline, to carry it on and complete it in detail may be supposed t be within the capacity of anybody; and in this working out of details time seems to a good inventor or at all events co-worker. This indeed is how advances in the arts have actually come about, since anyone can add what is lacking. (<i>N.E. 1098a20</i>)
4.7	Our method of inquiry then must be that employed by all people in other matters when they have something in hand to start with—we must endeavor by means of statements that are true but not precise to arrive at a result that is both true and precise. (<i>E.E. 1220a15</i>)
4.8	Let us describe these [differences among animals] first in general outline, and then will go on to speak of the various kinds, giving special attention to it. (<i>H.A.487a1C</i>

4.9 What has just been said has been stated thus by way of outline, so as to give a foretaste of the matters and subjects which we have to examine; detailed statemen will follow later. (*H.A.491a7*)

In 4.6 Aristotle appears to be saying that giving an inexact account of the good like the one he himself presumably gives is the way one must proceed in this investigation. Admittedly, his words are somewhat tentative (

figure

), but he does say "we must first sketch [

figure

. . .

figure

]." Giving an inexact account, one that is a mere sketch or outline, is the way one must proceed, according to Aristotle. The considerations Aristotle brings forth do not however show that this is so. The claims that if a work has been well laid down in outline it is easy to complete, that time is a good inventor and helper, and that in the arts advances are made by completing an incomplete beginning, do not by any means prove that one must start with something inexact and improve upon it later. The language of necessity may just be a bit of rhetorical excess. In any case, it is not clear whether Aristotle intends these considerations to be taken as the reasons for accepting the necessity of inexactness at the outset of an investigation. They may just have been given as reasons for showing the plausibility, rather than the necessity, of this type of rhetorical or methodological inexactness. Furthermore, Aristotle seems to view this type of inexactness as not being peculiar to his investigation at hand, as not being restricted to ethical investigation only, but rather as being a methodological strategy that presumably can be applied to any investigation.

In 4.7, however, Aristotle opts for methodological inexactness for somewhat different reasons. Notice again the use of the language of necessity twice in this passage: "Our method of inquiry must [

figure

] be that employed by all people in other matters when they have something at hand" and "we must [

figure

] endeavor by statements that are true but not precise to arrive at a result that is both true and precise." In fact Aristotle seems to be making two quite different claims here. The first is a general thesis to the effect that we must proceed in investigation in the way all those who have something at hand do—that is, they start from what they have at hand. It is a general methodological principle that prescribes how one is to proceed in any investigation when one has something that can be used as a starting point. At least two questions arise in connection with this methodological principle: Is the procedure that the methodological principle prescribes a necessary one? What is the relation between the methodological principle and exactness/inexactness?

It may very well be the case that Aristotle does not really intend to assert that the procedure of starting with what is at hand is necessary. All he perhaps intends to say is that we should follow the common practice of doing so. It seems to me quite possible that Aristotle has only this much

- 133 -

in mind, but if he really intends to assert that it is necessary to do so, the necessity he has in mind probably derives from the thesis he expounds in various places that all teaching, learning, and investigating proceeds from some pre-existing knowledge (see *Post. Anal.* I.i).

It is clear, however, that Aristotle's first claim, the methodological principle prescribing that we begin investigating with what is at hand, has, prima facie at least, no connection to exactness/inexactness. That one starts an investigation with what is available or with what one knows does not necessarily make the investigation exact or inexact. Whether exactness/ inexactness is introduced depends in part on the nature of the material that is at hand. (For there are other factors as well that can introduce

exactness/inexactness, e.g., what one does with the material at hand.) Focusing only on the nature of the material at this point, clearly if the material at hand were not lacking in precision—for example, some axioms or definitions of geometry—the methodological inexactness Aristotle is concerned with in this context would not arise. Inexactness, then, may be introduced into the accounts of an investigation by the lack of exactness in what is used as the starting point of that investigation, by the inexactness of what is at hand.

Indeed, Aristotle thinks that what he has at hand for his own investigation in the ethics is something that lacks precision or exactness (the second claim). It consists of some quite abstract and schematic statements about happiness, for example, that happiness is the greatest and best of human goals (E.E. 1217a22). Such statements, Aristotle insists, may be true, but are not precise (E.E. 1216633, 1220a16; N.E. 1138625). That Aristotle finds what he has at hand for his own ethical investigation to be lacking in precision is perhaps not surprising, for he seems to think that lack of precision characterizes all those things that function as the starting points of investigation. Inexactness of one form or another characterizes, according to him, all our preanalytic knowledge that may consist of observations, common beliefs, opinions of the wise, and so forth (see Met. 985al2, 986b4, 988a34; Anita . 413a10). Most probably it is the belief that preanalytic or prephilosophic knowledge in general lacks exactness that lies behind Aristotle's second claim that "we must endeavor by means of statements that are true but not precise to arrive at a result that is both true and precise." Such a belief would explain why Aristotle thinks we need to start with what is not precise in our investigation and, if successful, arrive at what is precise.^[52]

In 4.8 and 4.9 there is no talk about any necessity of inexactness. Aristotle's concerns seem to be more pedagogical or rhetorical. Inexactness is accepted as a way of giving an introduction to the field, giving a foretaste of what is to come. It looks more like a consequence of a rhetorical device of presenting the material of a discipline: giving a general

- 134 -

introduction or painting a rough picture at the outset and filling in the details later. Aristotle does not tell us here, in contrast to both 4.6 and 4.7, that this approach is a necessary one. It is put forth as being his preferred way of organizing and presenting the material rather than as something necessitated by some other deeper considerations.

The above discussion shows that although rhetorical or methodological inexactness may take in most cases the same form—in 4.6, 4.8, and 4.9 it consists of some type of outline—it can be generated by different considerations. This fact could be of some importance when we wish to determine whether and at what stage rhetorical or methodological inexactness can be eliminated from our accounts.

Inexactness and the Immediate Purpose of the Inquiry

In numerous places throughout his works Aristotle speaks of inexactness in connection to some specific topic and at a certain stage of an inquiry that has its source in the following: Given the purpose or objectives of the investigation at this stage, an exact account of the topic is not necessary or appropriate. An inexact treatment of the topic will be sufficient for the immediate purpose. In most cases Aristotle promises a fuller or more exact account of the topic at a later or more appropriate stage of the inquiry.

Thus Aristotle tells us in *Rhet.* (1361634) that a minute examination (

figure

) of the ingredients of a happy old age is not needed for the immediate purpose. In *Anim* . (414b13) he remarks that, concerning the faculties of the soul possessed by living organisms, we must be precise later (

figure

), but for the moment let it suffice to say that those animals which have a sense of touch have also appetite. (Aristotle gives a fuller treatment of this [413b32ff.]. See also his remarks on his inexact treatment of potentiality and actuality in sense-perception [417627] and the fuller treatment of this [429al0-430a25].) Also in *Cael*. (269622) he

says that we must discuss the nature of hearing and of light only so far as it is necessary for the purpose in hand but later with more precision (

figure

) when we come to investigate the essential nature of the two. (Aristotle gives a fuller treatment of this in *Cael* . [IV.i-iv]; see also *Cael* . [28664]; *H.A.* [488628, 493b]; *Phys* . [213a4].)

In at least three places in the treatises on conduct, Aristotle speaks of the above kind of inexactness. In *Polit* . (1326634), speaking of the limitations to be imposed on the size of the land adequate for a city, he says that it must be considered more precisely later on (

figure

) when we come to raise the general subject of property and wealth (this promise is not fulfilled in the extant works). In *E.E.* (1231b), while trying to establish that temperance is a mean in relation to some pleasures, he says that we will have to define later on the class of pleasures concerned

- 135 -

more exactly (

figure

) in our discussion of self-control and weakness of the will. (Aristotle does this in Book VII which is common to *E.E.* and *N.E.*) Finally, in *N.E.* after giving some illustrations or instances of his thesis that virtue is a mean between two extremes—namely, those of the virtues of courage, temperance, and liberality—be remarks: "For the present then we describe [these dispositions] in outline [

] and summarily [

figure

figure

], which is sufficient for the purpose at hand; but they will be more accurately [figure

] defined later" (1107b15). Aristotle fulfills his promise when he discusses at length each of the virtues separately— courage (III.vi-ix); temperance (III.x-xii); and liberality (IV.i).

It should be clear from the above that the source of the inexactness under discussion here is not the purpose or purposes of a discipline as a whole, but rather some contextual purpose one may have within a discipline. The source of inexactness in relation to some topic of conduct is not the purpose or goal of the disciplines of conduct. It is the immediate purpose one may have at some point of the investigation or of the giving of explanations that is the source. The same is true in the case of the biological disciplines (*H.A.*), the psychological ones (*Anim.*), and the physical ones (*Phys., Cael*.). The goals of these disciplines are not practical. They are, according to Aristotle, theoretical. Such inexactness appears to be discipline-neutral. It can arise within any discipline, irrespective of its goals. This is an important point to keep in mind, since there are types of inexactness that have their source, according to Aristotle, in the nature of the purposes or goals of the discipline. This is especially so in the case of those disciplines whose goals are practical, like those of ethics.

It is also clear that the above inexactness is topic-specific. It is not the case that the whole discipline is inexact, but rather some specific part of it is. The whole of *Anim* . or *Cael* . may not be affected by inexactness; only the specific discussions, accounts, or explanations of the faculties of the soul and the nature of the heaven and the light are affected by it. Indeed, this type of inexactness is not only topic-specific, but most often is also stage-specific. The account of a topic T need not be inexact throughout a discipline, but only at some specific stage S of the investigation. Thus the accounts of the topics in *Anita* . and *Cael* . just mentioned are inexact only at some particular point in these treatises. Aristotle himself gives more exact ones at later stages of these investigations. As discussed above, this is in general his strategy: to remove or at least to improve upon inexactness at a later stage. These are important considerations. For inexactness is not always topic- and stage-specific: whether it is depends on its source. For example, inexactness that is due to the goals or the subject matter of a discipline may not be either topic- or stage-specific.

— 136 —

Inexactness and Inappropriateness of Discipline

Aristotle speaks quite often of a factor that gives rise to a kind of inexactness which bears some resemblance to the kind just discussed above but is nonetheless different. The resemblance between the two types lies in the fact that in both of them Aristotle characterizes an account he gives of some topic T within some discipline D as inexact and promises to give a more exact one, or stipulates that a more exact one should be given later. The similarity ends here, however, for in the case just discussed the more exact account is given or is promised to be given within the same discipline that includes the inexact one also. In the present case however the more exact one is actually given or is promised to be given in a discipline that is different from the one in which the inexact account occurs. This is clearly due to the fact that Aristotle has in mind two different sources or factors of inexactness. Unlike the earlier case, the present source of inexactness in the treatment of a topic T is not some immediate purpose in the process of inquiry that may require a postponement of an exact treatment of T. Rather, the source of inexactness lies in the fact that a topic or subject that may be touched upon in one discipline is best treated or can only be treated by another discipline: The topic really belongs elsewhere. Now, it is most often the case that for the immediate purpose the inexact account of a subject will do, but the fact still remains that T is inexactly treated in discipline D and the inexactness is not and perhaps cannot be removed in D precisely because the topic belongs to a discipline other than D.

Thus, in the following passages from the group of Aristotelian treatises that we may designate as the physical sciences, Aristotle speaks of an inexact treatment of a topic because it belongs to another discipline. In *Phys*. (191629), while discussing the distinction between potentiality and actuality, he remarks that it is defined more exactly (

figure

) elsewhere. He probably has in mind the more elaborate discussion in *Gen. et Corr*. (A3) and *Met*. (Z, vii-ix and Q). He also insists that the study of the first principle(s) of things does not belong in physics: "To determine with accuracy [

figure

] the first principle in respect of form, whether it is one or many and what it is or what they are is the function of First philosophy; so let these questions be deferred till then. It is with natural and perishable forms only that we shall deal in what follows" (192a35). (Discussion of these questions is, as is well known, to be found in *Met* . Z, Q, and L.) In *Gen. et Corr*. Aristotle expounds his anti-Platonist theory that the elements as well as perceptible bodies consist of matter: "A more accurate [

figure

] account of these things has been given elsewhere [i.e., *Phys* . I.vi, vii]" (329a27). Finally in this connection, in *Meteor* .: "A separate and exact [

figure

] account of the heat generated by the sun's action would be more appropriate in a treatise on sensation

— 137 —

for heat is a sensible quality" (341a12). (But no such discussion is to be found in the extant treatises.)

Turning to the biological treatises, Aristotle makes several references to inexactness that is due to the inappropriateness of discipline. Thus, while discussing the differences in methods of reproduction in *H.A.*, he says, "We shall speak of these matters with more accuracy later in the treatise on generation" (489b17). This topic is, of course, one of the central problems discussed in the *G.A.* There are a number of references to the same type of inexactness in *P.A.*; for example, he refers to "another work where I have stated with greater exactness what things can be solidified and the causes that are responsible for it" (649a33) (the more exact treatment occurs in *Meteor*. 382b31ff. and 388b10ff.). At 668629 he refers us to the treatises on *Anatomy* and the *Researches on Animals* for a more exact account of the blood vessels (see *H.A.* 511b11-515a) and at 629a15 to the treatise on Generation for a more exact account of the production of milk

and analogous substances in animals (see *G.A.* 752b16ff.). Elsewhere (696b15) he assures the reader that the mechanisms for respiration are treated with greater exactness in the anatomical treatises and the *Researches on Animals* (see *H.A.* 504628). Similarly in *G.A.* (753b15), he claims that for an exact account of some matters relating to the mechanisms of reproduction of the ovipara we must turn to the *Researches on Animals* (see *H.A.* 561a3-562b), but for the purposes at hand what has been said is sufficient. Again in *Resp*. (477a7) he refers the reader to a more exact account of the breathing mechanisms of animals that live in water in the *Researches on Animals* (see *H.A.* 523a30). He is willing to accept a summary concerning the connection between heart and lung (478b), but he makes it clear that such matters should be studied visually from dissections and with greater exactness in the *Researches on Animals* (see *H.A.* 507b3).

Finally, we may include in this group a somewhat controversial passage in the *Anim* . where Aristotle appears to be making a reference to the type of inexactness we are discussing here. While concluding his brief discussion of the nature of food in connection with his account of nutritive soul, Aristotle remarks, "The nature of nutrition [or food] has now been described in outline; later on we must be more precise about it in a treatise of its own [

figure

]" (416630). Since no such treatise on food has come down to us, some scholars doubt that Aristotle is referring to any treatise dealing exclusively with food. Most likely however Aristotle's words (

figure

) do refer to such a treatise, to the same treatise referred to in *Somno* : "These have been discussed in On *Nutrition* [

figure

figure]" (45662).^[53] In any case, the issue here is whether the discussion on food is proper to *Anim* . The answer is clearly negative. *Anim* . is not the investigation to which the subject of food belongs. The proper discipline for the study of food, its

figure

, is some study other

- 138 -

than the one dealing with the soul. After all, soul and food are quite different matters, and this is what is important for our purposes, regardless whether Aristotle produced such a treatise.

In the logical treatises we also find that Aristotle makes a reference to the type of inexactness under discussion, for example, in *Top* .: "Secondly, we must realize that it belongs to another inquiry to lay down accurately both what a definition is and how we must frame it, and that for the moment we need only go as far as is requisite for our present task" (153a12). The other inquiry referred to here is, of course, the *Post. Anal*. where Aristotle takes up the questions he raises above.

Turning now to the treatises on conduct, we find several references to the inexactness of a topic due to the fact that treatment of such a topic belongs in another discipline. While discussing the effects of music and its place in education in Polit ., Aristotle says that in these subjects there are experts and therefore, "We will leave the precise discussion for any who wish it to seek it from these experts, while for the present let us lay down general rules, merely stating the outlines of the subject" (1341630). At two instances in the E.E. (1222638, 1227a10) he tells us that the topics concerning the relation of theorems to essential attributes and to postulates will be treated briefly, since the exact accounts of these have been given in Post. Anal. In the N.E. he makes reference to the above type of inexactness at several places. Concerning the question of how different things are called good, "Perhaps however the question must be set aside for now, since a detailed investigation of it belongs more properly to another branch of philosophy" (1096b30). Concerning the nature of encomia (laudatory orations) that, according to Aristotle, are fitting for the highest deeds, "But a detailed [or exact] treatment of this matter is perhaps rather the business of those who have made a study of encomia" (1102a).^[54] When Aristotle attempts to provide a theory of pleasure in terms of the nature of motion, he tells us that "however I have given an

exact treatment of motion in another work" (114663). Finally, in connection with the happiness that he thinks belongs to the intellect and is separate from that belonging to virtuous action, "so much may be said about it here, for an exact treatment of the matter is beyond our present project" (1178a23).^[55]

As with the previous source of inexactness, that is, the immediate purpose, the present source gives rise to an inexactness that is also topic-specific. The present source of inexactness need not render the whole of a discipline inexact; it may affect only some specific topic or subject of a discipline. Only those topics of a discipline that do not properly belong to it are treated inexactly within that discipline. It is clear however that this type of inexactness is not stage-specific within the discipline. A topic T that does not properly belong to a discipline D is treated inexactly and no exact account of T is given anywhere else in D. No exact account of

— 139 —

motion is given in the ethical treatises. T can have and Aristotle often provides or at least thinks that he does an exact account of it in a discipline other than D—that is, in the proper discipline of T.

It is also clear that this source of inexactness is discipline-neutral. Inappropriateness of discipline can be a source of inexactness in relation to any discipline. As seen above, Aristotle gives instances from almost all groups of disciplines, and there is no reason to think that this source of inexactness could not be present in the mathematical disciplines: a mathematical discipline may use a theorem of another that can be demonstrated or treated exactly only by this second discipline. Geometry, for example, uses the theorems of arithmetic.

Indeed, it is quite obvious that all the sources of inexactness we have discussed so far are discipline-neutral—they could affect any discipline. If Aristotle is correct in claiming that there is something laborious and illiberal in the character of exactness and is therefore willing to accept some inexactness in order to avoid such undesirable consequences, then he should be prepared to do so in any discipline. And if lacunae in classification give rise to inexactness, I see no reason for saying a priori that no such lacunae can exist in some disciplines. The case is similar with rhetorical or methodological inexactness. There is no reason why we may not choose to present at the outset an inexact account of a mathematical topic that is to be treated more exactly later on.

This is not however true of all sources of inexactness: Some sources give rise to formal inexactness only in relation to certain disciplines. These sources are not discipline-neutral. I shall next briefly discuss two such sources of formal inexactness that are of special importance to ethics and perhaps to all practical and productive disciplines. These sources of inexactness are connected to the goals of a discipline. They could not therefore apply to disciplines that do not have the same kinds of goals. My aim in this rather lengthy and perhaps illiberal account of the various sources of formal inexactness can be encountered in any discipline, while others can be met only in certain disciplines, and also to show that Aristotle himself is fully aware of this: He speaks of some sources of inexactness in relation to many or almost all of the disciplines but of some others only in relation to certain disciplines.

Inexactness Permitted by the Goals of a Discipline

Exactness may not be equally important to all disciplines. The importance it has in relation to a discipline depends on the goals of the discipline. It depends on the ultimate goals of the investigation. In the case of ethics and the rest of the practical and productive disciplines the goals are, generally speaking, action and production. So Aristotle tells us in *N.E.*,

"We must not seek the same degree of exactness in all areas, but only such as fit the subject matter and is proper to the investigation" (1098a27). He goes on to argue that

101 of 362

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where the goals of investigation differ—for example, in the case of the geometrician and the builder who both study the right angle—so does the degree of exactness that is appropriate for achieving the goals. Where the goal is action we need only that degree of exactness that is sufficient for acting. To demand more exactness than is required is a waste of time (*Polit*. 1331620). Aristotle then is willing to accept a degree of inexactness if the goals of the discipline justify it.

Inexactness Necessitated by the Goals of a Discipline

In some cases, however, the goals of a discipline are such that a kind of inexactness is inevitable. For instance, Aristotle thinks that since the goals of ethics are practical and action is concerned with particulars, our accounts must reach the level of the particular, but such a degree of specificity or exactness that is required by the goals is almost impossible. As Aristotle says in connection with the task of giving an account of the accidents of life, "To distinguish between them in detail would clearly be a long and indeed endless undertaking, and general treatment in outline [

figure

] may perhaps be enough" (*N.E.* 1101a27); and in *Polit* . he remarks that, "For just as in the other arts as well, so with the structure of the state it is impossible that it should have been framed aright in all its details [

figure

]; for it must of necessity be couched in general terms, but our actions deal with particulars" (1269a10).

I shall be discussing these last two sources of inexactness—that is, the acceptability and inevitability of inexactness given the goals of a discipline—in some detail later (in chap. 5 the latter and in chap. 9 the former). It is important however to mention them here together with the other sources of formal inexactness. This is so in part for the reason I mentioned earlier—namely, that these two are, unlike the others, restricted only to certain disciplines—but also because I shall shortly be raising the question of the ineliminability of inexactness. And, as shall be seen, whether some type of inexactness can be eliminated depends at times on the source that generates it.

The Congruence Thesis

We distinguished earlier between formal and material exactness/inexactness. What is the relation between these two levels of exactness/inexactness? Do they imply each other, does only one level imply the other, or does perhaps neither imply the other? Aristotle sometimes speaks of a kind of congruence that he takes to hold between characteristics of our accounts (or of the disciplines) and characteristics of the objects they are about (or

- 141 -

of the subject matter). He speaks, that is, of a congruence between formal and material features: "And when the sciences are nobler and more dignified, the nobler and more dignified are their subjects; for as is the science, so is the truth, and each science prescribes that which properly belongs to it; and, by analogy, the nobler and more dignified the objects of a science, the nobler and more dignified is the science itself, for the same reasons" (*Rhet* . 136467).^[56] At least then in the case of the characteristics of being noble and dignified we have, according to Aristotle, a congruence between formal and material levels: noble objects imply noble science, and vice versa. Aristotle is, of course, not alone in assuming that such a congruence holds. Plato does the same.^[57]

The application of the congruence thesis to formal and material exactness/inexactness yields the following possibilities:

- (a) Material exactness implies or is implied by formal exactness
- (b) Material inexactness implies or is implied by formal inexactness
- (c) Material exactness implies or is implied by formal inexactness

(d) Material inexactness implies or is implied by formal exactness

Which one of these, if any, does Aristotle take to be true? The last two can easily be ruled out: They seem most unlikely, and there is no evidence that Aristotle takes either of them to be true. Most probably Aristotle takes (a) to be true: Material exactness implies or is implied by formal exactness. That the most exact disciplines are those that deal with the most exact objects and that the most exact objects result in the most exact disciplines is a Platonic idea that Aristotle seems to embrace. He, like Plato, views the mathematical disciplines as being exact on account of their objects (*Cael* . 306a27).

Yet (a) may not be true; there may not be a relation of the kind Plato and Aristotle have in mind between material and formal exactness. From the fact that the subject S of a discipline D is exact, one cannot conclude that D itself is exact; one cannot infer formal exactness from material exactness, for our discussion of formal inexactness above has shown that there are many reasons for which D can be inexact despite the fact that its subject matter S is exact. At best the exactness of S implies that D can be exact. It is also not the case that the other half of (a) is true—formal exactness need not imply material exactness. For instance, we cannot infer from the fact that an account is exact by being in detail that what the account is about is also in detail.

The relation between formal and material exactness, (a), is not as central to our present concerns as is the relation between formal and material inexactness, (b). To begin with, does formal inexactness imply material inexactness? Is any characteristic C which when present makes a discipline D inexact also true of the subject matter S of the discipline? To ask however

- 142 -

whether a characteristic C is true of both the formal and material level presupposes that it makes sense, or it is meaningful, to apply C to both levels. Or at least that it makes sense to apply something like C to both levels. Sometimes it is meaningful to do so, but sometimes it is not.

Consider, for example, the characteristics of being in outline or lacking in detail that can make a discipline formally inexact: they may be true of its accounts, descriptions, definitions, explanations, and so forth. However, these characteristics cannot, strictly speaking, be asserted of the objects themselves. An object or a phenomenon is not the kind of thing that can either be in outline (or in detail) or not, but an account, description, explanation, and so forth, of an object or phenomenon can be in outline or detail. The reason for this is that accounts, descriptions, or explanations are in a sense representations of an object or phenomenon and therefore can either possess or lack detail, be in outline or not. Yet there are special objects that can have or lack detail: A picture is such an object. It is because a picture is at times a representation that it can be in outline or lack detail, and so forth. In the case of first-order disciplines at least it is doubtful that the characteristics of being in outline or in detail can be asserted of their subject matter. Of course the subject matter of a discipline may be the constituents of another discipline—that is, the subject matter of a higher discipline are the terms, accounts, explanations, proofs, and so forth, of a lower discipline. In such higher-order disciplines the subject matter is the sort of thing that can be in outline or possess detail. Thus at least in the case of the second-order disciplines, some features can be meaningfully asserted of both the subject matter of a discipline and of the discipline itself. There is, of course, the Platonist tradition that views all things as being in a sense imitations or copies of the Forms, and it is a part of this tradition to view all things or phenomena of the natural world as falling short of or failing to match the perfection of the Forms, as inexact. Plato however thinks the objects or subject matter of knowledge are the Forms themselves, and they cannot, as Aristotle often argues, be made to represent or imitate anything. To do so would lead into an infinite regress. In any case, the objects that constitute the subject matter of the ordinary Aristotelian disciplines are neither Plato's Forms nor inexact copies of the Forms.

However, we do not need to assume the Platonic conception of the relation between things and Forms in order to attribute exactness or inexactness to the things ordinary disciplines study. There are characteristics which constitute exactness/inexactness at the formal level that can at the same time be meaningfully asserted or denied of the subject matter of first-order disciplines—for example, the exactness of a discipline that Aristotle associates with simplicity: a discipline may be exact, or more exact than another, because it utilizes only a few axioms (basic elements), or

— 143 —

fewer than the other one does. One can also meaningfully speak of the number of the most fundamental elements of the domain that constitutes the subject matter of a discipline. For example, one can speak, as Aristotle himself does, of the number of elements of the domain of arithmetic and geometry. Where it is meaningful to speak of number it is also meaningful to speak of few (many) or fewer (more). Aristotle claims that there is just one element in the case of arithmetic (the unit), but there are at least two in the case of geometry (point and position). Thus, the subject matter of arithmetic has fewer basic elements, and it is therefore simpler or more exact than that of geometry.

Yet it should be evident from the above discussion that formal inexactness does not imply material inexactness. In some cases it is not even meaningful to assert or deny the feature that constitutes inexactness at the formal level of the subject matter of a discipline. Even where it is meaningful to do so, we cannot infer material inexactness from formal inexactness. Consider, for example, the type of inexactness at the formal level that Aristotle associates with gaps in classification. Something analogous to gaps at the formal level may exist at the material level. Thus, Aristotle points out that whereas in most actions or emotions there is a mean and two extremes, there are some actions or emotions where this is not so. The pattern of excess-mean-deficiency that characterizes most actions or emotions is absent in the case of malice, adultery, theft, or murder (1107a12). There is no name for a mean in relation to stealing because there is no such mean, but it should be clear from what Aristotle says in connection with most of the occurrences of classification gaps that lack of name does not imply lack of thing to be named. Formal inexactness exists in relation to classification precisely because most of the time there is no name but there is a thing to be named.

The reason why formal inexactness does not imply material inexactness should also be obvious from our earlier discussion of the sources of formal inexactness, for the sources of formal inexactness are many, and most of them have nothing to do with the nature of the subject matter of a discipline. As seen earlier, the sources of formal inexactness may vary. They may, according to Aristotle, range from one's wish to avoid being illiberal by insisting on detail, to accidental gaps in classification, and so forth, to the purposes of a discipline. These factors or similar ones do not affect the nature of the subject matter of a discipline.

There is no evidence that Aristotle holds that formal inexactness implies material inexactness. He does not assert that this part of the congruence thesis or that this half of (b) is true. Aristotle thinks that the other half of (b) does hold: that material inexactness implies formal inexactness. Indeed, he is quite certain that this part of the congruence thesis is true. The evidence on this is quite clear and unequivocal.

	— 144 —
4.10	Our treatment will be adequate if it achieves that amount of precision which belonits subject matter. The same exactness must not be sought in all accounts We be content, then, in dealing with such subjects and from such premises to indicate truth roughly and in outline It is the mark of an educated person to look for precision in each class of things just so far as the nature of the subject admits (<i>N.E. 1094b13; see also 1098a25</i>)
4.11	The whole account of matters of conduct must be given in outline only and not prec as we said in the beginning the accounts we demand must be in accordance with subject matter. (1104a)

4.12	Accounts of our emotions and actions admit only of such degree of definiteness belongs to the matters with which they deal. (1165a13)
4.13	For what is itself indefinite can only be measured by an indefinite standard, like the leaden rule used by Lesbian builders; just as that rule is not rigid but can be bent t shape of the stone. (1137b30)

Aristotle leaves no doubt that he takes material inexactness to imply formal inexactness. He speaks of a correspondence between the level of formal exactness and exactness of the subject matter. We must be content, he argues, in achieving in our accounts the level of exactness that the nature of the subject matter permits.

Although there is no doubt that Aristotle holds that material inexactness implies formal inexactness, there is doubt that even this part of the congruence thesis is true. To begin with, a question we raised earlier also arises here: Is it meaningful to assert or deny of the formal level every characteristic that can belong to the subject matter? Sometimes it is meaningful to do so, but at others it is not. Suppose, for example, Frege notwithstanding, that Aristotle is correct in claiming that matters of conduct are indefinite. A characteristic such as indefiniteness may be meaningfully asserted or denied of the formal elements of a discipline—its terms, propositions, definitions, laws, and so forth. Again, suppose, as Aristotle does, that the subject matter of some disciplines is such that some kind K possesses a property P only for the most part. One can also speak of the analogue of this characteristic at the formal level: Propositions or laws asserting that K has P can be characterized, when they have the appropriate logical form, as being true only for the most part.

It is not however the case that every characteristic of the subject matter can be meaningfully asserted or denied at the formal level. Suppose the subject matter consists of infinitesimally small particles, or suppose that what a discipline studies is characterized by a type of motion. Is it meaningful to speak of our accounts as being either infinitesimally small or in motion, or not? I think not. Even where it is meaningful to assert that a characteristic C belongs to both the material and formal level it is not

— 145 —

necessarily the case that if the material level has C, then the formal does also. Thus, being poetic is a characteristic that can be meaningfully asserted both of the subject matter (e.g., the Homeric poems) and of our accounts of a subject matter, ^[58] but it does not follow from the fact that the subject matter is poetic that our accounts of it are also poetic, although they may very well be so.

The question naturally arises as to why Aristotle is convinced that at least this part of the congruence thesis is true. This is a difficult question to answer since Aristotle gives no arguments or reasons in support of his claim that material inexactness implies formal inexactness. At best what can be done here is to try to reconstruct the framework within which Aristotle thinks in the hope of finding some reasons that make the above claim a plausible one. One must try to uncover, that is, some of the assumptions he makes that may very well provide the reasons for his contention that part of the congruence thesis is true.

The first thing to point out is the rather strong realistic line Aristotle takes throughout his writings. He considers the entities or phenomena that constitute the subject matter of a discipline to form a kind, to have a nature that is not determined by the way we speak and think about them or the manner we describe them. The characteristics of a kind are determined by and are to be explained in terms of the nature of the kind or the other causes that Aristotle recognizes. In no case are they determined by or are explained in terms of the way we describe them or speak and think about them. There is no evidence that Aristotle thinks that the situation is any different with the characteristics which constitute material inexactness. There is no evidence, in other words, that he thinks of them as not being a part of the nature of the subject matter but instead as the result of the way the subject matter is described. On the contrary, the available evidence indicates that he thinks of these characteristics as belonging to the subject matter itself. Thus, it is matters of conduct and of health themselves that are inexact (*N.E.* 1104a). It is characteristics of matter itself that give rise to inexactness in nonmathematical disciplines (*Met.* 995a15) and it is matter itself that suffers from indefiniteness (*G.A.* 778a7).

Coupled with this realistic line there are two additional Aristotelian theses concerning the logical role of a premise and the aim of an account or explanation. When all these three factors are taken together, Aristotle's claim that material inexactness implies formal inexactness seems plausible. Aristotle takes a premise to assert something (an attribute or property) of the subject (*Pr. Anal.* 25a), and the aim of an account or explanation is to show the truth (

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) about the subject matter, to represent the phenomena as they are (N.E. 1094620). Suppose, then, that an attribute or property P belongs to some subject matter S only for the

— 146 —

most part. The congruence thesis requires that this feature of the subject matter—S being P only for the most part—be reflected in our propositions. It seems that it would have to be if the nature of a premise or proposition and the aim of a discipline or account are what Aristotle takes them to be. If in some premise or proposition we assert P of S, and if we are to show the truth and represent the relation between S and P as it is, then our proposition would have to be true for the most part. Suppose that an attribute P is indefinite or vague: Now our premise that consists in asserting P of S will itself be indefinite or vague if we are to satisfy Aristotle's conditions. Our task presumably is to show the way things are. If the phenomena are indefinite or vague, then our accounts cannot be precise if they are to represent them. Our accounts would not fit the phenomena. Aristotle most probably thinks that there is a unique description or account that is true or fits the nature of the phenomena.

Material inexactness does not imply formal inexactness, however. The assumptions we have just discussed make the congruence thesis with regard to some types of inexactness appear more plausible by identifying the sort of considerations that motivate Aristotle's claim. But what these considerations show at best is that there is some description or account of the phenomena that reflects their inexactness. They do not show that the phenomena cannot be described, represented, or depicted in such a way that the features of inexactness that presumably characterize the material level do not appear at the formal level. In fact, this is possible. It is both interesting as well as somewhat puzzling that Aristotle himself utilizes techniques for representing phenomena that are presumably inexact in a way that the formal level does not suffer from the same kind of inexactness that characterizes the material level.

Consider, for instance, our earlier schematic example where a property P belongs to some subject S only for the most part. Now there is some proposition that has the appropriate logical form and asserts P of S that is true for the most part. Aristotle however uses the technique of restricting the subject in order to provide descriptions that are not true only for the most part. Briefly put, the technique generates a proposition that is universally true by narrowing the domain of the subject to only those things to which P applies universally. Aristotle uses this technique rather effectively and extensively in his biological treatises. They too deal with phenomena that exhibit to a considerable degree the type of inexactness Aristotle associates with being for the most part. Thus, whether material inexactness is reflected at the formal level does depend after all on the way the phenomena are described.

Consider again the type of inexactness Aristotle associates with variation. Such inexactness characterizes, according to Aristotle, the biological phenomena as well as the phenomena of conduct. Yet Aristotle sees no

- 147 -

problem in the case of the biological phenomena in giving accounts that do not exhibit this type of inexactness. He does this by moving to a level of abstraction such that accounts, descriptions, or definitions of phenomena that exhibit variation are not themselves affected by variation.

Then, the part of the congruence thesis stating that in all cases material inexactness implies formal inexactness is false. Any successful application of the above techniques for eliminating formal inexactness would show that although some subject matter may be inexact, not every account of it need be also inexact. Yet Aristotle insists that our accounts in ethics must be, like its subject matter, inexact or that the congruence thesis under discussion here holds. Perhaps Aristotle has reasons for insisting that this part of the congruence thesis holds in the case of disciplines dealing with matters of conduct. Perhaps he thinks that these techniques will not work in ethics—neither restricting the subject nor abstracting from variation will prove successful in producing accounts that are free of inexactness pervades the subject matter of ethics or with the nature of the goals of the discipline. I shall return to these matters later when I examine in detail the various types of inexactness in ethics.

Ineliminability and the Remarks on Exactness in the N.E.

The above discussion on the congruence thesis has touched on the question of whether inexactness can be eliminated, and we saw that in some cases Aristotle thinks that even though the subject matter may be characterized by inexactness we can give accounts that avoid inexactness. In other cases, he thinks that this cannot be done. Some formal inexactness that is due to material inexactness presumably cannot be eliminated.

But what about formal inexactness that is not due to material inexactness? It may at first appear that all such inexactness can be eliminated. It may not be so, however. Whether such inexactness is eliminable at times depends on the source that generates it. As seen earlier, there are, in addition to material inexactness, several other sources of formal inexactness. Now if the sole source of formal inexactness is one's wish to avoid the supposed pettiness or illiberality of exactness, then most likely inexactness can be eliminated at the cost of being petty or illiberal. The case is similar with formal inexactness that has its source in classification gaps, methodological or rhetorical strategies, or the immediate purpose at a particular point of an inquiry. Names can be provided to eliminate the classification gaps and the attendant inexactness. One may adapt different strategies of investigation, presentation, or teaching such that the inexactness resulting from our method of investigating, presenting the ma-

- 148 -

terial, or teaching does not arise. An inexact treatment of a topic due to the immediate purposes of the investigation can be eliminated by giving an exact one at the appropriate stage of the investigation. As seen earlier, Aristotle himself eliminates, or at least thinks that he does, formal inexactness due to the immediate purpose quite often throughout his writings.

Eliminating formal inexactness may prove much more difficult or even impossible where the sources that generate it are different from the ones we just discussed. Thus, when a topic T is treated inexactly in a discipline D_1 because it properly belongs in discipline D_2 , it may be impossible to remove such inexactness, for to explain or prove the theorems or propositions about T one needs the axioms, postulates, or basic propositions of D_2 . In order to explain the nature of the intellect, the emotions, or mathematical proportions—topics that Aristotle touches upon in his ethics for the purpose of giving an account of the good, the virtues, and justice— one must utilize the basic propositions or axioms of psychology or arithmetic. We may of course wish to incorporate arithmetic into ethics and thus make the treatment of an arithmetical topic exact within ethics, but it is clear that ethics and arithmetic are two distinct disciplines. They have different subject matters, different axioms, and the theorems or propositions of either one are not proven by using the axioms of the other. Neither of these disciplines is, in Aristotelian language, subordinate to the other.

Suppose that formal inexactness is due to the goals of a discipline—that is, that in order to satisfy the goals of a discipline, one needs to reach a certain level of specificity or detail. It may well be that such a level of specificity cannot be attained. This is indeed the case with the level of specificity Aristotle thinks is demanded by the goals of ethics and in fact by the goals of all disciplines of conduct. Similarly, if we are required to

eliminate vagueness or indefiniteness from our accounts, so that they would not be inexact, the possibility of doing so will depend on the degree to which we are required to do so—for it is not evident that all vagueness can be eliminated, that one can, in other words, produce accounts that are free of all and every vagueness. Indeed, whether inexactness can be reduced or eliminated or whether exactness can be attained will often depend on the standard of exactness set or required. If the standard set or required is such that it cannot be attained, then formal inexactness, regardless of its source, will be impossible to eliminate.

What then do the remarks on inexactness in the *N.E.* say about the possibility of eliminating inexactness from ethical accounts? It can be and has sometimes been argued that when Aristotle speaks of inexactness in the *N.E.* he is primarily speaking about the character of his own accounts. He is, that is, characterizing only the accounts he gives or is interested in giving and does not intend to assert anything about the nature of ethical

- 149 -

accounts in general. His remarks in the *N.E.* can best be understood as attributing inexactness that is due to his own methodological or rhetorical strategies or immediate purposes to his ethical accounts. This assessment of Aristotle's remarks is questionable. I shall discuss in detail in subsequent chapters, where I examine the various types of inexactness, whether Aristotle's claims about the extent of ineliminability of inexactness in ethical accounts are correct or not. It is important at this point to take an overview of the remarks on exactness in order to see that his concern with inexactness goes far beyond that of his own accounts.

We may for the purposes at hand distinguish between the following:

(a) Inexactness that Aristotle attributes to his own accounts: the accounts he gives or he proposes to give

(b) Inexactness that Aristotle attributes to all possible accounts in ethics

It is clear that (a) does not imply (b), but (b) implies (a). So if Aristotle attributes inexactness to his own accounts only, it would not follow from this that he thinks all accounts in ethics are inexact.

Many of Aristotle's remarks on inexactness properly belong in (a). We should certainly include in this class the following: his proposing to give an outline of the nature of the good (1094a25); his characterizing of the account of the good he gives as an outline and rough sketch (1098b20); his describing his own accounts of the virtues (1107b14, 1114b26, 1115a4), of courage (1117b20), of happiness and friendship and pleasure (1179a33), and of choice (1113a14) as being in outline and inexact.

Some of his remarks belong in (b), however, for in these Aristotle speaks of inexactness that characterizes any account of matters of conduct. In this class belong his remarks that connect inexactness of a discipline with inexactness of its subject matter. So Aristotle tells us that "accounts of our actions and emotions admit only of such definiteness as belongs to the matters with which they deal" (1165a13), and "every account of matters of conduct [

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] must be given in outline and not precisely. . . . The accounts we demand must be in accordance with the subject matter" (1104a; see also 1094b13, 1098a25). In these remarks Aristotle is not restricting inexactness to his own accounts only. On the contrary, he is characterizing all accounts of matters of conduct as inexact—"every account of matters of conduct"—including, of course, his own. We should include in this class his remarks concerning the difficulty or impossibility of giving an exact rule or definition of some matters of conduct because they exhibit variation or indefiniteness (1159a3, 1164a23, 1171a).

Some inexactness Aristotle recognizes as belonging only to his own accounts. At times he does indeed opt for methodological or rhetorical

108 of 362
inexactness, or is willing to accept inexactness given his immediate purposes in the process of the investigation. This concern of Aristotle with the inexactness pertaining to his own accounts neither excludes nor should it overshadow his more general concern with the nature of all possible accounts of matters of conduct and their supposed inexactness, for this latter concern is clearly of greater importance.

Similarly, the fact that Aristotle is at times concerned with kinds of inexactness that he himself takes to be, and in fact are, eliminable should not lead us to conclude that he takes all inexactness to be eliminable, for in some cases he thinks that it is not. His own remarks do indeed differ widely on whether inexactness is eliminable. It might be best to divide them into three broad classes. In the first class we may include those remarks where Aristotle simply characterizes the accounts he aims at or succeeds in giving as being inexact, but he gives no indication at all as to whether their inexactness can be eliminated. Thus, in Book I, ch. ii, as soon as Aristotle concludes that perhaps there is a highest good for man-something that is pursued only for its own sake and that may be the end of everything that humans do or pursue—he remarks that we should try to explain in outline what its nature is and what the science is that studies it. He characterizes in the same manner the account he gives of choice—that is, as being simply inexact—without indicating whether or not the inexactness can be eliminated (1176a30). At the end of the *N.E.* he assesses the accounts he has given of several aspects of conduct in the same terms and in the same fashion: "If then we have sufficiently discussed in their outlines the subjects of happiness, virtue and also of friendship and pleasure, our proposed investigation can be viewed as complete" (1179a33).

In these and similar remarks, Aristotle does not tell us much about why the accounts he aims at or succeeds in giving possess the inexactness they presumably do. He certainly does not state explicitly whether such inexactness can be reduced or eliminated. The first remark, in which he says that his own objective is to give an account of the good in outline, certainly raises the question: Why not have as an objective the giving of a precise or exact account of the good? Does Aristotle believe or know from the start that only a certain kind of account of the good is possible? The last quotation above, in which Aristotle claims that his inexact accounts of happiness, virtue, friendship, and pleasure have completed his investigation, also suggests something quite similar. It suggests either that he has all along been aiming at accounts that have certain features, and that what he has achieved satisfies his goals or purposes, or that inexact accounts are the only accounts we can expect in relation to matters of conduct. These questions make it quite clear that it is not obvious at all what we should infer about the ineliminability of inexactness from remarks such as the above where Aristotle simply characterizes something as inexact.

— 151 —

One certainly cannot infer that he thinks it can be eliminated, for after careful examination one may very well conclude that even in these remarks where he does not even suggest that inexactness is ineliminable, Aristotle assumes that it is. Otherwise his remarks would make little sense. And of course from looking at these remarks in isolation we cannot infer that it is eliminable. In order to draw any inferences about eliminability, one needs to answer the kinds of questions raised above and to consider the larger context in which these remarks occur. As shall be seen, when that is done, one finds that in some cases Aristotle thinks inexactness to be ineliminable even though he does not explicitly state that he thinks so.

But there is another group of remarks, our second class, in which Aristotle tells us explicitly how he views the inexactness he attributes to his accounts—namely, that it can be reduced or even eliminated. Thus immediately after giving a definition, account, or explanation of the good (and happiness) in terms of the human function, he tells us that the account is only an outline but "the proper procedure is to begin a rough sketch and to fill it in afterwards. If a work has been laid down in outline, to carry it on and complete it in detail may be supposed to be within the capacity of anybody" (1098a20). A similar sentiment is expressed in the passage in which Aristotle promises a more exact account of the virtues. After pointing out that the specific differentia of several of the virtues is, as his theory requires, a mean, he says, "For the present then we describe these [virtues] in outline and summarily . . . but they will be more accurately

defined later" (1107b14). In these cases Aristotle clearly speaks of reducing inexactness and possibly eliminating it. In the second remark he does not rule out elimination of inexactness, although his point seems to be that of improving upon it (

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-more exact). Yet in the first remark his language suggests that inexactness can be eliminated: "to begin with a rough sketch and fill it in afterwards . . . to complete it in detail."

In contrast to these two classes of remarks—that is, the class where Aristotle gives no indication whether elimination or improvement of inexactness is possible and the class where he states rather explicitly that inexactness can be reduced or even eliminated—there is a third class. In this third class belong those remarks in which Aristotle says or implies that no improvement is possible or that inexactness is ineliminable from accounts of matters of conduct. This class consists primarily of those remarks in which Aristotle connects formal inexactness to the nature of the subject matter of ethics. Thus Aristotle states categorically that, "In such cases [where there are differences of merit] it is not possible to give an exact definition [

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] up to what point persons can still remain friends" (1159a3). After he states that good things (such as wealth and bravery) fluctuate greatly, he remarks, "we must therefore be content, in dealing with such things and from such premises, to indicate the truth

— 152 —

roughly and in outline" (1094620). Later, he writes, "But let it be agreed at the start that every account of matters of conduct is bound to [or has to, or is required to figure

] be only in outline and not with any exactness, as we said in the beginning accounts must correspond to the subject matter" (1104a). It is evident that in these remarks Aristotle excludes the possibility of eliminating inexactness. We should presumably be content with the inexact accounts because they are the only ones possible. Accounts of matters of conduct are bound to be inexact. Although there may be some room for improvement, the remarks imply that there is a limit beyond which reduction of inexactness is impossible. Accounts of matters of conduct will remain inexact because what they deal with possesses certain features.

The above discussion makes it clear that Aristotle views some forms of inexactness to characterize all accounts of matters of conduct and to be impossible to eliminate. The fact that sometimes he speaks of only his own accounts as being inexact or suggests that inexactness can be reduced, or even eliminated, should not mislead us into thinking that he attributes inexactness only to his own accounts or that he thinks all inexactness can be eliminated. Whether Aristotle is correct in viewing all accounts of matters of conduct as possessing inexactness and in treating some types of inexactness as ineliminable are questions to be discussed later.

- 153 -

Five Outline, Exactness, and the Particular

Introduction

I have suggested in the previous chapter that the terms Aristotle uses when he speaks of exactness/inexactness signify a variety of things. In other words, Aristotle recognizes different types of exactness/inexactness. I have in addition argued that he recognizes different sources of formal inexactness. And we saw from the evidence presented in our discussion of the various sources of formal inexactness that Aristotle takes most of these sources to be present in his own accounts as well as in any possible accounts of matters of conduct.

Aristotle's remarks on exactness/inexactness in the ethical treatises can, then, be viewed from at least these two perspectives—that of the sources of exactness/inexactness they single out and that of the types of exactness/ inexactness they identify. These two ways of viewing Aristotle's remarks however cut across each other: Different sources may give rise to the same type of exactness/inexactness, and different types of exactness/inexactness may be generated by the same source.

In this chapter and subsequent chapters I shall view Aristotle's remarks from these two perspectives. I shall focus in this chapter on a group of remarks where Aristotle speaks of a type of exactness/inexactness that he thinks characterizes ethical accounts for a variety of reasons—it has many different sources. In the subsequent chapters I shall treat the remaining remarks by again dividing them in groups on the basis of these two factors: the types and sources of exactness/inexactness. In some cases, of course, the type of exactness/inexactness is the same despite the difference in the sources, but in most cases it is not. Although this way of dividing up Aristotle's remarks may not always produce groups that have no common

— 154 —

members, it often does. In any case, there is no reason to insist that each remark be placed in one grouping only. Sometimes the focus of our attention may be the type of exactness/inexactness Aristotle has in mind, while at others it may be the source that generates it, and of course at still others the focus may be both the sources and types of inexactness/ exactness.

I shall distinguish in this chapter a type of inexactness that Aristotle speaks of rather frequently in connection with his own as well as any possible investigation of matters of conduct. Following Aristotle, I shall refer most often to this type of inexactness by characterizing an account as being in outline or lacking in detail, recognizing of course that the variety of terms Aristotle uses signify somewhat different things—for example, being in outline, lacking in detail, being in general terms, being a summary, being brief or incomplete. Exactness will, of course, be the opposite of these. But despite the variety of terms for inexactness and exactness Aristotle uses throughout these remarks, it is correct to group them together; for although the terms for inexactness do not signify exactly the same thing, they signify something quite similar-lack of detail or specificity. The same can be said about the terms for exactness. In this instance at least there seems to be a common thread unifying the various things Aristotle has in mind when he speaks of inexactness/exactness. Our first task then will be to present the evidence from the treatises on conduct by giving the passages where Aristotle speaks of such exactness/inexactness and to try to identify as well as interpret the terms he uses in connection with it.

Our next task will be to identify the source or sources of this type of inexactness. I shall argue that the type of inexactness as well as the type of exactness under discussion is a formal and not a material feature—it characterizes the accounts, definitions, explanations, and so forth, and not the subject matter, of a discipline. It is the accounts, definitions, explanations, and so forth of ethics that are inexact by being in outline and not its subject matter or matters of conduct. And it is these same things that can or cannot be exact in the sense we are discussing here. Indeed, it will become clear that the type of inexactness under discussion is not a reflection at the formal level of any characteristic of the material level. It is not caused by some feature of the subject matter. On the contrary, the sources of this inexactness are the sorts of things we identified in the previous chapter as some of the sources of formal inexactness that Aristotle himself recognizes—methodological or rhetorical strategies, the burdensome character of exactness, immediate purposes at certain stages of his own inquiry, inappropriateness of discipline, or the goals of the discipline of ethics.

The last source is clearly the most important. For whereas most of the

- 155 -

others may be peculiar to Aristotle's own ethical investigation and could possibly be eliminated, the inexactness whose source is the very goals of the discipline of ethics is likely to be present in any ethical investigation and may not be eliminable. It is perhaps

111 of 362

8/6/2006 1:15 PM

the recognition of this on the part of Aristotle that explains both why he at times takes this kind of inexactness to characterize any ethical inquiry, not only his own, as well as why he insists that the inexactness at issue cannot be eliminated. It shall be seen that he takes the fact that the goals of ethics are practical instead of theoretical to imply a level of exactness that he considers to be unattainable. The level of exactness required by the goals of ethics cannot be reached. Hence, ethical accounts must remain inexact.

I shall then turn to an examination of the possible epistemological consequences such inexactness may have—in particular, whether this type of inexactness affects in any way the demonstrative nature of those disciplines it characterizes or whether it makes demonstration impossible. It is assumed universally by commentators from the ancient times to the present that it is inexactness that poses problems for an Aristotelian science: Inexactness affects negatively the demonstrative rigor or purity of a science or even makes it nondemonstrative. I shall argue that contrary to the accepted opinion, in the case of the type of exactness/inexactness under discussion, the most problematic epistemological consequences, which may even affect the demonstrative character of a discipline, are not the result of inexactness but rather of the exactness Aristotle considers necessary for practical disciplines. That is, it is not their lacking in detail or their being in outline that raises the important epistemological problems for such disciplines but rather their reaching that level of exactness that Aristotle thinks they must reach given the practical nature of their goals. Were such practical disciplines to become exact to the degree Aristotle requires, their exactness would have some important epistemological consequences, especially within the Aristotelian framework of a demonstrative science.

Thus, the discussion will confirm the opinion universally held by commentators on Aristotle's works about the supposed difference between practical and theoretical knowledge—namely, that practical knowledge is, according to Aristotle, different from theoretical knowledge because its goals are different. Instead of merely pointing to the differences in the goals of these two types of knowledge, I will try to identify the ways in which, according to Aristotle, the goals of the various types of disciplines affect their epistemological character—for example, that the practical goals of some disciplines require a certain level of exactness that may not be required by nonpractical (and nonproductive) disciplines. If the required level is not achieved, the practical disciplines will exhibit a type of inexactness that nonpractical (and nonproductive) disciplines may not exhibit.

- 156 -

But if the required level is achieved, then the epistemological consequences mentioned above may introduce important differences between practical and theoretical disciplines.

Finally, I will offer some reflections on several of Aristotle's claims. I will, for example, raise some questions about Aristotle's claim that the goals of ethics imply the level of exactness he says they do or that accounts in ethics are inexact to the extent he insists they are by virtue of not reaching this level of exactness. Some of these claims may make sense when they are seen as reactions against some familiar Socratic and Platonic doctrines about the rather abstract character of ethics, but they are nonetheless problematic.

The Evidence and its Meaning

Aristotle rather frequently characterizes accounts of conduct as inexact because they are or must be in outline or lacking in detail. He uses in this connection a number of different terms that despite some minor differences seem to signify for him this type of inexactness. Following are all the remarks where Aristotle speaks of this form of inexactness in the ethical treatises and the *Politics* :

5.1	If this is so [that there is some one thing that is the end of all action], we ought make an attempt to determine at all events in outline [
	figure] what the good is and which science or capacity is concerned with it. (<i>N.E. 1094a</i> .

Γ

	3
5.2	Perhaps, however this question [that is, how are different things called good] must set aside for now, since a detailed investigation [
	figure
] of it belongs more properly to another branch of philosophy. (1096630)
5.3	Thus the argument has reached the same result [that is, that the highest end is t good]; we must try however to make this still more precise [or clear—
	figure
	l. (1097a24)
5.4	Let this account then serve to describe the good in outline [
	figure
]—for we must presumably begin by making a rough sketch [
	and then to fill it in afterwards. If a work has been well laid down in outline [
	figure
], to carry it out and complete it in detail may be supposed to be within the capac
	of anyone. (1098a20)
5.5	But the accidents of life are many and exhibit all kinds of differences and some aff us more than others. To distinguish between them in detail [
	figure
	figure
	figure
] would clearly be a long and endless [
	figure
	figure
	figure
] undertaking, and a treatment which is general and in outline [
	figure
	figure
	figure
	figure
	rigure
	j, may pernaps be enough. (1101a25)
5.6	But a detailed [or exact] treatment [
	figure
] of this matter [that is, whether praise or encomia belongs to happiness] is perha rather the
	1

— 157 —		
	business of those who have made a study of encomia. For our purpose we may du the conclusion from the foregoing remarks, that happiness is a thing honored ar perfect. (I 102a)	
5.7	For the present then we describe these [that is, some dispositions as means (virtu and others as extremes (vices)] in outline [
	figure	

] and summarily [
] which is sufficient for now; but they will be more accurately [
] defined later. (1107b 14)
5.8	Let this serve as a description in outline [
	figure] of choice, and of the nature of its objects, and the fact that it deals with means ends. (1113a14)
5.9	We have now discussed the virtues in general and stated their genus in outline
	figure], viz.that they are means and dispositions, and have shown that they render us a to do the same actions as those by which they are produced, and to do them in t way in which right reason may enjoin; and that they depend on ourselves and a voluntary (1114626). But to resume, let us now discuss the virtues severally, defin the nature of each, the class of objects to which it is related, and the way in which is related to them. (1115a4)
5.10	Let this [that is, the account of courage as stipulated in 5.9] suffice as an account courage: from what has been said it will not be difficult to grasp in outline [
	figure] at least what its nature is. (1117620)
5.11	Now we observe that everybody means by justice that disposition which renders n apt to do just things, and which causes them to act justly and to wish what is jus and similarly by injustice that disposition which makes men act unjustly and wis what is unjust. Let us also, then, start by assuming this in outline [
	figure]. (1129a11)
5.12	To say this [that is, that in the case of all dispositions there is a mean to aim at a there is a definition of the mean which lies between two extremes and is in conformity with reason] is surely true, but it is not at all precise [
	figure]. For in other pursuits where there is a science it is indeed true to say that efforought to be exerted and relaxed neither too much nor too little, but to an intermediate amount prescribed by reason. But if one knew only this he would be wiser than before: for example, he will not know what medicines to apply to the bin merely from being told to apply those medicines prescribed and in the way a med expert does. Hence it is necessary with regard to the dispositions of the soul also only this true statement should be made, but that it should in addition be determine what correct reason is and what is the standard that determines it. (1138625)
5.13	Now virtue makes the choice right; but the things that are naturally to be done t carry out our choice are the concern not of virtue, but of another capacity. We mu dwell on this point in order to make it more precise [
	figure]. There is a certain capacity called cleverness, which

	is such as to be able to do the things that tend towards the goal we have set and achieve it. (1144a21)
5.14	However I have given an exact treatment [
	figure figure] of motion in another work. (117463)
5.15	Having now discussed the various kinds of virtue, of friendship and of pleasure, remains for us to treat in outline [
	figure] of happiness, inasmuch as we count this to be the end of human life. (1176a3(
5.16	Whereas the happiness that belongs to the intellect is separate: so much may be s about it here, for an exact treatment [
	figure] of the matter is beyond our present project. (1178a23)
5.17	If then we have sufficiently discussed in their outlines [
	figure] the subjects of happiness and of virtue in its various forms, and also of friendsh and pleasure, may we assume that the investigation we proposed is now complet Or perhaps, as we say, the end of studies about things to be done is not to study know the various things, but rather to do them. (1179a32)
5.18	Now a thorough examination of this opinion [that the form of good is the absolut good] belongs to another study But if we are to speak about it briefly [
	figure], we say that (<i>E.E. 1217b18)</i>
5.19	We must endeavor by means of statements that are true but not precise [
] to arrive at a result that is both true and precise. For our present state is as if v knew that health is the best disposition of the body and that Coriscus is the darke man in the market-place; for that is not to know what health is and who Coriscus but nevertheless to be in that state is a help towards knowing each of these thing (1220a15)
5.20	Let us then define them [the vices] simply [
	figure] in this manner, and with greater exactness [figure] when we are speaking about the opposite dispositions. (122168)
5.21	The necessity of what we are arguing [that necessary things follow from necessa and contingent from contingent ones] is clear from the <i>Analytics; at present we</i> <i>cannot either deny or affirm anything exactly [</i> <i>figure</i>] except just this. (1222638)

	— 159 —
5.24	We shall have to define the class of pleasures concerned [with temperance and the related vices] more exactly [
	figure] in our discussion of self-control and weakness of the will later on. (1231b)
5.25	Now in what preceded we stated the standard 'as reason directs'; but this is as if matters of diet one were to say 'as medical science and its principles direct,' and t though true is not precise [
	figure]. (124965)
5.26	Of the several divisions of wealth-getting I now speak generally [
	figure]; a minute consideration [figure] of them might be useful in practice, but it would be tiresome to dwell upon in stu (<i>Polit. 1258638</i>)
5.27	For just as in the other arts [or disciplines] as well, so with the structure of the struct
	figure] in all its details; for it must of necessity be described generally [or in universa terms, figure], but our actions deal with particular things. (1269a10)
5.28	However, if this point [that is, whether the excellence of a good person is the same the excellence of a good citizen] really is to receive investigation, we must first ascertain in some sort of outline [
	figure figure] what constitutes the excellence of a citizen. (1276b19)
5.29	And although sailors differ from each other in function and so clearly the mo exact [
	figure] definition of their excellence will be special to each, yet there will also be a comn definition of excellence that will apply alike to all of them. (1276624)
5.30	And since we are considering what circumstances give rise to party fractions an revolutions in constitutions, we must first ascertain their origins and causes genera They are, speaking roughly [
	figure], three in number which we must first define in outline [figure
] separately. For we must ascertain what state of affairs gives rise to party strife, for what objects it is waged, and thirdly what are the origins of political disorders internal party struggles. (1302a19)

5.31	We have now therefore spoken in outline [
	figure] about almost all the offices of state. (1323a10)
5.32	In extent and magnitude the land [of the state] ought to be of a site that will ena the inhabitants to live a life of liberal and at the same time temperate leisure. Whether this limiting principle is rightly or wrongly stated must be considered mc precisely [
	figure] later on, when we come to raise the general subject of property and ownership wealth. (1326633)
5.33	But to linger at this point over the detailed statement [figure
] and discussion of questions of this kind is a waste of time. The difficulty with su things [temples and public buildings] is not so much in understanding [or explainir figure] them, but in doing them Hence we

— 160 —	
	will relinquish for the present the further consideration of matters of this sort. (1331b18)
5.34	The particular kind of bodily constitution in the parents that will be most beneficial the offspring must be studied further in our discussion of the management of children; it is sufficient to speak of it in outline [
	figure] now. (133565)
5.35	We will leave the precise discussion [figure] as to each of these matters [effects of music and its place in education] for any v wish it to seek it from those teachers, while for the present let us lay down gener principles, merely stating the outlines [figure figure] of the subjects. (1341630)
5.36	And as we say that music ought to be employed not for the purpose of one bene that it confers but on account of several (for it serves the purpose both of educati and of catharsis—we speak of catharsis at present without explanation [
	figure], but we will return to discuss it in detail [figure] in our treatise on poetry. (1341640) ^[1]

The above remarks from the treatises on conduct make it quite clear that Aristotle takes the type of inexactness we have provisionally designated as lacking in detail or being in outline to be rather pervasive in accounts of matters of conduct. They also make evident the fact that Aristotle's favored term for expressing this type of

inexactness is

figure

(5.1, 5.4, 5.7, 5.8, 5.9, 5.10, 5.11, 5.15, 5.17, 5.20, 5.30, 5.31, 5.34, 5.35).^[2] The term originally meant an impression or imprint of an object; the outline of an object that is impressed or imprinted. Thus Aristotle speaks of the imprint (

figure

) of a stimulus that presumably is similar to the imprint made when we seal with a signet ring ($\it Mem.$ 450a31, b5) and of the outline of a scar (

figure figure

figure

figure

G.A. 721632). The original meaning of this term is in part preserved when Aristotle uses it to characterize the nature of accounts, descriptions, explanations, and so forth—such things are at times only outlines or sketches; they give only a general idea or they lack detail.^[3] And so Aristotle speaks in 5.4 of giving a rough sketch (

figure

) of the good that is a description of it in outline (

figure

).^[4] This latter term literally means to draw a line around something, hence to draw an outline, trace, sketch, or delineate.^[5]

Even though Aristotle uses terms that are different from the ones just discussed in some of the remarks quoted above, his concern is with the same type of inexactness. Throughout these remarks, he is invariably concerned with such features of an account as its lack of detail, its being in outline, its not giving a complete description or explanation of some aspect of conduct, and so forth. This seems to be the case even when Aristotle uses the term (

figure

) in its various forms, despite the fact that it has almost always been taken to mean 'clear'. For it is evident from the context

— 161 —

that what Aristotle has in mind when he characterizes an account as not being

figure

is its lack of detail or its being sketchy. And what he proposes or actually does in order to make such an account more

figure

is to make it more detailed or complete, and in this sense to make it more clear (see 5.11, 5.17, 5.20, 5.31). Similarly, Aristotle speaks of an account or treatment that is lacking in detail because it is in general terms (

figure , 5.5, 5.23, 5.26, 5.27), because it is brief (

figure

, 5.18;

figure

, 5.22), or a summary (

figure

, 5.7).

And it is exactness or inexactness in this sense of possessing or lacking detail that Aristotle has in mind when he uses the term

figure

in several of its forms. Thus, Aristotle uses this term when he speaks of a detailed investigation of some topic that belongs to another branch of philosophy or discipline (5.2, 5.14, 5.16, 5.21), of various topics that require a treatment in greater detail (5.7, 5.20, 5.29, 5.32), and of some which either cannot be treated in detail (5.27) or for which it would be tiresome to do so (5.26).

It is clear that this type of exactness/inexactness can characterize only a discipline and its constitutive elements—it can characterize definitions, descriptions, explanations, accounts, and so forth. These are the kinds of things that can have or lack detail, can be presented in outline, briefly, in general terms, or summarily, and so forth. It is a kind of

118 of 362

8/6/2006 1:15 PM

exactness/inexactness that can apply only at the formal level—it is a formal feature.

And it is evident from the remarks quoted above that Aristotle himself views this type of exactness/inexactness as being a formal feature. In none of these remarks does he attribute being in outline, being brief, or lacking in detail—and of course their opposites—to the subject matter of ethics and politics or matters of conduct in general. He restricts this type of inexactness to the formal level only, but whether there is nonetheless some feature of the subject matter, of the elements of conduct themselves, that generates or causes this type of exactness/inexactness at the formal level remains to be examined.

What are Aristotle's intentions when he speaks rather frequently of this type of exactness/inexactness? What do his remarks tell us about the sources and implications of this type of inexactness? Questions clearly arise as to what would satisfy Aristotle's quest for exactness and what level of detail or specificity would need to be attained for ethical accounts to be complete. Questions also arise as to whether Aristotle considers the kind of inexactness under discussion here to be eliminable and to affect the epistemological nature of the disciplines of conduct. Or, in general and independently of what Aristotle thinks, the question arises whether such inexactness can be eliminated and whether it has any epistemological consequences.

- 162 -

Aristotle's Intentions

In some of the remarks quoted above Aristotle himself proposes or sets out to give accounts, explanations, or descriptions that are only in outline or lack detail. Yet in others he appears to be saying that inexactness in his own and perhaps all accounts of matters of conduct is inevitable. Again, in some cases his reasons for proposing to give inexact accounts, settling for inexact accounts, or claiming that such inexact accounts are inevitable are quite transparent. In other cases, however, they are not so transparent.

For example, his reasons are transparent when in some of his remarks Aristotle proposes or is prepared to accept in some discipline D an inexact treatment of some topic T because T does not belong to the proper domain D studies. It presumably belongs in the domain of some discipline other than D, and in some instances Aristotle refers explicitly to the proper discipline of T where an exact treatment is or should be given. This source of inexactness is the one we identified earlier as inappropriateness of discipline. It is this source that generates accounts that are in outline or lack detail of the following: The explanation of how different things are called good (5.2), of whether praise or encomia belongs to happiness (5.6), of motion (5.14), of the happiness that belongs to the intellect (5.16), of whether the form of good is the Absolute Good (5.18), of whether necessary things follow from necessary and contingent from contingent ones (5.21), of the similarity between the end in deliberation and the postulates in the sciences (5.22), of the effect of music and its place in education (5.35), and of the nature of catharsis (5.36). In the case of some of these topics Aristotle offers more exact or detailed accounts in the disciplines to which he thinks these topics belong-for example, of encomia in Rhet., of motion in Phys., and of catharsis in Poet.

What can be said about inexactness that results from inappropriateness of discipline? What are its scope and implications? It seems, as I pointed out in the previous chapter, that the scope of inexactness resulting from inappropriateness of discipline can be rather limited. From the fact that some topic T is inexactly treated in discipline D because it belongs in another discipline need not imply that every topic of D is inexactly treated—that the whole of D is inexact. Thus, the fact that encomia, motion, music, or catharsis are and perhaps can only be inexactly treated in the *N.E.* or *Polit.*, need not imply that virtue, the good, the state, or citizenship are inexactly treated in these investigations.

Yet the scope of inexactness stemming from inappropriateness of discipline may' not be so limited in all cases. At the least, questions remain about the cases where the topic that belongs in another discipline, and is therefore inexactly treated in D, is of fundamental importance for explicating or understanding the basic elements of D. Thus, whereas treating

— 163 —

the matters of encomia or catharsis briefly or only in outline in ethics or politics may not affect the exactness of the accounts of the good, of virtue, or of the state, treating the topics of the nature of the soul, of the intellect, of function, or the number and nature of the things that can be in the soul inexactly may very well affect the accounts of the basic elements of ethics and politics.

So the rather cursory treatment Aristotle gives in Book I of the *N.E.* to the nature of function, the soul, and its faculties does affect the account of the good and happiness he gives in terms of the faculties and functions of the soul. As commentators often point out, many issues relating to these topics, in particular that of function, are either not treated at all or only touched upon by Aristotle, and this affects his account of the human good and happiness. Similarly, his cursory treatment of the intellect leaves his account of happiness in Book X as a form of contemplation lacking in detail. The same can be said about his treatment of dispositions or states of character (

figure

) (in contrast to faculties or habits), which is crucial for his account of virtue in Book II. Thus the scope of this type of inexactness may not be so limited in some cases. Whether it is seems to depend on the relation a topic T that is treated inexactly in discipline D because of inappropriateness of discipline has to the central elements of D.

Can inexactness due to the inappropriateness of discipline be eliminated? As I said in the previous chapter, it may not be possible, for in order to eliminate inexactness from the treatment of topic T in discipline D it may be required that considerable portions of the discipline to which T belongs be incorporated into D. For example, it may be required to incorporate major portions of psychology and physics into ethics in order to eliminate the inexact treatment Aristotle gives of motion and intellect in the ethics (5.14, 5.16). Even this rather drastic move of incorporating one discipline into another may not result in the elimination of inexactness in our treatment of topic T. It all depends on whether T is or can be treated exactly in its proper discipline, for if T is not or cannot be treated exactly in its proper discipline, incorporating portions of such a discipline into another would not eliminate the inexactness of T in the latter discipline. Thus, if motion is not or cannot be treated exactly in physics, incorporating the account of motion from physics into ethics would not eliminate inexactness from the treatment of motion in ethics. And we cannot assume that all things can be treated exactly even in their own disciplines. As shall be seen, Aristotle himself thinks that at least some matters of conduct are resistant to exact treatment, but this need not be restricted to matters of conduct. Aristotle thinks that some biological phenomena, for example, the gestation periods in animals, are equally resistant to exact treatment in their proper discipline.

But whether the inexactness that is due to inappropriateness of disci-

— 164 —

pline can be eliminated depends also on the standard of exactness that is demanded or required in the various disciplines. That is, whether a topic T that is inexactly treated in some discipline D because it belongs in another discipline can be treated exactly in part depends on the level of exactness demanded in or required by D. Thus, whether inexactness from the treatment of motion in ethics can be eliminated in part depends on the standard of exactness appropriate for ethics. If ethics requires a low level of exactness, then perhaps providing an account of motion that is even marginally more complete or in greater detail than the one Aristotle gives may be sufficient for eliminating inexactness in its own proper discipline, or whether any existing inexactness from its accounts in its proper discipline can be eliminated, would depend on the standard of exactness appropriate for or required by the proper discipline of motion.

Aristotle's intentions are also clear in 5.26 where he seems willing to accept an inexact treatment of a topic because it would be tiresome to seek a detailed account of it. He is willing to accept a treatment of the various types of wealth that is only in general terms and is lacking in detail in order to avoid the tiresome or burdensome task

of seeking an exact one.

Aristotle does not say that the inexactness in his account of the types of wealth that is due to the burdensome character of exactness cannot be eliminated. On the contrary, what he says about the usefulness of an exact account of the types of wealth suggests that perhaps an exact account is possible, although tiresome. Indeed, inexactness that has its source in our desire to avoid the burdensome task of seeking exactness need not imply that it cannot be eliminated. The nature of the source that generates it seems, on the contrary, to imply that it can be eliminated—if our desire, for example, for exactness outweighed our wish to avoid the irksome task of attaining it, then perhaps exactness would be realized.

But again whether inexactness that is due to these rather psychological factors can be eliminated depends in part on the level of exactness that is desired or required. If an extremely high level of completeness, detail, or specificity is required, then the mere desire to attain exactness despite the irksomeness and pettiness of doing so may not guarantee the attainment of exactness. Such an extreme level may very well be unattainable. As shall be seen below, Aristotle does at times set such an unattainable level of exactness for ethics and other practical disciplines.

The same may be said about the inexactness Aristotle is willing to accept when in 5.33 he claims that to seek an exact treatment of some topics may be a waste of time. What is problematic with some matters of conduct, he claims there, lies not with the understanding but with the doing of them. Again, Aristotle does not address the question of whether inexactness due

- 165 -

to such factors can be eliminated, but 5.33 by itself implies that it can. There is nothing said there that excludes attaining exact accounts if we were to decide to waste our time in order to realize such accounts. Whether we will succeed in obtaining exact accounts and thus in eliminating inexactness will, however, again depend on the level of exactness which we set or which is required.^[6]

The problem with the level or standard of exactness desired or required in a discipline becomes apparent when we focus on those remarks where Aristotle speaks of inexactness consisting in incompleteness or lack of detail that is due to methodological or rhetorical strategies, immediate purposes at a certain stage of the inquiry, or the goals of the discipline. Aristotle does not often state explicitly the standard of exactness that he uses in determining that ethical accounts are or must be inexact. Hence it is not clear at times why he characterizes some accounts as lacking in exactness and what is needed in order to improve upon or remove their inexactness. Yet Aristotle has some standard of exactness in mind—a standard he takes to be required by the discipline of ethics and similar disciplines of con-duct—when he insists that some or all accounts of matters of conduct are or can only be inexact.

For example, consider 5.1 where Aristotle proposes to seek an account of the good that is in outline. Why seek an account that is only in outline and hence inexact? Why set such an objective? Perhaps it is only Aristotle's immediate purpose or perhaps it is part of his rhetorical or methodological strategy. All he needs at this stage of the inquiry, all that is required for the purpose of presenting the results of his investigation, is an account of the good that is in outline and incomplete, a rough sketch. But perhaps the meaning of this remark, which sets the tone and indicates the objectives of Aristotle's inquiry, is more complex as well as unclear. It may, for instance, be the case that Aristotle has reasons for thinking that an inexact account of the good is all that he can obtain. That is, he has reasons for thinking not only that an inexact account of the inquiry, his immediate or methodological purposes—but also that an inexact account is all that can be expected in the case of the good.

What does Aristotle want from our accounts of the good, and what would enable us to transcend the outline form in them? In 5.4 he characterizes the result of his own investigation into the nature of happiness and the good as being inexact. This is understandable, since the only conclusions the investigation has produced so far do not tell us what the nature of the good is. They only tell us some relational and quite abstract properties of the good, that is, that the human good is something that is

pursued for its own sake, that it is not pursued for the sake of anything

— 166 —

else, that everything that is pursued is pursued for the sake of it, that it is self-sufficient, and so on. It is clear that these properties do not specify the nature of the good, and therefore of happiness, and Aristotle is fully aware that they do not. He is aware that his own characterization of the good so far does not specify its nature sufficiently: It does not identify the good. That this is so and that Aristotle clearly recognizes this can be easily seen from what he says in 5.19: To know that happiness and the good is the highest end is like knowing "that health is the best disposition of the body and that Coriscus is the darkest man in the market-place; for that is not to know what health is and who Coriscus is, but nevertheless to be in that state is a help towards knowing each of these things." Similarly, he finds the definition of justice in 5.11-what renders men apt to do just things and act justly-correct but inexact: It does not tell us what justice is; it does not identify the nature of actions that are just or the objects to which justice relates. The same, Aristotle observes in 5.12 and 5.25, is true of a definition of virtue as a disposition that lies between two extremes and is as reason prescribes. Such a definition is, according to Aristotle, as informative as the statement that purports to specify what medicines to apply to the body by telling us to apply those that medicine prescribes and in the way a medical expert does. Aristotle does not deny that such definitions or accounts provide us with information. As he says, to be in "that state [of knowing what such definitions tell us] is a help towards each of these things." But it is clear that the definitions of virtue as a mean disposition that is in conformity with right reason and of the good as the highest end do not specify adequately the nature of virtue and do not identify the good. Aristotle clearly recognizes that one needs to determine what correct reason is in the case of virtue (5.12) and to make more precise what the highest end of human pursuits (the good) is (5.4).

Setting the concerns with the definition of virtue aside for the moment, let us focus on Aristotle's attempts to make his account of the good more precise. The first attempt is made in *N.E.* (I.vii), where he gives his well-known explanation of the human good and happiness in terms of the human function. In the same chapter Aristotle identifies the good and happiness with that activity of the soul that constitutes the human function and is performed in accordance with virtue (1098a15). But Aristotle finds even this account inexact, lacking in detail, for immediately following this account of happiness and the good in terms of the human function, he characterizes the account as being a rough sketch or an outline (5.4). It is perhaps natural and understandable for Aristotle to find this last account of the good to be a mere outline. Although he has identified the good with the human function, he has not yet explained what the function really is—specifically, he has not yet given us his account of intellectual activity or contemplation, or his account of the virtues and their connection to

— 167 —

the human function (the topics that occupy the bulk of the discussion in the N.E.).^[7] Hence, after giving the account of the good and happiness in terms of the human

function, Aristotle sees his or anyone's task as being that of filling in a rough sketch (figure

) or adding what is missing from a sketch (

figure figure figure

) that gives the correct outline (1098a20). The task is to fill in or add to the abstract framework and general account of the good and happiness that has been given in terms of the human function. One needs to provide greater detail or specificity than the argument from function provided in order to obtain an account of the good and happiness that can be called exact. In at least this instance, Aristotle speaks as if the sketch of the good he has given can be filled in or completed, as if details can be provided and an exact account attained.

It seems, however, that this is not all that Aristotle has in mind here, or at least that the level of detail or specificity Aristotle has in mind is much higher than 5.4 appears to

suggest. The contrast between an account of X in outline and one that is not seems not to be merely the difference between identifying X in abstract, general terms (for example, the account of the human good in terms of the function of man) and giving a further detailed explanation of this abstract, general characterization (for example, the detailed accounts of contemplation and of the moral virtues). For in the very last book of the N.E. (Book X.vi), when Aristotle returns to the discussion of the good and happiness, he claims that "it remains for us to treat in outline of happiness" (5.15). He then proceeds to explain intellectual activity and compare a human life that attains the highest form of happiness through intellectual activity to one that is concerned primarily with the exercise of the ethical excellences and action. Yet this is not sufficient either, for after he completes this discussion, he adds that the accounts he has given of the good (happiness), virtue, friendship, and pleasure are only in outline: "If then we have sufficiently discussed in their outlines the subjects of happiness, virtue and also of friendship and pleasure, may we assume that the investigation we proposed is now complete [or finished]?" (5.17). The placement of the last chapters of the N.E. has often been subject to debate, and doubts have been raised as to whether these chapters should be placed where they are at present. But it is a somewhat surprising fact about the N.E., which is a rather loosely organized treatise, that at the end, or at least at what we take to be the end, Aristotle returns to characterize his own investigations and accounts (see 5.17) in exactly the same way that he characterized his own objectives at the beginning of the treatise—to give an account of the good in outline (see 5.1).

Wherever the last chapters of the *N.E.* are placed, the inclusion of virtue among the things that Aristotle considers to have been treated only in outline is indeed a puzzle. For after he completes his discussion of the

— 168 —

nature of moral virtue (Book II) by offering a definition of it in terms of its genus (disposition, state of character) and specific differentia (the notion of the mean) and shows that the ordinary virtues of courage, temperance, and liberality neatly fit his definition because they are mean states of character between extremes (the vices), he remarks: "For the present then we describe these qualities in outline [figure

] and summarily [

fiqure

] which is sufficient for now; but they will be more accurately defined later" (5.7). The inexact treatment of virtue in this case is due to Aristotle's own immediate purposes. As seen earlier, in most of these cases Aristotle promises and often gives a more exact treatment of the topic that has been treated inexactly at a later stage of the investigation. He promises and gives a more detailed account in the present case as well. When he promises that the virtues will be more accurately defined later, Aristotle is referring to the accounts he gives later of the individual moral virtues (Book III.v), which accounts he prefaces with the remarks, "We have now discussed the virtues in general and stated their genus in outline [

figure

], viz. that they are means and dispositions. . . . But to resume, let us now discuss the virtues severally, defining the nature of each [

figure

], the class of objects to which it is related and the way it is related to them [

figure	
figure	
figure	
figure	

]" (5.9).

The general account of virtue indeed does not identify the virtues individually or specify the types of objects to which they are related. It does not tell us, for example, what courage is, what the emotions are that make up its essential nature—such as fear and confidence—or what kinds of things are to be feared or not to be feared. The general account of virtue is not even sufficient for distinguishing one virtue from another, since what the general account tells us is supposedly true of all the virtues—that is, an explanation of their common features. Similarly, Aristotle claims in

123 of 362

8/6/2006 1:15 PM

5.29 that the definition of the virtue (excellence) peculiar to each class of sailors is more exact than the one which is of the common excellence to all and applies to all of them.

So Aristotle embarks on an investigation of the individual virtues, turning his attention to courage first. What he says in Book III, chapters vi-ix may not be altogether correct but he does elaborate in considerable detail on the nature of courage, the emotions to which it is related, and the objects in relation to which courage is displayed. Yet he concludes this discussion of courage by remarking, "From what has been said it will not be difficult to form a conception in outline of its nature" (5.10). Similarly, he concludes his rather elaborate discussion of choice—a discussion that he himself assumes has provided an explanation of its nature, of the types of objects with which it is concerned, and of the fact that it deals with the means to the various ends—by characterizing his account as being in outline (5.8).

— 169 —

Naturally, questions may be raised as to what Aristotle has in mind here. One may wonder why the explanation or account of each individual virtue, given in terms of its proper nature and the objects related to it, is still an explanation, description, or account which is rough or in outline. What does Aristotle think we could add to it, or do we in fact need to add anything to it at all? And would an explanation of some natural phenomenon, which is analogous to the explanation of the individual virtues, have the same inexact character, or is this true only in the case of ethical accounts? Perhaps this is a peculiarity of ethics that can be attributed to its goals or some other factor. Again, one may be puzzled why after all an account, explanation, or description of a certain kind, species, or genus need be considered rough or in outline when it includes a clear definition of the kind—especially when the definition satisfies Aristotle's own conditions and is given in terms of genus and specific differentia, as is the definition of moral virtue. Suppose, for example, we were to define triangle by giving its essential nature in the way Aristotle considers to be correct. Why should we then view such a definition to be in outline or incomplete in any way simply because there are different kinds of triangles—isosceles, equilateral, right, and so forth—just as there are different kinds of virtue, and each one has its own specific nature? Is what Aristotle says about his own accounts of the good, virtue, choice, and the like true of all accounts of kinds, species, and genera, regardless of the subject matter? If so, his theory of the structure of science faces considerable difficulties, since the definitions of such things as kinds, species, and genera occupy a central place in this theory.^[8]

Perhaps Aristotle's characterization of all of his accounts as being in outline or inexact is to an extent understandable: We can see that characterizing an account, explanation, or description as being in outline, or rough, or in some way incomplete, is to characterize it in terms of something that admits of degrees or that is relative. Thus an account B of X may be more complete than account A, but less complete than C. So the account of the general features of virtue may be more in outline and less complete than the accounts of the virtues severally, but a third account may be more complete and less in outline than the second, although what precise form the third one would take has yet to be specified.

Even this does not seem to be the whole story, for Aristotle at times appears to specify what form the accounts should take, what kinds of explanations of the elements of conduct he wants, and what degree of detail or specificity they should attain. In 5.9, for instance, he establishes as his goals in relation to virtue, "defining the nature of each, the class of objects to which it is related, and the way in which it is related to them." Yet the elaborate account of courage he gives, which satisfies these conditions of 5.9, is termed an outline (5.10); and so are all the individual

- 170 -

accounts of the virtues (5.17), as well as the account of choice (5.8), which also seems to satisfy conditions similar to those stipulated for the virtues in 5.9. This seems to be no accident—for Aristotle characterizes in this manner almost all the central accounts in the *N.E.* : the accounts of the good (5.1, 5.3, 5.4), happiness (5.15, 5.17), virtue (5.7, 5.9, 5.10, 5.17), choice (5.8), friendship (5.15, 5.17), and pleasure (5.15, 5.17).

The same is true in the case of several accounts Aristotle gives in the E.E. and Polit.

He is at times willing to accept an account that although inexact is sufficient for his immediate purposes. Yet when he elaborates upon it, exactness is still not attained. Thus in 5.20 Aristotle claims that his account of the vices is inexact and a more exact one is to be given later when the virtues are discussed. At 5.23 he claims that the account of the virtues he has given so far has been only in general terms and they need to be discussed individually. But at the conclusion of his discussion of the individual virtues he remarks that, "We have spoken roughly about the other praiseworthy virtues, and must now speak about justice" (1234b). At 5.24 he terms his discussion of pleasure inexact and promises a more exact account of it in his discussion of pleasure there is sufficiently exact. The same is true of the discussions in *Polit.* of party factions and revolutions (5.30) and the size of the land required for the state (5.32).

Returning to the *N.E.*, there is the question I raised previously about the meaning of 5.1.: Why does Aristotle at the outset of his investigation establish as his goal the attainment of inexact accounts? It could be, as I hinted earlier, that these are the kinds of accounts he is interested in; they are perhaps sufficient for his purposes. He may believe that he has no need, or in fact that there is no need, for a level of exactness that is higher than the one he achieves in his own investigation.^[9]

Yet this may not be the whole story, for it could also be the case that he thinks inexact accounts are the only possible accounts in ethics and similar disciplines. However hard we try to refine them by moving away from general or abstract characterizations and making them more specific or detailed, they will always remain in outline, inexact, and incomplete.

It is most likely that a belief in the impossibility of exactness in ethical accounts is in part what motivates 5.1. A belief on Aristotle's part that the only accounts possible in ethics are inexact, at least in the sense of being in outline or lacking in detail, would explain why at the outset he sets obtaining inexact accounts as his goal. Such a belief also suggests that his characterization of almost all the accounts he himself gives or proposes to give of the central elements of ethics as inexact is not a vacuous, insignificant expression or a mere figure of speech. On the contrary, it is a significant assessment of the nature of his own accounts as well as of all possible accounts. I also believe that the assessment is a plausible one given

- 171 -

the reasons on which it is based. Aristotle's reasons for thinking that his own as well as all accounts in ethics are inexact by being in outline or lacking in detail will be our next topic of discussion.

Outline, Lack of Detail, and the Goals of Ethics

A hint as to why Aristotle finds his own as well as all possible accounts of the central elements of conduct to be inexact by lacking in detail is given in 5.17. In that passage, which occurs in the final sections of the N.E., he questions whether his investigation is complete now that he has discussed in their outlines the subjects of happiness, virtue, friendship, and pleasure. His response is as follows: "Or perhaps, as we say, the end of studies about things to be done is not to study and know the various things, but rather to do them." Whether the investigation is complete or not is determined, according to Aristotle, by its goals. In the case of ethics the ultimate goals are presumably not cognitive but practical and they determine the level of exactness in the sense of detail, specificity, or completeness that is required. Aristotle himself proceeds to argue in the last pages of the N.E. that we must investigate how to put ethical theory into practice, how virtue is realized, what the role of the state is in educating the young, and so forth. In this way, he thinks, we shall have come closer to completing the investigation, for we shall have shown how ethical knowledge can be put into practice. After all, this is the ultimate goal of ethical investigation according to him. I shall argue in this section that when this claim about the practical goals of ethics is understood—as it is understood by Aristotle—to imply that ethical accounts must deal with what practice deals with, then it may be impossible for Aristotle or anyone else to obtain ethical accounts that are exact in the sense under discussion here.

The clearest statement regarding the implications that the goals of practical

disciplines have for the exactness possible in such disciplines is given in a passage from the *Polit.* quoted above (5.27). Aristotle claims there that it is impossible that the structure of the state should have been framed exactly in all its details (

figure

), for it must of *necessity be* described (

figure

) in general terms, whereas our actions deal with particular things (

figure

). Aristotle in this passage makes at least the following claims: (a) inexactness in some instances consists in the fact that some account or description is given only in general terms and is lacking in detail; (b) in accounts or descriptions relating to action, exactness or detail consists in reaching the level of the particular, since practice or action deals with particulars; and (c) exactness of this kind is impossible to attain, and consequently, inexactness in accounts of conduct is necessary or unavoidable. Thus Aristotle thinks the practical goals of the discipline that studies the nature and

— 172 —

structure of the state (politics) demand that our accounts reach a level of detail that cannot be achieved.

We should naturally expect the same to be true in the case of all those disciplines whose goals are similar to the goals of politics. The goals of all practical disciplines and perhaps all the productive ones as well should demand the kind of exactness which Aristotle thinks the goals of politics demand. And we should also expect Aristotle to view this type of exactness, which is imposed on the accounts of a practical discipline by the nature of its ultimate goals, to be, as is presumably the case with politics, unattainable in the case of ethics and every other practical discipline.

There is however no statement in Aristotle's ethical treatises that asserts unequivocally for ethical accounts what the passage from the *Polit.* (5.27) asserts for any account of the structure of the state—namely, that if accounts in ethics are to be exact they must reach the level of the particular and that such exactness cannot be attained. Although he speaks on at least two occasions of accounts of the particulars (1104a6, 1107a29), he does not assert that we must reach the level of the particulars if our accounts are to be exact. On the first occasion he is concerned with the difference between the exactness possible in accounts of the general or universal aspects (

figure

) and the exactness possible in accounts of the particulars (

figure

) of matters of conduct.^[10]

On the second occasion he is concerned with applying the general accounts to the particulars for the purpose of testing the truth of the general accounts: "We must, however, not only give general accounts, but also apply them to the particulars. For among accounts of matters of conduct the general ones have a wider application but those that are more specific are more true, since actions deal with particulars and our accounts must agree with them." The concern in this context is with the truth of his general thesis that virtue is a mean and his aim is to show the truth of this thesis by examining whether it applies to the particular virtues (courage, liberality, temperance, and so forth). But the application of a general theory to specific cases for the purpose of determining the truth of the theory is a requirement any general theory has to meet: It is not peculiar to ethics or to practical disciplines. Perhaps the practical goals of ethics and therefore of all practical disciplines demand that we reach a certain level of specificity in order to determine the truth of a general theory about practical matters. They demand, as Aristotle claims, that we reach the level of the particulars, since actions deal presumably with particulars. Although Aristotle may have something like this in mind when he speaks of the need to reach the particular in order to test the truth of an account, it still is not certain that there is a real difference between practical and nonpractical disciplines with respect to this matter. A claim about vivi-

parous animals needs to be tested by considering the particulars, the members of the

126 of 362

class of vivipara.

But despite the fact that we have no statement in the ethical treatises that asserts unequivocally for ethical accounts what 5.27 from the *Polit.* asserts for political accounts, it can be shown that the considerations that lead Aristotle to insist upon the necessary inexactness of the framing of a political constitution (political accounts) are also the ones that lead him to insist upon the inexactness of ethical accounts. In other words, it is considerations concerning the goals of practical disciplines, the exactness such goals demand, and the nature of what practice deals with that motivate Aristotle's characterization of all of his and perhaps all possible accounts in ethics as inexact by lacking in detail. The similarity he takes to exist between ethics and politics with regard to their goals has at least this consequence: Whatever implications the goals have in relation to exactness in one discipline they should, *ceteris paribus*, have in the other as well. If political accounts must reach the particular in order to be exact because action deals with particulars and such a level of exactness cannot be attained, then the same should be true in the case of ethical accounts.

There is no question that Aristotle takes the goals of ethics to be similar to those of politics. Ethics, as we saw earlier, is considered to be a practical discipline: Its ultimate aim is practice or action (

figure

). And it is this goal that determines the kind of exactness that is appropriate in the case of political accounts. The question, then, is whether Aristotle views action in the ethical context to be like action in the political context—as dealing with particulars. If he does, then the demand of reaching a certain level of detail and specificity (exactness) that Aristotle takes to be imposed on political accounts because of their practical goals and the nature of *praxis* would also be imposed on ethical accounts.

Just as there is no doubt that Aristotle takes the goals of ethics to be practical, there is no doubt that he takes action in the ethical context to deal with particulars. Indeed this seems to be an aspect he attributes to action in general; it is a characteristic of all action. As the passage from the *Polit*. discussed above (5.27) makes clear, when Aristotle speaks of action dealing with particulars he means all action or is thinking of action in general—"actions deal with particulars." He does not restrict his claim to actions in the political domain. Indeed, in *Met*. he states categorically that dealing with the particular is a feature of all actions: "And actions and productions are all [

figure

] concerned with the particular [

figure

]" (981a15). In any case, Aristotle speaks in the *N.E.* itself of this supposed character of action or practice: "Actions deal with particulars [

figure

]" (1107a31, 1110b33, 1141b16, 1143a32, 1146a6, 1147a2). If the concern with the particular then is a universal feature of action, it should have the same implications with regard to

— 174 —

exactness for the accounts of all the disciplines whose goals are practical. According to Aristotle, ethics is one such discipline.

The term (

figure

) that Aristotle uses to indicate what action deals with or what level of specificity accounts of matters of conduct must reach is, however, used by him to signify at least two different things. Sometimes he uses it to signify a kind or sort that is narrower than another kind, for example, something that is a species falling under some genus, while at others he uses it to mean the individual. Thus Aristotle speaks of the pleasure that corresponds to each (

figure

) faculty of perception (1141b25), implying here nothing more than a reference to the kinds of perceptual faculties—for example, vision, hearing, touch. He also speaks of the noble and pleasant things that correspond to each type of character (

figure

), each one kind (

figure

) of study (1094b23) or of animal (G.A. 715a3).

At times, then, when Aristotle contrasts accounts, descriptions, or rules that are general to those that are of the particulars, the contrast he has in mind may be merely of two levels of generality: Some accounts, descriptions, or rules are more specific than others by being about the various species falling under a genus or about some kinds that are narrower than some other kinds. This seems to be what Aristotle has in mind in his discussion of practical wisdom or prudence.

Aristotle's example of what the person who is likely to restore one to health knows makes it clear that he is thinking of knowledge of something that is a more specific or narrow type than something else—knowledge that chicken is wholesome in contrast to knowledge that light meats are wholesome. Knowing the particular in this case is knowing the more specific type.^[11] It is less clear what Aristotle means when, in trying to justify why practical wisdom requires knowledge of the particulars in addition to the universal, he says that action deals with the particular. Is action concerned with the particular in the sense of more specific or is it concerned with the particular in the strict sense—the individual? I will return to this question shortly.

However, at the moment it is important to recognize that at times when

— 175 —

Aristotle speaks of our accounts reaching the particulars or of the need to know the particulars he only means arriving at or knowing more specific accounts or rules. In the case of practical wisdom, knowledge of the particulars may simply be knowledge of the various kinds that fall under a wider kind—for example, chicken falls under light meat-or knowledge of more specific or narrow principles—for example, "chicken is light meat" (5.37). Perhaps the clearest example of this is Aristotle's remark where he says that we must not only give an account of virtue in general terms, "but we must also apply it to the particulars [

figure

]" (1107a28). What Aristotle means here, as is made evident by what he proceeds to do, is to apply the doctrine of the mean to each one of the species of virtue or even to classes of virtue that have more than one member. That is, he proceeds to apply the thesis of the mean to virtues like courage, temperance, and liberality—all of them species of virtue; or to apply it to a class that consists of a number of virtues that share a common characteristic—for example, virtues relating to passion, virtues relating to material goods, and virtues relating to social life. In all of these cases to reach the particulars is merely to provide more specific accounts that may remain at the level of the universal or general.

Aristotle, however, uses the term

figure

most often to mean "the particular" or "individual"—a usage that reflects the familiar contrast with the universal or general (

figure

) and at times with the species or genus under which an individual falls. Thus in Met: "For we say that there is no difference between being numerically one and an individual [

figure

]; for this is what we call an individual, that which is numerically one, and universal that which is predicable of many individuals" (999b34). And in G.A. the individual is contrasted to the genus: "Now both the individual (

figure

) and the genus to which it belongs are at work in the act of generation; but of the two the individual takes the leading part, because this is the really existent thing. . . by individual I mean Coriscus or Socrates" (767b33). Similarly, the individual man is contrasted to the species *man* : "For it is the individual that is the originative principle of the individuals. For while man is the originative principle of man universally, there is no universal man, but Peleus is the originative principle of Achilles, and your father of you" (*Met.* 1071a20).

This use of the term to mean the particular in the strict sense is encountered rather frequently in the *N.E.* At times Aristotle uses the term in conjunction with some demonstrative and thus makes it clear that he means the individual or particular in the strict sense. Thus, "in addition deliberation may be in error about either the universal [figure

] or the particular [

figure

]. For instance, [in asserting] either that all heavy water is unwholesome or that this [figure

] water is heavy" (1142a21). Similarly, when explaining the nature of the premises of the practical

— 176 —

syllogism in his discussion of moral weakness, Aristotle claims that there are two kinds of premises, the universal and the particular, and that it is possible for a person to act against knowledge when she knows both premises but is exercising only her knowledge of the universal premise and not that of the particular. For, Aristotle explains, "Action deals with particulars. . . . For example, he may know that dry food is good for every man and that he himself is a man or even that food of a certain kind is dry, but either not possess or exercise the knowledge that this particular [

figure

] food is of this kind" (1147a5).

Similarly, when he says that actions deal with particulars, he often means the particular in the strict sense—that is, the individual. For instance, he claims that action deals with or consists of particulars in the strict sense in his discussion of the voluntary and involuntary: "Actions consist of particulars [

figure

]" (1110b7, 1110632, 1111a24). It is the particular in the strict sense that Aristotle has in mind in the passage from *Met.* partly quoted above: "And actions and productions are all concerned with the particular; for it is not *man* that the physician cures, except incidentally, but Callias or Socrates or some individual called by such a name" (981a15).

Aristotle's claim about the relation of action and the particular in the strict sense must be distinguished from a different claim concerning the ontological status of actions themselves, for he also considers actions themselves to be particulars in the strict sense. As Harris Rackham, following Burnet, puts it in explicating Aristotle's position, "there is no such thing as an act which is not this particular act in these particular circumstances."^[12] It is not then merely the case that actions are concerned with this or that individual—for example, this water, this light meat, this sick per-son—but in addition the acts of drinking, eating, curing, and so forth are themselves individuals. The clearest statement of this is to be found in *N.E.* : "Each type [

figure

] of just and lawful [action] relates as a universal to the particulars [

figure

]; for the actions [i.e., the particulars] are many, but each type is one, since it is a universal [

figure

]" (1135a5). Aristotle wishes to distinguish here between action-types (the universals) and action-tokens or what is done (

figure

—the particulars or instances of the universals). He wishes to distinguish, for example, between the action-type *eating* and the various acts of eating (instances or tokens of the type), the latter being individuals. But clearly the claim concerning the ontological status of actions—namely, that they are individuals—does not necessarily imply that the objects of action or what they deal with are also individuals.

It is rather unfortunate that Aristotle uses the same term to designate both the individual and the narrow universal, calling both of them particulars. This clearly complicates matters unnecessarily and seems to obscure a clear difference between two types of particulars. Aristotle himself

— 177 —

sees the difference quite clearly: "For this is what we call an individual, that which is numerically one, and universal, that which is predicable of many individuals" (*Met.* 999b35). In *G.A.* he again contrasts being human, which is a narrow universal when compared to being an animal or a mammal or viviparous, to an individual: "Since 'human being' is general, whereas Socrates who is the father, and the mother whoever she may be, are to be classed as particulars [individuals,

figure

]" (768b13). A narrow universal is a universal and not an individual; it is predicable of many things. Perhaps his reason for calling both the individual and narrow universals particulars is that both fall under or are instances of universals. Individual virtuous acts are instances of virtue, as are courage, temperance, or justice (narrow universals). Thus, we may think of the particulars in the case of virtue as being the individual virtuous acts or the various kinds of virtue, for example, courage, justice, and temperance. In any case, the only reasonable thing to do in this context is to mark the distinction between narrow universals and individuals, keep the two meanings of "particular" clearly apart, and explore the implications exactness might have in terms of reaching either kind of particular.

When Aristotle insists that actions deal with particulars, which kind of particulars does he have in mind? Sometimes he seems to be saying that some actions have as their objects particulars that are narrow universals. This appears to be the case with the passage we discussed earlier where Aristotle explains the nature of practical wisdom or prudence: "Nor is practical wisdom knowledge of universals [

figure

] only, but it needs to know the particulars [

figure

] also, since it is concerned with action, and action deals with particulars [

figure

]" (5.37). But, as seen above, what Aristotle proceeds to do by way of explaining or illustrating his thesis is to argue that the person who knows that chicken is wholesome (the particular) is more likely to succeed in restoring one's health than the person who knows that light meats are wholesome (the universal) but does not know what kinds of meat are light. The particular in this context is clearly not an individual, but something that is itself general or universal, although more specific than what Aristotle takes to be the universal.

Does Aristotle then admit that there are actions that deal with what is a particular but not in the strict sense? When he says that actions deal with particulars and identifies in that context the particular with the more specific universal, does he mean to say that there are actions that deal with such relatively specific universals? If there were such actions, then actions would be at least of two types: those that deal with individuals and those that deal with nonindividuals. Both types of actions are presumably individuals and thus satisfy Aristotle's condition regarding the ontological status of actions: All actions are individuals.^[13] I think, however, that Aristotle

— 178 —

does not admit actions that deal with nonindividuals. Despite the rather ambiguous character of his remarks concerning the relation of practical wisdom, particulars, and actions, the evidence indicates that he admits of one type of actions only—those that

deal with individuals.

The example Aristotle uses in his discussion of practical wisdom and the particulars is most probably not an example of an action involving particulars that are not individuals. Rather it is an example of how practical knowledge of the specific and therefore particular fact that chicken is a light meat is more useful than knowledge of the more general fact that light meats are wholesome in producing or restoring health. The relevant act in this connection is the act of producing or restoring health, and there is no evidence Aristotle takes this to be an act dealing with nonindividuals. The act of course may involve use of knowledge of more specific properties or kinds or is likely to be more successful if it were to use such knowledge, but it need not be the case that the act deals with nonindividuals—that is, that the person doing the act is restoring the health of something that is not an individual.

Indeed, the very example of producing or restoring health that Aristotle uses in his somewhat ambiguous discussion of practical wisdom provides the best evidence that he is not thinking of acts that deal with nonindividuals, for it is practically the same example he uses in at least two other occasions for the purpose of showing that actions deal with the particular in the strict sense, the first occurring in *N.E.* : "He [the physician] studies the health of humans^[14] —or rather of some particular human being, for it is individuals [

figure

] that he cures" (1097a12). On the other occasion where Aristotle uses this example he provides us with even stronger evidence for concluding that he thinks all actions deal with individuals. Not only does he outrightly say so but in addition he uses the example on this occasion to illustrate the same point that the example illustrates in the problematic passage on practical wisdom from the *N.E.* —namely, the greater usefulness of knowledge of the particulars in contrast to that of universals, since actions deal with particulars. But in this case Aristotle goes on to explicitly identify the object the action deals with as well as to explain in what way one may be said to do an act whose object is not an individual.

5.38 And actions and productions are all concerned with the particular; for it is not *ma*, the physician cures, except incidentally, but Callias or Socrates or some individu called by such a name who happens to be a man. If, then, a man has the theo without the experience, and recognizes the universal but does not know the individual included in this, he will often fail to cure; for it is the individual that is to be cure *Met.*981a15)

— 179 —

Aristotle's concerns in the above passage are the same concerns that motivate his discussion of practical wisdom in the *N.E.*: to fix the relative importance of the kinds of knowledge for action. But in the *Met.* passage there is no ambiguity left as to what are the objects with which actions deal. He goes beyond stressing the greater importance of knowledge of the particular in relation to action—something he also does in his discussion of practical wisdom in *N.E.*—to clearly identify the object an action deals with as the particular in the strict sense: that is, the individual. Unlike cognition, which can deal either with the universal, the particular (i.e., the more specific), or the individual, action deals only with the individual. Aristotle's explanation of the way an action can be said to deal with the nonindividual makes his view concerning the objects action deals with even more clear. Suppose we were to ask, Can the physician cure *man*? (Now *man*

, the species, is a particular in the sense we discussed above. It is more specific than a wider kind, e.g., *animal*, but it is not an individual. It is not a particular in the strict sense. It is general or a universal.) The answer, according to Aristotle, is clearly negative. We can say that the physician cures *man* only incidentally, which means that he really cures Socrates or Callias or some other individual that happens to be a member of the species *man*. If any doubts remain about Aristotle's view on the objects actions deal with, they should be dispelled by the categorical and universal statement at the beginning of the above passage: "And actions and productions are *all* concerned with the particular." He makes it absolutely clear that he means the particular in the strict sense—that is, Socrates or Callias.

This rather lengthy discussion of Aristotle's views on the ontological status of actions, the nature of the objects they deal with, and the kinds of particulars relevant to practical knowledge and action is important for the purpose of discussing the issues at hand: Aristotle's characterization of practically all the major accounts he gives as being only outlines; his demand for ever greater exactness by way of greater detail; and his contention that the exactness required in such practical contexts cannot be attained. Clearly, if what Aristotle has in mind when he speaks of exactness in ethical accounts is that such accounts must deal with whatever actions deal with in order to be exact, then whether such exactness can be attained depends on the nature of actions and on the nature of their objects. It should be apparent from the discussion so far that if actions deal with particulars in the strict sense and ethical accounts are supposed to attain a level of exactness that reaches the particulars in the strict sense, then attaining such a level of exactness would be difficult and perhaps impossible. Indeed, I shall argue here that even if one were to take the particulars to be only narrow universals, so that ethical accounts are only required to arrive at rather determinate principles or rules specifying action-types,

- 180 -

there would still be problems for attaining exact accounts in ethics. These are the matters I wish to turn to next.

The Possibility of Attaining Exact Accounts

Consider again Aristotle's statement in the *Polit*. that the structure of the state must of necessity be described in general terms and therefore inexactly, whereas actions deal with particulars (5.27). How would our accounts of the structure of the state become exact? What sort of particulars must they reach in order to attain the level of detail Aristotle wants? We may take as an example Aristotle's own discussion of the offices and officers of the state in *Polit*. Book VI. He describes and gives brief accounts there of the functions of the following officers and their respective offices which he thinks a state must have: superintendents of markets, public and private properties, and farms; law, revenue, military, penal, and religious officers; and recorders, auditors, and councilmen. Not surprisingly, he concludes his discussion of these matters by characterizing his accounts of them as being in outline (5.31).

Aristotle is correct in so characterizing his accounts of the offices and officers of the state, for what he does in most cases is provide some arguments purporting to show why these offices or officers are needed and touch upon the actions each is concerned with in the most general terms: for example, one officer is described by saying that he supervises contracts and good order (superintendent of market), another by asserting that he receives a statement and subjects it to an audit (auditor). The accounts of these offices and officers consist solely of identifications at the most general level of some action-types that presumably define such offices or officers. In some cases, however, Aristotle is more specific by describing the functions of some offices in terms of less general or more narrow action-types and/or by enumerating the types of things with which the action-types deal: for example, the superintendent of public and private officers is in charge of the beautification, preservation, and rectification of falling buildings and roads, and of the boundaries between different person's estates; and the penal officer is concerned with the execution of judgment upon persons cast in suits and those posted as defaulters according to the lists, and with the custody of prisoners.

Similarly, Aristotle gives at first a very general account of justice with regard to the distribution of power in the state—justice is equality for those who are equal and inequality for those who are unequal (1280a12)—and then proceeds to specify his principle further. Since the political fellowship exists for the sake of noble action, he argues that "those who contribute most to such fellowship have a larger part in the state than those who are their equals or superiors in freedom and birth but not their

equals in civic virtue, or those who surpass them in wealth but are surpassed by them in virtue" (1281a5).

If the level of detail Aristotle attains when he explains the functions of some of the offices of the state in terms of action-types that are of lesser generality is not sufficient, and if the levels of specificity he reaches when he explains the kinds of equality and inequality involved in his principle of political justice is not adequate, then how shall we proceed in order to attain exact accounts? If what was said earlier about Aristotle's understanding of what action deals with and its supposed implications for accounts of matters of conduct is true, the options are quite limited: Either we remain at the level of the general but persist in narrowing the universals or action-types further and further; or we go down to the level of the particular in the strict sense—reaching the level of individuals or action-tokens.

The options for attaining exactness in the sense discussed here would be the same in the case of ethics. We will have to give accounts that either remain at the level of the general but are in terms of rather narrow universals or we will have to reach the level of the individuals. For example, we may begin with ethical statements or principles such as "Honor is good" and "Wealth is good" ("Dry food is good" or "Light meats are healthy" would be analogues in medicine). Or with statements that specify action-types: "Giving to one's friends is right" ("Walking is good" would be an analogue in medicine). To achieve greater exactness, we would have to narrow the universals or action-types by specifying, for instance, the types of wealth: wealth from land possessions, structures, animals, money, gold, inherited, amassed, won, and so forth (similarly, the types of dry food and light meats); or the types of giving (for example, giving gifts, sharing wealth, providing in time of need; and similarly, the types of walking). But if this level of detail is not sufficient, we would have to be more specific by making references to individuals—"This gold is good" or "This dry food is healthy"—or by identifying action-tokens—"Callias's giving this gift to Socrates at a particular time is right."

Can either of these levels of exactness or detail be realized? Aristotle thinks that neither level can, hence his belief that political as well as ethical accounts are necessarily inexact. The evidence for the impossibility of attaining exact accounts that are in terms of narrow universals is not as clear as one would have liked. There are, however, both theoretical and textual considerations that can be used in support of the claim that Aristotle thought such exactness to be unattainable.

The problem is due in part to the fact that when Aristotle speaks of narrowing the universal or reaching more specific universals, he does not set a limit as to how narrow or specific the universals must be. For it seems that given any account in terms of universals of the kind we encounter in

- 182 -

the domain of conduct, it is possible to think of even more narrow or specific ones. Since no limit is set on the specificity of the universals any account could clearly be inexact by comparison to some other, for it would always be possible to think of a universal that is more specific than the one we already have, and thus to think of a more exact account, description, principle, and so forth. For example, consider the principle that wealth is good. We may proceed along the lines suggested above and narrow the universal by specifying the types of wealth, but it is clear that given any type, we can think of an even more specific one.

If indeed Aristotle is thinking at times of the ever more specific universal when he speaks of the particular in relation to action and to our accounts in ethics (and politics), then it is considerations such as the above that lead him to the conclusion that accounts in ethics (and politics) cannot be exact. That is, textual evidence exists indicating he thinks that the process of seeking more and more specific universals in our accounts of practical matters may be endless. Thus, Aristotle claims that those who formulate laws frame them in general terms because at times "it is difficult to provide a rule owing to the infinite [

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] number of cases, as for instance, the size and kind of an iron instrument used in wounding; for life would not be long enough to reckon all the possibilities. If then no exact rule is possible, but legislation is necessary, one must speak in general terms" (*Rhet* . 1374a35). The law or the legislator cannot provide rules that specify the size and kinds of iron instruments used in wounding.^[15] They cannot reach that level of specificity whereby using specific universals they cover all the sizes and kinds of iron

instruments. The law remains at a higher level of generality, making reference presumably only to iron instruments used in wounding and not to more specific kinds or sizes. To include the latter would, according to Aristotle, be impossible since life is not long enough. This suggests that he is thinking that to give a complete account in terms of all the specific kinds and sizes of iron instruments would be a physical impossibility—life would not be long enough. Aristotle's claim at the beginning of this passage, that the types and sizes of iron instruments are infinite, points rather to a logical impossibility; it would be logically impossible to specify all the narrow types of an infinite series.

It is for exactly these same reasons that Aristotle thinks that no complete account that specifies the types of the accidents that befall humans can be given, but instead a general one is all that we can expect: "But the accidents of life are many and exhibit all kinds of differences and some affect us more than others. To distinguish between them in detail would clearly be a long and endless [

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] undertaking, and a treatment which is general and in outline [

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], may perhaps be enough" (5.5).^[16] The task of giving an exact treatment of the accidents of life by specifying their types (identifying the more specific

— 183 —

universals) is endless, according to Aristotle. The types into which they subdivide, the specific universals, are presumably endless: types of magnitude ("the accidents vary in magnitude," 1100b23); types of effects they have on us ("some affect us more than others," 1101a25); types of effects on our friends, the dead, our descendants (1101aff.); and so forth.

But if attaining exact accounts by reaching specific universals proves to be an endless and impossible task, the prospects of doing so by reaching the particular in the strict sense are not likely to be better. In order to obtain exact accounts by descending to the level of the individual, we would have to specify action-tokens or individuals that fall under various kinds: the individual agents, times, places, and things. We would have to specify, for example, all the individual acts of courage that Socrates, Callias, and all other agents are required to do, or we would need to determine all the individual things that Socrates must give and when to give them to Alcibiades, and in general all the things each agent must give to any other agent. However, Aristotle thinks that this level of exactness cannot be attained either, for again we would be attempting to complete an endless task, since the individuals, he thinks, are infinite (

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, Rhet. 1356b32; Met. 999a27, 1060a4).

The above considerations explain why Aristotle thinks that his own accounts of the main elements of conduct do not and cannot reach the level of detail and therefore the level of one type of exactness that he requires. If he requires that ethical accounts reach the level of the particular and he also thinks that the particulars, either as the narrow universals or the individuals, are endless or infinite, then clearly ethical accounts cannot but remain inexact. These considerations also explain why Aristotle speaks at times of ethical accounts in general, not only of his own, as being inexact—that is, why he speaks of any possible account in ethics as being inexact in the sense of lacking in detail.

These considerations show at the same time that given the standards of exactness Aristotle sets for ethical accounts, inexactness cannot be eliminated from an ethical account that is inexact. Indeed, the source of the formal inexactness under consideration here does not seem to matter, if the standard of exactness that needs to be met in order for inexactness to be eliminated is the one Aristotle identifies. Even where the source of inexactness is, for instance, one's immediate purpose or rhetorical strategies, such inexactness could not be eliminated if in order to do so one has to reach the level of detail Aristotle requires.

The same seems to be the case with formal inexactness that is due to one's wish to avoid the tiresome or burdensome task of seeking exactness. I said earlier the inexactness that has its source in such a wish need not imply that it is ineliminable. On the contrary, it seems to be just the sort of inexactness that can be eliminated since it is

134 of 362

8/6/2006 1:15 PM

generated by our unwill-

— 184 —

ingness to seek exactness. Yet, as I also remarked earlier, this need not be so, for abandoning the wish to avoid the burdensome task of seeking exactness and putting in its place a desire to attain exact accounts does not guarantee that such accounts can be obtained. The possibility of attaining exact accounts depends at least on the standard of exactness that has to be met. If the standard is the level of detail, specificity, or completeness Aristotle claims, then clearly even inexactness that has its original source in the wish to avoid the irksome character of exactness could not be eliminated.

The standard of exactness is also important in trying to determine whether inexactness that is due to inappropriateness of discipline can be eliminated. There is an additional consideration here that raises an interesting question. What standard of exactness is relevant in trying to decide whether the inexactness due to inappropriateness of discipline of an account of a topic T in some discipline D can be eliminated? Is it the standard of exactness for D or the standard of exactness for the discipline that is the proper discipline of T? It is not clear, for example, what level of detail, specificity, or completeness would be required to make the accounts of motion or of the intellect that Aristotle gives in the N.E. exact. Is it the level Aristotle says is required for ethics or is it the one appropriate for physics or psychology, the disciplines to which these topics properly belong? If it is that required for ethics, then even the inclusion of exact accounts of motion and the intellect from physics and psychology into ethics would not necessarily make the treatment of these topics in ethics exact; physics and psychology are, according to Aristotle, theoretical disciplines and therefore do not need to reach that level of detail that is presumably required by the practical disciplines. But it is most likely that Aristotle thinks that the relevant standard of exactness is that of the proper discipline to which a topic T belongs, hence he often refers us for an exact treatment of T to its proper discipline.

Before we turn to a discussion of any possible epistemological consequences this type of inexactness might have, I wish to stress the fact that this form of inexactness, as well as the standard of exactness Aristotle sets for ethics, is due primarily to the goals of the discipline of ethics. In speaking of detail or exactness that reaches the particular, Aristotle is not motivated by some abstract or universal ideal of exactness. There is no evidence that his insistence on exactness in the above sense stems from a belief that a certain level of ideal exactness must be attained in our accounts in order for them to be unambiguously understood or used in the contexts of inference and proof—the main objectives of the recent attempts to develop ideal languages that aim at realizing a certain level of perspicuousness. Neither is there evidence that Aristotle's insistence stems from

- 185 -

some arbitrary decision to achieve a particular level of detail in all or in some group of disciplines.

It may be argued in this context that what explains Aristotle's insistence on attaining exact accounts in ethics by reaching the particular is his belief that the subject matter of ethics consists of particulars. There is, however, no reason for thinking nor does Aristotle think of the subject matter of ethics as being different in terms of its level of generality from the subject matter of other disciplines. Action, emotion, desire, and their goals or objects are as general as animal, motion, point, or line. In all cases there are individuals that fall under the universal or general-there are individual animals as there are instances of emotion or individual actions. The difference, according to Aristotle, lies in the fact that in the disciplines concerned with such things as animal, motion, point, or line our goals are exclusively cognitive. These disciplines therefore stay at the level of the universal or general. But in ethics our goals are, Aristotle insists, ultimately practical. They are practical not in the sense that we aim at the study of action, but in the sense that we aim at doing or acting. When this claim is coupled with Aristotle's assumption that acting or practice deal with individuals, we can understand his insistence on the need to know the individual: this thing is sweet or this is light meat. If the practical goals are to be satisfied, the accounts must presumably tell what

particular thing is to be eaten or in general done.

Theoretical disciplines, however, do not deal with or have as their goal action or making or producing anything, and therefore they do not have to reach the level of detail or specificity which ethics as well as all other practical and productive disciplines presumably require. Thus geometry does not need to discuss the individual point, line, or triangle. As Aristotle often insists, discussions or proofs in geometry are not about the individual points, lines, or triangles drawn and used in our proofs but about point, line, and triangle in general. Similarly, pure or mathematical astronomy gives an account of the eclipse but not of some particular eclipse or of the eclipse in respect to some particular heavenly body.^[17] It is interesting to point out here that, although Aristotle in the biological works speaks of accounts that are inexact in the sense under discussion here, he does not view biological accounts as essentially lacking in detail, specificity, or completeness. Often he gives accounts of biological phenomena that he views as inexact because they are not detailed and he refers to treatments of these matters which he gives elsewhere and which he considers to be detailed or complete. And, unlike the N.E. where he often finds all treatments of a topic inexact, he gives no indication in the biological works that the treatments to which he refers are deficient in their exactness. This is so despite the fact that often the difference in detail, specificity, or completeness between the inexact and supposedly exact treatment of some

— 186 —

topic is negligible or nonexistent.^[18] The exactness required in these theoretical disciplines has presumably been met.

Although any discipline can be inexact in the sense presently discussed, only some disciplines appear to be essentially inexact. For example, geometry can be inexact by not reaching a certain level of specificity or detail for a variety of reasons, and so can biology, but the level of specificity or detail required in order that geometry or biology be exact can presumably be met. In contrast, the level of exactness Aristotle demands in the case of practical disciplines makes such disciplines in general and ethics in particular essentially inexact: The standard that needs to be met in their case cannot presumably be met.

But it could still be argued in this context that it nonetheless is the nature of the subject matter of ethics that makes it impossible to eliminate from our accounts the kind of inexactness presently under discussion. There is some merit to this claim, especially as it pertains to the possibility of eliminating inexactness by giving accounts in terms of more and more specific or narrow universals. There seems to be something in the nature of matters of conduct that makes the task of attaining exactness by seeking ever more specific or narrow universals an endless one. But even in this case, I shall argue, what compels us, in Aristotle's view, to seek ever more specific universals need not necessarily be the nature of the subject matter. What imposes the demand of seeking narrow universals need not be the nature of matters of conduct.

The demand of reaching the particular in the strict sense would seem to be equally problematic for all disciplines, regardless of the nature of their subject matter. If geometry were required not only to prove some theorem about all triangles or some class of triangles—for example, isosceles ones—but also to prove that theorem for each individual triangle by making explicit reference to each one of them, then clearly it would remain incomplete and lack detail. The same would be true of the discipline that studies the generation of animals if it were required not only to explain the modes of generation of the various classes—for example, vivipara and ovipara—but to give an account of the generation of each individual animal by making specific reference to each individual. Incompleteness will characterize any discipline that is required to reach a level of detail that includes reaching the individual and whose subject matter is not numerically limited.

There seems, however, to be a difference in the nature of the subject matter of practical and theoretical disciplines that may determine whether exactness in the sense we are discussing here is attainable. I have in mind the apparent difference in the way in which the subject matter of some disciplines divides into a small number of classes, whereas the subject matter of other disciplines does not. Thus it would seem that when we try to give more exact accounts by producing progressively more narrow or

— 187 —

specific universals we would be likely to succeed in achieving exact accounts in some disciplines instead of in some others. In those disciplines whose subject matter divides into a small number of classes we could perhaps attain complete accounts by including in our accounts all the more specific universals. In those disciplines where the subject matter divides into an indefinite number of classes there would be an indefinite number of specific universals and hence detail or completeness may be impossible to attain.

Consider, for example, the universal *fissipede* which determines the natural kind to which the dog, the wolf, the elephant, and so forth belong. If we were interested in giving a more detailed account of the biological law—"Fissipedes produce many offspring" (*G.A.* 771a25, b3)—we could proceed by specifying the various species of animals that are fissipedes: the dog, the wolf, the elephant, and so forth. The more narrow or specific universals related to *fissipede* form a finite disjunctive set; they constitute the infima species associated with it. The same is true with the more narrow universals related to *triangle*. The demand then to attain exact accounts in biology or geometry can presumably be met by reaching down to the infima species or to a finite set of rather narrow universals. The subject matter supposedly in these cases can be subdivided into a small number of well-defined classes and thus detail or completeness in our accounts of such subject matter can be attained.

In contrast, there seems to be no limit in the way a universal that applies to matters of conduct divides into narrower ones. Unlike the natural kind *fissipede* that divides into the finite set of the types of fissipedes, a universal like *wealth* divides into an indefinite number of more specific ones. We can think in the case of wealth of an indefinite number of specific universals that characterize it in terms of who possesses it, who manages it, how is it managed, who uses it, how is it used, how has it been acquired, and so forth. An indefinite number of differences in the case of wealth introduces an endless series of ever more specific universals. Hence, the problem of attaining exact or complete accounts in matters of conduct by way of reaching the specific universal—without setting some limit to the degree of specificity required in practical accounts, there will always be more specific universals than the ones we have already reached.

Actually the differences in the subject matter of the practical disciplines on the one hand and the theoretical on the other may not be as drastic as we have just described them. And it is doubtful that the ultimate reason why in the case of practical matters exactness cannot be attained or inexactness cannot be eliminated rests with such differences, whatever they may turn out to be. For it is not true that when we seek narrower universals relating to the kind *fissipede* we must stop at the level of species: dog, elephant, wolf, and so on. There are subdivisions within the species. Ar-

- 188 -

istotle speaks in connection with the species *dog* of Laconian hounds (*G.A.* 781b10; *H.A.* 574a16) and in connection to the kind of *fowl* of Adrianic fowls (*G.A.* 749628). In general, he speaks of differences in feeding patterns, habitat, mating, and so forth among various groups within a species that need to be accounted for by the appropriate disciplines. These differences may not constitute differences in species—they are differences within species and therefore result in narrower universals—but they need to be explained. Aristotle may be correct when he says, "And so paleness in a man, or darkness, does not make for one [difference in species], nor is there a difference in species between the pale man and the dark man, not even if each of them is denoted by one word" (*Met.* 1058b2). However, differences in color result in subdivisions within species or they generate narrower universals that our accounts must reach if they are to be complete.

Despite the fact that there may be universals that are more narrow than the species and the fact that a greater specificity or exactness can be attained in theoretical disciplines, it seems that there is a limit with regard to such specificity. One may argue that at some point a level is reached below which either there is no narrower type or, if there are differences that generate narrower types, the differences are not relevant for the theoretical purposes of a discipline—they do not generate theoretically relevant subgroups or narrower universals. Accounts do not have to reach them in order to be in detail, complete, or exact. Thus, to use an example Aristotle himself uses in the *Met.*, "Neither do a brazen and a wooden circle, then differ in species" (1058b13). It is not merely the case that being brazen or wooden do not mark different species of circles. They do not even mark off smaller classes of circles or narrower universals that are relevant to geometry. Geometry does not need to reach that level of detail or specificity whereby it deals with any difference that may be exhibited by a geometrical figure, for example, the difference between brazen and wooden circles. Similarly, it is not theoretically relevant to the study of the generation of dogs that some dogs are owned by some who received them as gifts, or that some dogs have more than one owner whereas others have only one. Such differences do not give rise to theoretically relevant subgroups or narrower universals and therefore the theoretical study of the generation of dogs does not need to account for them.

However, when we turn to matters of conduct, not only is it not evident what the narrower universals are into which a wider universal subdivides, but also, and most importantly, it seems that almost any difference in matters of conduct may be of relevance for practice and therefore it may need to be taken into account. It is not evident, that is, that we can identify in the case, for example, of wealth a number of species in the same way

— 189 —

we can identify the species of fissipedes. There is no obvious set of narrower universals that relates to *wealth* in the way the narrower universals comprising the infima species relate to *fissipede*. One might say that this is not such a serious problem: we need to determine such a set; we need to find the narrower universals related to *wealth* and give an account of them in the same way we find that a subgroup of dogs is the Laconian hound and we give an account of its attributes.

The problem of the relevancy of differences in matters of conduct to practice is a real one, however. To be sure, there are differences in any subject matter. Although it may not be true that all differences in matters of conduct are relevant to any particular question of practice, one cannot easily rule out the relevance of most such differences. Thus, clearly the few differences or narrower universals identified earlier in the case of wealth are relevant in making practical decisions in matters relating to wealth. Of course, there are many more differences than the ones isolated here. Aristotle himself insists that differences in the manner of being angry, in the person toward whom one is angry, the grounds one has for being angry, and the length of time that is proper to be angry are all relevant in deciding whether one is justified in being angry on a certain occasion. Such differences are relevant in determining whether a person is behaving virtuously and therefore is to be praised or whether he is not and therefore is to be blamed (1109b15). Similarly, the endless differences among the misfortunes of life are, according to Aristotle, relevant in settling the question whether the happiness of someone is affected by the misfortunes that befall her descendants (1101a30). Again, the many differences in the circumstances are relevant in determining what kind of respect and obedience one owes to one's father on a particular occasion (1164b25).

It is therefore the practical goals of the discipline of ethics that, according to Aristotle, dictate that we reach a level of exactness that in turn cannot be achieved. The assumption on his part that action deals with the particular leads him to the conclusion that our accounts must also reach the particular. They must reach the individual or they at least must reach ever more narrow universals. And the supposed need to reach the ever more narrow universals, to take into account all the differences in matters of conduct, is due to the fact that these differences may be of great relevance to practice. They may at times determine whether we act virtuously.

Epistemological Consequences of Exact/Inexact Accounts

What are the epistemological consequences, if any, of Aristotle's requirement that ethical accounts attain the particular and of the inexactness that may result from failing to reach such level of detail? Is demonstrative knowledge ruled out? Is inductive or some other type of knowledge implied or more appropriate?

If ethical accounts do not reach the level of specificity or detail that Aristotle thinks is necessary—the level of the particular—then clearly they remain inexact in the above sense and therefore are in a way deficient or incomplete, but it is not evident that this form of inexactness necessarily affects the demonstrative character of a discipline. If a discipline is demonstrative, the fact that it does not reach a certain level of detail or specificity need not alter its epistemological character. Suppose, for instance, that geometry does not reach the level of specificity where it proves those theorems that are true only of isosceles triangles but remains instead at a higher level of generality by proving only those theorems that apply to all triangles. In other words, our accounts of triangles would not reach the level of the more specific universals such as isosceles, scalene, equilateral, and so forth, but it is obvious that geometry would not be on account of this a less demonstrative discipline.

Yet the problems with accounts that are inexact by lacking in detail or by being incomplete should not be totally dismissed; although such inexactness may not affect the epistemological character of a discipline in a drastic way, it may nonetheless affect the discipline to some extent. Of course, the extent to which the discipline is affected would depend at times on how pervasive the inexactness is.

If, for example, every topic of a discipline were to or could only be treated inexactly, then our knowledge in that discipline would or could only be incomplete. And although such a consequence need not alter the epistemological nature of a discipline it may nonetheless affect it. For instance, if the discipline is a demonstrative one, the inexact treatment of every topic could very well affect the demonstrative rigor of the discipline. Demonstrations or proofs in such a discipline could very well depend on tacit, suppressed, or unproven premises precisely because all topics in the discipline have been given an incomplete treatment. Thus, the demonstrative rigor of the discipline may not reach the level it could have reached if the discipline treated its topics with greater detail or completeness.

Even if we were to admit that the type of inexactness we are discussing here can affect the demonstrative rigor of a discipline, the real epistemological problem would still be exactness itself. The most important epistemological consequences are those that stem from exactness, if it were ever attained; for if the requirement of exactness in the sense of detail that reaches the particular were to be satisfied, an element that Aristotle takes to fall outside the realm of demonstration could be introduced into our accounts. Hence, they could not be purely demonstrative; they could contain at least some if not all nondemonstrative components and therefore they could lack demonstrative purity.

- 191 -

The epistemological consequences of either achieving or failing to attain the level of specificity or detail Aristotle demands, and which may affect the demonstrative character of a discipline, are themselves a type of inexactness. Deficiency in demonstrative rigor or lack of demonstrative purity constitutes a lack of exactness that all the nonmathematical disciplines, according to Aristotle, exhibit. They presumably lack the kind of exactness which Grant, as has been shown, in explicating Aristotle's key term for exactness, calls "mathematical exactness." Thus, a rather curious situation presents itself: If the degree of detail or specificity Aristotle demands is not attained, our accounts remain inexact and perhaps the demonstrative rigor of the discipline is affected to some extent; but if the required level of detail or specificity is attained, then the demonstrative character of the discipline may be affected in an even more drastic way because non-demonstrative elements are introduced, and thus the discipline may become inexact in another sense.

Therefore, it need not always be the case, as it has been assumed by everyone, that it is inexactness that has the problematic consequences. At least it does not seem to be the case that only inexactness has such consequences or that it has the most problematic consequences. When exactness (inexactness) consists in detail (lack of detail), most epistemological problems lie with exactness, at least within the Aristotelian framework.

The epistemological consequences of attaining exactness, of reaching a level of

detail that includes the particular, can best be seen when we consider the particular in the strict sense. Reaching the individual in our accounts would raise at least two types of problems for Aristotle. The first is really formal in nature and has to do with the question of whether Aristotle takes propositions about individuals to have the logical form that is appropriate for functioning as syllogistic premises and therefore as components of demonstrative syllogisms. But the second is a substantive one and has to do with a number of questions concerning the modality of propositions about individuals and the nature of our knowledge of individuals.

When Aristotle enumerates the valid syllogistic forms in *Pr* . *Anal.* , he does not identify one that includes singular statements among its premises. As Jan Lukasiewicz pointed out some time ago, the valid argument that has invariably been offered as the paradigmatic Aristotelian syllogism is not a syllogism Aristotle recognizes: "All Greeks are mortal, Socrates is a Greek, therefore Socrates is mortal" is not an instantation of any syllogistic form Aristotle identifies.^[19] Hence arguments that have some singular statements as their components would not satisfy Aristotle's formal requirements for being syllogisms and therefore for being demonstrative syllogisms as well.

But if we were ever to attain exactness by reaching the level of the

— 192 —

individual, then some propositions in our accounts (potential premises or conclusions of demonstrative syllogisms) would be singular; they will include names of individuals or indexicals: "Callias must return what he owes to Socrates," "This is sweet," "That is pleasant," and so forth. Therefore, these propositions will not possess the logical form that, according to Aristotle, propositions must have in order to function as components of syllogisms. At least some part of a discipline that attained the highest level of exactness and reached the level of the individual would then be nondemonstrative. For it would consist of singular statements.

The introduction of particulars in the strict sense into ethical accounts will, however, pose additional problems for Aristotle, for he insists that there is no demonstration of the particular (*Met.* 999a25, b2, 1039627), but only of the universal (*Post. Anal.* 87637; Met. 999a28, 1003a13). Aristotle claims particulars in the strict sense and what is true about them are contingent and can be otherwise (*Met.* 1039630) and are known by perception (*Post. Anal.* 81b5; *Met.* 999b2).

The picture is less clear, however, if we take the particular to be merely the more specific or narrow universal. The epistemological consequences of reaching this level of exactness, where a certain degree of detail or specificity is attained but still remains at the level of the universal, would depend in part on the nature of the statements that contain such specific or narrow universals. We cannot say in general whether or not statements containing such universals will be suitable premises or conclusions of syllogisms that will yield demonstrative knowledge.

We can say, however, that statements containing specific or narrow universals can satisfy Aristotle's formal conditions for being components of demonstrative syllogisms. Since such statements are not singular, they do not pose the problems that statements containing indexicals or names pose. The statement about the narrower universal *equilateral* is of the same logical form as the one about the wider universal *triangle*. The same is true in the case of the statements about *chicken* and *light meat* or about *courage* and *virtue*.

Although statements about specific or narrow universals may possess the logical form Aristotle requires of statements that are components of demonstrative syllogisms, the question still remains whether they satisfy all the other conditions Aristotle requires of the premises of such syllogisms. If they do satisfy these conditions, then they can function as components of demonstrative syllogisms. If they don't, then they would fall outside the demonstrative domain. In that case, reaching statements or accounts that are exact by being about such narrow or specific universals would have epistemological consequences—at least some part of any discipline that contains such exact accounts will fall outside the demonstrative realm.

conclusions of a demonstrative syllogism are necessary. If statements about narrow or specific universals fall to be necessary, they can not be components of demonstrations in the strict sense. But are such statements not necessary? Is it possible to determine in general whether they are? It may seem that whether statements about narrow universals are necessary depends on the nature of the subject matter such universals characterize. In the case of the subject matter of geometry, for example, we should expect statements about scalene triangles to be if true, necessary. Thus, we may conclude that introducing narrow or specific universals in a discipline whose subject matter is like that of geometry need not affect the demonstrative character of a discipline. Statements about such universals will presumably be necessary. But even in the case of the most paradigmatic demonstrative disciplines it would not be correct to answer in an unqualified way that all statements are necessary, whether they are about narrow universals or not. For even in connection with the subject matter of geometry, one may encounter statements that assert the sort of thing that Aristotle calls "accidental"—for example, that scalene triangles seem irregular or circles are pleasing. We may, however, follow Aristotle and dismiss such statements as not being statements of geometry [20]

But how about narrow universals in disciplines that fail to reach the demonstrative purity of the mathematical sciences? Are they epistemologically problematic by introducing nonnecessary propositions? Consider, for example, the disciplines dealing with biological phenomena: We might think that in contrast to the statements about the broadest universals—for example, animals have sensation, quadrupedal ovipara lay perfect eggs (G.A . 718b16), all haired animals are vivipara (G.A . 718b30)—that are presumably necessary, those about narrow or specific ones—for example, Laconian hounds are keen scented (G.A . 781b10), Adrianic fowls are extremely prolific (G.A . 749b28), the cuckoo lays few eggs (G.A . 750a12), cattle have dark eyes (G.A . 779a31)—are not. This is by no means obvious, however.

For instance, Aristotle thinks that there are explanations for the phenomena described by the statements about narrow universals or that such statements can be derived from others. Thus, he explains why the Laconian hounds are keen scented by pointing out that (a) animals that have long nostrils are keen scented and (b) Laconian hounds have long nostrils. There in turn is an explanation or derivation for (a) (G.A. 781b5). Similarly, Aristotle offers an explanation of the fact that cattle have dark eyes. He claims that eyes that contain a large amount of fluid are dark and this is explained in turn by the nontransparency of large volumes of fluid (G.A. 779b29).

Whether statements about narrow universals are necessary will depend

— 194 —

on the nature of the propositions from which they are derived—that is, on the nature of the propositions that function as premises of syllogisms that have such statements about narrow universals as their conclusions. Aristotle takes the above propositions to be necessary and clearly thinks that at least some statements about narrow universals can be necessary. He considers, for example, the statement that sheep have eyes to be necessary, since having eyes is included in the essence of such an animal (*G.A.* 778b17). Similarly, he thinks that a statement about circular wounds can be necessary—that circular wounds heal slowly can supposedly be demonstrated by the geometrician.^[21]

But if the premises (either, all, or some) from which such statements about narrow universals are derived are not necessary or the statements themselves are simply empirical generalizations, they might not be necessary. This would clearly be so if what Aristotle often says about the domains of nature, conduct, and art is correct—namely, they consist, either wholly or partly, in things or phenomena that are not necessary. If all matters of conduct and of art are, as Aristotle says in *N.E.* Book VI (1140a15), not necessary, then clearly not only will statements about narrow universals be nonnecessary but so will all statements about such matters. It seems, then, that reaching the level of rather narrow universals for the sake of exactness in a discipline that is nondemonstrative on account of the nature of its subject matter would not necessarily alter the epistemological character of such a discipline.

Perhaps Aristotle is not correct in placing the whole of the domain of conduct or art outside the realm of the necessary and hence of the demonstrative in the strict sense.

Part of the domain of conduct could be necessary and hence also demonstrative—possibly the part dealing with the widest universals, for example, the nature of goodness, the nature of virtue, some properties of desire or preference. And it may be that only things of the lowest generality or statements about narrow universals are outside the necessary. So that one would more likely expect statements about the nature of virtue (e.g., virtue is a disposition) or desire (e.g., desire is transitive) to be necessary, whereas statements about rather specific universals (e.g., about giving to one's parents, repaying debts to friends, etc.) are more likely to be problematic in their modality. Statements of the latter type may be only empirical generalizations.

Even if statements about narrow universals were mere empirical generalizations, the epistemological consequences this might have need not be so radical that they change the demonstrative character of a discipline, if indeed it is demonstrative. For if such statements are on the whole true, or true for the most part—to use Aristotle's way of speaking—they could be components of less strict or weaker demonstrations. How and whether such demonstrations are possible is indeed a problem that will be examined

— 195 —

later; but there is no question that Aristotle speaks of such weaker types of demonstration.

Perhaps, however, statements about narrow universals are not even empirical generalizations; perhaps they are not even true for the most part. Hence it is not only that their necessity is questionable, but their truth may be also. If this were so, it would surely violate the truth condition Aristotle requires for being a premise in a demonstrative syllogism—the premises have to be true—and therefore such statements could not be components of any type of demonstrative reasoning. In this case, the demand of attaining exact accounts by reaching more narrow universals would have important epistemological consequences. Although Aristotle speaks at times about our more specific accounts being more inexact than the general ones, it is by no means certain that he goes as far as to deny the truth of the specific accounts.^[22] I shall address this problem later when I discuss Aristotle's remarks on the inexactness that results from the purported variation of the phenomena of conduct.

It appears, then, that it is the demand for attaining exactness in ethical accounts by reaching the individual that would have the greater and most significant epistemological consequences. Attaining such exactness may introduce elements in our accounts that would, according to Aristotle, fall outside the demonstrative. Then, at last a difference between the epistemological nature of a practical discipline and the nature of a theoretical discipline has been found. This difference is ultimately tied to the different goals Aristotle assigns to the two types of disciplines, and in a sense shows the common belief in the Aristotelian tradition—that there is a difference between these types of disciplines—to be correct. However, the reasons for the supposed difference have not been made clear in the past. Here we have uncovered at least one reason. If Aristotle is correct in taking the goal of ethics to be practice, in taking this in turn to imply that our accounts in ethics must reach the particular, and in viewing the particular in the strict sense as falling outside the realm of demonstration, then ethics will exhibit some differences from the paradigmatic demonstrative sciences—the pure theoretic disciplines. For inexactness in one of the two senses discussed here-either lack of detail or the introduction of nondemonstrative elements-will characterize it and other practical disciplines but not the theoretical ones. Yet these assumptions are by no means self-evident; they surely invite further reflection.

Aristotle's Assumptions

There is little doubt that Aristotle sees his own demand that ethical accounts reach a certain level of detail or specificity as a corrective measure against what he perceives to be Socrates' and Plato's tendency of treating

- 196 -

matters of conduct rather abstractly or in general terms. Thus Aristotle claims in the *Polit.* that "moreover, the working of the constitution [of the *Republic*] as a whole with

regard to the members of the state has also not been described by Socrates nor is it easy to say what it will be" (1264a11). More specifically, Aristotle argues: "In the *Republic* Socrates has laid down details about very few matters—regulations about community of wives and children and about property, and the structure of the constitution" (1264630) but that "about the farmers and the artisans, whether they are excluded from government or have some part in it, and whether these classes are also to possess arms and to serve in war with others or not, on these points Socrates has made no decision" (1264b35). Whereas in the *Laws* Plato provides us with a considerable body of laws (or statutes), according to Aristotle, Plato "has said a little about the form of the constitution" (1265a).

Aristotle's criticisms of Socrates and Plato may be unfounded, but this is not our concern at the moment. Given the assumptions Aristotle makes about the goals of ethics and the nature of the things practice deals with and given the conclusions he draws from these assumptions, he is perhaps justified in designating certain Socratic and Platonic accounts as inexact. Yet both his assumptions and conclusions may be problematic. In particular, it is doubtful that the conclusions Aristotle draws from some of his assumptions follow necessarily from them.

Of the assumptions Aristotle makes in the present context, the following appear as the most plausible: (a) Actions deal with particulars; and (b) The goals of ethics are practical. Although these seem to me to be the most plausible of Aristotle's assumptions, even these are not true. With regard to assumption (a), for example, one may concede that many or perhaps even most actions deal with particulars. This is certainly the case with the examples of actions Aristotle himself gives—for example, eating this food, drinking this water, curing this person, and repaying this loan. Perhaps Aristotle generalizes from these kinds of actions, which are denoted by transitive verbs and paradigmatically take as their object concrete particulars, to the conclusion that all actions deal with such particulars, but this need not be so. There may be actions that do not deal with anything at all or if they deal with something, it need not be a particular, for there are actions denoted by intransitive verbs (e.g., "to walk," "to rise," "to pray,"), mental acts, speech acts, and so forth. For instance, if I make a promise, what does my act deal with? And if we insist in saying that even in this case there is an object with which my act deals (i.e., the so-called internal object-the promise), it may be something quite general-for example, to obey the law. Similarly, there are doubts about assumption (b). In some sense ethics is practical. But, as I argued in chapter 3 and will argue in greater detail in chapter 9, it might be wrong to conclude from

— 197 —

this that ethics has no cognitive or theoretical component—a component that may also impose certain requirements on the exactness of the discipline.

Let us, for the moment, grant these two assumptions to Aristotle. The question is whether he is justified in drawing the conclusions he does. Is ethics required to reach the particulars because its goal is practice and the latter presumably deals with particulars? Does ethics need to reach the level of specificity Aristotle requires if it is to be a guide for practice? This is doubtful. The rules of multiplication are a guide to carrying out particular multiplications. When we ordinarily multiply, we multiply some particular numbers; our actions deal with some particular numbers. Must the rules then reach the level of the particulars? Must they spell out explicitly all the particular multiplications with all the particular numbers? This is not only unlikely, it is impossible. The numbers are infinite.

Similarly, law is a guide to action or may have practice as its goal. Although there can be laws dealing with particulars or individuals, is it necessary that law reaches the level of specificity Aristotle requires in order for it to do its function? This need not be so. As Aristotle himself repeatedly observes, law cannot reach the particulars; they are infinite. The law, he insists, is general. But the fact that the law does function as a guide to action (even though it may fail in some cases) shows that the high degree of specificity Aristotle demands of the law is not necessary. The same may be true in the case of ethics.^[23] At least some general moral principles can be guides to action. So it seems that the conclusion Aristotle draws from his two assumptions concerning the nature of the goals of ethics and the nature of the objects of practice may not be necessary—the high degree of specificity he requires from all accounts of ethics may not

be needed for practice.

Yet Aristotle judges the whole of the discipline of ethics to be inexact because it fails to meet such a high degree of specificity. He thus pronounces every account of ethics to be inexact by judging it solely on the basis of the standard of exactness he thinks is dictated by the practical goals of the discipline. By doing so, Aristotle overlooks completely the cognitive goals of ethics, and this may be a mistake. For it is possible that some of the accounts he determines to be inexact by judging them on the basis of the practical goals of ethics are exact or as exact as they should be when they are judged on the basis of the cognitive goals they serve. It is the general or universal, for example, "Justice is beneficial," that is of greater importance for cognitive purposes and not the particular, for example, "Socrates has benefited from doing this just act." The former and not the latter is what is needed for the purposes of explanation and understanding. It may even be the case that what is needed for some practical purposes is the general or universal rather than the particular. Suppose,

- 198 -

for example, that I wish to motivate someone to behave justly by convincing him that justice is beneficial or that it has some other consequences. Obviously, what I need to do is to show that justice is of such a nature or something of that sort and not that doing this act at a particular time will be beneficial or will have such consequences. What one needs to do is what Socrates and Plato attempt to do in the *Republic* —that is, prove that justice is beneficial.

— 199 —

Six Being for the Most Part: Its Meaning, Scope, and Nature

Introduction

In this chapter, I shall focus on the type of inexactness that Aristotle associates with being for the most part or fluctuation. This type of inexactness is altogether different from the one we discussed in the previous chapter and it raises quite different epistemological questions. I shall, however, defer the discussion of any epistemological consequences such inexactness might have until the next chapter. My objective at present will be to elucidate the meaning, scope, and nature of the inexactness Aristotle associates with being for the most part.

I shall begin by presenting the evidence from the treatises on conduct where Aristotle speaks of the type of inexactness presently under consideration. I shall argue here that unlike the inexactness discussed in the previous chapter, which was found to be such that it can characterize only accounts, the inexactness Aristotle associates with being for the most part can characterize both the accounts of matters of conduct and matters of conduct themselves. This type of inexactness, Aristotle claims, is both material and formal. I shall explain in what ways it can affect both the subject matter of the disciplines on conduct and what is said about it, and shall also touch upon Aristotle's contention that some kind of congruence exists between the inexactness of the material and formal levels.

Another question about the inexactness under consideration concerns its scope. According to Aristotle, what is the extent of this kind of inexactness? Are all or only some matters of conduct affected by it and are all or only some of our propositions about them characterized by it? I shall argue here that despite the fact that Aristotle at times speaks as if the scope of this inexactness is quite extensive but nonetheless limited, most

- 200 -

often he speaks as if its scope is all-encompassing-all matters of conduct are for the

144 of 362

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most part and all propositions about them are inexact.

However, the assumption that the scope of this type of inexactness is all-encompassing raises in turn a number of questions. For example, what does it really mean to say that *all* matters of conduct are for the most part? And does fluctuation affect both the nonessential and essential attributes of matters of conduct? What the answers are or even whether there are any answers to such questions is by no means obvious. We shall see in connection with the first question that in order for Aristotle's claims about all matters of conduct being for the most part and all propositions about them being true for the most part to be correct, it is not sufficient that every matter of conduct fluctuates in some respect or other. That is, it is not sufficient that wealth fluctuates in respect to the property of being beneficial, bravery in respect to the same or different property, justice in respect of some one property, liberality in respect of another or the same property, and so forth with all the virtues, vices, actions, choices—in short, with all matters of conduct. An even greater fluctuation than this is required if Aristotle's claim that all propositions about matters of conduct are true for the most part is to be correct.

A special problem arises when we include the essential attributes of a kind among those that fluctuate or belong to the kind for the most part. If we were to do so as the all-encompassing assumption of the scope of this type of inexactness requires, then even the propositions attributing to a kind the essential attributes of that kind would be true for the most part. But such a consequence would surely pose problems for the distinction between essential and nonessential attributes, for the former are precisely those attributes that are thought to belong to all members of a kind. Although in this chapter, I shall focus on the fluctuation of nonessential attributes, in a later chapter it will be seen that Aristotle has reasons for extending fluctuation even to essential attributes.

The more one reflects upon the question of the scope of the inexactness Aristotle associates with being for the most part, the more one realizes that it cannot really be separated from the question of the eliminability of this type of inexactness at the formal level, for whether all propositions about matters of conduct are inexact by being true for the most part depends on whether they can or cannot be replaced by others that are not true only for the most part. It depends, that is, on whether the inexactness at the formal level can or cannot be eliminated altogether or in part. I shall discuss below in greater detail why this question regarding the scope of the inexactness under consideration cannot really be examined independently of the question of eliminability.

Next, I shall turn to a discussion of the nature of being for the most

- 201 -

part and of the way Aristotle differentiates it from being necessarily, always, fortuitously, and so forth. I shall argue here that he takes what is for the most part to be contingent, and that therefore he distinguishes it from what is necessarily. But being for the most part is not to be identified with being contingently, for the latter includes more than what is for the most part. It includes, for example, the fortuitous. And what distinguishes, according to Aristotle, that which is for the most part from the fortuitous is the fact that the former falls within the causal regularities of nature whereas the latter presumably does not. Because that which is for the most part is a component of the causal regularities of nature, Aristotle argues, it falls within the scientifically demonstrable.

In the last section of this chapter, I attempt to identify the proper contrast of being for the most part. Aristotle most often contrasts what is for the most part to what is by necessity or what is always. I argue that strictly speaking what is for the most part or a proposition that is true for the most part is to be contrasted to what is without exception or to a proposition that is true universally. The relevant contrast, in other words, is not so much between being F necessarily and being F for the most part but between being F in all cases and being F for the most part; or between a proposition that is true universally and one that is true for the most part. I explore here the question whether Aristotle recognizes phenomena that exhibit certain properties in all their occurrences and are described by propositions that are universally true, and they thus constitute the proper contrast to what exhibits a property or is true for the most part. Whether Aristotle does or does not recognize such phenomena or propositions with the appropriate logical form is an important question on which some of my later arguments hinge—namely, that if the phenomena that are for the most part are to be, as Aristotle claims they are, represented inexactly, then the propositions about them must have a certain logical form. I shall argue in the next chapter that this logical form is none other than the form those propositions which are the proper contrast of the propositions that are true for the most part have.

The Evidence and its Meaning

Aristotle speaks of the type of inexactness that he associates with being for the most part in the following instances:

6.1	Our treatment [of ethical and political matters] will be adequate, if it achieves that amount of precision that belongs to its subject matter [
	figure]. The same exactness [
] must not be sought in all accounts [figure
], as it is not in all products of art. (<i>N.E.1094b13</i>)

- 202 -	
6.2	The noble [
	figure
	l and just [
	figure
] things, which political science studies, exhibit much difference [
	figure
] and fluctuation [
	figure
], so that it seems that they are only by convention and not by nature. The same ki
	of fluctuation [
	figure
] is exhibited by the good things [
	figure
	J, because narm nappens to many from them; before now some nave been destroy
	by weakin, while others by courage. We must be content, then, in dealing with suc
	figure
	figure
	and in outline [
	figure
	1, and in dealing with things that are only for the most part [
	figure
] and from premises like them, our conclusions will be of the same kind. In the sam spirit, therefore, should each type of statement be received; for it is the mark of th educated man to seek that amount of precision [
	figure
] in each class of things which the nature of the subject matter admits [figure
]; it is evidently equally foolish to accept probable reasoning from a mathematicia and to demand demonstrations from the rhetorician. (1094b15-27)
6.3	Also we must remember what was said earlier; we must not look for the same exactness [

figure
] in everything, but only such as belongs to the subject matter [
figure
]. (1098a25)

There are additional passages in the *N.E.* where Aristotle characterizes certain things as being for the most part (1112b9, 1129a24, 1161a27, 1164b31). However, he does not in these passages connect the characteristic of being for the most part to exactness/inexactness, nor does he speak of any epistemological consequences such a characteristic might have. Similarly, Aristotle in the other treatises on conduct identifies on a few occasions some things as being for the most part but without connecting being for the most part to exactness or inexactness (*E.E.* 1220b13, 1228b4, 1231a28, 1247a32, 1247a35, 1247b28; *Polit.* 1291b9, 1336b41; *M.M.* 1.33.20.7, 1.33.21.4, 2.8.2.4). I shall discuss these passages in a later section where I shall examine Aristotle's attempt to differentiate among what exists by necessity, always, by luck, or for the most part.

There is no question, however, that in the passages quoted above Aristotle associates the characteristic of being for the most part with exactness/inexactness and also claims that such exactness/inexactness has some epistemological consequences. This is clearly expressed in 6.2 when Aristotle claims that because matters of conduct and propositions about them are for the most part, our conclusions will also be of the same kind and our accounts will exhibit an exactness that is commensurate with the nature of the subject matter. The same claims are made in 6.3 which refers back to and reiterates the views expressed in 6.1 and 6.2.

But what is the nature of the exactness/inexactness Aristotle speaks of in the above passages and what does it characterize? Is it a feature of the

- 203 -

subject matter of ethics, of its propositions, or of both? Is it, in other words, a formal or a material feature, or is it both formal and material?

In all three passages quoted above Aristotle speaks of both the subject matter of ethics and our accounts of it as exhibiting certain characteristics that he associates with exactness/inexactness. The subject matter of ethics, the good things, as well as that of politics, the noble and just things, exhibit fluctuation or are for the most part. But what we say about them also, our propositions about the good, noble, or just things that function as premises when we reason about such things, exhibit fluctuation or are for the most part. Both the subject matter and our accounts of it are inexact in this particular sense and therefore the corresponding exactness could also apply to both. Aristotle speaks of both things and what we say about such things as being for the most part in treatises other than those dealing with matters of conduct. He thus speaks of the things that happen or are for the most part in *G.A.* (727b29, 770b12, 777a21), *Phys.* (199b24), and so forth. And he speaks of sentences or propositions (

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) as being for the most part in *Pr. Anal.* (43b35), *Post. Anal.* (87b26), *Phys.* (198b6), and so forth. Hence, exactness/inexactness of this type is both a formal and material feature.

According to Aristotle, the basic inexactness is that of the subject matter-the inexactness of the noble, just, and good things. It is the inexactness of the things politics and ethics study that generates the inexactness at the formal level. The level of exactness in the accounts reflects that of the subject matter (6.1) and the inexactness in the premises and conclusions used when reasoning about matters of conduct is due to the nature of matters of conduct themselves (6.2).

Aristotle's claim about the relation between material and formal exactness/inexactness in the present case is simply the application of the congruence thesis we identified earlier to the disciplines of conduct—namely, the thesis which asserts that some kind of congruence holds between the exactness/inexactness of our accounts (the formal level) and the nature of the subject matter (the material level). That Aristotle takes the congruence thesis to be a general one is evident from what he

says in 6.2 and 6.3. Congruence with respect to exactness or inexactness presumably holds between each and any subject matter and its accounts, and it is the presumed truth of this general thesis of congruence that Aristotle invokes in order to justify his claim that exactness in our accounts of matters of conduct depends on the nature of matters of conduct themselves (6.1, 6.2, 6.3).

In the case of ethics and politics, congruence holds, according to Aristotle, at least in the following cases: exactness at the material level implies exactness at the formal level; inexactness at the material level implies inexactness at the formal level. Whether material exactness of the kind under

- 204 -

discussion here implies formal exactness is not important, since Aristotle takes the subject matter of ethics to be inexact. But whether material inexactness of the kind we are presently considering implies formal inexacthess is clearly quite important, for Aristotle's belief that such congruence holds between material and formal inexactness goes a long way toward explaining why he seems to think that this kind of inexactness at the formal level must be accepted as inevitable; it is something we must learn to live with in disciplines of conduct. Thus Aristotle, using at times a rather strong language of necessity, insists that the exactness appropriate in some domains must not be sought [

figure

] in the case of the disciplines of conduct given the nature of their subject matter (6.1).^[1] One who holds that the subject matter of ethics and politics is inexact, and that such inexactness at the material level implies inexactness at the formal level, has, prima facie at least, good reasons for thinking that inexactness at the formal level is inevitable.

I have in an earlier chapter raised doubts about the validity of this general thesis of congruence. I shall not repeat the earlier discussion at this point but will rather focus on the case of ethics. It will be important to examine whether indeed the supposed inexactness of matters of conduct implies inexactness at the formal level and whether inexactness at this latter level cannot be eliminated. But before we do anything else, it is necessary to understand more clearly the nature of the inexactness that is presently under discussion. What, then, is this feature of matters of conduct or of the subject matter of ethics that affects the level and determines the degree of exactness in ethical accounts?

In 6.2 Aristotle claims that the things political science studies, the noble and just things, exhibit much difference^[2] and fluctuation. He goes on to add that the same kind of fluctuation is exhibited by the things ethics studies—the good things—and proceeds to give examples of two things that presumably exhibit such fluctuation—wealth and courage. The term

figure

("fluctuation") that Aristotle uses here primarily signifies change in location—wandering, roaming, shifting—and this is the meaning the term has in its only other occurrence in the whole Aristotelian corpus.^[3] In the present context, it signifies the change or shifting of things in respect to some or all of their properties or characteristics that are relevant to conduct. Thus, according to Aristotle, wealth and bravery sometimes are beneficial and at other times harmful.^[4] These characteristics that are relevant to conduct—for example, being beneficial or harmful—are not fixed, then, in relation to wealth or bravery in the way Aristotle thinks the characteristic of being hot is fixed in relation to fire, or the way the property of being a figure whose interior angles total 180 degrees is fixed in relation to the triangle.^[5] Whereas presumably fire and triangle do not fluctuate or shift in exhibiting the characteristic of being hot and having the sum of its

— 205 —

interior angles equal to 180 degrees respectively, wealth and bravery fluctuate in exhibiting the characteristic of being beneficial. Wealth and bravery are not in every instance beneficial. In some instances they are harmful. For many, according to Aristotle, have been harmed or destroyed by either wealth or courage.

Although Aristotle claims that the things politics and ethics study exhibit much

fluctuation, he himself does not infer from this that the characteristics in relation to which something can be said to exhibit fluctuation belong to it by convention only and not by nature. That is, he does not infer from the supposed fact that wealth exhibits fluctuation in relation to being beneficial that wealth is beneficial only by convention and not by nature. All Aristotle is saying is that because some things exhibit fluctuation they *seem* to be only by convention and not by nature, that the degree of fluctuation has perhaps led some to infer that matters of conduct do not possess certain characteristics by nature but only by convention.

Aristotle is correct in not inferring conventionality from fluctuation. The fact that in some cases pneumonia is not accompanied by fever does not necessarily imply that fever characterizes pneumonia by convention only. Both the presence and absence of fever in cases of pneumonia can be explained causally; reasons can be given that show how the presence or absence of fever is related to the nature of things—the type of pneumonia, the immune system of the patient, the stage of the illness, and so forth. This, as shall be seen later, is an important point. For by not inferring conventionality from fluctuation, Aristotle does not exclude the possibility that the phenomena that exhibit fluctuation are subject to explanations—for they are part of the domain of nature and not that of convention. He thus leaves open the possibility that they can be explained, that some type of demonstration can be given in their case.

The idea that matters of conduct exhibit fluctuation in relation to some or all of their characteristics is made more explicit when Aristotle speaks of things that are for the most part (6.2). The phrase he uses for this purpose,

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is no doubt a technical term for him, one he uses in almost all of his works when he wishes either to characterize some things as being for the most part or to explain the nature of being for the most part and how it differs from other ways of being.^[6] In the present context, Aristotle uses it to characterize wealth and courage as being beneficial for the most part. They are not in all of their instances beneficial, but only in most. They fluctuate, at least with respect to the property of being beneficial.

But if inexactness consists in fluctuating or exhibiting a property for the most part, then exactness would consist in not fluctuating or in exhibiting a property in every instance. Of course, there would be degrees of exactness or inexactness. As 6.1, 6.2, and 6.3 clearly suggest, Aristotle

— 206 —

conceives of exactness and inexactness as having degrees, the degree varying across the various subject matters. We must not seek the same degree of exactness in all domains, he claims, but that which is appropriate to each domain. He obviously thinks that fluctuation is rather pervasive in matters of conduct. And what he says in 6.2, when contrasting the exactness which is proper for a mathematician to seek to that which is proper for a rhetorician, indicates that the paradigmatically exact domain is the mathematical one, for it consists of objects that are presumably such that they do not fluctuate but instead exhibit their properties in all cases.

However, as we saw above, Aristotle thinks not only that matters of conduct themselves are inexact by fluctuating or by being for the most part but also that what we say about them or our accounts of them are inexact. At the level of our accounts of or propositions about matters of conduct—the formal level—the inexactness at issue here has to do with the truth of our accounts or propositions. They are fluctuating or are for the most part in relation to their truth.^[7] The proposition that attributes the property of being beneficial to courage and the one that attributes the same property to wealth are true of courage and wealth only in most instances. There are occasions when they are not true. Thus, they fluctuate in relation to truth in the way that the objects these propositions are about (courage and wealth) presumably fluctuate in relation to the property of being beneficial. The proposition that wealth (or courage) is beneficial is not true on some occasions, just as the property of being beneficial does not belong to wealth on some occasions.

That the relevant property of propositions, premises, or conclusions in relation to which such things fluctuate or are for the most part is the property of truth and not some other property—for example, a syntactic feature—is made clear by Aristotle's claim in 6.2 that we must be content when dealing with things that exhibit the kind of

inexactness under discussion to indicate the truth roughly (

figure

) and in outline (

figure

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Finally, our accounts may be inexact by lacking the demonstrative purity, rigor, or perhaps even character of mathematics. In the concluding sentences of 6.2 Aristotle claims that the conclusions of our reasonings about matters of conduct are themselves true for the most part. He goes on to insist that we should demand only that level of exactness that is commensurate with the nature of the subject matter (see also 6.3). The exactness at issue here has to do with the nature of the reasoning or proofs a discipline utilizes. The reasoning or proof must, according to Aristotle, fit

— 207 —

the subject matter of the discipline; it can only be as exact as its subject matter is. Some disciplines are more exact than others by utilizing proofs or reasoning that are more rigorous or pure than those utilized by disciplines whose subject matter is inexact.

Thus Aristotle identifies an inexactness at the level of the subject matter of ethics—the subject matter presumably fluctuates or is for the most part. He also attributes the same inexactness to the propositions about matters of conduct—they are true for the most part. The propositions are inexact by giving only a rough representation of matters of conduct. Last, he finds an inexactness in the reasoning or proofs ethics utilizes. The reasoning or proofs it uses or can use cannot match those used by mathematics in some respect or other. The kind utilized by ethics suffers from some deficiencies, and these deficiencies, Aristotle thinks, are a consequence of the nature of the matters of conduct. What these deficiencies are, what the inexactness pertaining to the proofs or reasoning of ethics are, is by no means obvious. They are the questions that will be the focus of the deficiencies in the proofs ethics uses and explain how proofs about matters that are for the most part are at all possible.

The Scope of Fluctuation or Being for the Most Part

What is the scope of fluctuation or of being for the most part? Are all the things ethics studies fluctuating? Are all the properties of everything that belongs to the subject matter of ethics fluctuating or are all ethical propositions true for the most part? Aristotle does not address explicitly the question of the scope of being for the most part, and he does not identify for us a set of things from the domain of matters of conduct or of their properties that fluctuate or a set of propositions about them that are true for the most part. The two examples he gives in 6.2 of things that fluctuate, those of wealth and courage, are too few and cannot by themselves provide us with a basis from which to generalize. It is not obvious that all external goods, like wealth, and all states of character, like courage, are fluctuating. The situation does not change much if we include the few other examples of things that are for the most part he gives elsewhere in the *N.E.* (see next section). Adding these to courage and wealth does not provide us with an inductive base that is significantly better.

Similarly, Aristotle in 6.2 gives one example of a property that fluctuates or belongs for the most part to wealth and courage—the property of being beneficial. But are we to suppose that all properties of wealth and courage fluctuate or that all propositions about these things are true for the most part? Are we to assume, for example, that all the nonessential as well as all the essential attributes of wealth and courage fluctuate?

- 208 -

Again, the few examples of things that are for the most part Aristotle gives elsewhere do not answer such questions unequivocally and do not provide any meaningful

inductive base from which to generalize. Most probably, Aristotle does not offer the few examples he gives with the purpose of providing an inductive base from which we will be able to draw some inductive conclusion. Most often, such examples are illustrations of a general principle that is held on the basis of noninductive considerations. This is certainly the case with the two examples of wealth and courage Aristotle gives in 6.2—they illustrate or provide concrete instances of the general thesis that the noble, just, and good things fluctuate. The two examples do not function as inductive evidence for the thesis that what politics and ethics study fluctuates, but they illustrate it.

Although Aristotle does not address explicitly the question of the scope of fluctuation and does not provide us with adequate inductive evidence for drawing our own inductive conclusions, it does not follow from this that he does not have a view on this issue. He makes several statements about related matters that indicate he does have a position. These statements suggest that he takes the scope of fluctuation to be quite wide, perhaps to be so wide that it encompasses all matters of conduct and all of their attributes.

For instance, Aristotle claims that matters of politics exhibit much (

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) fluctuation and the same is also true of what ethics studies (6.2), and although it may be argued that to speak of much fluctuation is not to imply that everything is fluctuating,^[8] what Aristotle says points in the other direction: All matters of conduct fluctuate or all of their properties belong to them for the most part. To begin with, he speaks of the noble, just, and good things as fluctuating without excluding anything that is noble, just, or good. It is true that Aristotle's assertions concerning the supposed fluctuation of the noble, just, and good things consist of sentences that are strictly speaking indefinite; they lack quantifiers and thus do not explicitly state that all matters of politics and ethics fluctuate. But indefinite sentences are almost invariably understood as universal statements, as statements whose universal quantifiers, although omitted, are taken for granted.

Again, when Aristotle characterizes the premises and conclusions that constitute the components of our reasonings about matters of conduct as being true for the most part, he does not exclude any statements that are not true for the most part.^[9] All propositions about matters of conduct are presumably true for the most part because they are about things that fluctuate. Indeed, if all propositions about matters of conduct are to be true for the most part it is not sufficient that all the good, just, or noble things fluctuate merely in the sense that each good, just, or noble thing fluctuates in respect to some property. In order that all propositions about

- 209 -

such things be true for the most part, all of their properties must belong to them for the most part; such things must fluctuate in respect to all their properties. For if there is a property P of some good or noble thing T such that all T's have P, or T does not fluctuate in respect to P, then the proposition "T's are P" will not be true for the most part but in all cases. For example, if in contrast to the way the property of being beneficial attaches to wealth, the property of being desired belongs to wealth always, then the proposition "Wealth is desired" will not be true for the most part but in all cases.

An additional and perhaps a decisive consideration in support of the claim that Aristotle views all matters of conduct as fluctuating or all of their properties as belonging to them for the most part is the following. Aristotle takes matters of conduct to be such that they can be otherwise. This feature, he argues in *N.E.* Book VI, sets matters of conduct apart from the domains of other disciplines which consist in things that are necessary. With regard to this feature of being able to be otherwise, the feature of contingency, Aristotle seems to hold that it is true of all matters of conduct: "All [matters of conduct] can be otherwise [

figure

]" (*N.E.* 1140b). And as shall be seen below, he also takes universality of truth in a proposition or the exhibiting of a property by all instances of a kind to imply necessity. If all matters of conduct can, according to Aristotle, be otherwise, if they are not necessary, then the propositions about them will not be universally true and matters of conduct will fluctuate; they will at best be only for the most part.

It is reasonable to suppose, then, that Aristotle includes all matters of conduct and all of their properties—both the essential and nonessential ones—among what can fluctuate or can be for the most part. To include, however, the essential attributes of a kind among those that can fluctuate or can be for the most part is bound to be quite problematic for Aristotle, for he thinks that the essential attributes of any kind K belong to all the members of K. They are the attributes that define the kind; they determine whether something belongs to the kind or not. But if essential attributes can fluctuate or belong to a kind only for the most part, then there could be members of a kind that could lack some of its essential attributes. If, for example, being an animal and being rational are essential attributes of humans, there could be humans that failed to be animals or rational, if such properties were to fluctuate or to belong to the kind *human* only for the most part. Similarly, if being a disposition fluctuates in relation to virtue (or vice) there could be instances of virtue or (vice) which are not dispositions.

I shall discuss the nature of this inexactness that, according to Aristotle, affects the essential structure of matters of conduct, his reasons in support of this claim, and any epistemological consequences such inexactness might

- 210 -

have in a later chapter. For the moment I wish to set aside any possible fluctuation of essential attributes and focus instead on the supposed fluctuation of nonessential ones. It needs to be recognized that there may be properties that fluctuate or belong for the most part to some X without there being anything problematic about the essence of X. Thus, Aristotle claims that the property of becoming grey-haired belongs to man for the most part (Pr. Anal. 32a5), but there is no evidence that he takes the essence of man to be inexact or its definition to be true for the most part. Similarly, males exhibit the property of having a beard for the most part (Post. Anal. 96a12), males resemble their fathers for the most part (G.A. 768a24), and honey-water is beneficial for someone with fever for the most part (*Met.* 1027a22), but again there is no evidence that Aristotle takes the essence of male or honey-water to be problematic. Focusing on the example Aristotle uses in 6.2, one does not need to suppose that the essential nature of wealth is problematic in order for the property of being beneficial to belong to wealth for the most part or to fluctuate. The supposed fluctuation may just be the way this property relates to wealth. Aristotle himself does not claim that wealth fluctuates in its essential structure. On the contrary, he offers a definition of its essential character without any hint that there is anything problematic about it.^[10]

If we can distinguish between the fluctuation of essential and nonessential attributes, we may consider the following question concerning Aristotle's claims about the fluctuation of matters of conduct: Do all matters of conduct fluctuate in relation to their nonessential attributes? The significance of Aristotle's claim about the pervasiveness of fluctuation in the case of nonessential attributes can best be understood when viewed against what Socrates and Plato say on these matters. As I said earlier, they often speak or assume that most if not all nonessential attributes of any kind K in the domain of conduct characterize all instances of K. They most often take a proposition asserting a nonessential attribute of some kind of matter of conduct to be universally true of the kind, to be true of all its instances. This thesis of universality is implicit in their conception of the proof or demonstration of the nonessential attributes of some matter of conduct from its essential attributes and other relevant propositions. Socrates and Plato view the propositions that constitute the premises of such proofs to be universally true and therefore the conclusions to be universally true as well. In the example Socrates gives in the Meno, the definition of virtue as a kind of knowledge and the (universal) proposition that knowledge is teachable will, if true, imply the (universal) proposition that all virtue is teachable. Such a proof or demonstration will show that the property of being teachable does not fluctuate in relation to virtue; it is not true of it for the most part but in all instances.

Most probably, the target of Aristotle's criticism when insisting that all

- 211 -

matters of conduct fluctuate in relation to their nonessential attributes is the Socratic-Platonic thesis of the universality of such attributes. In contrast to what the

universality thesis states, Aristotle is insisting that nonessential attributes belong to matters of conduct only for the most part. Against the implicit assumption of Socrates and Plato, he claims that the propositions which assert nonessential attributes of some subject, and which constitute the premises of syllogisms about matters of conduct, are not universally true. The premises are true for the most part because matters of conduct fluctuate. As he insists in 6.2 against the Socratic-Platonic program of demonstrating universally true propositions about matters of conduct, if the premises about matters of conduct are true for the most part, the conclusions will be also true for the most part.

Regardless of whether the Socratic-Platonic thesis is true, Aristotle seems to overstate matters in his response to it. All one needs to show in order to argue successfully against the universality thesis is that some matters of conduct fluctuate, that some nonessential attributes belong to matters of conduct for the most part or that the corresponding propositions are true for the most part. One does not need to show or assert that all nonessential attributes fluctuate or deny that any proposition asserting of a subject a nonessential attribute is universally true in order to refute or deny the universality thesis. Pointing to some instances where the thesis fails to hold would be sufficient for refuting the universality thesis. Indeed, we can see that Aristotle does not need all of the premises of a syllogism about some matter of conduct to be true for the most part in order for the conclusion also to be true for the most part. For even if only some of the premises are true for the most part, the conclusion may very well be true for the most part.

The tendency of going overboard when criticizing Plato or when proposing a position as an alternative to one proposed by Plato is rather typical with Aristotle. It is to some extent then not surprising to find that despite his pronouncements against Plato, Aristotle himself recognizes some things as not exhibiting fluctuation in relation to some of their nonessential properties or that some propositions about such properties are not true only for the most part. Thus he takes the property of being beneficial to belong to health in all instances, and therefore the proposition that health is beneficial to be true in all cases. Similarly, he takes the properties of being blameworthy and wrong to belong to all instances of malice, shamelessness, envy, adultery, theft, and murder: "All these [

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] are blamed as being bad in themselves" (1107a12). He takes the propositions that our moral dispositions are formed as a result of the corresponding activities (1103b22) and that such dispositions are destroyed by excess and deficiency (1104a12) to be true in all cases.

The same kind of discrepancy between general statements and actual

- 212 -

practice is to be observed in what Aristotle says about the inexactness of natural phenomena and his own specific observations or conclusions when investigating nature. For despite his general pronouncements that all of nature is inexact because the whole of it has matter (*Met.* 995a15) and despite the plethora of examples he gives in the biological works of things that are for the most part, he nonetheless identifies many things that exhibit no such characteristic or some properties that do not belong only for the most part to whatever has them. Thus, Aristotle observes that all animals have their uterus inside (*G.A.* 719b), females do not generate on their own (730a30), in all animals that move, male and female are separate (730633), all mules are infertile (747a24), all viviparous animals are blooded (732b10), all birds lay eggs (*H.A.* 558b10), and so on.

Even the restricted question about the scope of fluctuation we are discussing here is less clear and more complex than it at first appears. When the question: "Do all matters of conduct fluctuate in relation to their nonessential attributes?" is posed in a certain way it seems to presuppose that there is a way of finding an answer to it. It seems to presuppose that there is a way of determining whether all matters of conduct fluctuate by examining the various elements of conduct by running some sort of inventory and checking whether each element fluctuates. Or it perhaps assumes that we can identify some feature or set of features of matters of conduct which implies that all of them exhibit fluctuation in relation to their nonessential attributes. Aristotle himself, as seen above, identifies such a feature of all nature—namely, its possessing matter. Perhaps this same feature or even a different one is the reason why matters of conduct fluctuate. Such a feature would explain why all matters of conduct fluctuate.

Clearly, however, running an inventory will not by itself do as an answer to our question. For even though some matter of conduct may turn out to fluctuate when described in one way or when the domain is parsed in a particular way, it is not obvious that this same matter of conduct cannot be described or the domain be parsed in such a way that it is not fluctuating. Even if we were successful in singling out some feature as the source of fluctuation, our question could still be difficult to answer in the way Aristotle does—in the affirmative. What is required in order to answer the question in the way Aristotle does is not merely to single out some feature as the cause of fluctuation. One has to show in addition that there is no way of describing or parsing the phenomena such that fluctuation is eliminated from some of them or in relation to some of their properties.

It is clear that our question about the scope of fluctuation cannot be answered without resolving the problem of whether fluctuation or being true for the most part can be eliminated from our accounts, for clearly the question about the scope of fluctuation is not whether there is some

— 213 —

description under which the phenomena exhibit fluctuation. Even if there were such a description, it alone would not show that some phenomena cannot be described in a way that fluctuation or being true for the most part is eliminated. Wealth may exhibit fluctuation in relation to the property of being beneficial when we describe the phenomena by the statement "Wealth is beneficial," but fluctuation may be eliminated if we succeed in isolating the kind of wealth that is in all instances beneficial and the above statement is modified so that it attributes the property of being beneficial only to this kind of wealth. Hence, the issue concerning the scope of fluctuation raises the following question: Is there no description under which the phenomena of conduct do not fluctuate? This is a question about the eliminability of fluctuation or of being true for the most part from our accounts. I shall return to it later.

The Nature of Being for the Most Part

What precisely is the nature of being for the most part and how does it differ from other ways of being? Questions arise in this connection about the way Aristotle distinguishes among things that are by necessity, for the most part, by chance, and so forth, or among propositions that are true necessarily, universally, or for the most part. Fortunately, Aristotle gives some examples of things that he takes to be for the most part and he also attempts to explicate the nature of being for the most part, often by drawing a contrast between being for the most part and other ways of being—for example, being by necessity or being by chance. I shall first examine some of the examples Aristotle himself gives of things that are for the most part and next discuss his own observations about the nature of being for the most part and how it differs from other ways of being.

The following is a list of all the examples Aristotle gives in the treatises on conduct of things that are presumably for the most part:

6.4	The noble and just things exhibit fluctuation. (N.E. 1094bl5)
6.5	The good things exhibit fluctuation. (1094b17)
6.6	Wealth and bravery exhibit fluctuation. (1094b18)

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6.7	For the most part in such situations [where we are compelled by threat to act dishonorably] the penalty threatened is painful and the act forced upon us is dishonorable. (1110a32)
6.8	of one of two correlative terms has several senses, it follows for the most part that other is used in several senses too. (1129a24)
6.9	Comrades are similar in their feelings and character for the most part. (1161a25

— 214 —	
6.10	One ought for the most part to return services rendered rather than do favors to comrades. (1164633)
6.11	[For the most part] one ought to pay back a loan to a creditor rather than give th money to a friend. (1164634, 1165a3)
6.12	Rest and fasting are beneficial for someone with fever. (1180b10) ^[12]
6.13	I call passions such things as anger, fear and in general those things which are the most part accompanied by sensory pleasure or pain. (<i>E.E. 1220b13</i>)
6.14	It seems that the brave man is for the most part fearless, and the coward liable t fear. (122865)
6.15	The person deficient in all the enjoyments which for the most part everyone m share and enjoy is insensitive. (1231a27)
6.16	Men [who have good natures, but] lack reason, are for the most part successful (1247628)
6.17	For the most part the rich are few and the poor are many in a state. (Polit. 1291)
6.18	Those who divide the ages [of children] by periods of seven years are for the mompart correct. (1336641) ^[13]

The examples Aristotle gives in the rest of the treatises of things that are for the most part are altogether too numerous to be included here. This is especially so in the case of the biological treatises, in particular in H.A., where Aristotle gives many examples of things that are presumably for the most part. I shall therefore select a few of them from those remaining treatises to present here, focusing on those that seem to me to raise some important questions.

Consider the following examples from the logical or quasilogical treatises:

6.19	Men for the most part become grey-haired or grow or waste away. (Pr. Anal. 326
6.20	For the most part the envious are hateful. (70a4)
6.21	Not every human male grows hair on the chin, but for the most part. (<i>Post. Ana. 96a12)</i>
6.22	Exercise for the most part produces health. (Rhet. 1362a34)
6.23	Those things that give us pleasure when present for the most part also give us pleasure when we hope for or remember them. (1370b10)
6.24	Learning and admiring are for the most part pleasant. (1371a32)

- 215 -	
6.25	All things akin and like are for the most part pleasant to each other. (1371b14)
6.26	Men are fond for the most part of those who flatter and love them. (1371b23) ^{[14}

In the *Met.* Aristotle says much about the differences that presumably exist among things that are by necessity, always, or for the most part, but he gives only two examples of things that are for the most part:

6.27	Sultry heat occurs during the dog-days always or for the most part. (1026636)
6.28	Honey-water is for the most part beneficial for someone with fever. (1027a25)

Of the numerous examples Aristotle gives in the biological treatises of things that are for the most part, here are just a few representative examples from H.A.:

6.29	The skull of men has for the most part two sutures. (49164)
6.30	The white of the eye is for the most part the same in all animals. (492a1)
6.31	People with short upper arms have for the most part short thighs. (493624)
6.32	Animals with more teeth for the most part live longer. (501623) ^[15]

It is evident that the examples Aristotle gives are diverse. There may be similarities among them, but there are also differences. The latter is perhaps to be expected, since the examples come from quite different domains; they belong to the subject matter of quite different disciplines. The first two remarks (6.4 and 6.5) do not really give any specific examples; they do not identify any particular things that are for the most part. They are rather general statements about the nature of matters of conduct, the things politics and ethics investigate. Of the rest of the statements quoted above, some are best treated as empirical generalizations stating that some things exhibit some specific property for the most part. This seems to be the case with 6.6 which asserts that wealth and bravery fluctuate in respect to being beneficial. The same can be said about the assertion concerning certain moral dilemmas and the nature of the penalty threatened and of the act that is forced upon someone (6.7), the relation among correlative terms with respect to having several senses (6.8), the relation among comrades with respect to similarity of feelings and character (6.9), rest and fasting in respect of being beneficial (6.12), not being insensitive and experiencing certain pleasures (6.15), men with a good nature and success (6.16), rich and poor citizens in respect of their numbers in the state (6.17),

- 216 -

and the division of the ages of children in terms of periods of seven years (6.18).

The same seems also to be the case with almost all the statements from the treatises that do not deal with matters of conduct. That, for example, men grow grey-haired (6.19) or that males grow hair in their chin (6.21) are best treated as empirical generalizations. In general, the same treatment seems most appropriate for almost all of the remaining statements, especially the ones from *H.A.* (6.20, 6.22, 6.23, 6.24, 6.25, 6.26, 6.28, 6.29, 6.30, 6.31, 6.32).

Some of Aristotle's statements asserting that something exhibits a property for the most part are more problematic, however. Consider, for example, the disjuncts of 6.19 asserting that men for the most part grow or waste away. First, the properties at issue, growing or wasting away, are true of all men; they belong to men in all cases. Second, these assertions seem to involve something more than what is involved in empirical generalizations. They seem to involve at least physical necessity—growth and corruption appear to be physically necessary attributes of all living things. Aristotle, however, treats these attributes in the same way he treats the attribute of becoming grey-haired—he treats all of them as belonging to their corresponding subjects for the most part and contingently. As shall be seen below, Aristotle takes what is for the most part to be contingent but the two are not the same thing. In 6.19, however, it seems that the aspect of contingency is what is uppermost in his mind and this is perhaps what explains his statement that men for the most part grow or waste away.

A different problem is raised by 6.27. Why does Aristotle say there that sultry heat occurs during the dog days always (

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) or for the most part? Can it occur both always and for the most part? Or does he use the disjunction in the exclusive sense? There are ways of reading 6.27 that make either of the disjuncts plausible. One could, for instance, take dog days to just mean "days of sultry heat," which would make the first disjunct true: "Sultry heat occurs during the dog days" will always be true; it will be analytically true. But then it could not be true only for the most part.

Yet it is most certain that Aristotle takes the proposition about sultry heat during the dog days to be true for the most part. Most commonly, "dog days" is taken to designate the unusually hot days between early July and August—the period when the rising of the Dog Star (Sirius) occurs. The relation between dog days and sultry heat would be similar to the one which Aristotle takes to hold between the seven days preceding and following the winter solstice and calm weather (halcyon days): "Hence when calm weather occurs at this period [winter solstice], the name 'halcyon days' is given to the seven days preceding and the seven days following the solstice. . . . And these days are calm when it so happens that southerly winds blow at the solstice. . . . In our part of the world, it is true, it does

— 217 —

not happen at all times that halcyon days occur at the solstice, but in the Sicilian sea they occur almost always" (*H.A.* 54265). Thus, whereas Aristotle takes "halcyon days" and "calm weather preceding and following the winter solstice" to be analytically connected, there is no such connection between "calm weather" and "the days preceding and following the winter solstice." Calm weather occurs for the most part ("almost always") during the winter solstice days, but this is, according to Aristotle, an empirical fact. Similarly, sultry heat occurs for the most part when the rising of the Dog Star occurs.

However, the problem that 6.27 raises, which can be dealt with easily in its case, is also raised by almost all of the remaining examples, and it seems that it is more difficult to deal with it in their case. For what 6.10 and 6.11 state about our obligation to return services rendered and our obligation to pay back a loan appears to be more than a mere empirical generalization. One may agree with Aristotle that there are exceptions to the general rules about obligation to return services rather than do favors for comrades and to pay back a loan to the creditor rather than give the money to a friend, but it is clear that these general statements are different from the purely empirical generalizations, discussed above, that also have exceptions or hold for the most part. For in the case of 6.11 at least, the obligation to pay back a loan is part of the practice or institution of borrowing.^[16]

The same kind of difficulty is raised by two examples from the *E.E.* Consider, for instance, what Aristotle says about the brave person and the coward in 6.14. The relation between the emotion of fear and being brave or being a coward has to be more than a contingent one within the Aristotelian framework, for the emotion of fear is, according to Aristotle, part of the definition of the brave person (and of bravery) and of the coward (and of cowardice). The coward/s the person who is liable to fear. For the same reasons, 6.13 is also problematic. Does the property of being accompanied by pleasure or pain belong to passion only for the most part? In *N.E.* Book II, chapter v, being followed by pleasure or pain is included in what is offered there as the definition of a passion, but of course without the "for the most part" locution, and it seems that 6.13 itself is given as a kind of stipulative definition—"I call passions such things as. . . . "The relation between being a passion and being accompanied by pleasure or pain seems to be necessary either because it is a stipulative/analytic or an essential one.

In what way, then, do the properties that a subject possesses only for the most part belong to it? Do they belong to it necessarily or contingently? Or do some of them belong necessarily, whereas others do so contingently? As we have just seen in the two last examples from E.E., some properties that are included in the definition of a subject and therefore some essential

- 218 -

properties belong to it only for the most part. But if essential attributes are, as Aristotle invariably claims, necessary attributes, then some attributes of a subject that belong to it for the most part must belong to it necessarily.

There is something quite puzzling about the above conclusion, however, for, as noted earlier, the essential attributes of a kind K belong, according to Aristotle, to K necessarily and universally—every member of K has the same essential attributes. So how can essential attributes belong to a kind only for the most part? Can there be members of a kind that do not exhibit the essential attributes of that kind? And how can a property that belongs to a kind only for the most part be a necessary property of that kind? What Aristotle says about the nature of being for the most part and about the manner it differs from other ways of being may not answer all of the above questions, or it may not do so satisfactorily, but the logical step is to examine next what he actually says about these issues.

Aristotle speaks at times about the nature of being for the most part when trying to draw the boundaries of what is knowable or demonstrable. In several passages where he is concerned with determining the limits of scientific knowledge, he claims that the domain of the scientifically knowable or of the demonstrable consists of that which is necessary (

figure

figure

), always (

figure), and for the most part, while that which is accidentally (figure

) or by luck (the fortuitous,

figure

) falls outside the demonstrable (*Post. Anal.* 87620; *Met.* 1027a25, 1064b15, 1065a5; *Phys.* 196a, b19). Although Aristotle's focus in these passages is the contrast between the nondemonstrable and the demonstrable, or between the accidental or fortuitous and all else, one should not overlook the contrast he is also drawing within the demonstrable or knowable itself. It can easily be seen that Aristotle is as much concerned with distinguishing between the nondemonstrable and the demonstrable and the demonstrable as he is with keeping the components of the demonstrable apart and distinct; for in every instance where he contrasts the nondemonstrable to the demonstrable, he also identifies as distinct components of the demonstrable two or more types of things or being. Thus, Aristotle speaks of (a) what is always and of necessity on the one hand (

figure

) and what is for the most part on the other (

figure

—Met. 1026630, 1064633, 35, 36, 37, 1065a2); (b) what is always and what is for the most part (*Met.* 1026632, 36, 1027a18, 25, 1065a5; *Phys.* 196b10, 197a19, 31, 199624); and (c) what is of necessity and what is for the most part (*Phys.* 196620, 35; *Pr. Anal.* 32b7).

The contrast Aristotle draws in the passages referred to above indicates quite clearly that he takes what is for the most part not to be necessary. In addition, it indicates that he also takes what is for the most part to be distinct from what is always. It seems quite natural to distinguish between what is for the most part on the one hand and what is necessary or always

— 219 —

on the other. We consider what is necessary or always to be, unlike what is for the most part, without exceptions or incapable to be otherwise. This is part of our intuitive understanding of what it is to be always in a certain way or by necessity. However, it may be said in this context that what is for the most part is necessary or always save in the cases where we have exceptions.^[17] And it is such a conception of being for the most part that can best account for the cases mentioned earlier where some kind K exhibits a certain property F for the most part, while at the same time we tend to view F as an essential property of K or at least as belonging to K necessarily or always.

The move of incorporating what is for the most part into what is necessary or always is not without its difficulties, however. First, it seems to be in conflict with the intuition I alluded to above—namely, that unlike that which is for the most part, that which is by necessity or always is thought to have no exceptions, or to obtain in all cases (the universal), or to be incapable of being otherwise. It is to such an intuition that philosophers often appeal in order to justify their contention that what is for the most part is not a component of the necessary. Aristotle himself, as shall be seen, most often links these three ways of possessing a property: necessarily, always, and in all cases (universally). Second, setting aside the appeal to intuitions for the moment, there is ample textual evidence that Aristotle does not incorporate what is for the most part into the necessary. The evidence I have in mind here goes beyond the numerous instances I presented above where Aristotle merely contrasts what is necessary or always on the one hand to what is for the most part on the other. The evidence includes explicit statements by Aristotle that what is for the most part, unlike what is necessary, can be otherwise; it is contingent.

It is true that at times Aristotle speaks of things that occur regularly in a certain way if nature is not thwarted or prevented. He also speaks of other things that would not have occurred if the order of nature had not been thwarted or prevented. Thus he claims in G.A. that the natural position of the uterus is low down "unless there is some other business of nature that prevents it" (718b26). In Book IV, chapter iv of the same treatise, he speaks of a number of things relating to the generation of animals that occur because nature is prevented or thwarted.

Aristotle does not draw the conclusion that what is not prevented from occurring, what happens for the most part, is necessary. On the contrary, he insists that what is necessary or always cannot be prevented from occurring and that which can be prevented is what is for the most part and what can be otherwise: "So far as concerns

the Nature which is always and is by necessity, nothing occurs contrary to that; unnatural occurrences are found only among those things which occur as they do for the most part, but which may occur otherwise [figure

]" (*G.A.* 770b12).

- 220 -

Similarly, he remarks: "And that [same violence which is contrary to what is for the most part] *ipso facto* means something contrary to Nature, because in the case of things which admit and do not exclude the possibility of being otherwise [figure

] that which is in accordance with nature [natural] is that which is for the most part [figure

]" (777a20).

Aristotle's position that what is for the most part cannot be included in what is necessary is also made clear in a context that is quite different from that of the biological treatises. In Top., while discussing strategies of winning arguments, Aristotle writes,

6.33	Seeing that some things happen of necessity, others for the most part, others as chance dictates, the assertion that a necessary occurrence is a for the most part occurrence or a for the most part occurrence is a necessary occurrence, alwar gives an occasion for attack. For if a necessary occurrence is asserted to be a for t most part occurrence, it is obvious that whoever makes the assertion is stating th that which obtains in all cases [
	figure] does not obtain in all cases, and therefore he is in error; and the same is true if has stated that a for the most part attribute is necessary, for he has stated that obtains in all cases, when it does not. (112b)

The fact that this statement occurs in a context where Aristotle is concerned with the techniques of eristic argumentation or refutation should not affect the point he is making: namely, that to assert that what is for the most part is necessary and vice versa is wrong. This claim is independent of the particular use Aristotle thinks it has within eristic argumentation or refutation.

It is evident from the above that Aristotle does not include what is for the most part in what is always or by necessity. Whether Aristotle is right about this is of course another matter. But assuming for the moment that Aristotle is correct about the supposed relation between being for the most part and being contingent, a number of questions naturally arise: Does Aristotle think that there are different ways of being contingent? Does he identify a kind of contingency that is associated only with being for the most part? And is therefore what is for the most part only a component of the contingent?

The contrast that Aristotle often emphasizes between what is necessary or always on the one hand and what is for the most part on the other brings clearly into focus the aspect of contingency he associates with being for the most part. This emphasis tends at times to overshadow the equally important contrast he wishes to draw between what is for the most part and what is by chance or luck (the fortuitous). For despite their similarity by virtue of the fact that they can both be otherwise and therefore both

- 221 -

can be set against what is always or necessary, they are clearly to be distinguished. Aristotle distinguishes clearly between them by insisting, as seen earlier, that whereas what is for the most part falls within the demonstrable, the fortuitous does not (*Post. Anal.* 87620, 26; *Met.* 1025a15, a21, 1026632, b36, 1027a18, 1064b35).

The similarities and differences between what is for the most part and the fortuitous are best brought out in a passage from the *Pr. Anal.* Aristotle claims that we speak of things as being contingent in two senses (

): "(1) to describe what is for the most part but falls short of being necessary, for example, a man's becoming grey-haired or growing or wasting away, or in general that which is by nature applicable to a subject; and (2) to describe the indeterminate, which is capable of happening, both in a given way and otherwise, for example, the walking of an animal or the happening of an earthquake while it is walking or in general a chance occurrence" (32b5). Commentators have often pointed to this passage as providing sufficient evidence that Aristotle failed to distinguish clearly several quite different things and the relations among them—for example, the necessary, the possible, the impossible, the probable, the improbable—and have argued that the best way of conveying what he is trying to express in the above passage is to say that both kinds of phenomena he discusses there are not necessary and therefore are contingent (possible to be otherwise), but the one kind is probable (what is for the most part) whereas the other is improbable (the indefinite, the chance occurrence). This may very well be so—Aristotle may have failed to distinguish as clearly as he should the things the commentators identify. But whether it is, it is not as important as the point Aristotle wishes to make about the two ways something can be contingent—namely, by being accidental and by being for the most part. Both the accidental and what is for the most part are contingent. Although saying of something that it is for the most part implies, according to Aristotle, that it is contingent, it is not the case that "being contingent" is the meaning of "being for the most part." If it were, one could derive from "it is contingent that an earthquake happens when an animal walks" (the accidental), that "for the most part an earthquake happens when an animal walks." This is clearly not so: "For a chance occurrence does not happen either necessarily or for the most part" (Top. 112b15). "Being for the most part" signifies something more than what "being contingent" does—it signifies that something belongs to some subject not fortuitously, but by nature.

This last point, that what belongs to some subject for the most part belongs to it by nature and therefore cannot be identified with the merely contingent, is one Aristotle makes repeatedly. For example, in trying to explain how contingent propositions convert he adds to the passage from the *Pr. Anal.* quoted above, "The contingent in each of these two cases,

— 222 —

then, is convertible with its opposite; not, however, in the same way. That which is by nature [

figure

] so converts because it does not necessarily apply (for it is in this sense possible for a man not to become grey-haired); but the indeterminate converts because it happens no more in one way than in another" (32bl5). He again speaks of "the things which are said to be contingent by being for the most part and by nature [

figure

]" (25b14). Similarly in *G.A.* Aristotle claims that "it is what occurs for the most part that is most in accord with the course of nature [

figure

]" (727630) and that "that which is in accordance with nature is that which is for the most part [

figure

]" (777a20; see also Gen. et Corr. 33368; P.A. 663b30; Rhet. 1369b1; Phys. 198b36).

The things that are for the most part comprise, then, according to Aristotle, only a component of the contingent. Unlike the other component (the accidental), they are a part of the domain consisting of the causal regularities of nature. These regularities may not be perfect—the things that occur for the most part do not occur always in the same way—but they are nonetheless regularities. They are imperfect and in a sense deficient when compared to those that occur always in the same way or that are necessary, but they are clearly to be set apart from chance occurrences, for they are part of the causal regularities of nature.

What Aristotle says about the nature of being for the most part places the phenomena that are for the most part within the things that can be explained, for they have causes in the order of nature and they are therefore candidates for demonstrative explanations. Such explanations may not meet all of the conditions Aristotle requires of the most rigorous of demonstrative explanations—the phenomena are not necessary or always—but they meet some of them: According to Aristotle, they meet the causal requirement. Whether they meet a sufficient number of the conditions that Aristotle requires of demonstrative explanations or whether Aristotle is justified in including such phenomena within the domain of the demonstrable is to be examined later.

Being for the Most Part and its Proper Contrast

Aristotle's discussion of the nature of being for the most part raises an interesting question. In this discussion Aristotle invariably compares or contrasts what is for the most part to what is necessarily, always, or by chance (luck or accident—the fortuitous). It seems intuitive to suppose that the more appropriate comparison or contrast is between exhibiting some property F for the most part and exhibiting F in all instances or between a proposition being true for the most part and being true universally. Intuitively, the contrast seems to be, for example, between people with short arms having for the most part short thighs (6.31) and people

- 223 -

with short arms having in every case short thighs or between the proposition "People with short arms have short thighs" being true for the most part and being true universally. The contrast is not, in other words, so much between a property belonging necessarily instead of contingently to something or between a proposition being necessary instead of contingent, as it is between a property belonging to something (or to some kind) in every instance instead of in most instances or a proposition being true universally instead of in most cases.

Yet Aristotle, as seen earlier, most often contrasts what is for the most part to that which is necessary or always on the one hand and the fortuitous on the other. It seems as if he fails to recognize the possibility that some properties belong contingently to some kind but do so in every instance, or that some contingent propositions are universally true. It is not, however, obvious that one should accuse Aristotle of such a failure. Therefore, it is tempting to view what Aristotle designates as that which is always as being that which truly contrasts with what is for the most part. In other words, it is tempting to dissociate what is always from what is necessary and to view what is always as that which belongs to some kind in every instance (universally true), thus providing the proper contrast to what belongs to a kind for the most part (true for the most part).

The move of dissociating what is always from the necessary and making it the proper contrast to what is for the most part is a problematic one, for as several commentators have pointed out recently, Aristotle tends to include what is always in what is necessary.^[18] There are, indeed, several passages where Aristotle appears to be doing so, the clearest and strongest being in *Gen. et Corr.* : "For necessarily [figure

] and always [

figure

] go together (since what necessarily is, cannot not be), so that if it is necessarily, it is eternal [

figure

], and if it is eternal, it is necessarily" (337635). There are other passages as well, especially in *Cael.* Book I, chapter xii, and *Pr. Anal.* Book I, chapter xiii, where Aristotle speaks of a connection between being always and being necessarily.

A closer look at the passages where Aristotle speaks of such a connection between what is always and what is necessarily shows that most often they occur in contexts where he is primarily concerned with the eternal motions of the eternal heavenly bodies. This is clearly so in the above passage from *Gen. et Corr.* But can we generalize from these contexts and infer that Aristotle identifies what is always with what is necessary in all other contexts? Richard Sorabji has raised exactly this question recently and has in my judgment provided some good reasons for not extending Aristotle's claims about the supposed identity of what is always and what is necessary beyond those contexts in which he most clearly is concerned with the eternal properties of eternal bodies.^[19]

162 of 362

Yet there are problems with trying to determine with any degree of

— 224 —

certainty whether in some cases where Aristotle speaks of things that are always he is not speaking of things that are eternal or necessary. There are passages suggesting that he does so, but they do not seem in most cases to settle the matter in a decisive way. They do not do so precisely because in most cases it is quite difficult to determine with certainty that even in these passages he is not speaking of things that are eternal or necessary when he speaks of things that are always.

I wish, then, to consider some of these problematic passages in order to point to the difficulties that they raise. Some passages however seem less problematic than others, and it is perhaps reasonable to infer from them that in some contexts Aristotle separates what is always from the necessary.

Consider, for example, a brief passage in the *E.E.* where Aristotle is once more contrasting what is always and what is for the most part to what is by accident or fortune. The question at hand is whether the success or the doing well of some persons is due to their state of character or to fortune. In connection with this, Aristotle says,

6.34	But again, nature of course is the cause [
	figure
] of a thing that happens either always in the same way [
	figure
] or for the most part [
	figure
], whereas fortune is the opposite if a man is faring well owing to fortune, i
	would seem that the cause is not of such a sort as to produce the same result alwa
	figure
] or for the most part. (1247a33)

It might be argued that what Aristotle wishes to assert in the above passage when he says of some X that it is always is simply that X is in the same way (

figure

). Similarly, when he draws a contrast between X's being always and X's being for the most part, he is just pointing to the contrast between X's being in the same way at all times and X's being in the same way for the most part. There is no mention here of a contrast between some X's being of necessity on the one hand and of its being for the most part on the other. Indeed, one may argue that the way Aristotle differentiates what is always and what is for the most part from what is by fortune and the basis he gives for differentiating between them in the way he does shows that what is always cannot be reasonably identified with what is necessary. The difference between what is always and what is for the most part on the one hand and what is by fortune on the other is that the former have nature as their cause—"nature is the cause of a thing that happens either always in the same way or for the most part"—whereas the latter presumably does not. This analysis of what is always in terms of causal connections in nature that occur in the same way is not an adequate account of the necessary; it is not sufficient for making what is always a

— 225 —

part of the necessary. Perhaps, then, they are to be distinguished from each other.

The above line of argument faces a number of problems, however, for it is possible that when in the above passage (6.34) Aristotle gives an analysis of that which is always in terms of causal connections that occur in the same way, he is giving only part of the analysis. He is perhaps giving only a necessary condition. Consider, for example, the account he gives in Top. of a property that belongs to something always:

6.35

A property belongs to something always [

figure

] when it is true at all times [figure
] and never [
figure
] fails; for example, that of an animal that it is composed of body and soul. (129a

Now the property of being composed of body and soul is, according to Aristotle, a necessary property of an animal. In all probability when Aristotle says that such a property, in addition to belonging to an animal at all times, never fails, he means to say that it is necessary. For when he proceeds to explain how the properties that belong to something always differ from those that belong to it at some one time or temporarily he says:

6.36	A temporary property [
	figure] is one which is true at a particular time and does not by necessity always [figure] follow, for example that of a particular man that he is walking in the market-plac (129a3)

One may respond that Aristotle does not need to introduce necessity in order to contrast what is always to what is for the most part or both of these to what is by chance in the above passage from *E.E.* (6.34). All that is required by the context of the above passage, and all Aristotle is giving, is a contrast between two kinds of nonnecessary things (what is always and what is for the most part) that have causes in nature and another (what is by chance) that presumably does not have causes in nature. He can differentiate between the things that have causes in nature by insisting that one is the same at all times or in all instances or in all cases (what is always) whereas the other is so for the most part.

The above kind of response would be effective in establishing that what is always need not to be necessary, and that it can thus provide the proper contrast to what is for the most part, if there were evidence that Aristotle differentiates between what is the same at all times or in all cases and what is eternal or necessary. If there were, in other words, clear evidence that Aristotle takes the minimal characterization given in the previous paragraph of that which is always (i.e., as that which is the same at all times, or in all instances or cases) not to imply necessity. The evidence seems in most cases to point in the other direction, however.

When we examine some of the passages we quoted above, as well as some others, the conclusion that Aristotle does not differentiate between

- 226 -

what is the same at all times or in all instances or cases and the necessary seems quite plausible. It is most likely, for example, that when Aristotle in 6.35 says that a property belongs to something always if it is true of that thing at all times he does not differentiate between X's being F always and X's being F at all times. It is also most likely that he does not differentiate both of these from the necessary. His example of a property that is true of something at all times, that of animal being composed of body and soul, surely confirms this interpretation. One can also see in 6.36 that Aristotle most often recognizes only temporary properties (Socrates walking to the marketplace) and properties that belong to something by necessity or always. He does not recognize an intermediate kind of property that, although not necessary, belongs to something at all times.

There are, however, some passages where it seems quite plausible to assume that Aristotle uses

figure

to simply mean "at every time." This is most evident in those passages where he couples the term with another expression for the purpose of asserting that something occurs *almost* at every time or *almost* in every case, thus suggesting that some things that are or could be always need not be eternal, immutable, or necessary. Aristotle says, for example, that "the fluids already mentioned are almost in all instances [or

almost always,

figure

] connate in animals" (*H.A.* 521 b 16); "In our part of the world . . . it does not happen at all times [

figure

] that halcyon days occur at the solstice, but in the Sicilian sea they occur almost always

figure

]" (*H.A.* 542b13); "In those birds that are prone to pairing and do so at all times [figure

] . . ." (*H.A.* 564b10); "They [white bees] do not do this [produce honey] throughout the year [

figure

], but only in winter" (*H.A.* 554b12); "Other [testacea] do not have them ["eggs"] at all times [

figure

], but only in the spring" (*G.A.* 76368), and so forth (see also *G.A.* 751a8, b8, b32, 753a32). These passages show that Aristotle's use of the term under discussion is somewhat broader than has often been assumed. At times its use extends beyond the domain of the strictly eternal or necessary and encompasses what occurs merely at all times. Thus Aristotle can speak of things that occur almost always and which are clearly neither eternal nor immutable.

Then does Aristotle use

figure

to signify that which merely occurs at all the times or in all instances and does he therefore take it to form the proper contrast to what is or occurs for the most part? The two clearest examples I know of that support the view that he does so come from the *Rhet*. The first is "and it is equitable to pardon weaknesses, and to look . . . not to what a man is now, but to what he has been always or for the most part [

figure

]" (1374b16). What Aristotle is speaking of in this context is behavior that is the same at all times but which, according to the views expressed in the *N.E.*, is not eternal, immutable, or necessary. The contrast he wishes to draw is between behavior that is

— 227 —

always the same and that which is for the most part the same. The other example occurs earlier in *Rhet.* : "The opposite of what our enemies desire or of that in which they rejoice, appears to be advantageous This is not always so, but only for the most part [

figure

], for there is nothing to prevent one and the same thing being advantageous to two opposite parties" (1362637). What Aristotle means to say when he claims that what our enemies desire or rejoice in is not always advantageous is that it is not so in all cases or instances. There are exceptions to the general claim, "What our enemies desire or rejoice in is not advantageous." It is true only for the most part. There is no reason to think that Aristotle takes the relation between being an object which our enemies desire or rejoice in and being advantageous as an eternal, immutable, or necessary one. As he says, there is nothing to prevent one and the same thing being advantageous to two opposite parties. At least in these cases, then, Aristotle seems to take what is always to be merely that which occurs at all instances or cases and to treat it, especially in the second example, as the proper contrast to what is for the most part. In these examples he seems, that is, to contrast what merely is or occurs in the same way in all cases or instances to what does not, the exceptionless to that which has exceptions. These examples appear to be the exception rather than the rule, however. Most often Aristotle clearly links the possessing of a property always to being necessary.

Similarly, when Aristotle speaks of properties that belong to all instances or cases of a kind, he seems to take such properties to be necessary. Most often he tends to link what is true in all cases with what is always, and the examples he gives indicate that he thinks that what is true in all cases is necessary. Thus: "As an example of a difference that is true in all cases [

figure

] and always we may take the property of man in relation to a horse, that he is biped, whereas no horse is ever a biped" (*Top.* 129a9). The property of being a biped belongs, according to Aristotle, necessarily to man. The same is the case with what Aristotle says on one of the few occasions where he contrasts what is for the most part to what is in all instances: "To study Nature we have to consider the majority of cases, for it is either what is universal [in all cases,

figure

] or what is for the most part [

figure

] that is according to Nature. Now all the bone in animals' bodies consists of earthy matter" (*PA.* 663627). As Aristotle makes clear, the property at issue that is true in all instances, that is, the property of consisting of earthy material that is true of all bone, is a necessary property of bones (*P.A.* 663627). The same is the case with other examples of properties that Aristotle takes to be true in all instances of a kind, for example, the property of being blooded that is true of all viviparous animals (*G.A.* 732b10) or the property of laying eggs that characterizes all birds (*H.A.* 558b10).

- 228 -

The reason we find no clear cases where Aristotle dissociates what is always, in every case, or universally true from the necessary is, of course, that he believes these things to be interconnected, to be in some way all linked together. The intuition supporting such a belief is perhaps the view that what explains why something has a property always or why a property is possessed by all the instances of a kind is the fact that the things or kind are so by necessity. It is presumably the fact that a property F belongs to K necessarily that guarantees that K is always or in all its instances F. The idea that universality of truth or exhibiting of a property universally is linked to necessity has been embraced by many philosophers, including Kant.^[20] Here are some instances where Aristotle links what is always, what is in every case, or the universal with each other and with what is by necessity: "I say that something holds of every case [

figure

] if it does not hold in some cases and not others, nor at some times and not at others; e.g., if animal holds of every man, then if it is true to call this a man, it is true to call him an animal too; and if he is now the one, he is the other too" (*Post. Anal.* 73a28). Again, the properties Aristotle uses to illustrate what he means by saying that something holds in every case are properties that belong to a subject necessarily. Aristotle goes on to remark, "I call an attribute universal [

figure

] whatever belongs to [something] both of every case [

figure

] and in itself and as such. It is evident, therefore, that whatever is universal belongs by necessity to its subject" (73626). In two other passages, Aristotle connects what is universally true, what is in every time, what is everywhere, and what is always: "And it is impossible to perceive what is universal [

] and holds in every case [

figure figure

]; for that is not an individual nor at one time; for then it would not be universal—for it is what is always [figure

] and everywhere [

figure

] that we call universal" (87632); "Some things come about universally [

] (for always [

figure

figure

] and in every case [

figure

] either it holds or it comes about in this way), others not always but for the most part .

. . for that is what the universal is—what holds in every case and always" (96al0ff.). Yet the truth of the intuition linking necessity and universality is by no means

166 of 362

obvious; or since the truth of intuitions is supposed to be obvious, the "intuition" is not really an intuition, for it is not obvious that what is for the most part cannot be necessary. It is not clear that given a domain D which exhibits a property F for the most part, the proposition "For the most part D is F" is not necessary, or that those members of D that are F are not so necessarily, or even that those members of D that are not F are not so necessarily. Consider, for example, the domain consisting of the prime numbers.^[21] It is true in its case that for the most part prime numbers are not divisible by two. But this is clearly necessary—it can be derived from other necessary propositions of arithmetic. It is also the case

- 229 -

that those prime numbers which are not divisible by two are not so necessarily and that the prime number which is divisible by two is so necessarily. The same may be true in the case of natural phenomena or the domain of conduct. From the fact that a property F characterizes a class C for the most part we cannot infer that F characterizes C contingently, for such a fact may be implied by other necessary facts about C or F. Thus Aristotle argues in *G.A.* Book IV, chapter iii, that the offspring of humans resemble their parents or at least some human being in most cases and that such facts about humans or similar ones about any other animal species are necessary. Perhaps there are reasons for thinking that there is no necessity in the domain of nature, that everything in nature is contingent. This may be so. But it cannot be inferred by relying solely on a supposed link between being for the most part and contingency or between necessity and universality.

Regardless of what Aristotle's reasons are for assuming there is a link between necessity and universality, it is clear from the passages discussed earlier where he contrasts that which is always, necessary, or for the most part on the one hand and that which is fortuitous on the other that he does not explicitly identify any other domain that is distinct from them. He does not, in particular, recognize a domain of things or phenomena whose properties are such that while they do not belong to them necessarily or always, they characterize them universally or the propositions about them are simply universally true.

Aristotle does not include such a domain among those that he takes to constitute the realm of demonstrative knowledge. Thus, when on several occasions he identifies the components of the demonstrable, he speaks of what is necessary, what is always, and what is for the most part: "Now demonstration is concerned only with one or the other of these two [the necessary or what is for the most part]; for all reasoning proceeds from premises that are either necessary or for the most part" (Post. Anal. 87620). The components are what is always and what is for the most part: "For all science is either of that which is always or for the most part" (Met. 1027a20). He thus moves from that which is necessary or always to that which is for the most part without leaving room for what is not necessary but exhibits properties universally. Or he moves from demonstrative reasoning that consists of premises and conclusions that are necessary to that which consists of premises and conclusions that are true for the most part without leaving room for demonstrative reasoning whose premises and conclusions, while not necessary, are universally true: "And if the premises are necessary, the conclusion is necessary too; and if they are for the most part, the conclusion is the same" (Post. Anal. 87623).

Although Aristotle does not identify a domain of phenomena or things that falls between the necessary and what is for the most part—the domain

— 230 —

of things whose properties belong to them universally but contingently—and does not recognize such a domain as being a component of the demonstrable; he does identify explicitly propositions that are universal in form but not necessary, and he states explicitly what the truth conditions of such propositions are. These are the universal assertoric propositions Aristotle identifies in *Pr. Anal*. Book I, chapter ii, the propositions that constitute the premises of some assertoric syllogisms. He contrasts such propositions to universal apodeictic ones, and gives their truth conditions: "By universal I mean a statement which applies to all, or none, of the subject" (24a18). This

is an important point, for it shows that Aristotle recognized that there can be reasoning or syllogisms whose premises are universal assertoric statements. He recognized, that is, that syllogisms with such nonnecessary statements meet the formal conditions of validity.^[22] I shall argue in the next chapter that Aristotle views the demonstrative syllogisms pertaining to what is for the most part to be constituted by premises and conclusions that have the logical form of universal assertoric statements. When they are viewed in this way they meet the formal requirements of validity; they are valid syllogisms. If in addition they meet the other conditions Aristotle requires of demonstration, they will not merely be valid syllogisms, they will be demonstrative syllogisms.

Taking the logical form of propositions that are true for the most part or are about things that are for the most part to be that of universal assertoric statements helps to solve some additional problems or understand some of Aristotle's remarks that seem otherwise quite puzzling. I shall, for instance, show that it is only when the logical form of such statements is understood as being that of universal assertoric statements that one can understand how statements about things that are for the most part are true for the most part or how our accounts of things that are for the most part are inexact or reveal the truth about them roughly. Although Aristotle views the statements at issue to have the logical form of universal assertoric statements, he claims that due to the inexactness of the phenomena, the truth conditions of the universal assertoric statements are not met by statements which are about things that are for the most part. The statements about such inexact subject matter have exceptions; they are true only for the most part.

- 231 -

Seven Demonstration and What Is for the Most Part

Introduction

I have argued in the previous chapter that Aristotle takes what is for the most part to be a component of the domain of things that according to him exhibit natural regularities. For this reason, he includes the things that are for the most part among those that can be demonstratively explained, and he thinks that propositions about such things, propositions that are true for the most part, can be the constituents—premises or conclusions—of demonstrative syllogisms that explain certain features of such things. These last claims are made emphatically by Aristotle on several occasions:

7.1	There can be no demonstrative knowledge [
	figure] of the fortuitous. What happens by chance is neither necessary nor for the most p- but something that happens in a different way from either; whereas demonstratior figure] is concerned with one or the other of them. Every syllogism proceeds through premises which are either necessary or for the most part; if the premises are necessary, the conclusion is necessary too; and if the premises are for the most pa so is the conclusion. Hence, if the fortuitous is neither for the most part nor necessa there can be no demonstration of it. (<i>Post. Anal. 87620</i>)
7.2	But that there is no science of the accidental is obvious; for all science is either of t which is always or for the most part. (For how is one to learn or teach another? Th thing must be determined as occurring either always or for the most part, e.g., the honey-water is beneficial for someone with fever for the most part). (<i>Met. 1027a2</i>

7.3 The accidental, then, is what occurs, but not always, nor of necessity, nor for the m part. Now we have said what the accidental is, and it is

- 232 -

obvious why there is no science of such a tiling; for all science is of that which is alw or for the most part, but the accidental is neither of these classes. (1065a)

However, scholars have at times argued that Aristotle, by taking ethics to have a subject matter that is for the most part and to consist of propositions that are true for the most part, places it and similar disciplines outside the class of disciplines that can be demonstrative.^[1] Others have concluded that these supposed characteristics of the subject matter and of the propositions of ethics do not exclude the discipline from the set of the demonstrative disciplines; they only make it, in Aristotle's scheme of things, not a strict demonstrative or exact discipline.^[2]

Those who claim that the type of inexactness Aristotle attributes to the subject matter and to the propositions of ethics places the discipline outside the demonstrable have most probably been influenced by some remarks Aristotle himself makes. In these remarks he stresses, at times rather emphatically, the supposed differences in rigor among disciplines and the differences between practical wisdom and theoretical knowledge, differences which he thinks result from the nature of the objects with which the various disciplines or faculties deal.

As seen in the previous chapter, Aristotle connects the exactness of the subject matter of a discipline and of our accounts of it to the exactness of the proofs of that discipline. In the passage quoted in 6.2 he claims that if the subject matter is for the most part, the premises in our reasoning about it are true for the most part, and therefore our conclusions from such premises and about such subject matter are also true for the most part. He concludes that passage with the following remark:

7.4	In the same spirit, therefore, should each type of statement [or account] be receive for it is the mark of the educated man to seek the amount of precision [
	figure] in each class of things which the nature of the subject matter admits [figure
]; it is evidently equally foolish to accept probable reasoning from a mathematician to demand demonstrations from the rhetorician. (<i>N.E. 1094624</i>)
-	

The above remark can lead someone to the view that at least one of the epistemological consequences of the supposed inexactness of the subject matter of ethics is that it falls outside of the domain of the demonstrative; there is no demonstration in matters of conduct.^[3] For presumably, the nature of the subject matter of ethics, of matters of conduct themselves, is such that it excludes demonstration. The disciplines of matters of conduct are presumably among those disciplines where it would be foolish to demand demonstration—the nature of their subject matter excludes it.

Similarly, Aristotle in *N.E.* Book VI contrasts practical wisdom or prudence (ethical knowledge) to theoretical knowledge (demonstrative knowl-

— 233 —

edge) and even insists that these two different types of cognition correspond to two distinct faculties:

7.5 Let us now similarly divide the rational part, and let it be assumed that there are tw rational faculties, one whereby we contemplate those things whose first principles cannot be otherwise, and one where we contemplate those things which can be

	otherwise: since, on the assumption that knowledge is based on a likeness or affini of some sort between subject and object, the parts of the soul adapted to the cognition of objects that are of different kinds must themselves differ in kind. (1139a5)
7.6	Hence inasmuch as scientific knowledge involves demonstration, whereas of thing whose principles can be otherwise there is no demonstration, because everything about them can be otherwise, and inasmuch as one cannot deliberate about thing that are of necessity, it follows that practical wisdom [or prudence—
	figure
7.7	Scientific knowledge is an understanding of universals and of things that are of necessity For something to be an object of scientific knowledge it must be demonstrated, while they [art and practical wisdom] are concerned only with what c be otherwise. (1141a)

Indeed, there are occasions when Aristotle appears to exclude from the domain of the demonstrable not only matters of conduct but the whole of nature:

7.8	The accuracy [exactness,
	figure] of mathematics is not to be demanded in all cases, but only in the case of things the have no matter. Hence its method is not that of natural science; for presumably, the whole of nature has matter. (<i>Met. 995a15</i>)

These remarks can also easily lead to the conclusion that ethics falls outside the demonstrable because its subject matter is such that it can be otherwise. Since Aristotle takes what is for the most part to be in addition the kind of thing that can be otherwise, one can conclude that one epistemological consequence of the kind of inexactness of the subject matter or of the accounts of a discipline that Aristotle equates with being for the most part is that such a discipline is nondemonstrative.

Despite what Aristotle says in these latter remarks (7.4-7.8), where he appears to be denying that demonstration is possible of things that are for the most part in general and of matters of conduct in particular, we must, in my judgment, ultimately conclude that he does not mean to deny altogether that demonstration is possible in the case of such things. We must assume, that is, that the domain of the demonstrable encompasses what is for the most part. Thus, I am urging that we take what is asserted in 7.1-7.3 to express Aristotle's opinion on these matters.

- 234 -

However, to say that Aristotle includes what is for the most part in the class of things that are demonstrable raises a number of questions that need to be addressed. First, it raises a question that has puzzled students of Aristotle's thought from the earliest times. The question concerns the very possibility of demonstrations whose syllogistic premises are true for the most part. As shall be seen, syllogisms with such premises appear to be not valid, and therefore syllogistic inferences with such premises even fail to meet the formal constraints Aristotle requires of demonstrative reasoning. Therefore, it needs to be shown how this kind of syllogistic inference—about what is for the most part or whose premises consists of propositions that are true for the most part—can be construed so that the condition of validity is in some way satisfied.

Second, if demonstrations about what is for the most part are, as Aristotle says, in some sense inexact or the disciplines dealing with such subject matter are not as exact or cogent as other disciplines are, it needs to be shown how they are inexact or less cogent. In other words, an explanation is needed as to where the supposed inexactness lies or in what sense their demonstrative character is deficient. Third, one who advances the claim that Aristotle does not exclude what is for the most part from the domain of the demonstrable must show how this claim is consistent with those remarks we quoted above (7.4-7.8) where Aristotle appears to deny the truth of such a claim. One must, in other words, show that the apparent disagreement between these remarks and the earlier ones (7.1-7.3, where Aristotle insists upon the inclusion of what is for the most part into the demonstrable) can be explained away.

The overall argument of this chapter, which aims at accomplishing all of the above things, is rather long and complex. It attempts to show at first that Aristotle distinguishes between two types of demonstration or demonstrative knowledge: the strict, unqualified, or Platonist demonstration and the soft or weak demonstration. I argue further that when Aristotle speaks of such soft or weak demonstrations what he primarily has in mind are demonstrations whose premises are propositions that are true for the most part. Thus the nature of weak or soft demonstration is made clear. In addition I give some arguments in support of the view that when Aristotle speaks of some disciplines as being less exact than others with respect to some of their demonstrative characteristics, he is thinking of disciplines whose subject matter is for the most part or whose demonstrations consist of premises and conclusions that are true for the most part. Thus, an explication is provided of the nature of inexactness Aristotle attributes to the accounts of some disciplines when he claims that because of the inexactness of their subject matter, they cannot be as exact in their demonstrations as some other disciplines whose subject matter does not exhibit such inexactness.

— 235 —

Whereas there is clear evidence that Aristotle distinguishes between strict or ungualified and weak or soft demonstrations, the evidence with regard to the nature of weak or soft demonstration and its relation to the inexactness of disciplines whose subject matter is for the most part is far from clear. My strategy, then, will be to first delineate the two lines of argument we encounter in Aristotle about demonstration: one line insisting that demonstration consists of syllogisms whose premises are necessary-the strict, ungualified, or Platonist conception of demonstration; the other line identifying demonstrations that do not meet all the conditions that the syllogisms of strict or ungualified demonstration meet—the soft or weak demonstrations. Clearly, the problem is to locate the conditions that soft or weak demonstration fails to meet, to identify where the difference between it and strict demonstration lies. But since the evidence for this is, as I said, rather scanty I will support my conclusions by relying in part on an argument by elimination. I consider, that is, various conditions that may weaken or soften a demonstrative syllogism, and examine whether any one of them is the condition that Aristotle singles out as being the one that makes a demonstrative syllogism weak or soft. Some of these conditions are more relevant or plausible than others and a discussion of them raises some important questions about the nature of demonstration and the differences among disciplines with respect to their demonstrative purity, rigor, certainty, and so forth. I shall conclude that the most likely candidate that explains the difference Aristotle thinks exists between strict or unqualified and weak or soft demonstration is the fact that whereas the premises of the former type of demonstrations are necessary and universally true, those of the latter are contingent and true for the most part. Using similar kinds of arguments I show that the demonstrative inexactness that Aristotle takes to characterize some disciplines is due primarily to the fact that their syllogisms consist of premises that are true for the most part and therefore contingent.

I then proceed to explain how Aristotle sees demonstration in the case of what is for the most part. The main difficulty with demonstrations of such things is that the syllogisms about them appear to be not valid. My strategy here is to identify the logical form that the premises of such syllogisms must have in order to avoid invalidity. Theoretically, I argue, one must treat the premises of such syllogisms as having the logical form of universal propositions. When one does so—when one construes the premises as being universal in form—then Aristotle's syllogisms can be valid. I also give textual evidence that Aristotle himself takes the logical form of the premises of his syllogisms to be that of universal propositions. He thus assimilates syllogisms whose premises are for the most part into his paradigmatic demonstrative syllogisms whose premises are universal in form, and relies on some pragmatic features—features that are not part

of the logical form of the syllogistic premises—for distinguishing between the two types of syllogisms.

The hypothesis that Aristotle treats for-the-most-part propositions as being universal in form explains several of his claims or remarks that otherwise seem odd. It explains, for example, his claim that the propositions that constitute the premises of such syllogisms are true for the most part. For in order for them to be true for the most part they must have a certain logical form: They must be universal. It also explains why Aristotle claims that the propositions of ethics which are about things that are for the most part represent the truth about such things only roughly and in outline, and why he often warns us not to forget that our accounts are not exact. These claims of Aristotle make sense when viewed as presupposing that the logical form of ethical propositions is that of universal statements. Only when ethical propositions are viewed as being universal in form, while *ex hypothesi* they are true for the most part, can we see why they represent things roughly or in outline, why they are not exact representations of the phenomena. We can also see why Aristotle's warnings about the exactness of ethical accounts or propositions are appropriate: The form of the propositions may mislead us into taking them as being universally true.

The explanation of how Aristotle construes demonstration of what is for the most part sheds light on a problem in Aristotelian scholarship that has defied solution since ancient times—namely, the problem concerning the validity of syllogisms about what is for the most part. This problem and its solution are of significance not only in connection with Aristotle's views on ethics and the knowledge appropriate for or possible in it but also in connection with his views on the whole domain of nature and the knowledge appropriate for or possible in it. For he takes most if not all of the phenomena of nature to be, like the phenomena of conduct, for the most part (*Met* . 1027a11). If there is no demonstration in the case of matters of conduct because they are for the most part, then there will be no demonstration in the case of natural phenomena.^[4]

Yet the way Aristotle deals with the question of the validity of these problematic syllogisms has its limitations. Given the constraints imposed by his own demonstrative framework, his handling of this problem perhaps makes good sense, but it cannot be said that it really solves the problem. If what is needed is a general theory which explains how for the most part syllogisms themselves are valid, then Aristotle does not provide one. Perhaps there is no solution of this problem without recourse to inductive logic, something Aristotle does not have. Although assimilating syllogisms about what is for the most part into standard ones may seem ultimately to sidestep the problem rather than to solve it, Aristotle's way of dealing with these problematic syllogisms merits a careful examination.

— 237 —

Obviously the condition of logical validity, although most important, is not the only condition that a syllogism must meet in order to be a demonstrative syllogism. According to Aristotle, it has to meet other conditions as well. I therefore examine whether syllogisms about matters of conduct can meet any of the other conditions Aristotle requires of demonstrative syllogisms. I conclude that there is no reason to deny that syllogisms about matters of conduct meet to some extent these other conditions that Aristotle requires.

Of course, by essentially claiming that Aristotle takes the domain of the demonstrable to include what is for the most part, I appear to be contradicting what he says in some of the remarks quoted above (7.5-7.8). He gives the impression of denying that demonstration of what is for the most part is possible. Both of these claims cannot be attributed to Aristotle as they stand. The principle of charity requires us to give up one of the two or show that there is no inconsistency between them. I see no reason for giving up altogether either of these claims. Aristotle is explicit enough in his statement that the demonstrable includes what is for the most part (7.1-7.3). If we are not willing to dismiss totally the second claim, the only remaining option is to try to show that there is a way of interpreting the two claims so that they are not inconsistent,

and this can be done. It can be shown that there is a way of reading those remarks where Aristotle appears to be denying that there is demonstration in the case of what is for the most part so that they are not inconsistent with those remarks where he includes what is for the most part in the domain of the demonstrable. I shall argue that the context in which the remarks that appear to be denying the possibility of demonstration in the case of what is for the most part occur makes it clear that Aristotle has in mind the strict, unqualified, or Platonist conception of demonstration. His aim in these contexts is to deny that in matters of conduct we can have the strict or unqualified demonstration or knowledge that Plato often speaks of in relation to such matters. But this of course does not exclude the possibility that there is weak or soft demonstration in the case of matters of conduct. Indeed, when Aristotle includes what is for the most part in the domain of the demonstrable he has in mind the enlarged view of demonstration which includes both the strict and the soft type of demonstration, and it is the latter type that applies to whatever is for the most part.

Again, when in 7.4 Aristotle says that the exactness possible in a discipline corresponds to the nature of its subject matter and that for this reason we must not demand the same exactness in all disciplines, he need not necessarily be saying that the nature of the subject matter of the disciplines of conduct makes them nondemonstrative. Perhaps this is, as Aristotle suggests, true of rhetoric, but whether it is true of the disciplines of conduct cannot be inferred from what 7.4 asserts.

— 238 —

Throughout our discussion in this chapter, I will be concerned with the epistemological consequences of the inexactness Aristotle associates with being for the most part. And in particular, I will be concerned with the question whether demonstration is possible in the case of what is for the most part. This question, however, presupposes to some extent that the inexactness at issue cannot be eliminated from the accounts of some disciplines. For clearly if it were possible to eliminate it, then the question regarding its epistemological consequences would be of no great significance.

I therefore wish to examine whether the inexactness at issue can be eliminated from the accounts of ethics. In particular, I would like to consider whether the devices Aristotle uses in other disciplines for the purpose of eliminating inexactness of the kind we are presently discussing can be applied in the case of ethics. If Aristotle thinks that such devices cannot be applied in the case of ethics, it will be important to examine why he thinks they cannot. It would be important to know what it is about the subject matter of ethics that makes elimination of inexactness impossible.

The Core Meaning of Demonstration

At times, while concerned with explaining the nature of demonstrative knowledge or of the various disciplines that aim at such knowledge, Aristotle speaks as if not all demonstrative knowledge is exactly the same, not all disciplines aim at or attain knowledge that is completely identical. Thus in the *Post. Anal*. Aristotle often characterizes his task as being that of explaining what it is to know absolutely or *simpliciter* (

figure

, 71a9, 72b15), what absolute knowledge is (figure

, 73a22), or what absolute demonstration is (

figure

, 75624). In so doing, he is indicating that although his main concern is with explicating the form of absolute, highest, or most perfect demonstrative knowledge, he thinks there are less perfect forms of it that nonetheless qualify as forms of demonstration. In the same vein Aristotle remarks in the N.E.,

The nature of scientific knowledge [or demonstration,

173 of 362

7.9

8/6/2006 1:15 PM

figure] and disregard cases of similarity [or analogy, figure] may be made clear as follows. We all conceive that a thing which we know cannot otherwise. (1139b18)

At other times Aristotle contrasts disciplines or proofs that are more cogent, necessary, or exact to those that are soft or less exact:

7.10	He [Empedocles] ought, then, to have defined, or to have postulated, or to have demonstrated [
	figure] them [the two causes of motion, Love and Strife] exactly [figure
	igure] or less cogently ["softly," figure] or in some other way. (<i>Gen. et Corr. 333b24</i>)

— 239 —	
7.11	In general every thinking, or thought-partaking, science deals with causes and principles with greater or less exactness [
	figure]. (<i>Met . 1025b7</i>)
7.12	But starting from the essence—some [sciences] making it plain to the senses, othe assuming it as a hypothesis—they then demonstrate [
	figure] with greater or less necessity [more or less cogently— figure] those things that belong by themselves to the genus. (1025b12)
7.13	Of the sciences mentioned [medicine, gymnastics, and all productive or mathemati ones] each formulates the essence in each genus and tries to prove the other thing more or less exactly [
	figure]. (1064a5)
7.14	Therefore, since it is evident that all men follow this procedure in demonstration [ρ roof,
	figure], whether they reason with greater or lesser exactness [figure] it is evidently necessary to have on each subject a selection of arguments. (<i>R</i> <i>1396b</i>)

The above remarks show that Aristotle distinguishes between more and less perfect forms of knowledge or demonstration—knowledge or demonstration that is so absolutely or *simpliciter* and that which is not so. He also distinguishes between disciplines or proofs that demonstrate with greater necessity, or greater exactness, or more cogency and those which do so with less exactness or cogency—they demonstrate more "softly." It is far from obvious however what Aristotle has in mind when he identifies some knowledge as being so absolutely or *simpliciter* and some disciplines or demonstrations as proving with greater necessity, cogency, or exactness. My objective, then, will be to explain what Aristotle has in mind where he makes the above distinctions. In particular, I will try to show that absolute knowledge and most cogent or exact demonstrations or disciplines are those that meet all those conditions that Aristotle requires of strict demonstrative explanations. The soft, less cogent or less exact disciplines or demonstrations are those that fail to meet one or more of these conditions, but both the most cogent or exact and the less cogent or exact kinds are, according to Aristotle, demonstrations. First, then, I want to show that the demonstrations or disciplines which are less cogent or exact are demonstrations or disciplines in a significant way, that Aristotle does not weaken his notion of demonstration to the point that anything is a demonstration or a demonstrative discipline. On the contrary, he thinks that there is a set of features that all demonstrations share.

As pointed out earlier, Aristotle takes demonstration to be a deductive inference whose premises satisfy certain conditions, and demonstrative knowledge is the knowledge produced by such deductive inferences (de-

- 240 -

monstrative syllogisms). It is not the case that every deductive inference or everything that produces knowledge is demonstration. There are deductive inferences that are not demonstrations and there may be some kinds of knowledge that are produced by means that are different from demonstrative syllogisms.

Thus Aristotle considers whether circular proofs can provide demonstrative knowledge. Such proofs, according to him, infer that which is epistemologically prior—that is, that which is more knowable absolutely but not necessarily in relation to us—from that which is epistemologically posterior—that is, more knowable relative to us but not necessarily more knowable absolutely. But if we were to admit such inferences as demonstrative proofs, "our definition of absolute knowledge [

figure

] would be unsatisfactory because it will have a double meaning [or will be equivocal,

figure

]. But presumably the other demonstration [

figure

], proceeding from that which is better known to us, is not demonstration in the absolute sense [

figure

]" (Post. Anal. 72b30).

It may seem from the above that Aristotle accepts circular proofs as being demonstrations but not absolute ones, that he thus extends the notion of demonstration to include at least circular proofs. Actually Aristotle does not accept circular proofs as being demonstrations, for it can be seen that in this whole discussion Aristotle is arguing against opponents who claim that there are circular demonstrations, and hence he himself labels such proofs, which aim at proving what is logically prior by what is not, as his opponent would, that is, as demonstrations. It can also be seen that Aristotle does not assert such proofs must be accepted as demonstrations, but rather that *if* they were accepted certain things would follow, "perhaps our definition [of absolute knowledge] would be unsatisfactory, for it would be equivocal." Indeed, Aristotle goes on to argue that such "proofs" are not demonstrations precisely because they fail to meet a condition that demonstration must, according to him, meet—namely, it must prove the epistemologically posterior from the epistemologically prior.

Similarly, Aristotle rejects as demonstrations "proofs" that fail to meet the causality condition. One may, according to him, produce a syllogism with true premises that validly infers the cause from the effect. One may, for example, infer from a valid syllogism with true premises that the planets are near from the fact that they do not twinkle or that the moon is spherical from the fact that it has phases (*Post. Anal*. I.xiii). Such "proofs" are not demonstrations, according to Aristotle, for they fail to derive the effects from their causes.^[5]

Yet, one might argue, whether the two conditions we identified above— those of the epistemological and causal priority of the premises—are satisfied is not the important question in the present context. What is im-

175 of 362

8/6/2006 1:15 PM

portant is whether Aristotle is willing to consider as demonstrations other kinds of reasoning, for example, induction. Aristotle recognizes inductive reasoning or arguments as being along with deductive arguments a means for teaching: Both proceed from pre-existing knowledge from which they infer something else (*Post. Anal*. 71a5). Yet induction is not demonstration. This is made clear in the contrast Aristotle draws between the two in *Post. Anal*. when he argues that there are two ways of learning (or investigating—

figure

): "Since we learn either by induction [

] or demonstration [

figure

figure

] and demonstration proceeds from universals and induction from particulars" (81a40). There is not the slightest hint here that induction is a kind of demonstration, that demonstrative knowledge can result from induction as it presumably does from demonstration. On the contrary, it is assumed that the two forms of reasoning—inductive and demonstrative—are altogether different.^[6]

But perhaps the difference between demonstrative and inductive reasoning can be seen more clearly from what Aristotle says elsewhere. While discussing the nature of the method of division and its use for arriving at definitions, he says that "at no stage [of the progress of division] does it result necessarily [

figure

] that, given certain things, the object must have the required definition, just as the one who uses induction does not demonstrate [

figure

]" (91b14).^[7] Both induction and division fail to meet the condition of necessity, for both fail to meet at least the necessity associated with the validity of a deductive inference—the conclusion must be true if the premises are true. Division is not even an inference (

figure

-91b33), and the truth of the conclusion of an inductive inference does not follow logically from the truth of the premises.

Yet Aristotle does not wish to deny that induction or division convey some knowledge, but they do so by a way that is different from that of demonstration (

figure

): "There is nothing abnormal in this [in the fact that induction and division convey knowledge], since presumably neither does he who uses induction prove anything [figure

], but nevertheless he shows [reveals-

figure

] something" (91b35). What precisely the difference between proving (

figure

) and showing or revealing (

figure

) is may not be altogether clear, but neither induction nor division is a form of demonstration.

According to Aristotle, the same is true with perception. It does not provide us with demonstrative knowledge, although it does provide us with some type of knowledge. Perception is knowledge of particulars and therefore not of causes, for it is the universal that reveals the cause (85b25, 88a5). Thus, the problem with perception is not, as Plato often insists, merely that its objects are physical ones. It is rather that it is not demonstration. For, Aristotle argues, "if it were possible to perceive by the

- 242 -

senses that the sum of the angles of a triangle is equal to two right angles, we should still require a proof [

figure

] of this; we would not (as some maintain) know that it is so" (87b35). The same is true with our perceptions of physical phenomena—they do not constitute demonstrative knowledge: "Hence if we were on the moon and saw the earth intercepting the light of

176 of 362

8/6/2006 1:15 PM

the sun, we should not know the cause of the eclipse. We should only perceive that an eclipse was taking place at that moment and not the reason why, because sense-perception does not tell us anything about universals" (87b38, and see also Aristotle's discussion of the example of the burning glass at 88a15).

The above evidence shows that Aristotle does not weaken the notion of demonstration, as some have suggested recently, to the point that anything can be a demonstrative proof.^[8] There are differences between demonstrating and showing or revealing. The former meets conditions the latter does not, and whatever is to count as a demonstration must meet some if not all of these conditions. This is an important point, for, if one accepts that Aristotle ultimately enlarges his conception of demonstration to include the domain of things that are for the most part, the claim that he does so will be of any significance only if not everything is a case of demonstration. In other words, only if demonstration is distinct from the method of division, induction, perception, or other forms of reasoning and knowing will our claim about Aristotle's enlarged conception of demonstration be asserting something significant. At least it will be asserting that some type of proof that is different from induction, division, perception, and so forth is possible in the case of what is for the most part.

The Limits of the Spectrum of Demonstration

But, while it may be true that Aristotle has some rather well-defined notion of demonstration in mind when he speaks of some kind of spectrum that encompasses the most exact, as well as the "soft" type, one needs to know what the limits or boundaries of this spectrum of Aristotelian demonstration are. The upper limit can be identified easily and with certainty: The most cogent or exact demonstrations are the ones whose premises are necessary. They or the disciplines to which they belong demonstrate with greater necessity (7.12). According to 7.9, knowledge in the strict sense of the term is about objects that cannot be otherwise; their properties belong to them necessarily, or it is about things "whose principles cannot be otherwise" (7.5, 7.6), "it is an understanding of universals and of things that are of necessity" (7.7). Knowledge or demonstration that is absolute or *simpliciter* is that whose objects exhibit necessity or whose premises are necessary. It is the demonstration that shows that a thing cannot be other-

— 243 —

wise (*Post. Anal*. 71b13). What is demonstrated in this way cannot be otherwise not only in the sense that it follows from the premises of a valid inference but also absolutely—it follows from necessary premises: "Now knowledge is demonstrative when we possess it in virtue of having a demonstration; therefore the premises of demonstration are necessary" (*Post. Anal*. 73a25; see also 73a20, 73b16, 74b5, 75a28).^[9]

Of course, in addition to the condition of necessity, an inference or syllogism must meet all the other conditions Aristotle requires of a syllogism in order for it to be an exact demonstration or to result in absolute knowledge. These are the conditions we mentioned earlier (chap. 2), the ones Aristotle identifies at Post. Anal. 71b20-namely, the premises of such a syllogism must be true, primitive, immediate, more familiar than, prior to, and causative of the conclusion. These are no doubt important conditions, but it is quite clear that the condition that is essential to absolute knowledge or most exact demonstration is that of the necessity of the objects of knowledge or of the premises of the demonstrative syllogism. This is the condition that almost defines absolute demonstrative knowledge for Aristotle. That what is known in this sense cannot be otherwise is introduced in the very first formulation Aristotle gives of absolute knowledge in Post. Anal. (71b10), and much of what he says in that treatise can be viewed as an attempt to flesh out in terms of the semantic and syntactic properties of the demonstrative syllogism this feature of knowledge. This line of thought in Aristotle's account of demonstrative knowledge, which requires that the objects of knowledge exhibit necessary properties or that the propositions which constitute our proofs are necessary, is unmistakably Platonic. For Plato, knowledge has as its objects only those things that cannot be otherwise. Therefore, I shall at times refer to Aristotle's account of absolute or strict knowledge as the Platonist account.

Whereas the only conception of knowledge Plato had was that embodied in the Platonist account—knowledge has as its objects only the things that cannot be otherwise—Aristotle, as seen above, recognizes also knowledge or demonstration that is less exact or that is not absolute. What, then, is this knowledge or demonstration that is not absolute or that is lacking in exactness? What is the lower limit in the Aristotelian spectrum of demonstrative knowledge? Specifying this limit is not easy. It seems most likely that the demonstrations that are lacking in cogency or exactness, or that fall short of producing absolute knowledge, differ from those that produce such knowledge with respect to the condition of necessity. Aristotle, however, does not state explicitly what gives rise to the difference between absolute knowledge or demonstrations, or of a kind of cognition that is not knowledge in the strict sense but only by similarity, and so on.

But, if Aristotle does not state explicitly how an exact or absolute dem-

- 244 -

onstration differs from an inexact or "soft" one, might it not be the case that the spectrum of Aristotelian demonstration is really rather narrow, that the lower limit of the spectrum does not differ much from the upper limit? Perhaps exact or absolute demonstration does not differ much from that which is not absolute or exact and there is really only one kind of demonstration—that of the Platonist conception—and whatever differences there are between the two limits of the Aristotelian spectrum of demonstration. Thus, one might argue, there is really one line of thought in Aristotle's account of demonstration, the Platonist one, and whatever differences Aristotle identifies among demonstrations must be such that one always remains within this conception of absolute knowledge.

The above line of argument fails to capture Aristotle's intentions. I think that Aristotle enlarges the conception of demonstration in a significant way, that the lower boundary of his demonstrative spectrum differs from the upper one to such a degree that it falls outside the Platonist conception of knowledge. Since Aristotle does not explain the differences between the two boundaries, I wish to show that the attempt to explain the differences Aristotle has in mind (when he speaks of more and less exact or cogent or soft demonstrations) within the boundaries of absolute demonstration will not be successful. It is true that there are some important differences among demonstrations or disciplines that affect in a way their demonstrative rigor but not to the extent that they cease to be demonstrations or disciplines that produce absolute knowledge. Examining these differences is indeed important, for in many instances it brings to light the rather extensive variation in the demonstrative rigor or purity that exists among the various disciplines. Yet these differences that allow us to remain within the Platonist conception of knowledge are not sufficient for explaining the differences among demonstrations or disciplines that Aristotle cites. Eventually, it will be necessary to get out of the circle of absolute or Platonist knowledge in order to account for Aristotle's differences. Thus, those who refuse to recognize that there is demonstration or knowledge that is not of the Platonist kind—they refuse to admit that Aristotle enlarges the conception of demonstration-will not be able to account for these differences. If this is so, it will also strengthen the interpretation I wish to offer-namely, that inexact or soft demonstration or knowledge is that which Aristotle associates with domains that are for the most part, domains that can be otherwise. This is denied by all those who think that ethics falls outside the demonstrable on account of its inexactness.

One who takes the strict or Platonist conception of demonstrative knowledge as being the only conception of demonstrative knowledge Ar-

— 245 —

istotle has will naturally be motivated to interpret his remarks about the differences in demonstration, knowledge, or disciplines in a way that is consistent with this Platonist conception. One will try to find some features which, although they vary across demonstrations or disciplines, do not affect the condition of necessity that seems to be

at the core of the Platonist conception of demonstrative knowledge, or one may look for some features that can affect to some extent the rigor of demonstration but without altering the demonstrative character of a discipline. As Barnes has argued, although it is possible to speak of degrees of rigor, it makes no sense to speak of degrees of demonstration.^[10] Differences in rigor can be looked upon as being nonpermanent features of the various disciplines, as being something that can be eliminated. Although eliminating such differences in rigor may prove to be quite difficult and, as I shall argue below, what may appear to be merely a matter of rigor could at times affect the demonstrative character of a discipline in a more fundamental way, the move of focusing on differences in rigor is a reasonable one. Following are some moves the defender of the absolute conception of demonstration or knowledge might make.

One move would be to focus on some differences among disciplines which Aristotle himself identifies and which we discussed earlier (chap. 4)-for example, some disciplines deal with something as inhering in a substrate (harmonics) whereas others do not (arithmetic) or some use fewer factors in their demonstrations (arithmetic) than some others (geometry-see Post. Anal. I.xxvii). Another move would be to point to the supposed difference in our knowledge of the basic principles of the various disciplines. The principles of some are perhaps better known-for example, those of mathematics—and hence demonstration in such disciplines is in some respect better. For instance, the necessity or cogency of such disciplines is more transparent, for one can see clearly the necessity of the conclusions of its demonstrations (the necessity of its theorems), since the starting points in such disciplines are also transparent. Indeed, this concern with the nature and the knowledge one has of the principles or starting points of demonstration runs through the whole of the *Post. Anal.*, and it quickly becomes evident that Aristotle takes the quality of our demonstrations to depend on the nature of the principles of a discipline and our knowledge of them. So Aristotle claims that in order for there to be "demonstrative knowledge one must not only know better, and be more convinced of, the first principles than what he proves from them, but also that nothing which is opposed to the first principles . . . must be more credible or better known to him than those principles; since one who has absolute knowledge [

figure

] should be unshakeable in his conviction" (72b). If one does not know better that from which his demonstration proceeds, "it will not be possible to have knowledge of anything

- 246 -

absolutely through demonstration [

figure

], but only hypothetically" (84a5).

The idea that of the things we know some are known more or better than others is not a clear one. Perhaps what Aristotle wants to say is that of some things we are more convinced; we have, as he puts it, an unshakeable conviction or we are more certain. Thus understood, he is pointing to the nature of our cognitive state or attitude in relation to some things or propositions, rather than to some formal features of the propositions of a demonstration. There is no question that when Aristotle speaks of demonstration or knowledge, these aspects of our cognitive states are quite important—if they are not satisfied, there would be no absolute proof even though the formal elements are satisfied, for example, if we are not certain or convinced of the truth of the basic elements of our demonstration we would not be certain of our inferences. Are there disciplines then whose basic elements are less well known? It is not clear that the feature Aristotle probably has in mind in this context is more peculiar to some disciplines than to others. Perhaps he thinks it is; perhaps he thinks it is more common, for example, to some disciplines whose basic elements are more strongly connected to experience (see below). So that although the principles of all disciplines are necessary, the principles of some are more or better known than those of others. But if this is the reason why some disciplines are not as exact as others, then the resulting differences in exactness among disciplines are differences that we may be willing to live with. They are clearly not the sort of differences that would justify the drawing of sharp distinctions among the disciplines, at least not to the extent that we would call some of them less cogent, soft, or inexact and consider the knowledge they produce to be knowledge only by similarity. In addition, it is not clear that such

epistemological characteristics cannot be eliminated from or reduced in all or most of the disciplines. Thus, it would be hard to see how one could demonstrate with less or greater cogency if one were to move from necessary premises to necessary conclusions, assuming that one is using valid rules of inference.

Perhaps one could also include here as a way of explaining the differences among demonstrations Aristotle's concern with the difference between demonstrations that proceed from universal in contrast to non-universal or affirmative in contrast to negative premises. In demonstration which proceeds from universal premises one has greater or better knowledge (

figure

, 85b9), the demonstration is better (

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, 85b15, b27, 86a10) than when the premises are not universal; and since the demonstration of things which are "more demonstrable is more truly demonstration [figure

]. . . . the universal demonstration is superior, inasmuch as it is more truly demonstration" (96a8). In a similar way one may argue that a demonstration that uses affirmative

- 247 -

premises is better than one that uses negative ones: "If the means of proof is more knowable and more certain than the thing proved, and negative is proved by affirmative demonstration, but not affirmative by negative, the affirmative, being prior and more knowable and more certain, must be superior" (86b28). There is no reason to believe, however, that some disciplines have more demonstrations of the kind that Aristotle considers inferior than others. It would be difficult to differentiate among disciplines on the basis of this feature.

Although it may be possible to account for some differences of purity, clarity, epistemological superiority, and so on in demonstrations in terms of the above considerations, the question still remains whether such considerations account for a difference in cogency or necessity. Do they justify the type of difference Aristotle is pointing at? It is doubtful, for it does not seem that these are the sort of differences and considerations that can account for the contrast Aristotle draws between disciplines that demonstrate more cogently and others that do so less cogently. For in all the above cases, despite the differences, one stays inside the circle of necessity—the condition of necessity is preserved, for the differences are located in various other factors and not in that of necessity. Some of these factors can perhaps be eliminated, but even those that cannot do not seem to justify a differentiation among the disciplines in terms of cogency of demonstration.

Perhaps the difference that Aristotle speaks of in the necessity or cogency of demonstration is to be found in what makes up a demonstration: its premises. There might be, that is, some features of the premises of demonstration that affect its rigor or the rigor of any discipline that consists in demonstrations whose premises are characterized by such features. To begin with, suppose that some premises are suppressed in a proof-thus, generating a nonperspicuous demonstration whose cogency can be questioned. Such types of reasoning would fall into the class of enthymemes that Aristotle discusses rather extensively in the Top. and Rhet. It seems that such a feature of proofs could be looked upon as giving rise to some type of difference in the cogency of syllogistic reasoning in general and demonstrative reasoning in particular. For one may question whether what has been concluded really follows or can be inferred from what has been asserted—the necessity of the conclusion has not been made clear. One cannot say with certainty that this is what Aristotle has in mind, for he tends to restrict enthymemes and related types of reasoning to what he often views as dialectical or rhetorical purposes—thus putting them outside the realm of the demonstrative disciplines.

In addition, it is not clear that there are certain disciplines where such features of proofs are to be met more frequently than in others. We often think of the mathematical disciplines as possessing perfect or ideal proofs—
— 248 —

that is, proofs which are such that anything that plays an inferential role is made explicit, and nothing that is not explicitly stated plays such a role. This is not always the case even in the mathematical disciplines, but the nonmathematical ones are presumably more affected by this. Yet it is not obvious that the disciplines that supposedly contain proofs suffering from such deficiencies cannot be brought up to the level of the mathematical ones. Assuming that they are demonstrative, why can't their suppressed premises be made explicit and thus their necessity be made perspicuous and their proofs as cogent as those of the mathematical ones? These types of features of proofs seem to be the type that can be corrected. In any case, in order to locate some basic difference in the demonstrative cogency or necessity of some of the disciplines in such a feature of their proofs, one would have to show that these disciplines do indeed suffer from proofs that exhibit such features and that in turn such features cannot be eliminated either in principle or in practice. It is quite possible that this is indeed the case—and most importantly that the last claim is true: Such features cannot be eliminated from the proofs of some disciplines. In some cases premises cannot be made explicit. This would be problematic for an axiomatic view of demonstrative knowledge or science, such as Aristotle's. The problem would be especially acute if the basic principles of a particular discipline on which all of its demonstrations depend could not be made explicit.

Are there then disciplines which systematically rely on suppressed premises either because such premises have not been made explicit or because they cannot be made explicit? There is no doubt that considerable parts of Aristotle's discussion in the various treatises rest on suppressed premises. Consider, for example, the opening segments of the N.E. Does the first claim that Aristotle makes about every action, pursuit, art, and so forth, aiming at some good stand on its own or does it presuppose a more general but unstated principle about the nature of human action? Perhaps Aristotle presupposes a rather general principle which connects the notions of purpose or end and of the good; perhaps he presupposes some view about the nature of rationality or about the nature of explanation or understanding of human action. Possibly, he presupposes some even wider metaphysical principle that all things aim, in some way or other, at the good. Consider again the claims he makes about the architectonic structure of desires and pursuits and the use he makes of these claims in proving that if anything is desired at all, then there must be at least something that is desired for its own sake. These claims about the architectonic structure of pursuits and desires rest on some general principles he presupposes but does not state explicitly as general principles, about the nature of desires or pursuits—namely, that they have ends or goals, that they are transitive, that they are asymmetrical, and so forth.^[11]

— 249 —

The above are just two instances of the use of suppressed premises in the *N.E.* In a way, they illustrate an important difference between general principles that are often used without being stated in deriving or justifying other principles or propositions—a difference that could be viewed as explaining why some disciplines unavoidably depend on suppressed premises and therefore lack cogent demonstration. For the unstated principles on which the architectonic nature of desire and the existence of something which is desired for its own sake rest can be grasped and made explicit rather easily. One way of formulating them is the following:

(a) If x is desired, then there is a y such that x is desired for the sake of y (where it may be the case that x = y—the teleological aspect of desire)

(b) If x is desired for the sake of y and y for the sake of z then x is desired for the sake of z (relativized of course to agent, time, place, etc.—the transitivity of desire)

(c) If x is desired for the sake of y and x 7 y, then y is not desired for the sake of x (again, relativized in the appropriate manner—the asymmetry of desire)

When, however, we turn to the general principles that seem to be presupposed in Aristotle's claims that the good is in some way connected with desire and its ends or goals, matters become much more complex. It is much more difficult to grasp what the connection is, and it is not clear how these general principles are to be stated. Is there a connection of meaning between "being good" and "being desired" or "being an end"? Or is the connection a weaker or a stronger one and of what kind? If, in addition, it is true that behind Aristotle's theoretical principle connecting the good, desire, and its ends lies a particular view about the nature of explanation, understanding, and rationality of human action, then grasping and stating explicitly such a principle is not likely to be easy. Yet such a principle plays a central role in his reasoning about the good.^[12]

Plato seems to have puzzled over the difficulty in formulating an account of the good. Despite the theoretical and practical importance it has, the good, Plato argues, is something whose nature baffles or poses a challenge for the understanding: "That, then, which every soul pursues and for its sake does all that it does, with an intuition of its reality, but yet baffled and unable to apprehend its nature adequately, or to attain to any stable belief about it as about other things, and for that reason failing of any possible benefit from other things" (*Republic* 505E). In a well-known passage Plato describes Socrates as shying away from attempting to offer a definition of the good: "Do not stand off as if you [Socrates] had come to the end. We shall be satisfied if you discuss the Good. . . That, my friend, I said, would also quite satisfy me, but I fear I shall not be able

— 250 —

to do so, and that in my eagerness I shall disgrace myself and make myself ridiculous. But . . . let us abandon for the moment the quest for the nature of the Good itself" (506D).

I am in a way suggesting that the claim that some disciplines demonstrate less cogently than others because they rely on suppressed premises should be taken seriously, for quite often premises that play a role in our reasoning are not stated, and perhaps some disciplines rely on such premises more than others. These seem to be the disciplines that rely in their reasoning on some rather basic concepts which cannot be easily stated in the form of general principles. I have in mind in this context not only the disciplines of conduct but also the disciplines which investigate what Aristotle himself investigates in some of his own treatises—that is, the psychological, physical, and biological phenomena he investigates in the Phys., Anim., G.A., and so forth. Consider, for example, the difficulties and problems Aristotle encounters in trying to formulate general accounts of time, space, place, purpose, and cause. Yet much of what we reason about in disciplines such as the above presupposes or rests on certain accounts of these concepts or features that seem to be the most fundamental elements of our thought or of the world, regardless of whether or not such accounts are made explicit in our reasoning. Thus St. Augustine is puzzled by exactly this problem when he says, "What, then, is time? If no one asks me, I know; but if I wish to explain it to one who asketh, I know not."

If St. Augustine's problem with time cannot be solved, if no definition can be provided, then we can perhaps see how a discipline that requires a definition of time can fail to achieve a certain level of demonstrative rigor. For if some of its demonstrations depend on a definition of time, they will have to rely on tacit or implicit premises-the premises explaining the nature of time that St. Augustine claims to know only when no one is asking. Even a concept such as that of potentiality seems to have been problematic for Aristotle. In *Met* . he remarks in connection with his efforts to define or explain the nature of potentiality: "Our meaning can be seen in the particular cases by induction, and we must not seek a definition of everything but be content to grasp the analogy, that it is as that which is building is to that which is capable of building, and the waking to the sleeping. . . . Let actuality be defined by one member of this antithesis, and the potential by the other" (1048a35). Now potentiality plays, according to Aristotle, a major role in understanding or explaining change; it is even indispensable in explaining how change is possible and thus in avoiding the difficulties earlier thinkers had with accepting the possibility of change. Potentiality is a concept that, although difficult to define or articulate, plays a major role in the reasonings of many disciplines, and the disciplines that rely on it would appear to rely on suppressed premises. Indeed one may say that the disciplines that have always been taken to be

the models of demonstrative science, the ones that possess a perspicuous axiomatic structure where the basic elements from which all other propositions are inferred are made explicit—for example, the mathematical sciences—may very well be just the disciplines which rely less on those kinds of concepts that, although they affect our reasoning, quite often function as suppressed premises.

This last remark is not obviously true, however. The mathematical disciplines themselves do not seem to be exempt from this problem of suppressed premises, for they also presuppose and use a number of concepts that may not be any easier to define than potentiality is: "And for this reason it does not belong to the geometer to inquire what is contrariety or completeness or unity or being or the same or the other, but only to presuppose these and reason from this starting point" (Met. 1005a11). But, one might say, these are concepts presupposed by every discipline, they are not peculiar to the mathematical ones. So the mathematical disciplines may differ from the others in the sense that they do not use specifically mathematical propositions as suppressed premises. This is not obvious, and as shall be seen below, it most likely is not true.

But do these considerations show or imply that some disciplines are necessarily less cogent because they reason at times from suppressed premises? They would only if it could be shown that such premises cannot in principle be made explicit, that these kinds of deficiencies in the reasoning of certain disciplines cannot in fact he remedied. However, it is not clear what sorts of considerations are relevant in showing that some premises can or cannot be made explicit. Recent philosophy has emphasized the existence and importance of tacit or implicit knowledge-knowledge of concepts, general rules of language, and so on. But can all such things that we supposedly know tacitly or implicitly and that play a role in our reasoning be made explicit and stated in the form of premises for our reasoning? The Socratic-Platonic practice and search for definitions rests on the assumption that the answer to this question is affirmative. There is no question that Socrates and Plato assume that what is known can be made explicit, that it can be formulated in explicit definitions of the kind Socrates demands. It is this assumption which leads Socrates to say often that one cannot know what one claims to know, since the attempts to produce an explicit definition have failed. Plato himself in the Phaedo states the assumption in the following way: "When a man knows, can he give an account of what he knows or not? Certainly he can, Socrates" (76B). Indeed, the subsequent discussion in the Phaedo makes it clear that Socrates has no doubt about the assumption, which for rhetorical reasons is put in the form of a question in the quotation above. In fact, as Plato's words make clear, he not only claims that we can give an account of what is known, that it can be formulated explicitly, but even that the very same

- 252 -

person who has the knowledge can do this. More recently, this assumption has been taken for granted by much of linguistic theory, especially that which derives from the work of Noam Chomsky. It is thus not only assumed that there are quite general or even universal rules that explain our linguistic performance and capacity or ability but also that these rules are in some sense known to us and that they can be explicitly formulated. (Which one of these assumptions is more problematic is left for the reader to ponder.)

Most important for our present purposes is the fact that the assumption concerning our ability to make explicit our knowledge is taken for granted by those who view knowledge as having an axiomatic-deductive or demonstrative form, for they assume that the propositions one claims to know are ultimately to be proved from the explicitly stated axioms only. If no such basic propositions can be formulated or articulated, then clearly the prospects for giving a demonstrative account of what is known are not good. Yet it is not clear what sorts of arguments can be given to justify this assumption. Are we to examine cases of reasoning and show that in each case what is tacitly known can be made explicit, thus providing an inductive justification for the assumption? As shall be seen below, there are problematic cases that cast doubts on such a procedure.

But the arguments in support of the view that some disciplines are necessarily less cogent because they involve suppressed or nonexplicit premises are not any more clear, for again it is not obvious what sort of arguments can be brought forth or even what

kind of arguments are needed in order to show that some elements that play a part in the inferences of certain disciplines cannot be made explicit and their role in such inferences made perspicuous. One may suggest, to begin with, that some elements are indefinable; but how or why are they so? Would primitive or absolutely simple notions or objects be the sort of thing that one has in mind? For example, the intuitionists have claimed that either the good or the right or both are primitive, but there are problems here. For it is not clear what role primitive notions play—whether and how they could function as suppressed premises. Assuming that there are such primitive notions (predicates, objects), they may not by themselves be premises in our reasoning, but they could nonetheless appear as elements of premises that need not be suppressed or tacit. For example, assuming that point is a primitive notion in geometry, the definition of line in terms of this notion need not pose any particular problems, can be explicitly stated, and can play an important role in geometrical inferences.

But, as some philosophers have argued (e.g., Nelson Goodman and W. V. O. Quine), it cannot be taken for granted that there are such primitive terms, much less that some particular terms must be primitive. For what may be taken as a primitive notion in one system or in one particular

— 253 —

arrangement of the propositions of a discipline, may be capable of definition relative to another system or a different arrangement of the propositions of the same discipline. So one may define "point" in terms of "line" and "line," in turn, by an algebraic equation, thus giving definitions of the supposed primitive notions of one discipline by notions of another. Although we have to stop somewhere, this exercise shows that no one term need be singled out as the primitive and no one discipline as necessarily containing primitive terms which are indefinable. Aristotle does not accept these views that relativize primitives or elements to a system. He at times argues that some things are basic or primitive by nature and that proper definitions must be in terms of such basic or primitive things—that is, in terms of those which are elements by nature (Top. 141b15, b25, 142a 28). Even if Aristotle were to be correct in claiming that there are such absolute primitives, there is no reason to believe that they are to be encountered more in one discipline rather than another. If they pose any problems in relation to the demonstrative character of a discipline, they would pose the same problems for all disciplines whose definitions are in terms of such primitives, including the mathematical ones. The geometrical point is, according to Aristotle, such a primitive by nature and other things in geometry are defined in terms of it.

Intuitionists, again, have at times argued that certain notions or entities are simple and therefore indefinable. G. E. Moore's arguments for the simplicity and indefinability of the good are perhaps the most well known, but the claim that there are such notions or entities goes back at least as far as Plato.^[13] The process of definition or analysis, Plato argues in Theaetetus (201Eff.), leads us to the recognition that there must be logically simple objects. Aristotle himself considers the position Plato discusses in the Theaetetus in Met., a position he also attributes to the followers of Antisthenes: "Hence the difficulty which the followers of Antisthenes and other uneducated people raised carries some weight. They said that the 'what' cannot be defined. . . . But of what sort a thing, e.g., silver, is they thought it possible actually to explain, not saying what it is, but that it is like tin. Therefore one kind of substance can be defined and formulated, i.e., the composite kind, whether it be perceptible or intelligible; but the primary parts of which this consists cannot be defined" (1043625). Although Aristotle expresses some sympathy with Antisthenes' point of view, he does not argue that there are simple or indefinable entities. There is no evidence where Aristotle claims that any constituents of the subject matter of ethics or of some group of disciplines are absolutely simple or simple in a way that is different from what we find in the rest of the disciplines.

But suppose we were to assume that there are such absolutely simple ingredients of our knowledge and the world, what follows from this about

- 254 -

the existence of disciplines with suppressed premises? Very little follows that is of any consequence, for such supposedly simple elements will necessarily be components of

propositions if they are to function at all as premises in inferences. Such propositions need not be suppressed, non-explicit, or tacit just because they contain components that are supposedly absolutely simple. After all, Moore defines the right (or obligation) in terms of the good, and his definition is an explicit one that is used in other inferences he makes.

Philosophers and nonphilosophers, however, have quite frequently argued for or simply claimed that there are kinds of knowledge or objects of cognition that cannot be articulated—whether simple or primitive—but nonetheless play an important role in our reasoning. Mystical experience and knowledge are the most familiar examples in this connection, especially those types of nonordinary experience or knowledge that presumably succeed in comprehending what appears in ordinary modes of cognition to be contradictory, and therefore incapable of being articulated without asserting a contradiction. Of course, not all nonordinary cognition need involve the contradictory in order to defy articulation. Plato in the *Republic* suggests at times that the good is beyond ordinary and even above what he considers to be ideal cognition and articulation. Yet, despite the fact that it may be difficult or impossible to make its nature explicit, the good plays, according to Plato at least, a central role in our knowledge.

We are often inclined not to accept these types of arguments in support of the claim that some disciplines inevitably use suppressed or nonexplicit premises. What motivates this attitude is not so much the fact that mystical knowledge and in general nonordinary types of cognition do not exist or are impossible—this has yet to be shown—but rather our tendency to think that such cognitions or experiences should not and perhaps cannot play any role in what we ordinarily call knowledge, however great their role and importance may be in different contexts. For they are invariably viewed as failing to satisfy some conditions that are taken to be necessary in order for a cognition to provide an item of knowledge—they are not easily repeatable, are not shared by ordinary cognitive subjects, seem to lack criteria of verification, violate the laws of logic (e.g., the law of contradiction), and so forth.

It is perhaps reasonable to be skeptical about claims of ineffable or contradictory experiences and cognitions. One should be doubtful of claims insisting that, though such experiences or cognitions provide truths that cannot be articulated, they nonetheless play an important role in inferences. It may also be reasonable to be skeptical about invoking knowledge by intuition in an indiscriminate and ad hoc fashion. Yet, though such skepticism appears to be reasonable, one must be careful not to overlook a number of interesting cases that have been viewed as involving

— 255 —

such cognitions or intuitions and possibly suppressed premises that cannot be made explicit.

Paradoxically, almost all of these cases or at least the most interesting ones are from mathematics, the discipline that is supposed to proceed from a set of explicit propositions (axioms) and to prove all other propositions (theorems) without utilizing any other suppressed or nonexplicit premises. I have in mind in this connection primarily Henri Poincaré's classic discussions of the roles of intuition and logical proof in mathematics. Poincaré gives a number of examples from geometry where, contrary to what David Hilbert claims, one knows (by intuition?) that certain propositions are true without any proof.^[14] One who holds on to the axiomatic method at all costs would have to insist that there are tacit premises from which such propositions follow. Yet there are problems here, and the best way to see them is to consider Poincaré's discussion of the principle of mathematical induction. Such a principle is not provable; it is not a theorem in mathematics. In fact, it cannot be stated in full generality, for all properties. It is quite clear that it is not an axiom of the kind that would be admitted by the logicists (whom Poincaré calls "logisticians"), but if one is not willing to accept knowledge by intuition, as the logicists are not, then one will have to insist that there are premises involved which are suppressed or tacit and from which the principle of mathematical induction follows. Thus, those who uphold the axiomatic method and formal proof as the model of mathematical knowledge and refuse to accept that any elements that are not made explicit play any role in mathematical proof are forced to insist that if one is to avoid having recourse to intuitions, there must be some premises that are suppressed.

The case of the principle of mathematical induction is of course not an isolated case. One may include here Poincaré's own conjecture of reducing the volume of a solid to a point. Poincaré conjectured—and it is generally accepted that he is correct—that this is so of a three-dimensional object, although he was not able to give any proof of it. Proofs were first given for objects of more than four dimensions and recently a proof was constructed for a four-dimensional object, but Poincaré's own conjecture has not been proven yet. One may add to the list of such cases Goldbach's conjecture and Fermat's last theorem.^[15] But one may argue that if there are suppressed premises in these cases, then they are so until a proof is provided or until they are made explicit. This may very well be true, although the case of the principle of mathematical induction is likely to be a difficult one. There is a case however that would not give much hope and comfort to a logicist, for it can be viewed from the logicist's own perspective as showing that if there are premises for proving some theorems, then they certainly cannot be stated explicitly. I am of course thinking of Gödel's theorem. Gödel's results show that given any set of axioms

— 256 —

for arithmetic there is a proposition of arithmetic which is true but is not a theorem (it is not provable from the axiom set). If the logicist is not to accept knowledge by intuition—and it is unlikely that he would take such an option—he would have to insist that such propositions that are not theorems of the given axiom set must nonetheless follow from some premises that cannot be stated. But even if one were to set Gödel's theorem aside and instead focus only on the cases that could, in principle, be given proofs, this discussion makes an important point: Viewing mathematics in terms of the axiomatic-deductive model of the logicists that is supposed to eliminate intuitions as well as any proofs that are not of the formal kind has the odd consequence of forcing us to argue for the existence of suppressed premises to account for the above cases. Thus—and this is most important for our purposes—if the logicists are right, one could encounter even in mathematics kinds of reasoning from suppressed premises that would not satisfy the standards of absolute or unqualified demonstrations of Aristotle and the formal proofs of the logicists. It is likely that such types of reasoning are to be met more frequently in those disciplines whose principles are more difficult to formulate and articulate.

I do not know of any general theory that can tell us that some disciplines necessarily involve suppressed premises whereas others do not. It is not easy to show that either everything can be made explicit or that some things cannot be made so. Perhaps the best one can hope for is to examine the elements of each discipline individually and see whether they can be articulated explicitly. It may be that some cannot. One may thus show that St. Augustine's problem is a genuine one and that his puzzle cannot be eliminated. Richard Gale has developed an argument to this effect-that time is indefinable because temporal notions are involved in all of the basic concepts that one uses to think and talk about the world.^[16] He is not then surprised to find that most proposed definitions of time-including Aristotle's-are circular. The examples from mathematics also point out both that the feature of suppressed premises may affect some of the most paradigmatic of the sciences as well as the fact that this feature may prove much harder to eliminate than is often thought. It is often thought of as affecting merely the rigor of these sciences and not their demonstrative nature. If one wishes to insist on some rather strict notion of demonstration or proof, the failure to produce the suppressed premises indicates a problem which affects the demonstration or proof itself and which may not be possible to eliminate.

What evidence is there that Aristotle is concerned at all with reasoning or demonstration that involves suppressed premises? At least three different questions may be distinguished: Does Aristotle recognize forms of reasoning that involve suppressed premises? Does he associate these forms of reasoning with demonstration in the disciplines in general or only with

— 257 —

some specific group of disciplines? And does he locate the difference he speaks of between softer or less cogent and more cogent or exact demonstrations in some disciplines in the fact that the former disciplines involve suppressed premises in their demonstrations whereas the latter do not?

The first question is perhaps the easiest to answer, for there is no doubt that he distinguishes in the logical treatises rather clearly between syllogisms that have all the premises that are necessary for proving their conclusions and those that lack some of the premises that are required for their conclusions.^[17] But does he associate this latter kind of syllogisms or reasonings with certain demonstrations or any particular group of disciplines? Aristotle tends to associate reasoning of this kind with nonscientific or nondemonstrative purposes. He commonly thinks of it as being the type of reasoning appropriate for dialectical or rhetorical purposes—that is, the reasoning that consists of the kind of syllogisms that he designates as enthymemes.^[18] It can easily be seen from the examples Aristotle gives in such dialectical or rhetorical contexts that the premises that are suppressed or nonexplicit are so only because they are known and can easily be supplied by those who participate in dialectical or rhetorical activities—"The enthymeme is a kind of syllogism, using a few premises, often fewer than the ordinary syllogism; for if any one of these is well known, there is no need to mention it, for the hearer can add it for himself" (*Rhet* . I.ii.13).

I know of only two passages where Aristotle appears to connect forms of reasoning that involve suppressed or nonexplicit premises with the standard disciplines, but the evidence supplied by these two passages seems to me to be inconclusive at best. In *Post. Anal*., Aristotle distinguishes the three elements that every demonstrative discipline possesses: the genus or kind whose attributes it studies, the common axioms, and the attributes. But he adds,

7.15 Nothing, however, prevents some sciences from overlooking some of these—e.g from not supposing that its kind is, if it is evident that it is (for it is not equally cle that number is and that hot and cold are), and from not assuming what the attribu signify, if they are clear—just as in the case of the common items it does not assu what to take equals from equals signifies, because it is familiar. But nonetheless th are by nature these three things, that about which [the science] proves, what if proves, and the things from which [it proves]. (76b15)

The assertion that a discipline may overlook some of the three elements that are necessary ingredients of every discipline seems to be, as Barnes has put it, "a bow to the enthymematic nature of actual scientific reasoning." Barnes is also correct when he goes on to add that, "for 'by

- 258 -

nature' (i.e., when presented in their full, unabbreviated form) demonstrative arguments will show all three elements."^[19] Aristotle makes it clear that some of the disciplines may overlook one of the elements of demonstration only because "it is evident that it is" (numbers vs. hot and cold) or "it is clear or familiar what it signifies" (taking equals from equals). These remarks then provide us with no evidence that he thinks there are some disciplines that involve essentially suppressed or nonexplicit premises that cannot be made explicit. On the contrary, the nature of the suppressed or nonexplicit premises in demonstrative arguments and in those disciplines that use them seems to be quite similar to the nature of nonexplicit premises in enthymemes within the context of dialectical or rhetorical activity, for in both cases the premises are missing because they are evident, familiar, or can be easily supplied.

Yet even in the above passage, Aristotle seems to be hinting at some possible differences among the disciplines. Some deal with a kind whose existence or even nature is evident whereas others do not—"for it is not equally clear that number is and that hot and cold are." Some disciplines then may deal with a kind whose existence may not be at all obvious. Since the existence of the kind must be posited, a discipline that deals with such a kind could conceivably encounter some difficulties in making its premises explicit—for, as Aristotle's own discussion in the *Met* . shows, it is indeed difficult to explain how the mathematical objects exist. If Platonism is to be avoided, it is not clear in what manner numbers exist, if they exist at all. But Aristotle seems to think that there are difficulties not only in connection with the existence of the kind with which a discipline deals but also with the nature or essence of some of the things a science studies. So in *N.E.*, where he is concerned to point out the difference between

practical wisdom or prudence and scientific knowledge, he remarks parenthetically: "Indeed one might ask this question too, why a boy may become a mathematician, but not a philosopher or a physicist. Is it because the objects of mathematics exist by abstraction, while the first principles of these other subjects come from experience, and because young men have no conviction about the latter but merely use the proper language, while the essence of mathematical objects is plain enough to them?" (1142a15).

Admittedly, this is merely a parenthetical question, but it is really a rhetorical one that is presumably meant to be answered in the affirmative. In addition then to the problems that may be generated by the difficulties concerning the existence of the objects a discipline studies, there could be problems that stem from the difficulty of giving definitions of the nature or essence of these objects. Aristotle views mathematics as posing problems of the first kind and not of the latter. Whereas the ontological status of its objects is problematic, the nature or essence of its objects is presumably transparent. He takes the reverse to be the case with some physical objects

— 259 —

or entities. The nature of some physical entities, for example, hot and cold, thunder, deciduousness, may be problematic in some way or other, or it may be the case that the definitions of such entities are difficult to formulate because one must give a causal account of them and such causal accounts are by no means easy to obtain. It shall be seen later that he thinks the objects of ethics are difficult or impossible to define with any degree of precision because they are themselves indefinite—a feature that he at times attributes to all things known by perception.

I do not wish at this point to raise questions about the reasons Aristotle gives for claiming that the essence of mathematical objects is transparent (i.e., they exist by abstraction), whereas that of the objects of physics and philosophy is not (i.e., their nature is known through experience). What I rather wish to point out is that if the nature of the objects of some discipline is difficult to grasp or formulate and if some of the basic principles of any discipline are accounts of the nature of its objects, then there are likely to be some problems with the basic premises of such a discipline. Some of the basic principles of a discipline could not be formulated or made explicit. One may object that if such principles are not known or formulated, then how could they play any role in demonstration, which they must do if they are to be viewed as premises at all? This can, of course, be so—at least in the cases where the objects are not deficient in the way Aristotle says they are, and thus it is not impossible to know them in some way. For some principles may be difficult to formulate explicitly, perhaps for the reasons Aristotle gives, and yet play a role in demonstrative reasoning. I mentioned the principle of mathematical induction and the conception of time earlier, but there could be others as well. If we were to view ethics as a discipline whose principles are known through experience, then it is perhaps possible that some of its principles are subject to these problems. One could, for example, argue that although the nature of the good and virtue play an important role in our reasonings in ethics, nonetheless their nature is quite difficult to formulate, state, or make explicit.

Although I see this as a plausible line of argument that can be used to distinguish cogent or exact from soft or inexact disciplines on the basis of the use they make of demonstrations that involve suppressed or non-explicit premises, I have some doubts that Aristotle uses such a line—for he does not quite say that the principles of some disciplines, unlike those of the mathematical ones, cannot be known, grasped, or formulated, but rather that it is difficult to do so or that experience is required. Indeed, he clearly suggests that they can be known and formulated and hence function as the basic premises of these disciplines. Hence there is no evidence that he thinks there are disciplines whose basic premises are in principle impossible to formulate or state, and therefore must remain

- 260 -

suppressed or tacit. Although ethics would be as good a candidate as any other discipline for having principles that are difficult to know or formulate because they depend on experience, it is not clear that Aristotle has ethics in mind as an intellectual

discipline when he is drawing a contrast between disciplines whose subject matter is known through experience and those where it is not. For he seems to be talking primarily of practical wisdom or prudence or something like practical ethical knowledge and not of ethics as a discipline that aims at explaining certain things from a set of basic principles. What is of more importance is the fact that there seems to be no unequivocal evidence that Aristotle locates the difference between disciplines that demonstrate less cogently or use "softer" demonstrations and those that presumably demonstrate with greater necessity in the fact that the former utilize suppressed or tacit premises whereas the latter do not. Of the few passages that I know of where he draws a contrast between types of demonstrations or arguments, none of them clearly shows that he views the supposed difference in demonstration to rest on this sort of feature, although this and related features are quite important to Aristotle when he is thinking of the demonstrative structure and practice of the various disciplines.

One may also wish to consider an additional and different possibility—namely, that instead of suppressed premises, some disciplines may introduce premises in their demonstrations that are not included in their axioms or are not theorems derived from these axioms. Thus some disciplines may depend more than others on what may be called extraneous premises. So Aristotle's complaint against Empedocles when he introduces Love and Strife as the cause of motion: "He ought, then, to have defined or to have postulated or to have demonstrated them [the two causes of motion]" (7.10). And ethics could be a discipline that relies on or introduces propositions that it does not include in its axioms or does not prove. They may be propositions from another discipline, for example, from the discipline of psychology. Whether the introduction of extraneous propositions will pose any problems in relation to the demonstrative character of a discipline would seem to depend on the nature of such propositions. For such propositions may be provable in some discipline or other and therefore their necessity may not be questionable at all, even though they are used in sciences that do not prove their necessity-for example, theorems of arithmetic are used in geometry and the theorems of both are, as Aristotle is fully aware, used by almost all the disciplines. At best then, if a discipline were to use propositions which it does not demonstrate and does not contain in its axioms, it would generate demonstrations of lesser cogency only because such propositions have not been demonstrated. If Empedocles had done what Aristotle says he ought to have done-defined, postulated, or demonstrated the nature or attributes of Love and Strife-

- 261 -

presumably his demonstrations would not have been affected, and there is no reason to think that what Aristotle suggests cannot be done. The cogency or necessity of demonstration need not be affected by introducing premises that for certain reasons do not belong to a discipline unless they are propositions that have not been or cannot be demonstrated. It is also clear that the introduction of premises that do not properly belong to a discipline is quite common and seems to affect almost all disciplines.

The defender of the Platonist conception of knowledge may be prepared to make an even more drastic move-to relax somewhat the notion of strict knowledge or demonstration by abandoning the idea that necessity is the same in all disciplines. Admittedly, this still preserves necessity but it makes it less homogeneous. So one may, to begin with, consider the possibility of there being different kinds of necessity, or perhaps—and this will make more sense of Aristotle's claim that some sciences demonstrate with greater necessity than others—that there are degrees of necessity. Some propositions, one may argue, are more necessary than others and therefore it is possible that some disciplines contain propositions that are more necessary than those of others. Is Aristotle pointing here to degrees of necessity? Is there such a thing? Some views of the necessary do leave the possibility of degrees of necessity open. If one were to think, along the lines suggested by Quine, of the necessity of a proposition in terms of the likelihood of giving up such a proposition, then there might be degrees of necessity. Similarly, if one were to connect, along the lines suggested by Hilary Putnam, some types of necessity with analyticity and take the latter to have degrees, then perhaps there could be degrees of necessity. [20]

These conceptions of necessity which allow for degrees rather easily have very little in common with Aristotle's conception of necessity. Aristotle himself distinguishes

among the properties of a thing that are necessary by singling out those which make up the essence of it from those which necessarily belong to it but are not part of its essence, so one may say that Aristotle recognizes degrees or at least types of necessity. But it is not obvious that this would really be adequate for introducing degrees or types of necessity in demonstration. First, it is not clear whether there is indeed a difference in the *necessity* among such properties or propositions that assert such properties of an object, for the difference may lie elsewhere. It may be, for example, that essential properties are those that one must refer to in answers to certain questions, whereas the other necessary properties are not. As Aristotle often says, essential characteristics are the characteristics that must be mentioned as an answer to the question of what something is, whereas other necessary properties are not. Second, demonstration is primarily or almost exclusively concerned with properties or propositions that assert properties of a subject, which are necessary but not a part of the essence of a certain kind (genus). For this reason

- 262 -

alone one would not be able to make any distinction between disciplines that demonstrate more cogently than others on the basis of distinguishing between essentially necessary and merely necessary properties or propositions, for all demonstration deals with the latter type of properties or propositions.^[21] And, as pointed out earlier, Aristotle does not differentiate sharply between metaphysical, logical, or physical necessity.

As a final move in this context, one may consider whether the necessity or cogency of demonstrations is affected by the rules one uses to make inferences. Could there be a difference in the necessity of proofs that result from using different (valid) rules of deduction? Does it make any difference with respect to the necessity of a proof which rule one uses? Does one valid rule generate greater or a different type of necessity or cogency than another? (Consider, e.g., the case of using the equivalences that obtain among the connectives to translate the premises of a proof into equivalent forms and then use as our rule of inference the rule of detachment instead of modus ponens.) It is hard to see how there could be any such differences in the necessity of proofs resulting from the use of different valid rules of inference if we were to use only truth-preserving rules of inference. It is possible, of course, that there could be a difference in the ease with which the necessity of proofs which use different rules could be grasped—a difference in the sense of necessity they convey. Although this guasipsychological factor could be of interest to Aristotle, it is not what primarily concerns him in the context under discussion. In any case, it seems that the feature of necessity is not affected by using equivalent valid rules of inference—lesser necessity or different types of necessity do not result by such use.

The possibilities considered so far are quite important to Aristotle, especially when he is concerned with some quasipsychological or nonformal aspects of demonstration or more commonly when he, in his characteristic way, moves imperceptibly from the formal to such nonformal aspects. I have no doubt that in part what he means when he insists that some disciplines demonstrate with greater cogency or exactness than others is that the demonstrations of the latter kind of disciplines possess some of the features mentioned—for example, they proceed from principles about the truth of which one is not as convinced as one is about that of the principles of some others; they introduce extraneous premises; they do not make all of their premises explicit. I am not convinced that this is the whole story, for there is no clear textual evidence that he takes these features to constitute by themselves the demonstrative differences cited earlier. These features do not capture what appears to be the intent of his remarks about the differences in cogency or necessity in demonstration and the contrast between knowledge in the strict sense and knowledge by analogy or similarity. It therefore seems that the attempt to explain

— 263 —

the supposed differences in cogency or exactness among disciplines within the Platonist conception of knowledge or demonstration is not altogether successful. It appears that one would have to weaken some of the conditions of demonstration more than the defenders of the Platonist conception are willing to do.

Soft, Weak, or Inexact Demonstrations

However, which condition are we to weaken, and how? It is difficult to answer this question with any certainty. The problem lies in determining what Aristotle means when he speaks of demonstrations that are soft (

figure

) or disciplines that demonstrate more softly (

figure

) than others. These terms that Aristotle applies to some demonstrations or disciplines mean, when used literally, "soft" or "softer," their opposites being "hard" or "harder." Aristotle himself uses them quite frequently in their literal sense and often contrasts them to their literal opposites (

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figure

).^[22] What is a soft or softer demonstration and how does a discipline demonstrate softly or more softly?

The examples Aristotle gives of soft demonstrations and even the contexts in which the above terms occur do not tell us very much about the features that make a demonstration or a discipline soft or softer. In *Met* . (109068), for instance, he characterizes an argument as very soft (

figure

figure

) because it rests on premises that are, according to him, false or absurd. And when in the *Rhet*. he speaks of demonstrating cogently or softly (7.14), he goes on to claim that in order to do so one must use as premises only those facts that bear on what he is trying to prove. These ways of weakening the conditions of demonstrations go too far, for one needs at least to suppose that the premises of a demonstration are not absurd, are not altogether false, and are relevant to what we aim at demonstrating.

The condition of truth, however, is one of the conditions that may be looked upon as a plausible candidate for distinguishing between soft or weak and cogent or exact demonstrations. After all, it is one of the conditions Aristotle requires of the premises of a demonstration. Without abandoning it altogether, without making the premises outright false, it can perhaps be weakened somewhat. Thus there can be demonstrations whose premises are strictly true (the exact or cogent ones) and others whose premises, although not strictly true, are almost true (the soft or inexact ones). Such premises could be just those propositions that Aristotle takes to be true for the most part—the propositions about matters of conduct and the world of nature. As seen earlier, these propositions are not false, but they are not strictly true either. Though they have exceptions, they are almost true.

Weakening the condition of truth would have provided Aristotle with

- 264 -

some justification for claiming that there are differences among demonstrations or disciplines. For, after all, demonstrations with premises that are not strictly true could not demonstrate—if they demonstrate at all—as cogently or exactly or with the same necessity as those whose premises are strictly true. Even the necessity or cogency we associate with the relation the conclusion bears to the premises of a valid syllogism—the conclusion must be true if the premises are true—may be affected by the fact the premises are not strictly true. If the premises of a syllogism have exceptions, its cogency is likely to be deficient. Thus one could say that the disciplines which demonstrate less cogently or softly are those that consist of syllogisms with premises that are not strictly true.

Most probably Aristotle is partly thinking of such deficiencies in the truth of the premises of some syllogisms when he speaks of deficiencies in exactness among demonstrations or disciplines. Yet the failure of the premises of some syllogisms to be strictly true is not his sole or even primary focus when he compares demonstrations in terms of their cogency, necessity, exactness, or softness. His primary concern is instead with the condition of necessity—that is, with the condition that constitutes the core of the Platonist and Aristotelian conception of strict or absolute knowledge or

demonstration. The condition that is most relevant for explaining the differences in cogency among demonstrations that Aristotle cites is that of the necessity of their premises. The weaker, softer, or inexact types of demonstrations or the less strict or absolute knowledge are primarily those that demonstrate from premises that fail to meet the condition of necessity.

When Aristotle characterizes some types of knowledge or demonstration as being so absolutely, strictly, or *simpliciter*, what he has in mind is that these types prove or explain that something cannot be otherwise. An absolute demonstration shows that something cannot be otherwise by deriving it from necessary premises, that is, from premises that themselves cannot be otherwise. Demonstrations consisting of such premises show that something cannot be otherwise absolutely or *simpliciter* and not merely that it follows from premises that are true. And as seen in the previous chapter, Aristotle sees the domain of the demonstrable to be constituted in part by that which is necessary and in part by that which is not. He almost invariably contrasts that which is by necessity to that which is not, demonstrations that deal with that which is necessary to those that deal with that which can be otherwise, and demonstrations about that which is always to those about that which is for the most part. This is precisely the contrast Aristotle draws in 7.1-7.3. Again, when he speaks of knowledge in the strict sense in 7.4 and contrasts it to that which is by similarity or analogy, he identifies the object of the former as that which cannot be otherwise. The objects of the latter presumably are the things that can be otherwise, that is, they are part of the domain consisting of things that

— 265 —

lack necessity. He tends to focus on the supposed failure of that which is for the most part to meet the condition of necessity rather than on its failure to exhibit properties in every instance, or he emphasizes the failure of propositions that are true for the most part to meet the condition of necessity rather than the condition of being true universally. Whether this is so because he assumes that propositions that are true for the most part must nonetheless be treated for demonstrative purposes as if they are universal in form and as if they are universally true is something that needs to be examined further.

If it is true, as Aristotle claims, that we consider that we have absolute or unqualified knowledge only of that which cannot be otherwise, then knowledge that is not absolute or unqualified will be of that which can be otherwise. This is the knowledge that is, according to Aristotle, less exact or soft. For in 6.2 Aristotle characterizes the knowledge that has as premises propositions that are true for the most part or that are about things that are for the most part as being inexact, but Aristotle's language in 6.2 is almost identical to the language he uses in 7.1: In both cases his concern is to remind us that propositions that are not necessary or that are for the most part will yield, when used as premises, conclusions that are also not necessary, or that inexact premises will yield inexact conclusions.

It is easy to see why Aristotle would view demonstrations whose premises failed to meet the condition of necessity as being not absolute demonstrations, as being soft or less cogent. For, as pointed out earlier, the demonstrations whose premises meet the necessity conditions prove absolutely that something must be the case, or they show that something that is cannot be otherwise. Their conclusions stand fast and hard, for they are necessary and their necessity is made perspicuous. Unlike these demonstrations, the ones whose premises fail to meet the necessity condition will not produce conclusions that stand equally fast and hard. They will not show or prove that something is so necessarily or that it cannot be otherwise. The only necessity one could ascribe to the conclusions of such demonstrations is that which one associates with the relation between the premises and the conclusion of a valid and sound deductive inference. For the failure of the premises to meet the necessity condition allows for the possibility that what has been demonstrated or explained by them is otherwise, since the premises themselves could be otherwise. This is a less cogent demonstration; it gives us knowledge that is not ungualified or absolute. Matters become even more complicated when, following Aristotle, one takes the premises of such syllogisms not only as failing to meet the necessity condition but in a way also the truth condition. Strictly speaking, the premises of these syllogisms are true only for the most part. (But more about this problem later.)

It is also easy to see that by admitting demonstrations whose premises

— 266 —

do not meet the necessity condition, Aristotle enlarges the domain of the demonstrable as well as our conception of demonstrative knowledge. He does the latter by including weaker forms of demonstration—less exact, less cogent, or softer ones. He does the former by incorporating into the demonstrable that which is not part of the domain of the necessary. The nonnecessary component of the demonstrable consists, according to Aristotle, in most of nature as well as of the things which practical and productive disciplines study.

There is no doubt that Aristotle's move of enlarging the conception and domain of the demonstrable is a major one and that it has far-reaching consequences, for it allows for the possibility of knowledge about domains that the Platonist or strict conception of demonstrative knowledge considers as falling outside the domain of the knowable. It expands the domain of the knowable. It allots at least a place within the demonstrable to the order of nature or to natural phenomena—things that Plato, who was almost exclusively guided by the Platonist conception of the demonstrable, often tends to dismiss from the domain of knowledge.^[23]

Yet there are problems with Aristotle's move. While it is easy to see that the enlarged view of demonstration is more fitting for Aristotle's purposes, which include among other things the rescuing of the world of nature from the Platonic disparagements and rehabilitating it within the domain of knowledge, it is not easy to see how or whether this can be done. It is not obvious that demonstration in the case of that which is for the most part is possible, and it is not obvious that the enlarged conception of demonstration is really a unified conception of demonstration or scientific knowledge, that the knowledge Aristotle says is possible in the case of that which can be otherwise or is for the most part is not really demonstrative knowledge by analogy only. If the latter is indeed the case, if knowledge of the order of nature or of matters of conduct is only knowledge by analogy, it would indirectly show that Plato is after all right in taking the view he takes about the possibility of knowing the sensible world and that which is not necessary. These are the problems I wish to discuss next.

Validity and Syllogisms about what is for the Most Part

The enlarged conception of demonstration or of the demonstrable that I sketched above presupposes that demonstration in the domain that fails to meet the condition of necessity is possible. It presupposes that syllogisms whose premises are true for the most part constitute demonstrations. For that to be the case, syllogisms with such premises must meet all or most of the conditions—excluding that of necessity—that Aristotle requires of demonstrative syllogisms. The most fundamental condition is of course

— 267 —

that of the validity of the inference which claims to be a demonstrative syllogism: A demonstrative syllogism is, for Aristotle, a deductive inference, and therefore has to meet the formal requirement of validity. If syllogistic inferences that have as premises for-the-most-part propositions cannot be valid, then they cannot be demonstrations.

Unfortunately, the validity of syllogisms with premises that are true for the most part has always been in doubt. Among the ancients, Alexander of Aphrodisias considered such syllogisms to be useless and thought that Aristotle himself was of the same opinion, taking such "syllogisms" not to be really syllogisms. Alexander's view was endorsed by Lukasiewicz.^[24] More recently, Barnes has argued that such syllogisms are indeed problematic, for from "For the most part C's are B" and "For the most part B's are A" it does not follow that "For the most part C's are A." According to Barnes, "Aristotle himself never worked out a satisfactory logic for 'for the most part' propositions."^[25]

There is no doubt that both of the claims Barnes makes are correct:

for-the-most-part syllogisms seem not to be valid and Aristotle does not appear to have worked out a logic for for-the-most-part propositions. Yet, as seen above, he insists that there are such syllogisms and that most of the propositions about nature are for-the-most-part propositions. How does Aristotle construe such syllogisms? Or, perhaps, how should he construe them in order to deal with the problem of validity? It is reasonable to assume that he does not wish to admit syllogisms that are outrightly invalid or to use nonvalid rules of inference in demonstration.

One way of making such syllogisms valid is to interpret the for-the-most-part locution in a way that it does not affect the logical form of the propositions that it appears to modify. We can interpret it, for example, as being epistemic, as simply expressing our ignorance of how things really are. Interpreting it so, we will be claiming that the correct analysis of propositions of the sort "For the most part AaB" is really "As far as we know AaB." In other words, it can be treated as expressing a feature of our knowledge and not of the propositions whose surface structure it modifies or of the phenomena themselves. So treated, the for-the-most-part locution does not affect the validity of a syllogism. If the syllogism is of the right logical form, it will be valid. Thus, we can avoid introducing nonvalid syllogisms into demonstration.

I know of no evidence where Aristotle pursues this line of argument either in general or specifically for the purpose of making syllogisms whose premises are modified by the for-the-most-part locution valid.^[26] He nonetheless seems to be familiar with the move of interpreting certain locutions as being epistemic. He considers, for example, the possibility that the locutions "from fortune" or "by luck" could be treated epistemically:

— 268 —

"Whereas if fortune is to be eliminated altogether, then nothing must be said to come about from fortune, in spite of the fact that, although there is another cause, because we do not know it we say that fortune is a cause" (*E.E*. 124765); "And so luck is obscure to human calculation and is a cause by accident, but in the unqualified sense a cause of nothing" (*Met*. 1065a34). The epistemic interpretation of these kinds of locutions seems not to have been uncommon. It reflects perhaps the rather prevalent view of the unreality of chance or of the fortuitous. Thus, the author of "The Science of Medicine" in the Hippocratic writings remarks, "Indeed, upon examination, the reality of chance disappears. Every phenomenon will be found to have some cause, and if it has a cause, chance can be no more than an empty name."^[27]

Upon reflection, the move of treating the "for the most part" epistemically is not open to Aristotle. First, because he takes being for the most part to be the sort of feature that can be a feature of the world, a feature of the things themselves; and second, because he thinks that we *know* that the world is characterized by such a feature. As seen earlier, Aristotle has no difficulty in speaking of the subject matter of disciplines, or of matters of conduct, or of the domain of nature as being for the most part. This feature can be as much a feature of the world as it can of our accounts of the world. And Aristotle claims that we know it is a feature of the world—matters of conduct, phenomena of medicine, or most of nature are for the most part.

Another way of treating the "for the most part" is to equate it with the modal operator "it is contingent," but Barnes points out, this move will not make valid syllogisms out of inferences that consist of premises modified by the locution "for the most part."^[28]

There is, however, something to be learned from both the epistemic and modal move. The former, in attempting to shift the feature of being for the most part from our propositions to our knowledge, in a way recognizes that if such syllogisms about the domain that is for the most part are to be valid, then such a feature cannot be an ultimate constituent of the propositions in whose surface structure it appears. But the epistemic move goes wrong in failing to recognize that Aristotle considers the feature of being for the most part as characterizing primarily the phenomena or things themselves. The modal one recognizes the connection that Aristotle takes to hold between being for the most part and being contingent, but it goes wrong in taking the two not to be merely connected but to be identical. As I argued in the previous chapter, the two cannot be, at least as far as Aristotle is concerned, so identified. Whereas being contingent signifies merely that something is possible, being for the most part signifies that something is a component of the causal structure of nature, that it is a regularity or

a law of nature. Such causal connections, regularities, or laws are not as perfect as those that hold always or by necessity, for they

— 269 —

have exceptions. But they are almost like the perfect ones and play presumably the same role in syllogistic inferences.

Now Aristotle does not have inductive logic, or at least does not consider inductive reasoning to be a means of giving explanations or proofs in the way deductive reasoning does.^[29] The option, then, of treating syllogisms whose premises are true for the most part as inductive inferences, as inferring the probability of the conclusion from the probabilities of the premises, is not open to him. There is only one option open to someone who, like Aristotle, accepts that (1) scientific knowledge, explanation, demonstration, proof, or understanding is essentially a deductive syllogism, and (2) there is scientific knowledge, explanation, and so forth of what is for the most part. That option is to construe propositions about the domain of what is for the most part as having the logical form of propositions about the domain of what is always or by necessity, or to treat laws that have exceptions as being like those that do not, and to ensure by some nonformal device that we are not misled by the identical treatment of the two types of propositions or laws. The only alternative open to Aristotle is that of treating for-the-most-part propositions and syllogisms as if they are standard ones while keeping their deficiences in focus in a way that does not affect their logical form. I wish to suggest, then, that Aristotle does not view propositions about what is for the most part as being modified ultimately by an operator like "for the most part," whatever its nature may turn out to be. Such propositions are free of any operator, including the modal one, that could affect the validity of the syllogisms whose premises they modify. Aristotle treats such propositions in the same way he treats those that are about what is always or by necessity—namely, without any modifiers.^[30] Since he thinks that the syllogistic mood most appropriate for demonstrative purposes is that of Barbara (AaB, BaC

figure

AaC), he takes the form of such propositions to be that of affirmative universal statements.^[31]

The above suggestion for treating syllogisms whose premises and conclusions are about what is for the most part should be taken seriously. It identifies at least one way of treating such syllogisms so that the condition of validity is in some way met, and therefore it points to some explanation of why Aristotle thinks that there is demonstration of what is for the most part. It also explains some other things Aristotle says about the exactness/ inexactness of the domain of conduct or of natural phenomena and the propositions about them. Theoretically, then, there are reasons for taking it seriously. But there is also textual evidence that shows that Aristotle actually takes for-the-most-part propositions to be (affirmative) universal in form and thus assimilates syllogisms with such propositions into standard syllogisms.

Propositions about what is for the most part must be universal in form

- 270 -

in order for their truth value to be what Aristotle says it is and in order for them to be inexact in the way Aristotle claims they are. As seen in the previous chapter, Aristotle takes the feature of being for the most part to be foremost and primarily a *material* feature—it is a feature of the subject matter of some disciplines, for example, of ethics, medicine, natural sciences, and thus characterizes matters of conduct, medical phenomena, natural phenomena, and so forth. He also takes the propositions about such subject matter to be true for the most part and to be inexact, to represent the subject matter that is for the most part only roughly.

If the above is correct, propositions about what is for the most part cannot have the form "For the most part P," if they are to be true for the most part. If indeed matters of conduct are such that brave men are for the most part fearless, then the proposition "For the most part brave men are fearless" cannot be true for the most part of matters of conduct. The proposition that can be true for the most part of such a subject matter is the one that is either explicitly or implicitly universal in form. It is either the universal

proposition "All brave men are fearless" or the indefinite but implicitly universal "Brave men are fearless" that can be true for the most part. If Aristotle's claim about the truth value of propositions about what is for the most part is to make any sense, we need to assume that such propositions are universal in form. This is what Aristotle assumes.

For almost everywhere Aristotle speaks of propositions that are for the most part or states that such-and-such is for the most part his concern is to point out that such propositions are true for the most part or that the phenomena are for the most part. He is not, that is, concerned with the form of such propositions, and he is certainly not saying that the "for the most part" is a constituent of their logical form. Thus Aristotle argues in 6.2 that the propositions about matters of conduct that fluctuate are also true for the most part; they themselves fluctuate. The same is the case with what Aristotle says in 7.1—the concern is with the way things are and the truth of our propositions about them. Indeed, in all the passages where Aristotle speaks of such propositions and of their role in inferences or demonstrations the concern is with the character of the things they are about or their truth value and not with their logical form (see Pr. Anal. 36a10, 46b33; *Rhet*. I.ii.14). In all the examples of things that are for the most part I gave in the previous chapter, including those from the logical treatises, Aristotle nowhere claims that the logical form of the propositions he asserts of such things is "For the most part P." Propositions about what is for the most part do not, then, necessarily differ from those about what is always or by necessity in their syntax, but in their semantics-they differ in their truth or modality.

The clearest evidence in support of the view I sketched above comes from what Aristotle says about law in N.E. (1137b15). All law is, according

- 271 -

to him, universal in form, but it does not apply in all cases. The matters with which the law deals exhibit the same types of inexactness that the rest of matters of conduct exhibit. Hence the propositions or rules of law apply only for the most part, but they are universal:

7.16	All law is universal [
	figure] but about some things it is not possible to make a universal statement which will correct. In those cases, then, in which it is necessary to speak universally, but no possible to do so correctly, the law takes into account that which is for the most pa [figure], though it is not ignorant of the possibility of error. And this does not make it a wrong law; for the error is not in the law nor in the lawgiver, but in the nature of t thing, since the matter of practical affairs is of this kind from the start. When the law speaks universally [figure
], then, and a case arises to which the universal statement does not apply it i right to rectify the defect This is the essential nature of the equitable: it is a rectification of law where law is defective because of its universality [figure].

The above shows beyond any reasonable doubt that Aristotle takes the for-the-most-part propositions to be universal in form. The above statement is not an isolated case. Aristotle makes the same claim on at least two other occasions. In *Polit* . (1282b2) he argues that, while the right laws should be sovereign, the rulers must have the power to deal with the cases to which the law, being universal, fails to apply:

7.17 But the difficulty first mentioned [i.e., about sovereignty in the state] proves nothinelse so clearly as that it is proper for the laws to be sovereign, while the ruler or rulers in office should have supreme powers over things about which the laws are unable to pronounce with exactness [

figure
] owing to the difficulty of any general statement covering all cases [
figure
].

And in *Rhet* . (1374a28), concerned again with the failure of the law to cover all cases, Aristotle writes:

7.18	For that which is equitable seems to be just, and equity is justice that goes beyon the written law. These omissions are sometimes involuntary, sometimes voluntary on the part of the legislators; involuntary when it might have escaped their notice voluntary when, being unable to define for all cases, they are obliged to make a universal statement [
	figure], which is not applicable to all cases but only for the most part [figure
].

In addition Aristotle takes maxims to be universal in form although they, like most statements used in rhetorical contexts, are true only for the most part:

7.19	Now, a maxim is a statement, not however concerning particulars, as, for instance what sort of a man Iphicrates was, but universal [
	figure]; it

- 272 -

does not even deal with all universals, as for instance that the straight is the oppos of the crooked, but only with those pertaining to actions, and with what should be chosen or avoided with reference to them. And as the enthymeme is, we may say the syllogism dealing with such things, maxims are premises or conclusions of enthymemes without the syllogisms. (1394a23)

An example of a maxim that is part of an enthymeme is "No man is free" (1394b3). For, Aristotle claims, when it is taken with the statement "For he is the slave of either wealth or fortune" it forms an enthymeme (1394b5).^[32] These two statements together constitute a rhetorical syllogism or an enthymeme that can be made a complete syllogism in the following way: "Every man is the slave of either wealth or fortune. No man who is a slave is free. Therefore, no man is free." This is a valid syllogism. But Aristotle tells us that "the materials from which enthymemes are derived will be sometimes necessary, but in most cases [

figure

] only for the most part [

figure

]" (*Rhet*. 1357a31). In the above enthymeme the second premise, "No man who is a slave is free," may be viewed as an analytic and therefore as a necessary statement. The other two are the sort of propositions that, according to Aristotle, are true for the most part. Yet Aristotle construes all of them as being statements that are universal in form, and thus as guaranteeing the validity of the rhetorical syllogism whose premises (either implicit or explicit) and conclusion they constitute.

What is true in the case of maxims and rhetorical syllogisms is also true of scientific premises and demonstrative syllogisms. That is, syllogisms are found in Aristotle's scientific treatises, whose premises—at least some of them—are identified as being true for the most part, but they are treated as being universal in form. Aristotle, for instance, argues in *G.A.* (734a34) that the hare "produces numerous offspring, since it is a fissepede, and fissepede animals produce numerous offspring." Aristotle's syllogism can be reconstructed as follows:

- (a) Fissepede animals produce numerous offspring
- (b) The hare is a fissepede animal
- (c) Therefore, the hare produces many offspring

Premise (a) is, according to Aristotle, true for the most part; there are exceptions to it: "For the most part [

figure

] it is the solid-hoofed animals which produce a single offspring, the cloven-hoofed animals which produce few, and the fissepede animals which produce many" (*G.A.* 771b3). One of the exceptions to the claim made by premise (a) is the case of the elephant, which is a fissepede but produces only one offspring (771a20, 771b10). Yet Aristotle states all the premises as universal affirmative propositions. There is no indication at all in the form of these propositions that some are for-the-most-part propositions.

— 273 —

But Aristotle gives a syllogism where at least one of the premises is stated as a for-the-most-part proposition. In G.A. (774b5) he argues as follows:

- (a) Vivipara with one or two offspring produce perfect offspring
- (b) "The cloven-hoofed animals produce either one or two for the most part" (774b9)
- (c) Therefore, cloven-hoofed animals produce perfect offspring

Yet, despite the fact (b) is stated as being modified by the for-the-most-part locution, Aristotle nonetheless treats it in the context of making an inference as if it has the form of a universal statement. In addition, Aristotle takes both (a) and (c) to be, despite the fact he states them as universal propositions, true for the most part only. With regard to (a), humans produce, according to Aristotle, "most naturally and normally one" (772b3), yet at times the offspring is imperfect (775a) and "the perfecting of [the human] female embryos is inferior in condition . . . though once birth has taken place everything reaches its perfection sooner in females than in males" (775a10ff.). As far as (c) is concerned, Aristotle gives an explanation of why offspring are at times born before their formation is perfected: that is, the inability of bringing their nourishing to completion (774b35). And there is no reason why the cloven-hoofed animals will be altogether exempted from this condition which according to Aristotle causes imperfection in offspring.

I said earlier that taking the propositions that are about what is for the most part to be universal in form also helps to understand both the way in which accounts in ethics are inexact and the meaning of Aristotle's reminders that one must not forget that they are so. Aristotle argues in 6.1-6.3 that accounts in ethics fluctuate or are true for the most part, just as the things they are about fluctuate or are for the most part, but, beyond this inexactness, Aristotle also argues that one must be content when dealing with such things to indicate the truth roughly and in outline. The accounts of ethics and related disciplines must be inexact because they fail to indicate completely the truth about a certain subject matter. He often remarks that it must not be forgotten that ethical accounts do not fit or represent accurately the subject matter of the discipline.

To explain how propositions about what is for the most part are true for the most part one needs to assume that such propositions are universal in form. I want to argue now that one needs to make the same assumption in order to explain how propositions about matters of conduct or about any other subject matter that is for the most part indicate the truth roughly or are only outlines, how they fail to represent accurately the truth about such matters. For if matters of conduct are, as Aristotle claims, for the most part and propositions about them were to include in their syntax,

— 274 —

deep structure, or logical form some linguistic component signifying being for the most

part, then they would be accurate representations of matters of conduct. They would represent the nature of matters of conduct as it is, that is, as being for the most part, and consequently they would not represent the truth about such matters roughly, but completely or accurately.

But the propositions of ethics are, Aristotle insists, inexact. What Aristotle has in mind here is that the logical form of such propositions and hence what they assert does not match or fit accurately the nature of matters of conduct. The propositions are universal in form, and therefore any one of them asserts that some property P belongs to all members of a kind K, but because matters of conduct are only for the most part, P applies only to most K's. Such propositions are not total misrepresentations of the facts, but nonetheless they do not fit the facts exactly—they are rough pictures or outlines. The proposition "Wealth is beneficial" asserts that all wealth is beneficial, but this is not true in all cases. It is true only in most cases; it is roughly true. Similarly, the proposition "Fissepedes produce numerous offspring" is roughly true. It is true of almost all the fissepedes—the elephant being the exception. The implicitly universal proposition about fissepedes is, then, a roughly accurate representation of the truth about this kind of animal; it gives us a sort of outline of the facts without the details and certainly without the exceptions. It does not indicate that there are exceptions to what the proposition asserts nor does it identify the kinds of fissepedes of which it is true or the one kind of which it is not true. Because of their logical form, then, propositions about subject matters that are for the most part do not exactly fit what they are about.

The above assumption about the logical form of these propositions also explains why Aristotle reminds or warns to keep in mind that accounts, propositions, or syllogisms about matters of conduct are inexact, just as the subject matter with which they deal is inexact. He is reminding or warning that the form of our propositions does not exactly fit the nature of matters of conduct, that we should not be misled by the form of our propositions and conclude that in matters of conduct properties hold necessarily, or always, or in every case, or that syllogisms prove strictly their conclusions. In particular, if, as Aristotle claims, universality of truth implies necessity, we must keep in mind that despite their form, our premises are neither necessary nor universally true. In other words, he is calling our attention to something that is not in the form of our propositions, and hence in the premises of our syllogisms about matters of conduct. If a subject matter is, for example, probable and our propositions about it have the form "Probably P," then the propositions fit the nature

— 275 —

of the subject matter and their inexactness is transparent. The same would be true of syllogisms with such premises. There would be no need for reminders or warnings. But reminders or warnings are in order if the propositions are universal in form and the subject matter is for the most part. One needs to be reminded that although we assert the proposition "Wealth is beneficial" and use it in our inferences, there are exceptions to it and the conclusions of our inferences also have exceptions: The form of our propositions and of our syllogisms should not mislead us. And these warnings and reminders are the nonformal means Aristotle employs for the purpose of making us aware of the gap that exists between the form of accounts and the nature of that they are about.

Aristotle's move of assimilating for-the-most-part syllogisms into standard ones can be looked upon as a way of acknowledging that such syllogisms are problematic, that they can be valid only if they are represented as standard syllogisms. A syllogism construed in this way will be valid if it is an instance of a valid syllogistic form. The problem, Aristotle claims, with syllogisms about matters of conduct and natural phenomena is that their premises are neither strictly true nor necessary; their soundness and modality are deficient.

But Aristotle speaks at times as if for-the-most-part syllogisms themselves can be valid, as if they preserve the modality or truth of their premises— that is, the contingency or the truth for the most part of their premises guarantees the contingency or the truth for the most part of their conclusions. Thus Aristotle claims in 5.21 that from necessary things follow necessary ones and from contingent things contingent ones; or in a syllogism whose premises are necessary necessity is preserved and in one whose premises are contingency is preserved. Most probably, this is what

Aristotle is also asserting in 7.1 when he claims that "every syllogism proceeds through premises which are either necessary or for the most part; if the premises are necessary, the conclusion is necessary too; and if the premises are for the most part, so is the conclusion." For, as noted earlier, quite often when speaking of what is for the most part he is primarily thinking of the contingent and he contrasts both to the necessary. Whereas Aristotle may be correct in saying that the necessity of the premises in a valid syllogism guarantees the necessity of its conclusion, the other half of his claim is not true: The contingency of the premises of a valid syllogism does not guarantee the contingency of its conclusion. One just cannot determine the modality of the conclusion of a syllogism from the contingency of its premises.

Is truth-for-the-most-part preserved? Aristotle seems to be saying that it is. In 6.2 and 7.1 he appears to be claiming that if the premises of a syllogism are true for the most part, so is its conclusion. But if Aristotle

— 276 —

is making such a claim, he is wrong. In a standard syllogism that is an instance of the syllogistic form *Barbara* (AaB, BaC

figure

AaC) truth is preserved, but if both premises of such a syllogism are true for the most part, the conclusion is not necessarily true for the most part. To use an example suggested by Barnes, although the premises of the syllogism, "Centenarians are women; women are under seventy; therefore, centenarians are under seventy," are true for the most part, the conclusion is not. This of course does not mean that there are no syllogisms whose premises and conclusions are true for the most part. Aristotle's own syllogism stated earlier about vivipara and cloven-hoofed animals producing perfect offspring is such a syllogism. But the truth for the most part of the conclusion of this syllogism is not necessarily a consequence of the truth for the most part of its premises. One may nonetheless be certain of the truth value of the conclusion because one knows things that go beyond the formal relations that obtain among the terms of the propositions constituting a for-the-most-part syllogism. For example, one may know certain facts about the classes denoted by the terms and the relations among them, or one may know what the exceptions are to the premises that are true for the most part—for example, that the elephant is the only fissepede that does not produce many offspring, and therefore may recognize that the conclusion of the for-the-most-part syllogism that aims to prove that the hare produces many offspring because it is a fissepede is for the most part true.

It is clear, however, that the truth for the most part of the conclusions of such problematic syllogisms is not guaranteed by the truth for the most part of their premises; it is not implied by the form of the premises alone. If it were, Barnes's syllogism about centenarian women would be valid; the truth for the most part of its conclusion would be guaranteed; and so would that of the syllogism about the elephant that shares the identical form with Aristotle's syllogism about the hare:

- (a) For the most part fissepedes produce many offspring
- (b) The elephant is a fissepede
- (c) Therefore, for the most part the elephant produces many offspring

The conclusion of this syllogism does not follow from the premises; it is outrightly false. Indeed, one can see that as long as the major premise (AaB) in such a syllogism is only true for the most part, it is possible that the subject term (C) of the minor premise (BaC) denotes just those things or most of the things that are B but not A; it denotes all or most of the exceptions of the major premise. As the syllogism about the elephant shows, validity is not obtained even if the minor premise is universally true. The premise "The elephant is a fissepede" is universally true, and yet the

— 277 —

above syllogism is not valid. What is required for validity is the elimination of exceptions in the major premise; it needs to be universally true. When the major premise is

200 of 362

universally true and the minor one is true for the most part, the conclusion is true for the most part—truth for the most part is preserved in this case.

The last observation indicates that as the major premise in a for-the-most-part syllogism comes close to being exceptionless or universally true, the more likely it will be that truth for the most part is preserved. As the major premise approaches being universally true, so will our syllogism come closer to preserving truth for the most part. Aristotle thinks that most propositions about natural phenomena and some about matters of conduct do approximate universally true propositions. It is such propositions that make up his for-the-most-part syllogisms. Some of the examples listed in the previous chapter of things that Aristotle takes to be for the most part indicate clearly that this is so (see 6.19, 6.20, 6.21, 6.27, 6.29, 6.30). So the propositions "Human males grow a beard" and "Beards grow grey" are almost universally true, and one can easily see how Aristotle might have considered these propositions as premises of a syllogism whose conclusion "Human males become grey-haired" is for the most part true. Many of Aristotle's examples of things that are for the most part indicate that "For the most part B's are A" is not to be equated with "Most B's are A." Rather it is to be equated with "Almost all B's are A." Therefore the move of assimilating for-the-most-part propositions into universally true ones and for-the-most-part syllogisms into standard ones may not only have seemed necessary to someone who lacked inductive logic but also quite plausible.

But demonstration is not merely a valid syllogism; other conditions have to be satisfied. Therefore syllogisms about what is for the most part will be demonstrations only if all or some of these other conditions can also be met or at least can be met to a sufficient extent. But there are no obvious reasons for denying altogether that syllogisms about what is for the most part can satisfy these other conditions. Such syllogisms, for instance, can provide causal explanations in the way other syllogisms provide, according to Aristotle, causal explanations of what is necessary or always. After all, what is for the most part is, according to Aristotle, a component of the regularities of nature. Aristotle considers most of nature to be for the most part, and he also considers explanations of natural phenomena to be causal explanations.

Similarly, there is no apparent reason why some elements of a certain domain that is for the most part are not epistemologically prior to other aspects of that domain. Aristotle clearly thinks that this is so in the case

— 278 —

of natural phenomena. But this could also be true in the case of matters of conduct: The good is considered to be a basic principle and something that is epistemologically prior to the other aspects of conduct. Hence the condition of the epistemological priority of the principles Aristotle requires could be satisfied, and perhaps the same could be said about the other conditions.

Yet there is a problem, at least an apparent one, about the condition of truth. For from what was said so far it is clear that the premises of syllogisms about what is for the most part are not strictly true. A universal proposition that has exceptions is not strictly true. Indeed, even one exception to the proposition "Wealth is beneficial" will make it not true. But Aristotle does not consider such propositions to be simply false. As I shall argue later, he does not abandon the requirement of truth for explanation or demonstration as some recent philosophers have done. Yet his views on the truth of general principles are not very different from those of some contemporary philosophers who also argue that such general principles or laws are not universally true. Whereas they conclude from this supposed fact that the explanatory function of such principles or laws cannot be preserved, Aristotle seems to think that it can. Whether Aristotle can hold both that principles or laws have exceptions and that they provide causal explanations is to be discussed later (chap. 10).

But is the enlarged conception of demonstration a unified conception or are we ultimately left with distinctly different types of "demonstration"? The answer to this question will depend partly on how much emphasis is placed upon the condition of necessity and partly on the importance assigned to the other conditions of demonstration. If one takes necessity to be an essential feature of demonstration, to almost define demonstration, then inferences that fail to meet the condition of necessity will be at best demonstrations by analogy. If one were to take necessity to be such a feature of demonstration, then the enlarged conception of demonstration would fail to be a unified conception.

There is no doubt that Aristotle tends at times to single out the condition of necessity from the rest of the conditions of demonstration, to emphasize it above all others. Yet the above discussion has shown that these other conditions were also quite important to him. The conditions of the causal order, primitiveness, and epistemological priority of the premises are indispensable to demonstration. In the enlarged view of demonstration these other conditions become the essential features. And it is clear that as the role of necessity is minimized and that of the other conditions becomes dominant, the more unified our conception of demonstration becomes. This is the case with Aristotle's own conception. It is after all the conception of demonstration that can accommodate the world of nature, a matter that was of great importance to Aristotle.

— 279 —

Making Aristotle's Remarks Consistent

The claim that Aristotle thinks there can be demonstration in the case of what is for the most part in general, and of matters of conduct in particular, appears, as indicated earlier, to be inconsistent with some of his remarks quoted at the very beginning of this chapter. There is no doubt that these remarks have led some scholars to the conclusion that Aristotle thinks there is no demonstration in the case of things that are for the most part. I shall argue, however, that these remarks do not necessarily assert or imply anything of the sort. At least, they do not assert or imply that there is no demonstration of the kind that we identified as being appropriate for domains that are for the most part.

Consider what Aristotle says in 7.8 where he appears to deny that demonstration is possible in the case of the whole of nature. For suppose, as Aristotle does, that the method of mathematics is the demonstrative method and that most of nature is for the most part. Then Aristotle's claims that the exactness of mathematics is not to be demanded in the study of nature and that its method is not that of the study of nature, for the "whole of nature has matter,"^[33] seems to imply that demonstration is not possible or appropriate in the study of nature or in any domain that happens to be for the most part.

Yet Aristotle is not, in fact cannot be, asserting that the whole of nature falls outside the demonstrable. The context in which 7.8 occurs is one where Aristotle is speaking about the correct way of giving lectures and is discussing the method or approach to be used in teaching: "Some people do not listen to a speaker unless he speaks mathematically [

figure

], others do not listen to a speaker unless he speaks using examples [

figure

], while others expect him to cite a poet as a witness" (Met. 995a6).

One way of understanding the above passage is the way Ross does—namely, that some demand mathematical proofs, others demand examples, and so forth.^[34] Another way would be to understand Aristotle to be saying that some use the mathematical language or take everything to be a mathematical object. Assuming that Ross means only that some use demonstrative proofs of the rigor of mathematics and not proofs whose premises are mathematical propositions or are about mathematical objects, the second interpretation of Aristotle's words is really quite different. It is obviously much stronger, for it does not merely assert that some use demonstrative proofs of a certain rigor in every domain, but that they make every domain into a mathematical one or that they use the mathematical language everywhere. This stronger interpretation is the most appropriate one for interpreting the only other occurrence of this phrase "speaking mathematically" in the Aristotelian corpus.^[35] Indeed, what Aristotle says

- 280 -

in 7.8—namely, that the method or manner of mathematics is not appropriate where the subject is something that has matter—suggests that he is worried about introducing

mathematical objects or language where they do not belong—he is worried about mathematizing nature. And this is an issue that concerns him rather strongly, especially in the criticisms he develops in the *Met*. of the Pythagoreans and of Plato himself, for he takes the former to have propounded the thesis that all things are numbers and the latter that at least the Forms are numbers. Tradition has, in addition, ascribed to Plato the thesis that the Good itself can be explained or defined only mathematically.

Yet I do not wish to insist that the strong interpretation is the one Aristotle intends, for the contrast between giving examples and using demonstrative proofs that attain the rigor of mathematical proofs can be at times understood as being between two kinds of proving or showing. Hence, we may speak of two methods, the one used in mathematics (the demonstrative one) and the other (the nondemonstrative one) used elsewhere or for different purposes. Even if Aristotle has something like this in mind in the present context, it does not follow from this that he excluded all of nature from demonstration. For Aristotle's major concern in this context is with demanding the exactness of mathematics in every domain and for every purpose, especially when lecturing to an audience and presenting material in a way that can be understood. So he claims that "some want to have everything done with exactness, while others are annoyed by exactness, either because they cannot follow the connexion of thought or because they regard it as pettifoggery. For exactness has something of this character, so that as in trade so in argument some people think it mean" (995a8).

What Aristotle identifies as the peculiar methodology of mathematics that is presumably not to be extended to other things is its *minute* exactness or accuracy (figure

) and not the demonstrative method itself. If he is speaking about the demonstrative method at all, it is the way mathematics uses it that concerns him in this connection. In other words, the concern is with the transferring of the minute exactness of mathematical demonstrations to the domain of nature. These are, for Aristotle, domains that exhibit different exactness, and therefore their corresponding investigations cannot attain the same levels of exactness, for the domain of nature or at least most of it is for the most part. It can therefore be only subject to the weaker or softer demonstration identified above. But the point that needs to be stressed is that Aristotle cannot be saying in 7.8 that the study of the whole of nature falls outside of the class of demonstrative disciplines, for there is no doubt that he takes physics to be a theoretical and a demonstrative discipline.^[36]

But one still has to contend with the remarks from N.E. Book VI quoted

- 281 -

earlier (7.5-7.7). These single out specifically matters of conduct and contrast them to the objects that constitute the domain of demonstrative knowledge. They clearly identify the latter with what is necessary or what cannot be otherwise and the former with what is not necessary or what can be otherwise. There is no doubt that these remarks can easily be viewed as placing matters of conduct outside the domain of the demonstrable and the kind of knowledge one has of them—that is, practical wisdom or prudence—outside the class of demonstrative disciplines (see, in particular, 7.6 and 7.7). Such a conclusion may not be inevitable, however.

To begin, in the whole discussion of *N. E.* Book VI, Aristotle is concerned with practical wisdom or prudence and the objects he contrasts to the objects of demonstration are the particulars that are dealt with in particular practical contexts of deliberation or practical reasoning. But, as I argued in chapter 3, it is not obvious that Aristotle equates the knowledge of philosophical ethics with that of practical wisdom or prudence when these are understood in a narrow sense.

Even if one were to take practical wisdom in the wide sense—that is, as being not any different from ordinary disciplines—and equate it with philosophical ethics or ethical inquiry, still it is not obvious that Aristotle excludes matters of conduct from demonstration altogether. For throughout the discussion of *N.E.* Book VI, where Aristotle contrasts scientific knowledge or demonstration to practical knowledge and the objects of the former to those of the latter, he has in mind the strict or absolute conception of demonstration. By "demonstration" in this context Aristotle means only the strict, absolute, or Platonist kind. That this is so is evident from all the remarks quoted above (7.5-7.7), but it is made most clear by what Aristotle says in 7.9 and immediately after. After he says there that the object of strict scientific knowledge cannot be otherwise, he adds: "The object of scientific knowledge, therefore, exists of necessity. It is therefore eternal, for everything existing of absolute necessity is eternal; and what is eternal does not come into existence or perish" (1139b22). This is clearly the Platonist conception of knowledge or demonstration; this is Platonism at its best (or at its worst). What Aristotle is contrasting, then, in this context are objects which are absolutely necessary, invariable, and eternal, and can be demonstrated in the absolute, strict, or unqualified sense of this term to objects that presumably do not satisfy these conditions (matters of conduct) and therefore fall outside this Platonist kind of demonstration or conception of the demonstrable.

But one may grant the contrast Aristotle is eager to establish—that is, grant at least for the moment that matters of conduct are not like the necessary, invariable, and eternal objects that the highest or most pure disciplines investigate—assuming of course that there is anything that corresponds to Plato's and Aristotle's conception of the objects of the highest

- 282 -

knowledge. And one may be willing to grant Aristotle that knowledge in ethics is not the same as the knowledge that he considers to be of the highest order, the most pure or absolute demonstrations of the eternal objects and their eternal properties. But this is obviously not the end of the matter, for it does not imply that the objects of ethics do not admit of demonstration of any sort or that knowledge of them cannot be demonstrative in any way whatsoever. It clearly leaves open the possibility that ethics, given the nature of its subject matter, is one of the disciplines that uses softer or weaker demonstrations; its subject matter is part of the demonstrable in the enlarged conception of demonstration discussed above.

It is easy to see what Aristotle's target is in the N.E. Book VI. The words he uses to describe the objects of absolute knowledge, as well as the almost Platonic fervor and lyricism with which he expounds the nature of the highest knowledge and its objects, unmistakably reveal that his target is none other than Plato himself. Aristotle is attacking the Platonic view that ethical knowledge and its objects are of the same order as or even of higher order than the knowledge and objects of the most pure theoretical disciplines. He is attacking the view that matters of conduct are necessary, invariable, and eternal. To deny Plato's view about the objects of ethics is, within the framework of ancient philosophy (see chap. 2), to deny as well that the knowledge he associates with ethics is possible. Indeed, as I pointed out earlier, to describe the objects of ethics in the way Aristotle does—that is, as being inexact, as being for the most part, or as fluctuating—is really to attack the Socratic and Platonic view that the objects of all disciplines are of the same order. All Aristotle does in the remarks from N.E. Book VI quoted at the beginning of this chapter is to draw out the epistemological consequences of the supposed inexactness of matters of conduct, and thus to criticize Plato on his conception of ethical knowledge.

It is quite characteristic for Aristotle, when he is attacking Platonism, to go overboard and to speak as though the Platonic model has no element of truth. Yet, as is well known, when his own views are finally developed, they often turn out to have much in common with those of Plato. The most accurate way, then, of characterizing his more developed view, in contrast to the one he enunciates when criticizing Platonism, is as weakening and not as abandoning the Platonic model. The objects of ethics may not be necessary, invariable, or eternal, but they are not such that they do not exhibit regularities. They are almost like what is always or in the same way; they are for the most part. And the knowledge possible in ethics may not be what is achieved in the most rigorous or pure of the disciplines (if there are any), but it may not be altogether different either.

For similar reasons, what Aristotle says in 7.4 does not necessarily imply

— 283 —

that matters of conduct fall outside the demonstrable. His concern there is to remind us that only the exactness that fits the nature of the subject matter can be achieved and therefore it would be unreasonable to aim at demonstrations that fit the mathematical domain in rhetorical matters and vice versa. But Aristotle does not say, as some scholars have urged, that it is inappropriate to aim at demonstrations in matters of conduct.^[37] He is rather pointing to the variation in demonstrative rigor across disciplines, with rhetoric occupying presumably the lowest end of a spectrum, perhaps even falling outside of such a spectrum of demonstration. This variation in exactness, he argues, rests in part with the supposed differences in the exactness of the subject matter of the disciplines. Aristotle is thus comparing the most exact disciplines with the most exact subject matter to those that are less exact because their subject matter is less exact. His main point is that the knowledge and objects of ethics are not as exact as the knowledge and objects of mathematics. A comparison such as this makes sense to the extent that there can be demonstration in ethics. The comparison presupposes that mathematics, ethics, and most other disciplines are disciplines of almost the same kind.

Eliminating Formal Inexactness

All of the above having been said, the question still remains whether the subject matter of ethics is as inexact as Aristotle says it is or whether the supposed inexactness cannot be eliminated from our accounts. I pointed out in the previous chapter that not all matters of conduct are for the most part, that Aristotle himself identifies some that are not so. The same is true in the case of nature, despite what Aristotle himself at times says when he attributes inexactness to the whole of nature on account of its having matter. He recognizes, that is, many things in nature that are not only for the most part, but by necessity, or always, or in every case.

Indeed, it is not obvious at all that there is no necessity in matters of conduct. Aristotle, when arguing against Plato, often contrasts matters of conduct to those things that are always or of necessity and insists that matters of conduct are not always the same or that they lack necessity; they can be otherwise. At times he goes as far as to claim that everything about matters of conduct can be otherwise (7.6). Yet Aristotle himself argues that "a most perfect thing is that which is always [figure

] desired for its own sake and never [

figure

] for the sake of something else. Now happiness above all else appears to be most perfect, since we always [

figure

] choose it for its own sake and never [

figure

] as a means to something else" (N.E. 1097b).^[38] In the class of necessary things one will have to include the following: the properties of asymmetry and transitivity Aristotle ascribes to desires, pursuits, or goals (N.E. I.i); the supposed connection

— 284 —

Aristotle takes to hold between the excellence of an F and the function of F (1097b25, 1106a15); the connection between being an excellence and being a disposition or state of character—the latter is part of the definition and hence of the essence of the former (1107a), and so forth. Indeed, in *E.E.* Aristotle argues, "For excellence [virtue,

figure

] is of the soul, it is not accidental [

figure

]" (1219b26), where the accidental is to be contrasted to that which belongs essentially or necessarily. That human excellence is a characteristic of the soul is, according to Aristotle, necessary.

But suppose one was to agree with Aristotle that at least matters of conduct are inexact because they are for the most part. Why can't the supposed inexactness from our accounts of those matters of conduct that are for the most part be eliminated? As I said above, Aristotle takes the propositions about what is for the most part to be universal in form, even when such propositions are indefinite. Only then can they be true for the most part, and thus be inexact by failing to be universally true and by indicating the truth about matters of conduct roughly.

It may seem, then, that the inexactness in our ethical accounts cannot be eliminated as long as we are unwilling to give up either of the two elements of the relation: the nature of the subject matter of ethics being what Aristotle says it is, that is, for the most part; and the form of our propositions in ethics being what he takes it to be, that is, universal. For if we insist, as Aristotle does, that, for instance, wealth exhibits the property of being beneficial for the most part and also that our proposition about such property belonging to wealth must be universal, then we will have the congruence Aristotle believes holds between the inexactness of the subject matter of ethics and our accounts of it. Aristotle is, of course, not willing to give up either of these components—the subject matter is for the most part and the propositions are universal in form.

Yet this may not be the end of the matter. As seen in an earlier chapter, it is not obvious that there is no way of describing the phenomena that eliminates inexactness from our accounts of them. It is not obvious that this cannot be done even when our propositions have the form Aristotle says they must have—they remain universal in their form. Aristotle himself recognizes that by restricting the universal term that refers to whatever is for the most part, we can obtain propositions that are universal in form and true in all cases.^[39] Thus, whereas the proposition "Ill people are cured by taking honey-water" may be true for the most part, the one that singles out the class whose members are such that everyone is cured by this substance will be true in all cases; it will be exact. So Aristotle writes, "But to judge that it [some medication] has done good to all persons of a certain constitution, marked off in one class, when they were ill of this disease, e.g., to phlegmatic or bilious people when burning with fever" (*Met.*

— 285 —

981a10). Similarly, he argues that the physician says what is healthy for the eye in general or "he determines some sort [of eye]" and says what is healthy for this sort of eye (*Post. Anal.* 97b28). Aristotle uses this technique of narrowing the universal throughout the scientific treatises.

What lies behind the technique of restricting the universal is the recognition that inexactness may at times depend on the way things are described or the way the world is represented. Hence, there may be no domain that is immune to inexactness that has its source in the manner in which things are described or represented. Thus the proposition "Prime numbers are odd" is true for the most part. And the same is the case with the proposition x + n > x, where x and n are positive integers, for the proposition is not true whenever n = 0. Yet one tends to think that by describing things in the proper way our propositions can be made exact; they can be true in all instances.

Perhaps, then, the technique of restricting the universal that succeeds in eliminating inexactness in many domains can be used in the domain of ethics. It may, for instance, be the case that only one sort of wealth is not beneficial or only some specific kind of bravery is harmful. If one excludes these from the universal, if one restricts the universals to pick out only the sort of wealth or bravery that is beneficial, then our propositions will be true in all cases. For example, it may be that only excessive wealth is not beneficial or that only thoughtless bravery is harmful. So that the propositions "Moderate wealth is beneficial" or "Thoughtful bravery is beneficial," may be true in all cases. So Aristotle narrows the universal *virtue* to arrive at the proposition "Moral virtue is a mean" that is true in all cases, whereas "Virtue is a mean" is not, since intellectual virtues are not, according to him, means.

But Aristotle's insistence that inexactness cannot be eliminated from ethical accounts suggests that he probably thought that the technique of restricting the universal would not succeed (at least not always) in the domain of ethics. Regardless of how one tries to narrow the universal, the propositions obtained will still be true only for the most part; they would still have exceptions. Aristotle is perhaps right about this. His knowledge of medical phenomena may have convinced him that there are domains, for example, that of medicine, where the results of the technique of narrowing the universal are questionable. Despite the advances in medicine and its incorporating the discoveries of chemistry, biology, and related disciplines, its propositions always seem to suffer from exceptions. It might not be possible to determine the "sort of eye" for which a certain treatment produces the same result in every case, hence, Aristotle's frequent claim that matters of medicine are essentially inexact.

To see the problems that the domain of ethics and medicine might have posed for Aristotle, consider the following propositions from the domains

— 286 —

of quite different disciplines: "Evergreens do not shed their leaves," "] produce many offspring," "Prime numbers are odd." All of these are, as stated, true for the most part. Each has, as far as we know, one exception: The species of the evergreen dawn redwood, *Metasequoia Glyptostrophoides*, sheds its leaves in the winter; the elephant is a fissepede but produces only one offspring; and the number two is prime but not odd. There is an easy way out in these cases. Inexactness can be eliminated by using the above technique of restricting the universal, by narrowing the universal in a way that it excludes the sole exception in each case: "Evergreens other than the dawn redwood do not shed their leaves," "Fissepedes other than the elephant produce many offspring," and "Primes other than two are odd."

But when we look at the domains of ethics and medicine, the picture appears quite different. The exceptions to general propositions in these domains seem to be much more pervasive than the rather neat way in which the propositions in the previous paragraph each came to have one clearly recognizable exception. Perhaps we would be giving up too easily if we were to conclude from these considerations that inexactness in ethics cannot be eliminated, for there may be, in addition to the technique of restricting the universal, other ways of eliminating inexactness.

Indeed, Aristotle himself seems to have had another and perhaps more powerful and effective technique for eliminating inexactness. Consider, for example, Aristotle's way of eliminating the inexactness from such propositions as "Cloven-hoofed animals produce one or two offspring" and "Fissepedes produce numerous offspring," both of which are true for the most part, with the pig being the exception to the first and the elephant to the second. There is, Aristotle argues, a causal mechanism that explains why there are exceptions to these propositions, or why the elephant produces only one offspring and the pig many, a mechanism that allows us to describe the phenomena in a way that is not in terms of the universals *Cloven-hoofed* or *Fissepede* that have exceptions. The reason, Aristotle claims, that some animals are "producing few or many offspring is the size, great or small, of their bodies, not the fact that that particular kind of animal is cloven- or solid-hoofed or is fissepede" (G.A. 77166).^[40] One can describe the phenomena then by using the universal *large animal* and *small animal*, a move that may not only produce universally true propositions but also may allow one to see a causal mechanism operating far beyond the species mentioned above: "And it is not only among the animals that walk but also among those that fly and swim that the big ones produce few offspring and the small ones produce many; and the cause is the same. Similarly, too, it is not the biggest plants that bear the most fruit" (*G.A.* 771b11).

Can this technique of identifying a causal mechanism and then using it

— 287 —

to redescribe the phenomena in terms of exceptionless universals eliminate inexactness from our accounts of nature? As I said earlier, Aristotle even seems resigned to the inexactness of our disciplines that study nature. Whether he arrives at this conclusion by recognizing the insufficiency of both the technique of restricting the universal and that of identifying a causal mechanism that explains exceptions is not clear. Perhaps he thought that regardless of how far the universal is restricted, there will always be exceptions, and that the move of shifting to different universals that identify causal mechanisms will not eliminate the exceptions. Perhaps, to use the example Aristotle himself uses, there is some large animal that produces many offspring or a large plant that produces much fruit.

Can the technique of identifying a causal mechanism that explains exceptions be used in order to eliminate inexactness from ethical propositions? Perhaps it can in some cases, but there is no evidence that Aristotle considers the effectiveness, or lack of it, of this technique in relation to matters of conduct. His conviction that inexactness cannot be eliminated from our accounts of matters of conduct may stem from his assumption that matters of conduct are inexact in the most pervasive way as far as their nonessential properties are concerned. Neither restricting the universal nor moving to universals that identify broad causal mechanisms will eliminate inexactness from our accounts of matters of conduct. His conviction might also stem from his belief that matters of conduct are inexact even in their essential structure. He might have thought, that is, that even the most basic elements of ethics, for example, goodness, the human good, happiness, and virtue suffer from certain features of inexactness that affect even their essential properties. Thus, the very basic principles of ethics (its axioms), those from which other propositions about matters of conduct are derived or proved, may be inexact in a way that cannot be eliminated, and therefore all else that rests on them is also inexact. Are there types of inexactness which affect the essential properties or structure of matters of conduct and can they be eliminated from our accounts? These are the questions I wish to consider next.

— 288 —

Eight Variation, Indefiniteness, and Exactness

Introduction

In this chapter, I wish to examine in some detail the types of inexactness Aristotle designates as variation or indefiniteness. As with some of the other kinds of inexactness discussed so far, these are also attributed to both the subject matter of ethics and the accounts of it. And as he does in other cases, Aristotle invokes the congruence thesis in connection with these kinds of inexactness also.

I shall follow here the strategy I have followed in some previous chapters: I will present the textual evidence and discuss its meaning, examine Aristotle's target, discuss the consequences these kinds of inexactness have and, finally, consider the possibility of eliminating or reducing such inexactness from the accounts of matters of conduct.

The features of matters of conduct and of the accounts of them that Aristotle identifies in the remarks quoted below are of considerable importance. Although they do not appear to be unique to ethics and its subject matter, they nonetheless are of special significance to ethics because of the considerable extent or high degree to which they appear to affect matters of conduct and the accounts of them. If Aristotle is, indeed, correct in claiming that variation or indefiniteness characterizes matters of conduct, then he has succeeded in undermining the Socratic-Platonic essentialism that he also at times advocates.

The features of variation or indefiniteness have important consequences. They make it difficult or even impossible to use definitions of matters of conduct for some of the purposes for which Socrates and Plato sought definitions. Both the diagnostic and demonstrative uses of definition become questionable. At the same time, these features may be quite

- 289 -

difficult to eliminate. Although Aristotle has some techniques for reducing or bypassing these problematic features, it is not clear that these techniques ultimately succeed.

The Evidence and its Meaning

Here then are Aristotle's remarks in which he speaks of a kind of inexactness in matters of conduct that presumably poses problems for formulating general rules about them or providing definitions of them:

8.1 The noble and just things, which political science studies, exhibit much difference [variation,

	figure]. (<i>N.E. 1094b15)</i>
8.2	But let it be agreed at the outset that every account of matters of conduct [
	figure] is bound to be in outline only and not exact [figure
], in accordance with what was said at the beginning, that accounts must correspon- the subject matter; and those concerned with conduct and the expedient have noth fixed [
], as is the case also with those concerned with matters of health. And if our gener accounts are of this nature, the accounts dealing with particulars will be even mor lacking in exactness; for these come under no art [or science] or professional traditi but the agents themselves have to consider what is suited to the circumstances o each occasion, just as is the case with medicine and navigation. But although our present discussion is thus inexact, we must give whatever help we can. (1104a)
8.3	It is by doing this, to sum up the matter, that we will be best able to hit the mean. no doubt it is a difficult thing to do, especially in particular cases: for it is not easy define [
	figure] in what manner and with what people and on what sort of grounds and how long of ought to be angry; and in fact sometimes we praise those who err on the side of the defect on this matter and call them gentle, sometimes those who are quick to ang- and call them manly. However, we do not blame one who diverges a little, but one we diverges more widely, for his error does not fail to be noticed. But to what point and what extent a man must deviate before he becomes blameworthy is not easy to def in an account [figure
]; for nothing perceptible is [easily defined] and such things depend on particular circumstances and the decision rests with perception. (1109b13)
8.4	They [actions intrinsically involuntary but in some circumstances choiceworthy] approximate however rather voluntary actions, since actions involve particulars, are the particulars are voluntary. But what sort of things are to be chosen and in return what, it is not easy to state [
	figure], since there are many differences in the particular cases [figure]. (1110b7)
r	200

- 290 -	
8.5	But what was said above is also clear from what we are now saying; it is not easy define [
	figure] in what manner and with whom and on what grounds and how long one ought to angry, and up to what point one does right in so doing and where error begins. For who deviates a little is not blamed, whether he errs on the side of excess or deficier It is therefore not easy to state in a [general] account [figure] how far and in what manner one must deviate in order to be blameworthy, since
	these are particular circumstances and judgment rests with perception. (1126a32

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8.6	Now should we define the person who jokes well as being the person who makes remarks not unsuitable for a well-bred person, or as the one who does not give pain even gives pleasure, to the hearer? Or is this definition itself indefinite [figure
], since different things are hateful or pleasant to different people? (1128a25)
8.7	This is the essential nature of the equitable: it is a rectification of law where law i defective because of its universality. In fact this is the reason why things are not a determined by law: it is because there are some cases for which it is impossible to down a law [
	figure], so that a special ordinance becomes necessary. For what is itself indefinite [figure] can only be measured by an indefinite standard [figure], like the leaden rule used by Lesbian builders; just as that rule is not rigid but can bent to the shape of the stone, so a special ordinance is made to fit the facts. (1137627)
8.8	In such cases [where there are differences of merit] it is not possible to give an exa definition [
	figure] up to what point persons remain friends; for much can be taken away and the friendship still remain, but when one party is removed to a great distance, as God the possibility of friendship ceases. (1159a3)
8.9	Does a man owe his father unlimited respect and obedience, or ought he when ill t take the advice of a physician, and when electing a general to vote for the best sold And similarly, ought he to do service to a friend rather than to a virtuous man, an ought he to repay his obligation to a benefactor rather than make a present to a comrade, when he is not in a position to do both? Now perhaps with all these matter is not easy to define exactly [
	figure], because the cases admit of every kind of variation [figure] in respect of importance and unimportance and of nobility and necessity. (1164b2
8.10	Hence, as has been frequently remarked already, accounts of our emotions and acti admit the same degree of definiteness [
	figure] that belongs to the matters with which they deal. (1165a13)
8.11	But should one have as many good friends as possible, or is there a limit of size for circle of friends, as there is for the population of a city? Ten people will not make a c and with a hundred thousand it is a city no



In some of the above remarks Aristotle's concern seems to be with the feature of inexactness discussed in the two previous chapters—namely, with the feature of being for the most part or being true for the most part. Thus, in 8.7 Aristotle is emphasizing that law has exceptions, that it does not cover all cases but only most. Similarly, in 8.9 he suggests that any general principle stating when we ought to pay back a debt or when children are obligated to obey their father will not apply in all cases.

Yet this is not all Aristotle is concerned with in these remarks, for we see that in almost all of them he points to some features that matters of conduct or our accounts of them exhibit that on the surface at least appear to be different from the ones discussed so far. Thus, Aristotle tells us that matters of conduct exhibit variation (8.1, 8.4, 8.9), matters of conduct and our accounts of them are not fixed (8.2) or are indefinite (8.6, 8.7, 8.10), matters of conduct are not easy to define (8.3, 8.5, 8.9) or cannot be defined exactly (8.3, 8.8). Now these features, whatever they might turn out to be, may very well presuppose or imply the feature of being for the most part or being true for the most part. That is, they may imply that if, for example, virtue is indefinite, it is also for the most part, or that if an account of virtue is indefinite or is not fixed, the account is also true for the most part.

But the feature Aristotle identifies in the above remarks may nonetheless be different from the feature of being for the most part or being true for the most part. Thus, not all things that are for the most part or are true for the most part are also indefinite. Prime numbers are for the most part odd or the proposition stating this fact is true for the most part, but there is nothing indefinite about oddness (or "odd" or the concept *odd*) or being a prime (or "prime" or the concept *prime*). The features Aristotle identifies in the present context may be more basic than that of being for the most part, since they may explain in some cases why things are for the most

- 292 -

part or why the relevant propositions about them are true for the most part. Therefore they deserve to be examined in detail, so that their nature and implications can be clearly understood.

The first thing to notice is that Aristotle attributes these features both to the matters of conduct themselves and to the accounts of them. Thus, it is the noble and just things themselves, the things to be chosen, or the obligations one has in relation to lenders or to one's father that exhibit variation or differences (8.1, 8.4, 8.9); the things the law is concerned with are indefinite (8.7); or both matters of conduct and our accounts of them lack fixity (8.2) or admit of the same degree of definiteness (8.10). Whatever these features might turn out to be, Aristotle takes them to characterize both the subject matter of ethics and its accounts, to be both material and formal features. Indeed, as 8.2, 8.7, and 8.10 make clear, Aristotle thinks that a congruence exists between the inexactness of the subject matter and that of our accounts of it: The indefiniteness of our accounts corresponds to the indefiniteness of the subject matter. When the assumption that the subject matter of ethics is inexact is taken together with the assumption that there is a congruence between material and formal inexactness, the prospects for eliminating formal inexactness do not appear promising. And so, Aristotle

himself suggests that formal inexactness cannot be eliminated: Our accounts are bound to be inexact (8.2) or in certain cases it is not possible to give an exact definition (8.8).

What, then, are the features that, according to Aristotle, are problematic for both the subject matter and the accounts of ethics? In some of the above remarks Aristotle appears to be concerned with the problem of formulating a general statement or rule which, by singling out some one feature or a determinate set of features, provides an answer to a question such as "what sorts of things are choiceworthy in a situation where we have to choose between doing something that we would not normally choose and suffering some penalty?" (8.4); "when should one repay an obligation or show respect and obedience to one's father?" (8.9); "how many friends should one have?" (8.11); or "what is the limit of expansion in a state?" (8.12)

One problem Aristotle finds with such questions is that their answers admit of exceptions; they apply only to some cases. Whatever class of things, for instance, is singled out as being the class of choiceworthy things, or whatever feature is identified as determining choiceworthiness, will not capture all the cases. Similarly, although one may accept the general rule that one ought to pay back a debt and one may even consider children to be indebted to their parents, ^[1] the rule does not cover all of our obligations to pay back debts or those that children have to their parents: "But it is clear that no one is entitled to unlimited consideration As a general

— 293 —

rule then, as has been said, one ought to pay back a debt, but if the balance of nobility or necessity is on the side of employing the money for a gift, then one ought to decide in favour of the gift. For there are occasions when it would be actually unfair to return the original service" (*N.E.* 1165a).

Any general statement that singles out some set of conditions as being necessary and sufficient for determining, for instance, what actions are choiceworthy in the context of moral dilemmas or when we are obligated to obey our parents, will then be defeasible. Any set of such conditions will have exceptions. Yet the problem Aristotle is primarily concerned with is not that of exceptions to general statements, for the problem regarding exceptions arises where one at least has or is able to formulate general statements. But the problem with the above cases lies with the difficulty or perhaps even the impossibility of providing rules or formulating general statements that cover the majority of cases. Aristotle seems to think that with some phenomena it is difficult or perhaps impossible, to fix any necessary or sufficient conditions, for the factors are many, or they vary from context to context, and even their relevance or importance varies from case to case. There may be, in the case of these kinds of phenomena, no strand or core of common relevant factors one can isolate as the necessary and sufficient conditions that can be used to answer the kinds of questions mentioned above. The phenomena, Aristotle argues, exhibit much or every kind of difference or variation. Hence, it is not easy, he insists, to articulate general statements about such phenomena or to answer in general terms certain questions about them.

But perhaps, one may argue, our answers or general statements could be in a disjunctive form so that they include all possible relevant features. By doing so, we will not single out any features as being the necessary and sufficient ones, a process that may easily result in the omitting of other ones that are also relevant, but instead all the relevant factors will appear as disjuncts in our answer or general statement. The problem, however, with such a proposal is that it presupposes that we can determine all the relevant factors, that we can fix the degree to which some factors are relevant, or that we can rank the various factors with respect to importance, unimportance, nobility, necessity, and so forth. In any case, it is not clear of what practical use such a disjunctive statement is likely to be, for given the kinds of differences or variation that presumably characterize such phenomena, the general disjunctive statement may contain incompatible factors. If there is no general rule for determining which is the relevant factor in some particular context, having an incomplete list of disjuncts will not be of much help. And such a general rule is presumably not easy to obtain.

Perhaps, however, on some occasions Aristotle's difficulties with the

212 of 362

variation he attributes to certain phenomena can be overcome by finding or fixing the limits within which variation exists. So that even if one were to have recourse to disjunctive statements that list the relevant factors or features, the disjunctive lists will be complete. In 8.11 Aristotle suggests that one can answer the question about the number of good friends one needs by saying that it is the largest number of persons with whom one can constantly associate. This may give an upper limit and perhaps there is a lower one as well. Although the number of friends one needs may vary, the variations occur within some limits.

But there are problems with finding or fixing limits—there may be none. For in some cases the phenomena may exhibit no limits; they may be indefinite. We notice, for instance, that Aristotle expresses reservations about his attempts to articulate a limit on the number of friends one needs. On the two occasions where he gives an answer, he prefaces it by saying "perhaps [

figure

] the number is . . ." (1171a, a8). Most importantly, Aristotle recognizes that his answer is not a definite one; it only stipulates that, as in the case of the number of people required to make a city, there are limits. He does not even identify what the limits are, either the high or the low one. To say that the high limit is the largest number of persons one can constantly associate with is not to specify a limit, for the number of persons one can constantly associate with could vary from person to person or context to context. This is, most probably, what Aristotle assumes—the limit cannot be fixed with any degree of precision, for the number of friends required for any one person or in any context cannot be fixed; it is not some one number. The phenomena are basically indefinite.

The same is true with what Aristotle says in 8.12 with regard to specifying the number of citizens required for having an ideal state. Again, one cannot give a specific number. The best that can be done is specify a lowest and highest limit, but when Aristotle attempts to specify the lowest limit, what he tells us is not a specific number but rather that "it follows that the lowest limit for the existence of a state is when it consists of a population that reaches the minimum number that is self-sufficient for the purpose of living the good life after the manner of a political community" (8.12). This is clearly a rather imprecise way of specifying a limit. Things are of course no different with what Aristotle says about the highest limit of the state's expansion is can easily be seen from practical considerations." Yet the limit may be something quite indefinite and, contrary to what Aristotle says, it may be something that is hard to specify even from practical considerations. The best Aristotle himself is able to do is to state that "it is clear therefore that the best limiting principle for a state is the largest expansion of the population with a view to self-sufficiency

— 295 —

that can well be taken in at one view" (*Polit* . 1326b23). But this principle may not yield an exact limit, some one mathematical quantity, that states the maximum number of citizens. There may be no well-defined or exact limit in this case.

Are these problems peculiar to matters of conduct and their accounts or are they also to be met in other domains and their accounts? Aristotle does not think that the kind of inexactness under discussion is unique to matters of conduct and their accounts. He thinks that it also characterizes the domain of nature and its accounts. Thus, Aristotle argues that "among human beings, a man can, at the longest generate up to the age of seventy, a woman up to fifty; but both occur infrequently. Few people at these ages produce children. For the most part the limit for men is sixty-five, for women forty-five" (*H.A.* 545b27). Similarly, Aristotle claims, "In women the period is not accurately fixed" (*G.A.* 738a16) and the period of gestation in some animals is not single or exact, but varies considerably and cannot be precisely fixed (*G.A.* 778a5). It is most indefinite in the case of humans where it varies from seven to ten months (*G.A.* 772b8, 776a23) and at times up to eleven months (*H.A.* 584a35). The size of a perfected embryo varies, but for each kind of animal it lies within an interval bounded by a higher or lower limit (*G.A.* 771b35).

In general, Aristotle claims that several processes or phenomena do not have exact periods; they are not as measured as those of the heavenly bodies because of the

indefiniteness of matter:

8.13	In all cases, as we should expect, the times of gestation or formation of a lifespan a according to nature, at being measured by "periods." By a "period" I mean day ar night and month and year and the times which are measured by these Natur aim is, then, to measure the generations and endings of things by the measures these [heavenly] bodies, but she cannot bring this about exactly [
	figure] on account of the indeterminateness [

[] of matter and the existence of a plurality of principles which impede the natura processes of generation and dissolution and so are often the causes of things occurring contrary to Nature. (*G.A. 777b16ff.*)

The indefiniteness Aristotle attributes to matters of conduct, then, he also attributes to the domain of nature. And our accounts of the latter at times are indefinite; they only specify certain limits. Although Aristotle insists on there being limits to the processes or phenomena that he finds indefinite, he nonetheless takes these limits to be inexact—they have exceptions. So the upper limit for generating in the case of men may be sixty-five, but this is, according to Aristotle, only for the most part. For some men generate up to the age of seventy. There is, then, variation and indefiniteness outside the domain of conduct.

But why are the above phenomena indefinite—for example, the number

— 296 —

of friends one can have, the limit of expansion in the state, the gestation period of some animals? One may be tempted to assume that the reason why the period of gestation in some animals is indefinite or cannot be fixed exactly is that gestation itself is indefinite or that the concept *gestation* is indefinite. Similarly, one may be tempted to assume that friendship or state, or the corresponding concepts, are indefinite or difficult to define. And thus to suppose that the difficulty with fixing the period of gestation, the number of friends one needs, or the limit of expansion in the state stems from the difficulty of defining the state, friendship, or gestation. Yet this may not be so.

Aristotle, for example, has no difficulty in determining what a state is: "And a state is the partnership of clans and villages for the sake of a complete and self-sufficient life, which in our view constitutes a happy and noble life" (*Polit* . 1281a; see also 1280b34). Similarly, Aristotle seems to have no special difficulty in defining what friendship is: "Let friendship, then, be defined as wishing for anyone the things which we believe to be good, for his sake but not for our own, and procuring them for him as far as lies in our power" (*Rhet* . 1381a). Indeed, Aristotle goes a step further by giving an account of what it is to have numerous and worthy friends: "Having numerous and good friends is not difficult to understand, once the definition of being a friend has been given. A friend is one who exerts himself to do for the sake of another what he thinks is good for him. A person to whom many persons are so disposed, has many friends; if they are worthy, he has good friends" (*Rhet* . 1361b35).

Now, are the above definitions problematic? Are they indefinite? And do they thus show that the state or friendship or the corresponding concepts are themselves indefinite? This is not obvious and Aristotle does not say that they are. Yet, as shall be seen, he does argue elsewhere that friendship is itself indefinite and difficult to define. But as 8.13 makes clear, Aristotle does not think it is necessary for friendship, state, or gestation to be indefinite in order for the number of good friends, the limit of expansion of the state, or the period of gestation to be indefinite. For according to what he says there the indefiniteness of the period of gestation is not due to the indefiniteness of gestation itself but rather to the indefiniteness of matter and the competition among the numerous principles that affect gestation. Similarly, it may not be the nature of friendship or of the state that gives rise to the indefiniteness of the questions about the number of good friends or the expansion of the state, but other factors—for example, the nature of our aim in seeking numerous friends.^[2]

However, in some cases questions may be difficult to answer or may admit only of

inexact or indefinite answers because they are about or make reference to things that are themselves inexact or indefinite. They are about things that are difficult to define or whose nature and definition

— 297 —

are inexact or indefinite. Examples of such things, Aristotle claims, are gentleness, irascibility, being choiceworthy, or being a person who jokes well. For such things exhibit not only variation, but they are also not definite or well defined, and as a consequence they cannot be defined easily or exactly (8.3, 8.4, 8.5, 8.6). The situation, Aristotle claims, is the same with the nature of friendship or of the city, for they also include some factors that seem to be indefinite (8.8, 8.11).

But what precisely is problematic with the nature of matters of conduct or with the definitions that aim at capturing such natures? It is tempting to suppose in this context that what Aristotle finds problematic with the definitions of matters of conduct is what Friedrich Waismann has called the open texture of our concepts^[3] In his well-known paper, Waismann argues that most concepts are almost totally indefinite or indeterminate as to what decisions one would make in applying them or the terms of the language that signify them, if the things to which one normally applies these concepts or terms were to change drastically. What would one say, for example, if a cat gradually grew to be six feet tail or a swallow slowly reached the size of an ostrich? There are clearly problems here, for although a concept may have well-defined boundaries in relation to some conditions, it may have ill-defined ones or even no boundaries at all in relation to others.

Is Aristotle's problem that of the open texture of our concepts? I think not. For we see that Aristotle is not really concerned with the extraordinary situations Waismann is concerned with-the situations about which our concepts seem to fail to give any definite answers.^[4] Aristotle's problem presumably arises even when the circumstances are ordinary—it is the ordinary cases of gentleness or irascibility that are problematic. In a way, it is obvious that it could not be the characteristic of open texture that puzzles Aristotle, for the latter is only a formal feature; it is a feature of concepts. For Waismann is not suggesting that things themselves possess open texture—a cat or a swallow is a rather well-defined thing—and it is perhaps because they are so that the concepts of these things are indefinite in relation to Waismann's extraordinary conditions that although possible, do not obtain. If cats were to begin to regularly undergo rather drastic changes of the kind Waismann describes, then perhaps some conceptual decisions would have to be made. Thus, some new conditions would have to be incorporated into the concept *cat* in the same way some features are part of the present concept, conditions that give rather definite answers in normal circumstances. But whatever it is that Aristotle considers to be problematic, it is as much a material feature as it is a formal one—it is as much a *de re* characteristic as it is a *de dicto* one. Indeed, for Aristotle it is primarily a *de re* feature.

Aristotle's concerns seem to be primarily about the vagueness or in-

- 298 -

definiteness of matters of conduct. Of course not everyone accepts the view that vagueness or indefiniteness is a material or *de re* feature. Frege's denial of the existence of vague objects, aptly captured in his famous remark "I confess that I have not yet seen an indeterminate pea," is perhaps the most well known.^[5] But many others have recently argued in support of Frege's positions, for example, Evans, Nathan Salmon, Peter Unger, and Samuel C. Wheeler.^[6] The last two philosophers have in fact denied that many ordinary objects—for example, tables, chairs, tall people—exist at all, since the predicates "table," "chair," or "tall person" are vague and therefore true of nothing. Thus, Wheeler writes,

On reflection though, the property-sorites argument should convince one that the only objects that exist are ones with a precise essence. Only precise essences can constitute the being of a genuine logical subject or of real properties of logical subjects. And objects with precise essences seem to exclude persons, tables, chairs, etc.^[7]

Frege, however, went a step further. Not only did he deny vague objects but also

vague concepts:

The concept must have a sharp boundary. . . . To a concept without a sharp boundary there would correspond an area that had not a sharp boundary-line all round, but in places just vaguely faded away into the background. This would not really be an area at all; and likewise a concept that is not sharply defined is wrongly termed a concept. Such quasi-conceptual constructions cannot be recognized as concepts by logic.^[8]

But others have concluded that, contrary to what Frege says, at least all empirical concepts are vague or "loose."^[9]

I cannot however discuss here these differing views on the nature or existence of vague objects or concepts. The concern is with what Aristotle says, and it is quite clear from the remarks quoted at the very beginning of this chapter that he takes some objects and concepts to be inexact by being vague or indefinite. So Aristotle argues that it is difficult to fix with any precision the various factors involved in the definition or nature of the virtue of gentleness: for example, in what manner and with what people and on what sort of grounds and how long one ought to be angry (8.3). This is as good an example of a vague or indefinite object or concept as any. It is not very different from the examples of "heap" or "bald" that philosophers often appeal to in this connection. In the case of heaps one cannot fix the number of grains required for having a heap and any limit one chooses as defining the concept *heap* is shown not to be the limit by the fact that small additions to or subtractions from the limit do not make the concept inapplicable. One cannot fix the various factors that constitute the essential nature of the virtue of gentleness, and although at times persons err on either side of whatever one takes to be the limit, they may

— 299 —

nonetheless be praised as doing the virtuous thing. The concept *gentleness* is still applicable. The deviation from the limit must be wide in order for one to notice it and blame the person (8.3, 8.5).

Similarly, Aristotle argues that the nature of friendship and our concept *friendship* are indefinite. There is no exact point up to which people differing in merit can still be friends. It is known, Aristotle argues, that the difference in merit between humans and Gods excludes the possibility that the Gods are our friends. But leaving the Gods aside, the limit, if there is one, is indefinite: Much can be taken away from the merit of persons who are friends, but the friendship still remains (8.8). The essence of friendship is vague or indefinite. One's concept or account of it is also, according to Aristotle, inexact or indefinite: It cannot specify an exact point up to which people who differ in merit can be friends. The same is true, according to Aristotle, with the city or the concept *city* : the number of people required for making a city is not any particular number, but any number between certain limits (8.11). Presumably, the situation is similar with the nature of the choiceworthy (8.4) and joking well (8.6).

But are the things we just mentioned above the only matters of conduct that exhibit indefiniteness or variation? What, according to Aristotle, is the scope of these types of inexactness? Although he does not state explicitly his view on this matter, what Aristotle says in the remarks quoted above suggests that he takes all matters of conduct as well as objects of perception to be characterized by these types of inexactness. Thus he tells us that all the noble and just things exhibit much variation (8.1), that the subject matter of ethics and matters of health have nothing fixed about them (8.2). Again, Aristotle's reminder in 8.10 of the correspondence between the definiteness of matters of conduct (at least emotions and actions) to be lacking in definiteness. Indeed, his claim in 8.3 that "nothing perceptible is [easily defined]" implies that the scope of these types of inexactness is indeed very wide. He certainly does not identify any matters of conduct or any accounts of them that are not subject to variation or indefiniteness.

Does Aristotle in these remarks assert that definitions of matters of conduct are altogether impossible? He does not do so outrightly. Most often his concern is to point to the difficulties in giving a definition or giving an exact definition. In 8.3, 8.4, and 8.5 Aristotle repeats by using the same phrase that matters of conduct are not easy to define (
). In 8.8 and 8.9 his aim is to point out that exact definitions of matters of conduct are difficult or impossible. In 8.10 he reminds us of the congruence thesis, that the exactness of our definitions must correspond to the exactness of matters of conduct, clearly implying that the accounts must be inexact since the subject matter is inexact. Aristotle does

- 300 -

not assert that no definitions are possible. The closest he comes to suggesting the impossibility of definitions is in 8.2 where he says that some particular matters of conduct come under no art or science. Even here what Aristotle means to say is that the accounts of these rather particular things are so inexact that one has to rely on the particular circumstances of each occasion, but to say this is not to say that definitions are not possible. It is clearly not to say that no definitions of anything at all are possible.

Aristotle's Target

The importance of Aristotle's claims about the supposed indefiniteness of the elements of conduct and of our concepts or accounts of them can best be seen when viewed against Socrates' and Plato's position on these matters as well as Aristotle's own position on essence and essential definitions. For to deny that phenomena such as friendship, gentleness, or irascibility, and in general all or most matters of conduct, exhibit a fixed essential structure or pattern is to deny what Socrates and Plato presuppose in their search for definitions or accounts of such phenomena. As seen earlier (chap. 2), they presuppose that all members of a kind share the identical essential structure or pattern, that such a structure or pattern does not change from one member or instance of the kind to the next, and that it does not exhibit any variation but is instead fixed and well defined. Thus, Socrates and Plato claim that piety is the same in all cases and identical with itself, and of course the same is true of impiety (Euthyphro); courage is the same in all its instances (Laches) and so is friendship (Lysis); and the Form of or what it is to be a virtue, man, figure, bee, and so forth is the same in all the instances of each one of these kinds. Bees or figures may vary in many ways from instance to instance, but they do not, according to Socrates, vary in those factors that make them instances of bees or figures; the essential structure of the kind *Bee* or *Figure* remains fixed and identical to itself. The Form is always the same.

It was also seen earlier that Aristotle himself embraces essentialism. The members of a kind exhibit, according to him, the same essence. Humans do not differ among themselves with respect to being human, that is, with respect to their essence, nor do triangles differ with respect to being triangles. It is such fixed and invariable essences that Aristotelian definitions supposedly capture, and it is essential definitions that partly form the Aristotelian conception of demonstrative knowledge. Strict essentialism and the conception of definition as capturing the essence of a kind go hand in hand in Socrates', Plato's, and Aristotle's conceptions of knowledge.

Indeed, in some of his logical works where Aristotle is concerned with

-301 -

the nature of definition, he extends strict essentialism to almost everything. He even extends it to the sorts of things that he elsewhere views as lacking a fixed essential structure or as exhibiting much variation. Things, for instance, like avariciousness, ambition, incontinence, wind, or night are thought of as exhibiting well-defined essential structures whose differentiae must be precisely captured in their respective definitions. Thus:

8.14 Cases occur when one has failed to define the quantity or quality or place, or the of differentiae which are involved, for example, what is the quality and quantity of the honour which he desires that makes a man ambitious; for all men desire honour, a so it is not enough to say that the man who desires honour is ambitious, but the above-mentioned differentiae must be added. Similarly, too, we must state what quantity of money which he desires makes a man avaricious and what quality of

pleasures which he desires makes a man incontinent; for a man is not called incontinent who is the slave of any kind of pleasure whatsoever, but only if he is t slave of a particular kind. Or, again, when people define night as a shadow over t earth, or an earthquake as movement of the earth, or cloud as condensation of air, wind as movement of the air, the quality and quantity and cause must be added. A similarly, in all cases of this kind; for the omission of any differentia whatever invol a failure to state the essence. (*Top. 146b20*)

Is it possible to obtain the kind of definitions Aristotle describes above in the case of ambition, avariciousness, incontinence, wind, and so forth? Can one fix the differentiae in each case in the way Aristotle thinks is necessary in order to have a definition? Although it may be possible to identify with some degree of exactness the *type* of pleasures that are essential to incontinence—Aristotle argues in the *N.E.* that the relevant pleasures are bodily ones—it is not obvious that one can specify with any degree of exactness the *quantity*, for the quantity is likely to vary as that of anger varies in the case of gentleness, and in neither case is there an obvious fixed point where gentleness or incontinence begins or ends. Where does wind or night begin or end exactly?

Similarly, it is not at all obvious that one can specify in the way Aristotle appears to want the quality and quantity of honor or wealth that are necessary to make a person ambitious or avaricious, for these are precisely the type of phenomena which in the *N.E.* Aristotle considers to be inexact by being indefinite and by exhibiting variation, by lacking a fixed essential pattern or structure that is identical in all cases. So the quantity or quality of honor will vary and therefore will not be the same in all the instances of ambition, and so will be the quantity and quality of wealth in the instances of avariciousness. There is no exact point in the quantity of honor or wealth where ambition or avariciousness begins or ends.

To deny invariability or a fixed and well-defined pattern or structure

— 302 —

to matters of conduct is to undercut the strict essentialism that Socrates, Plato, and at times Aristotle himself seem to demand of everything. For in the case of some kinds of things there is perhaps no well-defined structure. And there may not be strictly identical conditions or differentiae that are to be found in all the instances of a group of things or phenomena that nonetheless fall in the same class or are members of the same kind. Some of the differentiae could be identical in all instances of a kind, but there could be cases where none is. Aristotle thinks that in the case of some differentiae of certain kinds, the variation in the quantity, quality, importance, and so forth can be extreme. Not all instances of friendship need exhibit the identical conditions and it would therefore be a mistake to insist that friendship is nonetheless the same in every instance or is, as Socrates insists, the same with itself. Is Aristotle in this context pointing to what Wittgenstein has characterized as family resemblances among things or phenomena which fall under the same class or concept but nonetheless lack a strictly identical essence of the kind Socrates, Plato, and Aristotle at times demand? The phenomena or things that Aristotle describes and the way he describes them make guite appropriate examples of things that exhibit the logical features which Wittgenstein has identified. Matters of conduct, according to Aristotle, exhibit much variation in their structure and they lack the kind of fixed and well-defined nature that Socrates, Plato, as well as himself, often assign to them.

If the above interpretation captures the meaning of Aristotle's remarks quoted earlier, then Aristotle thought that matters of conduct are inexact not only because some or all of their nonessential properties fluctuate or are for the most part but also because they are indefinite in their essential structure or nature. Therefore, even their essential features, either all or some, will fluctuate or will be for the most part: The level of anger or honor will not be the same in every instance of gentleness or ambition, nor the difference in merit between friends in every instance of friendship. Consequently, not only will general statements attributing some property to a kind be inexact by fluctuating or by being true for the most part, but also the definitions of some or all matters of conduct will be inexact in the same way. For example, the best definition we could give of gentleness will presumably apply to most instances of it, for there will be some instances that deviate from such a definition. Thus, the Socratic thesis concerning the universality of truth of definitions cannot be met by some or all definitions of matters of conduct. All or some of our definitions in ethics will be defeasible or indefinite, reflecting presumably the inexactness of the subject matter of the discipline.

Rejecting the Socratic thesis concerning the truth of definitions, or accepting that essential attributes of a kind may fluctuate or belong to it for the most part, has some unwelcome consequences for Aristotle. For

- 303 -

he also assumes that being for the most part implies being contingent, and these two claims imply that some of the essential attributes of a kind will be contingent. But this runs counter to the well-known Aristotelian thesis that essential attributes are necessary attributes.

Consider, for example, the case of the virtue of gentleness. The definition of this virtue, like that of any other virtue, will include, according to Aristotle, the essential attribute of being a disposition (its genus). If Aristotle is correct in claiming that this is the genus of virtue, then it will be necessarily true of all the virtues. But when we attempt to specify the mean in relation to anger that, according to Aristotle, gives the specific differentia of gentleness, the features of inexactness Aristotle attributes to some matters of conduct come into play. Any one specification of the mean will, according to Aristotle, be defeasible; there will be cases of gentleness that are not instances of the mean as specified in our definition. So one might say that given any exact specification of the mean, it is possible that something is an instance of gentleness and not an instance of the specified mean, or that it is not necessary in order for something to be an instance of gentleness that it meets this exact specification of the mean. Given the kind of indefiniteness Aristotle attributes to gentleness, it seems that no exact specification of the mean will capture anything that belongs to gentleness necessarily. Perhaps Aristotle can save his strict metaphysical essentialism by avoiding an exact specification of the mean and by giving instead only the upper and lower limits of the amount of anger within which all the instances of gentleness fall, so one could say that it is necessary that every instance of gentleness exhibits an amount of anger that falls between these limits. This may be one of the reasons why Aristotle, while recognizing that such limits are difficult or impossible to fix, insists at times that we need to specify such limits.

As I argued in previous chapters, definitions have a central place in the thought of Socrates, Plato, and Aristotle. These thinkers assign to definitions several important roles, and therefore the question naturally arises whether definitions that supposedly are as inexact as Aristotle claims can play the roles assigned to them. Does the inexactness Aristotle attributes to the definitions of matters of conduct have any significant consequences? Does it affect the epistemic and practical uses that are often assigned to them? These are the matters I wish to examine next.

Consequences of Indefiniteness or Variation

I will begin by examining first the implications the inexactness under consideration might have for the diagnostic role of definitions. I argued in chapter 2 that the Socrates of Plato's Early Dialogues takes the definition of a kind F to be necessary and sufficient for determining whether some

— 304 —

particular is a member of that kind, whether it is an F. Although Aristotle does not seem to take this Socratic-Platonic thesis to be universally true (as Socrates and Plato do), he argues that a restricted version of it is true—at least with some matters of conduct definitions are indispensable. There must be definitions, he claims, of those things about which there are disagreements or disputes:

8.15

5 But since it often happens that a man, while admitting the fact, denies the charge

the point on which it turns—for instance, admits that he took something, but did r steal it; that he was the first to strike, but committed no outrage; that he had relations, but did not commit adultery; or that he stole something but was not gui of sacrilege, since the object in question was not consecrated; or that he trespasse but on public land; or that he communicated with the enemy, but was not guilty treason—for this reason it will be necessary to define [

figure

] what is theft, outrage, or adultery, in order that, if we desire to prove that an offence has or has not been committed, we may be able to put the case in its tru light. (*Rhet. 1374a*)

There are several problems with accepting the general Socratic-Platonic or even the more restricted Aristotelian thesis that the definition of F is necessary and sufficient for knowing that some particular is F. One may, for example, deny that knowledge of the definition of F is required for determining whether some x is $F.^{[10]}$ One may argue that explicit knowledge of the definition of F is not required, but only an implicit or tacit one, ^[11] or that regardless of how exact our definition of F is, it is not sufficient for determining that any x is $F.^{[12]}$

The above problems with the Socratic-Platonic thesis regarding the diagnostic use of definitions are not the problems I wish to discuss here, however. For the concern is with what follows with regard to the use of definitions from Aristotle's claims that the strict essentialism of Socrates, Plato, and at times Aristotle himself does not apply to some or all matters of conduct, or that definitions of such matters are inexact. Let us assume for the moment that the Socratic-Platonic thesis of the diagnostic use of definitions is correct: Knowledge of the definition of F is both necessary and sufficient for determining that some particular is F. The problem is with using definitions that are inexact or indefinite or defeasible for diagnostic purposes.

In the extreme case where no definitions at all are possible there would, of course, be nothing to serve the diagnostic purposes Socrates and Plato assign to definitions. In this sense, perhaps, Aristotle's claims about the inexactness of matters of conduct can be looked upon as being indirectly an argument against the general Socratic-Platonic thesis that the definition of F is necessary for determining that any x is F. For if Aristotle were to make the rather extreme claim that no definition of F is at all possible

- 305 -

and the claim were to be correct, it would have provided him, when taken together with the rather noncontroversial assumption that one knows that some particular x is F, with an indirect argument against the Socratic-Platonic thesis that the definition of F is necessary for knowing that x is F. It is doubtful, however, that Aristotle makes such an extreme claim, that he denies that definitions of matters of conduct are possible at all.

Even where definitions can, with the associated difficulties Aristotle himself mentions, be attained, they could not function as diagnostic tools in the way Socrates and Plato expect. For consider the Socratic view of the diagnostic use of definition that is stated by Socrates in 2.3, where he says that the definition is to be used as a model, as something by which we will "be able to say that anything you [Euthyphro] or others do that is similar to it is pious and that which is not similar I [Socrates] will be able to say that it is not." Consider also how Plato wishes to use the Forms or our accounts of their nature as models for making correct judgments about things and for realizing the proper political association (2.6, 2.7). But if Aristotle is correct, if the definition of some F is true only for the most part, if it is defeasible, it could not be a means, as Socrates says it can be, for determining all the things that are F. There will be things to which the definition does not apply or, to use Socrates' way of putting it, there will be things that do not agree with the model of F, but which are F. Perhaps, then, one can say that the definition of F will be at best useful for diagnostic purposes in most cases.

But suppose, in addition, that a definition is, as Aristotle claims, vague or indefinite. There will be further problems when one attempts to use such a definition as a diagnostic tool. A definition that does not single out a set of well-defined properties, a strict structure or essence, for a kind F will not be as effective a tool as Socrates and Plato assume it will be for determining the membership of F. Consider, for instance, Aristotle's account of gentleness in *N.E.*: "Gentleness is the observance of the mean in relation to anger Now we praise a man who feels anger on the right grounds and against the right persons, and also in the right manner and the right moment and for the right length of time. He may then be called gentle-tempered, if we take gentleness to be a praiseworthy quality" (1125b26ff.). A definition such as the one Aristotle gives here may have its uses, and I do not mean to claim that it gives us no information about gentleness. Of course it does, but it is obvious that this account of gentleness cannot be the model that Socrates and Plato expect it to be for determining what is an instance of gentleness and what is not.

When Aristotle finds it difficult to define things that exhibit variation or indefiniteness he argues that decisions in such things rests with perception (8.3, 8.5). Thus, he could be construed as shifting the role Socrates and Plato assign to the definition of F (or to universal features) for knowing

- 306 -

that some particulars are F to perception of the particulars themselves. Yet there are undoubtedly problems with the move of shifting the diagnostic role to perception. In some cases perception may make the difference by revealing features that one had overlooked and which may very well determine whether something is an instance of a particular kind—for example, perception of the particulars may be sufficient for determining that a certain act of communicating with the enemy is or is not an instance of treason (8.5). But there will also be problematic cases that the move of falling back on perception may not be able to handle. If the phenomena exhibit the degree of variation or indefiniteness, if they lack an essential pattern to the extent Aristotle at times thinks they do, how is one to decide that something belongs to a certain kind by falling back on perception? For what are we supposed to perceive or recognize by perceiving the particulars? Not the essence of the kind, for example, of gentleness or friendship, for this is precisely where, according to Aristotle, the problems lie. There may be cases, then, where perception of the particulars could be as ineffective as indefinite, vague, or defeasible definitions can be. If one cannot make determinations with regard to heaps or baldness by falling back upon perception, how likely is it that one will in the case of gentleness, irascibility, ambitiousness, and so forth?

The same sorts of problems will be encountered if we were to fall back upon perception as a means of arriving at definitions of the kinds of things that Aristotle finds difficult to define. Aristotle tends to think that in the act of perceiving the particular we also come to know the universal, that although we can distinguish these two elements of cognition they are inseparable in the act of perception. ^[13] Thus, the move of relying on perception of some particular belonging to a kind F as a means of arriving at the definition of F might have appeared plausible to Aristotle, but if the phenomena lack a well-defined nature or structure, it is not obvious that perception can be of any help in attaining definitions. For if there are no well-defined boundaries or the boundaries are too indefinite, one should not expect to find any or to find definite ones by falling back on perception. Perhaps, then, one may have to admit that on some occasions one might not be able to discover a clear answer to the question whether something is an instance of a kind F or to produce an exact definition of F that supposedly explicates the nature of F. Perhaps one may have to admit that in some cases an answer or definition has to be given and not discovered by perception or any other means. A decision rather than a discovery has to be made.

Thus, Aristotle himself argues in 8.7 that where things are indeterminate and no general law can be formulated to cover all cases a special ordinance becomes necessary. Similarly, one may need to decide or set the boundaries or limits that Aristotle speaks of in the case of concepts like *friendship*,

— 307 —

gentleness, irascibility, or *city*. But, as the familiar arguments about vague concepts or things from ancient times to the present have shown, it is quite difficult to set such boundaries or limits. Arguments such as those of the "sorites" and "falakros" have pointed out that whereas it is clear that fifty thousand grains make a heap or that the person with a thousand hairs is not bald, fixing the upper or lower limits of such

concepts is problematic. As Aristotle points out in 8.8, one can say that if the difference in merit between two persons is that which exists between Gods and humans then these two persons cannot be friends. The problem is in fixing the lower or upper limits in the difference of merit within which friendship obtains. As Aristotle says, in the case of friendship or gentleness or irascibility, this is difficult or impossible to do. There is no obvious boundary in the phenomena themselves, and if we want or need a boundary, we will have to decide on one.^[14]

Yet, although Aristotle appears to recognize the difficulties with fixing any limits or boundaries in the case of vague or indefinite concepts and he himself fails to provide any such limits or boundaries for the concepts or things he cites, it is obvious that he places much weight in the existence of such limits. Perhaps he has reasons for doing so. As recent philosophers have argued, vague concepts or objects pose many problems. To some, identity statements about vague objects are problematic, for at least the transitivity of identity appears to fail.^[15] But to others the problems of embracing vague objects or concepts are even greater. Russell and Frege argued that such objects or concepts violate the law of the excluded middle, which according to them is indispensable to logic.^[16] Hence, they concluded that if the world consists of vague objects or is described by vague concepts, then logic cannot be about this world. In the famous words of Russell, "All traditional logic habitually assumes that precise symbols are being employed. It is therefore not applicable to this terrestrial life, but only to an imagined celestial existence."^[17]

Aristotle, as is well known, took the law of the excluded middle and the law of noncontradiction to be the universal laws of being and thought. It is possible that it is this kind of assumption that partly motivates his insistence that boundaries or limits need to be given even for vague objects or concepts. As it has been argued recently, the semantics of his logical theory almost rules out vague predicates.^[18] If one were successful in drawing a boundary or in fixing a limit for a vague concept, one would have at least made a step toward eliminating its fuzzy area that has traditionally been looked upon as posing problems for the applicability of the two laws of classical logic. Whether the limits Aristotle insists upon are sufficient for resolving the problems of truth associated with vague concepts is to be examined later.

But what are the implications of the inexactness under consideration

- 308 -

for the demonstrative use of definitions? As I said earlier (chap. 2), Aristotle, like Socrates and Plato before him, assigns a central role to definitions in his conception of demonstrative science or knowledge: Definitions are among the principles of demonstration (*Post. Anal*. 72a21) and all sciences proceed through definitions (*Post. Anal*. 99a23). If definitions are necessary ingredients of demonstration and if there are domains consisting of things that cannot be defined, then it would seem that no demonstrations would be possible in such domains.

Aristotle's major concern with matters of conduct is that they are difficult and not necessarily impossible to define on account of their supposed inexactness, and that their definitions are inexact by being true for the most part or by being indefinite or vague. The feature of being true for the most part that Aristotle attributes to definitions of matters of conduct would not pose problems with regard to the demonstrative use of such definitions that are any different from the ones discussed in the previous chapter. Definitions of matters of conduct will function as premises of demonstrations of the less rigorous, softer, or weaker type.

The feature of indefiniteness or vagueness that Aristotle attributes to definitions of matters of conduct may have different, as well as more problematic, consequences with regard to their demonstrative uses, however. If Russell and Frege are right, traditional logic is not applicable to vague objects (terrestrial life) or to propositions using imprecise symbols but only to an imagined celestial existence or propositions that use only precise symbols. The problem, according to these philosophers, with attempting to apply traditional logic to a vague world or to propositions using imprecise symbols is that validity has no place in reasoning about such a world or with such propositions. There is no evidence, however, that Aristotle drew the conclusion that Russell and Frege drew. Although he recognizes vague or indefinite objects, he does not deny that we can reason about them or that demonstrative inferences are possible in their case. His

concern is most often to remind us of the inexactness of certain things and our accounts of them, to remind us of the deficiencies of our inferences, rather than to deny that we can make inferences.^[19] Perhaps he might have thought that one can avoid the conclusion that Frege and Russell drew by assuming that boundaries or limits can be drawn somewhere.

Eliminating Indefiniteness or Variation

As I said earlier, one cannot assume that because some accounts or descriptions of a certain domain are inexact, inexactness cannot be eliminated from them, or different accounts cannot be given that are exact or at least that are more exact than the original ones. Can the inexactness under consideration here be eliminated from the accounts of matters of conduct

— 309 —

or can it at least be reduced? The last possibility is of importance given Aristotle's claim that nature or natural phenomena are, as matters of conduct presumably are, characterized by the same kinds of inexactness. If accounts of other domains that are subject to the same kinds of inexactness can achieve a reasonable level of exactness, why not those about the domain consisting of matters of conduct? Can the techniques that are helpful in reducing the inexactness of accounts of biological phenomena, for example, be useful for reducing inexactness in the case of ethical accounts?

I gave some evidence above that Aristotle takes the features of variation and indefiniteness to characterize some natural phenomena—for example, he thinks that the periods of generation and gestation in many animals exhibit much variation and cannot be accurately fixed. These examples are not isolated instances, however. The extent of these kinds of inexact-ness in the order of nature is, according to Aristotle, considerable:

8.16	The Ascidians differ very little in their nature from plants, but they are more akin animals than the Sponges are, which are completely plants. Nature passes in a continuous gradation [
	figure] from lifeless things to animals, and on the way there are living things which are a actually animals, with the result that one class is so close to the next that the difference seems infinitesimal. Now a sponge, as I said just now, is in all respects a plant: it lives only while it is growing on to something, and when it is pulled off dies. What are called Holothuria and the Sea-lungs and other similar sea-animals d only slightly from the sponges in being unattached. They have no power of sensati but they live just as if they were plants unattached to soil Sometimes it is doubtful whether these Ascidians and any other such group of creatures ought to classed as plants or as animals: In so far as they live only by growing on to som other object they approach the status of a plant; but yet they have some fleshy substances and therefore probably are capable of sensation of a kind. (<i>P.A.681al.</i>

Nature, according to Aristotle, has no sharp or clear boundaries: "It passes in a continuous gradation from lifeless things to animals." It is difficult or even impossible to determine exactly where plants end and animals begin or whether the sponge and the Ascidians are plants or animals. Concerning the sponge, Aristotle, despite his claim above that it is in all respects like a plant, cannot determine to his satisfaction whether it is a plant or an animal. In *H.A.* (548b10) he reports the common disputes as to whether sponges have sensation, but he goes on to argue that they do have sensation and therefore are animals (549a8, 487b10). There are many groups of animals that, according to Aristotle, "dualize"; they straddle the divisions of plants and animals by "inclining towards the plants on one side and the animals on the other" (*P.A.* 681b3). Among these Aristotle includes the knides, sea-anemones, starfish, and testacea (*P.A.* 681b10).

— 310 —

Other animals "dualize" with respect to different divisions: for example, the hermit-crab between the crustacea and testacea (H.A. 529624), the pig between solid-hoofed and cloven-hoofed (H.A. 499b12, b21), the ape between man and quadrupeds (H.A. 502a16) or between biped and quadruped (P.A. 689632), the ostrich between bird and quadruped (P.A. 697b14).

I should add to the above list the phenomena Aristotle lists in the passage from the *Top.* quoted above (8.14), for example, night, shadow, earthquake, cloud, and wind. For these are, again, things that lack definite or clear boundaries. The same is true with the phenomena of eclipse, thunder, or deciduousness that Aristotle discusses in the *Post. Anal.* (93a20, 98b). Again, throughout the biological treatises Aristotle speaks of the extensive variation that exists in most animal characteristics. Thus, there is considerable variation in the parts of animals—for example, there are many differences in the lung (*P.A.* 669a25), ears vary considerably from one species to the other (*H.A.* 492a25), so does hair (517b10), the head and the neck (497b15), the reproductive organs (500620), the teeth (501a8), the mouth (502a6), the tongue in birds (504a35), and in general all internal parts (509a27).

The above examples of natural phenomena that presumably exhibit variation or indefiniteness show the extent to which nature is, according to Aristotle, inexact. Recognizing this is important for the purpose of comparing how he deals with the supposed inexactness of the domain of nature and that of matters of conduct. Consider, for instance, Aristotle's treatment of the phenomena of eclipse, thunder, and deciduousness in the Post. Anal. He first proposes in that treatise the following definitions of them: "Thunder is a noise in the clouds," "Eclipse is a privation of light," and "Deciduousness is leaf-shedding" (93a20, 98b). These quasi-conceptual or verbal definitions reflect most clearly the vagueness or in-definiteness we tend to associate with these phenomena. For what quality or quantity of noise, privation of light, or leaf-shedding constitutes these phenomena? Not every noise in the sky is thunder, or every privation of light an eclipse, and there is difficulty in fixing, as Aristotle would say, the exact differentiae of these phenomena. Even deciduousness, which has often been taken as being reasonably well defined, is problematic. Not all types or quantities of leaf-shedding are cases of deciduousness. Is a tree that sheds its leaves in the spring—for example, Erythring caffra —deciduous? Or is one that sheds its leaves but replaces them simultaneously or almost simultaneously? The differentiae these sorts of definitions use cannot be fixed precisely.

The vagueness of these verbal definitions can perhaps be reduced or eliminated by replacing them with definitions that state the causes of the

- 311 -

relevant phenomena. Such a move is quite familiar to Aristotle. He offers the following causal definitions of these same phenomena: "Eclipse [of the moon] is the obstruction by the earth of the moon's light," "Thunder is an extinction of fire in a cloud," "Deciduousness is the coagulation of the sap at the junction of the leaf-stalk" (93b5-10, 99a29). The advantage of such causal definitions is that they succeed to some extent in moving away from terms or concepts that seem to be inherently loose, vague, or indefinite. Thus, by defining thunder as the extinction of fire in a cloud, one avoids the looseness or vagueness of the term "noise," but problems still remain. For even this definition uses the term "cloud," which is, like "wind" or "night" or "shadow," vague or indefinite. The same is perhaps true with the other causal definitions Aristotle gives, and probably is true with any causal definition. Aristotle is, of course, ready to admit that no object of perception can be defined exactly or that those disciplines dealing with things as inhering in matter are less exact than those that deal with things as not inhering in matter.^[20] Yet the causal definitions Aristotle gives are less inexact than the verbal ones.

Again, in dealing with the considerable variation of the domain of nature, Aristotle's strategy is to offer definitions that aim at leaving behind such variation or differences. In defining the parts of animals, for example, he opts always for a functional definition of a part. Thus, despite the differences or variation in the lungs of animals—they can be small, large, spongy, dry, full of blood, bloodless, and so forth—the lung is simply the organ of breathing (*P.A.* 669a15) or it is that whose function is always breathing

(669b8). Aristotle succeeds in this way in bypassing, so to speak, the variations which natural phenomena exhibit; he succeeds in moving to a level of generality or abstraction that is almost free of the problems he attributes to the phenomena.

Naturally, the question arises why Aristotle's strategies for dealing with vagueness or variation in the domain of nature cannot be applied to matters of conduct. One may concede to Aristotle that the accounts of matters of conduct cannot be as exact as those of mathematical objects, but go on to argue that if our accounts of matters of conduct could be made as exact as those of the disciplines studying the order of nature, it will be sufficient. Why do the problems of vagueness or variation not concern Aristotle as much in relation to the study of the order of nature as they do in relation to the study of matters of conduct? Are there reasons for thinking that our accounts of the domain of ethics must be more inexact than those of the domain of the disciplines studying nature?

One may, for example, argue that matters of conduct exhibit these types of inexactness to a much greater degree than natural phenomena do. Although this is by no means obvious, there may be reasons for taking it seriously. For a considerable component of the domain of conduct consists

- 312 -

of the various virtues and vices, which, according to Aristotle, are dispositions or states of character, or something akin to these. But dispositions have always been considered to be paradigms of indefiniteness or vagueness. If this assumption is correct, it is not surprising that Aristotle's efforts to give adequate definitions of gentleness, liberality, irascibility, ambitiousness, and so forth produce little in terms of exact definitions. It is also not surprising that he comes to the conclusion that such elements of conduct cannot be defined exactly. However, not all elements of conduct are dispositions. Aristotle claims that happiness, the good, and pleasure are not. Also, nature itself includes many dispositions, and one must not forget phenomena such as wind, night, shadow, heaps, and so forth.

Even if matters of conduct were to be inexact to a greater degree than natural phenomena are, it is not clear why the inexactness in the accounts given of the former cannot be reduced in the way it can in the accounts given of the latter. It is not obvious, that is, that there is a problem in applying, for example, Aristotle's strategy of replacing verbal definitions with causal-explanatory ones in the case of matters of conduct. One may, for instance, succeed in reducing the inexactness of our account of gentleness by moving from a verbal definition of it to a causal one as Aristotle does in the case of thunder. Thus, Aristotle gives a causal-explanatory definition of fear: "Fear is a process of cooling produced through scantiness of blood and insufficiency of heat" (P.A. 692a23). This definition can be used, in turn, to give a causal-explanatory account of cowardice that may avoid some of the indefiniteness of a verbal definition of it: "Those [animals], however, that have excessively watery blood are somewhat cowardly. This is because water is congealed by cold; and coldness also accompanies fear; therefore in those creatures whose heart contains a predominantly watery blend, the way is already prepared for a cowardly disposition" (P.A. 650b27). Elsewhere Aristotle associates fear, cowardice, and courage in an animal with the size of its heart, but again the causal or explanatory mechanism is that of heat: "Those [animals] with a large heart are cowardly, those with small or moderate-sized ones, courageous (this is because in the former class the affection which is normally produced by fear is present to begin with, as their heat is not proportionate to the size of the heart, but is small and therefore hardly noticeable in the enormous space that it occupies; so that their blood is comparatively cold)" (667a15).[21]

I do not mean to suggest that all causal-explanatory accounts have to be like the ones Aristotle gives of fear, cowardice, or courage—that is, physicalistic. Aristotle's strategy of replacing verbal definitions with causal-explanatory ones does not specify that definitions of the latter type must be in physicalistic terms, although many of Aristotle's own definitions are physicalistic. Also, it is not certain that such definitions are always an improvement over verbal ones with regard to indefiniteness. Definitions or explanations that use such terms as "cold," "heat," "watery blend," "large," or "small" are likely to face their share of indefiniteness or vagueness. But it is clear that Aristotle's strategy of replacing verbal definitions by causal-explanatory ones need not be excluded from application in the case of matters of conduct, and Aristotle does not say that it is excluded.

One cannot assume that causal-explanatory definitions are possible in the case of every matter of conduct or that the indefiniteness of any account is due to its not being a causal-explanatory one. What kind of causal account, for example, is one likely to give of the city that is of any relevance to the issue of indefiniteness or vagueness?^[22] Similarly, the problem of indefiniteness in the case of heaps or baldness has not much to do with the causes of these things or phenomena. Whatever the causes of baldness, the problem is one of drawing the boundaries or limits of the phenomena or the relevant concept.

If, indeed, the problem is in most cases that of drawing boundaries or limits, one can see why matters of conduct may pose greater problems than natural phenomena. Drawing boundaries of indefinite phenomena or concepts is not, as I said above and as Aristotle recognizes, easy in any domain. Yet where one draws the boundary in the case of baldness, wind, or shadow is perhaps not very important; not much may depend on it. With such phenomena we may decide to have recourse to Aristotle's special ordinance and draw the boundary at some point. But in matters of conduct much depends on where one draws the line. It may mean the difference between virtue and vice, good and bad, noble and base, blameworthy and praiseworthy, and so on. The reason Aristotle finds it difficult to simply decide on the limits of gentleness is that the line between it and irascibility is the boundary between virtue and vice and hence the boundary between an agent's being praiseworthy and blameworthy. Yet it is not certain that the difference between drawing boundaries in the world of nature and matters of conduct is as large as it at first appears. The scientist who wishes to know where life begins cannot just draw the boundary anywhere, and of course where we draw the line in the case of concepts such as *animal*, *life*, *fear*, and so forth may be of great importance to ethics. Our moral positions on abortion, euthanasia, or cowardice may partly rest on where such boundaries are drawn.

One might also argue that it would be difficult to deal with the problem of variation in matters of conduct in the way Aristotle deals with it in the case of natural phenomena—that is, by disregarding such variations and by moving to a higher plane of generality or abstraction. Thus, what matters in the case of the lung is its function and not the many differences among lungs. It is much harder to disregard the differences or variation in matters of conduct, for they seem to be essential: Differences in the circumstances, time, emotion, persons, merit of persons, nobility, neces-

- 314 -

sity, and so forth, are relevant in giving an account of choice, obligations to our parents, the nature of gentleness, friendship. They are certainly of great relevance in the context of action—in making a choice, in deciding whether to obey our parents, or to be someone's friend.

Perhaps in some cases the variation in the order of nature may be easy to disregard, although this cannot be generalized. But one may be willing to concede that variation in matters of conduct cannot be disregarded. Although one may be willing to recognize the above considerations as providing some reasons for thinking that the inexactness under discussion here poses more problems for matters of conduct than it does for natural phenomena, this may not be the end of the matter. Not all natural phenomena are, after all, alike. Although being an animal is, as Aristotle points out, to some extent inexact, being bald or being a heap is clearly much more so. Some things or phenomena are less indefinite than others, or at least some are definite enough that acceptable definitions or accounts can be given of them.

It might be possible, then, to distinguish within the domain of conduct matters which exhibit the inexactness Aristotle cites to a much higher degree than others, and of the latter class of things adequate definitions or accounts can perhaps be given. Aristotle however tends at times, and without further argument, to view all matters of conduct as being equally inexact and more inexact than the objects mathematics and the scientific disciplines investigate. This tendency is due to the emphasis he places on the more particular or practical concerns of the discipline of ethics in contrast to the general or abstract concerns that are the focus of other disciplines.

Aristotle takes ethics to be a practical discipline, to have practice or action as its ultimate goals. He also insists that these practical goals of the discipline require that it reaches the particulars, that its primary concerns are with the particular or specific rather than with the general or abstract aspects of conduct. Unlike theoretical disciplines that supposedly stay at the level of the general or abstract, practical disciplines need to reach the level of the particular or specific, but some features of exactness/inexactness may be more prevalent or pervasive at one level than they are at the other. In addition, some of these features may pose greater (or lesser) problems when present at one level than when present at the other. At the level of the particulars, for example, matters of conduct may exhibit considerable variation and such variation may be of great importance in making decisions, choosing a course of action, determining whether blame or praise is due, and so forth. But this does not rule out the possibility that other matters or at least aspects of them do not exhibit such variation or that they do so to a far lesser extent, for, perhaps, the moral virtues are subject to variation but the intellectual ones are not, or while the cases

— 315 —

of courage, liberality, or gentleness may exhibit considerable variation, virtue itself may not. Thus virtue, both moral and intellectual, may be defined as that which makes something good and causes it to perform its function well (*N.E.* 1106a15). Such a definition appears to succeed, as the functional definitions of the parts of animals do, in bypassing variation and giving a more general or abstract account.

Aristotle gives a number of definitions which, by being highly general or abstract, seem to deal successfully with the feature of variation he attributes to matters of conduct. So he defines magnanimity as intolerance of dishonor or being unaffected by good and bad fortune (*Post. Anal.* 97b20). In similar fashion he defines most of the virtues and vices in *E.E* (II.iii). The same can be said of the account of happiness as that which can be only an end in itself and of the good of F in terms of the function of F. These accounts may be lacking in detail, but this is clearly another matter.

One cannot, in other words, rule out the possibility that some elements or aspects of matters of conduct can be treated at a level of generality or abstractness that is sufficient for avoiding or at least minimizing the problems of inexactness that concern Aristotle. Grant may, therefore, have been correct in suggesting that Aristotle tends to overstate the scope and degree of inexactness under consideration here in relation to matters of conduct, an overstatement that appears to have been accepted by the ancient commentators.^[23] Once one distinguishes somewhat more sharply than Aristotle is willing to do between the theoretical concerns of philosophical ethics and those of practice that he often stresses, one sees that some elements of conduct and some accounts of them (the most abstract and general ones) may be less subject to the inexactness that concerns Aristotle.

Thus, Aristotle himself recognizes in 8.2 that accounts dealing with particulars are likely to be more lacking in exactness than the general ones. Aristotle is correct on this point. It is quite possible that the individual virtues exhibit greater variation or indefiniteness than virtue itself does. It may therefore be more difficult to define what gentleness or irascibility is than what virtue is. Aristotle's own discussion bears this out. Similarly, it appears that the concept art is less problematic with respect to the types of inexactness under consideration here than the concept *tragedy*. The latter concept has resisted any and every attempt to articulate a reasonably precise definition of it.^[24]

Yet Aristotle may have had some reasons for insisting that matters of conduct or our accounts of them pose greater problems than natural phenomena and our accounts of them, and these reasons may ultimately have something to do with the specific accounts he himself gives of the basic elements of conduct and with his own conception of ethical theory.

For if the basic elements of the subject matter of ethics and its principles or axioms exhibit the kind of inexactness Aristotle claims that they do, then all the other things

that are derived, proved, or demonstrated from them will most likely also be affected by these same features. If, for instance, the good or virtue and our accounts of them were to exhibit these features of inexactness, then the rest of our accounts in ethics would probably also be inexact. But why is the case of ethics different from that of the investigation of, for example, the biological phenomena? After all, Aristotle defines animal as that which is capable of sensation (*P.A.* 653b23, 666a35), and clearly sensation is not free of indefiniteness or vagueness. As seen earlier, some living things occupy the fuzzy area between animal and plant; they, as Aristotle says, "dualize."

Although one can accept, as Aristotle does, that nature exhibits indefiniteness, the problems matters of conduct pose may nonetheless be far greater than those natural phenomena pose. Consider, for example, the problems Aristotle encounters with giving an account of virtue. There is, as I said above, some account of virtue that seems, on the surface at least, not to be affected by variation or indefiniteness-namely, that virtue is that which makes something good and causes it to perform its function well. Yet the definition of virtue that Aristotle relies upon in order to explain or define the nature of the individual virtues, the definition that does most of the work in the N.E., is a classic example of an account suffering from inexactness for which there seems to be no obvious remedy. The definition, of course, is none other than the one Aristotle gives at N.E. in terms of a notion that is a paradigm of inexactness—namely, the notion of the mean. Indeed, not only does Aristotle insist that the differentia of virtue is the mean, he argues that the mean relevant to virtue is not some exact quantity that can be determined mathematically by a mathematical operation on some other mathematical quantity or quantities, but something that is relative to the agent and the practical circumstances. But this nonmathematical way of explicating the mean introduces so many indefinite or indeterminate factors that the differentia of virtue remains, for all practical purposes, intractable.

Virtue is, however, one of the basic elements of Aristotle's ethical theory. It has a role to play in the explication of other components of his theory. The definition of virtue Aristotle gives is to be used in explicating the nature of the individual virtues as well as vices—for example, the nature of courage, temperance, gentleness, irascibility. All of them are either instances of virtue or vice; they are either instances of the mean or of deviation from it. Thus, the problems with Aristotle's account of virtue or vice that result from the inexactness of the notion of the mean will be encountered again in our explication of the particular virtues or vices in terms of this same notion.

— 317 —

Consider, for instance, some of the accounts of the virtues or vices Aristotle gives in the *E.E.* In trying to define irascibility or the irascible person, Aristotle writes, "The man that gets more angry and more quickly and with more people than he ought is irascible" (1221a15). This account, which Aristotle takes to exemplify the use of the mean in explaining the virtues or vices, is, like the accounts of all the other virtues and vices he gives in this context (see in particular those of cowardice, insensitivity, and jealousy), as indefinite as one is likely to meet. For what exactly is asserted by claiming that the irascible person gets "more angry and more quickly"? Aristotle, of course, recognizes the vagueness of such accounts and concludes his discussion of the virtues by remarking, "Let us then accept these simple definitions, and let us make them more precise when we are speaking about the opposite dispositions" (1221b8). When, however, Aristotle returns to an examination of the virtues that is supposed to produce accounts of them that are more exact, things are not any different. Let me give as an example part of what he says about gentleness in his more exact account of it:

8.17 And since as we said in the other cases, so here also there is excess and deficien (for the harsh man is the sort of man that feels this emotion too quickly, too long, the wrong time, with the wrong kind of people, and with many people while the slowish man is the opposite), it is clear that there is also somebody who is at th middle point in the inequality. Since, therefore, both these shades of character a wrong, it is clear that the state midway between them is right, for it is neither tc hasty nor too slow-tempered, nor does it get angry with the people with whom i ought not nor fail to get angry with those with whom it ought. (1231b12)

I do not wish to insist here that for definitions to work they must be exact, as Aristotle himself often says in the logical treatises; that they must specify the quantity and quality of the differentiae, that such specifications must be numerical, or even that numerical specifications are possible.^[25] What I wish to point out, or what is important to recognize, is that if the basic elements of matters of conduct exemplify the above kind of vagueness or if the highest definiteness our accounts can attain is that exemplified by Aristotle's discussion of gentleness, then there is more reason to be concerned about the inexactness of ethics than about that of the disciplines investigating natural phenomena, for although *animal* may not be altogether definite, it is not as indefinite as *virtue* seems to be. The indefiniteness of *animal* appears to affect not every animal, but only a few at the fringes—for example, the sponges, sea-anemones. But the inexactness of virtue affects every virtue and vice—all of them are almost equally problematic. The inexactness of virtue, a basic element in Aristotle's ethical

— 318 —

theory, filters down, so to speak, to every one of the particular virtues and vices.

Suppose, in addition, that the Good itself, the good of an F, or a good F are to be explicated ultimately in a way that involves the notion of virtue. This is clearly the case in Aristotle's ethical theory. The notion of a good F is, according to Aristotle, to be understood in terms of the virtue of F. Similarly, what the good of an F consists of is to be explained in terms of the function and virtue of F.^[26] If this is so, then the inexactness of virtue will most likely filter down to every important aspect of Aristotle's theory.

The problems of inexactness Aristotle encounters in his own theory and the way the inexactness of the basic elements affects other components of his theory are likely to be found in any theory that relies on these same elements. Thus Rawls offers a definition of a good F that is not very different with respect to definiteness from some of Aristotle's accounts:

A is a good X if and only if A has the properties (to a higher degree than the average or standard X) which is rational to want in an X, given what X's are used for or are expected to do, and the like (whatever rider is appropriate).^[27]

An account that faces similar problems is the one given by Ross, although he seems to be aware of the difficulties:

And "good of its kind" is relative in a further sense, viz. that it is comparative. We have in mind what we suppose to be a rough average of the excellence of the members of the kind, and we call anything better than this good anything worse than it bad, not implying that there any fixed neutral point at which what is good ends and what is bad begins. "Good" in this usage means "better than average" or perhaps "considerably better than the average," "bad "worse than average" or perhaps "considerably worse than the average," "bad "worse than average" or perhaps "considerably worse than the average."

These accounts of "good of its kind" are, with regard to their definiteness, as problematic as Aristotle's own account of virtue or of being a good F. The notions of "average," "standard," "rational to want," and so forth are notorious for their lack of any clear or definite boundaries. Ross recognizes this and he does not wish to be taken as "implying that there is any fixed neutral point at which what is good ends and what is bad begins."

It is quite possible, then, that Aristotle's reasons for taking matters of conduct and our accounts of them to be more problematic with respect to their inexactness than natural phenomena and our accounts of them stem in part from his conception of ethical theory and the particular accounts he gives of some of the basic elements of conduct in his own theory. A different theory that assigns a lesser, or no role at all, to virtue may perhaps fare better as far as exactness is concerned than Aristotle's own theory' does. Even an ethical theory that takes virtue as a basic element

— 319 —

but nonetheless succeeds in treating it not as a disposition will have made another step toward reducing the kinds of inexactness that concern Aristotle. But most importantly, a

229 of 362

8/6/2006 1:15 PM

theory that succeeds in explicating virtue without reference to the mean or at least without reference to the kind of mean Aristotle's theory relies upon will have made the most significant step toward reducing inexactness. Given the kind of ethical theory he puts forth, these options are not open to Aristotle.

- 320 -

Nine Exactness and Pragmatics

Introduction

It remains to examine some remarks by Aristotle in which he connects exactness/inexactness to the method or to the nature of a discipline. I shall at the moment speak of an exactness/inexactness that could be related either to the method or the nature of a discipline or perhaps to both. In this way, I will be reflecting an ambiguity that is present in Aristotle's own remarks which makes it difficult to determine whether the exactness/inexactness at issue attaches to the method a discipline utilizes or to the nature of the discipline itself. By "method" in this context I shall understand what is ordinarily meant by this term when it is used to identify or describe the methodology of a discipline-namely, the way, manner, or procedure a discipline utilizes for the purpose of supporting, justifying, or proving the propositions it puts forth as true (its "theorems"). Thus, a discipline may utilize demonstration, induction, analogical reasoning, empirical observation, and so forth, in order to support, justify, or prove its propositions. And these are different methods. By the "nature of a discipline," I shall understand what Aristotle most often has in mind when he distinguishes between theoretical and practical disciplines—namely, the supposed difference in the goals of the various disciplines.

The ambiguity in Aristotle's words, then, is this: The exactness/inexactness at issue may be the result of either the method a discipline utilizes or the nature of a discipline. A discipline, for example, that utilizes demonstration as the means of justifying its theorems may be said to be more exact than one which relies on induction or empirical observation. However, a discipline whose goals are practical and whose cognitive interests are subordinate to practical ends, is perhaps either incapable of reaching

- 321 -

the level of exactness we associate with theoretical disciplines or does not need to reach such a level. It may thus be the case that its goals make a certain kind or level of inexactness necessary or acceptable.

The difficulty of determining where the exactness/inexactness stems from lies with the fact that a term Aristotle uses in this connection can mean either the method a discipline uses or the discipline, or inquiry itself. It is thus possible to take as the source of exactness/inexactness either the method or the nature of a discipline. Indeed, it is not only possible but also quite plausible that either of these two alternatives is the source of exactness/inexactness. Although either the method or the nature of a discipline can be and perhaps is the source of the exactness/inexactness under discussion, and therefore commentators are justified in choosing either one of these as being the source, I shall argue here that Aristotle is concerned with the nature of a disciplines in general, or for ethics in particular, that is different from the method of disciplines with different goals, and does not attribute the supposed inexactness of practical disciplines to such a method that these disciplines presumably share. His aim instead is to link the level of exactness that is desirable or attainable in such disciplines to their practical goals.

Aristotle's attempt to link a type of exactness/inexactness to the goals of a discipline brings to mind much of the recent discussion on the nature of explanation that has

attempted to link explanation to some pragmatic considerations which are invariably understood in terms of the goals explanation serves in various contexts. The proponents of the pragmatic conception of explanation are not always in agreement about the role pragmatic considerations play or the importance they have in determining the nature of explanation. Some argue that such considerations determine only the kinds of questions or problems that are asked within a certain context—they do not affect the nature of explanation, which is taken to be determined by epistemic considerations. Others take a much stronger view. They argue that pragmatic considerations also determine the nature of explanation that is appropriate in a given context. At times, they relativize explanation not merely to some fixed and possibly well-defined goals that explanation may serve, but to the individual who requests or seeks an explanation. They relativize it to the particular goals, objectives, or purposes of any one individual. They thus deny that there is one unified conception of explanation that is appropriate in all contexts.

In claiming that the level of exactness under consideration here is determined by the goals of a discipline, Aristotle is linking exactness to what apparently are pragmatic considerations. He is, as shall be seen, connecting certain aspects of the proofs that a discipline utilizes to some goals or purposes. Does Aristotle think that the goals or purposes of a discipline

— 322 —

determine the questions or problems of that discipline or that they affect the character of its proofs or explanations, or both? At times Aristotle speaks as if both the questions a discipline asks and the character of its proofs or explanations are in some way determined by its goals. But whether this is really so remains to be seen.

Another question that arises in this context is the one concerning the status of the goals which presumably determine the level of exactness that is appropriate in a discipline. Whose goals are they? Are they the goals of any one individual, as the advocates of the pragmatic theory of explanation at times claim? Does Aristotle, in other words, relativize exactness to the goals, purposes, or objectives of any individual? Aristotle's view on this matter is more cautious than the rather extreme view just mentioned. Most often he takes the goals to be primarily the goals of the discipline, inquiry, or art and only secondarily those of some individual or other. The goals, according to Aristotle, define a discipline or an art; they are part of its essential definition, and therefore cannot be altered by the interests or objectives of some individual, and perhaps they cannot be altered at all. In this sense, one might conclude, the considerations to which Aristotle relativizes exactness are not really pragmatic ones. Or, if we insist in calling them so, one needs to keep in mind that they are considerably more fixed than the goals pragmatists often have in mind.

Understanding Aristotle's conception of the relation between a discipline and its goals is important for understanding why he often speaks as if the inexactness that presumably results from the goals of a discipline cannot be eliminated. If, for instance, a type of inexactness is due to the practical goals of a discipline, it cannot be eliminated by making the goals less practical and more theoretical. Such a change in the goals of a discipline, Aristotle seems to think, is ruled out by the nature of the discipline. But if our conception of goals is the one advocated by those who propound the rather extreme pragmatic view of explanation—namely, the one that relativizes goals to any individual—then there is no reason why goals cannot be altered for the sake of eliminating some types of inexactness. If a change of goals were possible, then the elimination of inexactness due to the goals of a discipline might also be possible in some cases.

The Evidence and its Meaning

Aristotle connects exactness/inexactness to the method or the nature of an inquiry in the following passages:

9.1

We must also keep in mind what was said earlier and not seek exactness [

] in the same way in all cases, but in each case in accordance with the subject matt and in such a degree as is appropriate to the

- 323 -		
	particular inquiry [or method— figure]. (N.E.1098a25)	
9.2	For a carpenter [or builder—	
	figure] and a geometrician investigate [or seek after— figure] the fight angle differently [or in different ways— figure]; the former does so insofar as is useful for his work [figure] while the latter [inquires] what it is [figure] and what properties it has [figure]; for he [the geometrician] is a spectator of truth [figure]. We must act in the same way, then, in other cases, so that our goal [or task— figure] will not be outweighed by secondary matters [figure]. (1098a30)	
9.3	But to linger over the detailed statement [figure] and discussion of questions of this kind [physical plan of the city] is a waste of tim The difficulty with such things is not so much in understanding them, but in doing them. (<i>Polit.1331b20</i>)	

It is easy to see that there are different ways of reading 9.1 and 9.2 which may in the end have different consequences with respect to the source and nature of the exactness/inexactness Aristotle speaks of in this context, for if one were to focus on the opening sentence of 9.2, one might conclude that Aristotle's primary concern is to point out that different disciplines raise and deal with different problems or questions. Just as presumably the builder asks different questions about the mathematical objects he encounters in his work from the ones the mathematician does, so does the moral philosopher ask different questions, one may argue, do not necessarily imply different methods, but they supposedly imply differences in exactness.

If one were to focus on the closing sentence of 9.1, one might conclude (by selecting one reading of

figure

) that Aristotle is saying something much stronger. He is saying that different disciplines may utilize different methods, and differences in method result in differences in exactness across disciplines. For different methods, one may argue, produce different types of knowledge that can vary in their exactness. The way the builder comes to know something about some geometrical object is fundamentally different from the way a geometrician does, and this explains why the one has exact knowledge and the other does not. Perhaps, then, Aristotle is claiming that there is a way or method, and therefore a level of exactness that such a method implies, that is appropriate in ethical inquiry. Such a method may be very different from the demonstrative method that he associates with the theoretical disciplines. Perhaps he has in mind some type of induction or just simply an empirical investigation that relies rather strongly on, and perhaps remains at the level of, the acquisition of data from experience.^[1] Aristotle's frequent comparisons of ethics to medicine

- 324 -

makes this option a possible or even a plausible one. Perhaps he is pointing to the dialectical method where presumably one relies more on accepted opinions rather than on either empirical generalizations or the types of propositions that are appropriate in demonstration. Or possibly, and going beyond the traditional list of methods, he is thinking of an altogether different method. For just as there might perhaps be no similarity between what the builder does and what the geometrician does, one might conclude that there is really no similarity between what we do in ethics and what we do in a demonstrative discipline. Thus when the builder wishes to show that two things are equal or something is straight he makes some measurements or uses a stretched string as his standard of straightness or for showing that something is straight. But these sorts of things are not at all the kinds of proof the geometrician uses, and presumably different types or levels of exactness would be required for or correspond to all these different methods.

When one looks at Aristotle's remarks quoted above in their entirety, however, it is more likely that one will conclude that Aristotle does not outrightly and without any reference to the nature of ethical inquiry identify a method, and hence a level or type of exactness, that is proper for it. For he seems rather to be concerned in these remarks with the following aspects of an investigation: its nature, goals, methods, exactness, and so forth, and the relation among them. He appears to accept some general principle that specifies the connection, or that captures the relation, among them that can best be described as a kind of pragmatic principle. Provisionally, this general pragmatic principle can be understood as asserting that the goals of a discipline determine, in some way or other, the method, type of exactness, level of exactness, and so forth that is required or is appropriate for a discipline. This is presumably a general principle, one that is applicable to all disciplines or arts. When it is applied to ethics it will imply that the goals of the discipline fix the method and exactness that are required or best fit the nature or goals of the investigation into matters of conduct.

The above pragmatic principle seems to summarize an interesting line of argument that can be based on the rather familiar theme we find in Aristotle's works about the relation between disciplines or arts and their goals—a theme that was recognized by the ancient commentators. Therefore much can perhaps be learned by taking it seriously and examining it against the texts. Such an examination may, for example, tell us something about the sorts of things Aristotle is willing to consider as acceptable means (methods) of investigation and their relation to the nature of the various disciplines or arts. But this interpretation need not disagree altogether with the earlier one that insists that Aristotle outrightly identifies some

— 325 —

method for ethics and that most likely this method is different from the one used in the theoretical disciplines. Even if one were to assume Aristotle's pragmatic principle, one cannot rule out that the method dictated by the goals of ethical inquiry is not one of the nondemonstrative methods identified earlier, that is, induction, data gathering, examination of opinions, and so forth. What then does the application of the pragmatic principle to the case of ethical inquiry tell us about its method and exactness?

There are, it seems to me, two alternatives that have some basis in Aristotle's remarks and that have at times been identified in the Aristotelian scholarship tradition. The first, and certainly the strongest, is that Aristotle identifies or that his pragmatic principle implies a method for ethical inquiry that is different from the one utilized by the theoretical disciplines precisely because ethics is practical. The goals of ethics, according to this alternative, imply that its method is not demonstrative, ^[2] Hence, the exactness that is appropriate in ethical investigation cannot be understood in terms of some features of demonstration. Such exactness cannot presumably be explicated in terms of the degree to which a discipline meets the conditions of demonstration, since

the goals of the discipline dictate a method that is different from demonstration. Let us call this the strong pragmatic thesis.

The second alternative takes Aristotle's remarks to be saying that the application of the pragmatic principle to ethical inquiry does not result in a method that is different in kind from that employed by demonstrative disciplines, but that the degree of exactness is different. In other words, the method appropriate for ethical inquiry is not different from that employed in the theoretical ones. For the immediate goals of ethics are the attainment of some type of knowledge, that is, they are epistemic, and it is these immediate epistemic goals that dictate the method. But the ultimate goals in the case of ethics are practical, and it is these "pragmatic" goals that dictate the level of exactness that is appropriate. They determine the degree to which ethical inquiry needs to satisfy the conditions of demonstration. We may designate this the weak pragmatic principle.

The difficulty of deciding with certainty which one of these alternatives best captures the meaning of Aristotle's remarks quoted above rests partly with the ambiguity of the term

figure

. The term is used at times, though not very frequently, to mean "method" in our sense of this term—namely, the way or manner of an inquiry or investigation, the kinds of proof or justification it uses. Aristotle really does not have a single or technical term that he consistently uses to speak of method. Quite frequently he avails himself to the use of

figure

-way or manner—a term that has a rather broad application but is used to distinguish ways of investigating or prov-

— 326 —

ing: for example, demonstration from dialectical proof or both of these from the method of collection and division.^[3] And at times he just uses

figure —path, road, way—which is of course one of the constituents of the compound term figure

and is even less precise than

figure

.^[4] It is used in this imprecise sense in what seems to be its only occurrence in the N.E. where Aristotle is concerned with whether the path, way, or method (

figure

) of investigation is from the basic principles or to them as well (1094a33).^[5] There are however occurrences of the term

figure

itself where it is clearly used to signify the method or way of investigation or proof in certain contexts. Thus, the opening chapter of the *Anim.* raises the question whether there is a single method (

figure

) for investigating into, and supporting our claims to know, the essential nature of all things, just as demonstration (

figure

) is the method by which we know the necessary attributes in all cases. It goes on to argue that if there is no "single and common method [

figure

] about essence our treatment of the subject will be more difficult. For we must establish what the method [

figure

] is in each case; and even if it is obvious whether a form of demonstration, or division or some other method [

figure

] is the right one" (402a15). Aristotle also uses the term

figure

to mean "method" or "procedure" in N.E.: "Our investigation [inquiry-

fiaure

] may follow the same method [course, procedure-

figure

234 of 362

] as the preceding discussions" (1129a6). And the same is also true in *Polit.* (1252a17), where Aristotle urges that we investigate the nature of the state by following "our regular method," that is, by analyzing, a composite whole into its uncompounded elements.

The term is, however, most frequently used, along with a number of other terms such as

, or

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figure

, to simply mean inquiry or investigation—for example, an inquiry into the nature of the syllogism, of demonstration, or of the soul.^[6] And this seems to be the meaning it has in two of its four occurrences in *N.E.* It means inquiry or investigation where Aristotle tells us that every art and every inquiry (

figure

) seems to aim at some good (1094a). The same seems also to be the case with the occurrence of the term at 1094b10 where Aristotle remarks that "since it aims at such things our present inquiry [

figure

] is a sort of political science." The term has the same use in all of its three occurrences in the *E.E.*, although two of them (1216b35, b39) are somewhat less clearly so than the remaining one (1214a14).^[7] In the *Polit.*, the term occurs ten times, and it means inquiry or investigation in all of them except in the one occurrence I mentioned above.^[8]

Clearly what we conclude about the nature or source(s) of exactness/ inexactness that Aristotle is concerned with in the remarks quoted above in part depends on how we understand the term

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. I shall, therefore, turn next to an examination of the alternatives I outlined earlier.

— 327 —

Questions, Methods, and Exactness

As I said above, one way of looking at Aristotle's concerns with the variation of exactness across disciplines is to see it as being analogous to the concerns that have been raised recently about the variation in explanation, and hence in method, across disciplines or purposes. Some, especially Thomas Kuhn, Paul Feyerabend, and Bas van Fraassen, have at times gone as far as to deny that one can identify one form of explanation or method for all disciplines or purposes. An explanation or method, according to them, is appropriate as long as it meets the pragmatic considerations that give rise to the demand for explanation or inquiry. Others, however, recognize the role that pragmatic considerations may play in explanation, but they deny that they play the all-important role that is sometimes assigned to them. Matti Sintonen has, for instance, recently argued that the pragmatic considerations primarily determine the questions that are asked and not the form of the explanation that must be used in order to answer the questions.^[9] For example, the difference in the particular concerns or objectives the chemist and the dietician have determine what questions each one asks about, say, milk. Presumably both use the same method in trying to answer them. Questions, in other words, may vary due to different goals or purposes (pragmatic considerations), but explanation or method remains fixed.

Following Sintonen's argument, one might say that what Aristotle is claiming in 9.1 and 9.2 is that questions vary while methods stay the same. In 9.2 Aristotle seems to be at least saying that questions vary. For, he there claims, the questions the geometrician asks about the right angle are not those the builder asks. They have two different goals or purposes, and therefore they ask different questions. The geometrician is interested in the truth about geometrical figures, and he therefore asks questions about the nature of the right angle and its properties. The builder is interested in realizing some practical goals, and therefore his questions are not concerned with the truth about geometrical figures. Similarly, Aristotle claims elsewhere, fishermen do not observe fish for the sake of pure knowledge, while presumably scientists do (*G.A.* 756a34). And so, again, since their goals are different from those who are interested in a theoretical understanding of the phenomena of marine life, the questions they ask are different.

Although this line of argument raises an important point, it does not seem to me to fully explain what Aristotle says in 9.1 and 9.2 without further elaboration. For even if we were to assume that the geometrician and the builder ask different questions, the problem still remains how this affects the exactness of their respective enterprises since the method of inquiry is supposed to be the same. Why does the fact that the builder

— 328 —

asks and answers different questions from those the geometrician asks and answers give rise to a difference in the exactness of their disciplines if they both utilize the same method to answer their questions? There must be some factor other than the fact that the one asks question A and the other asks question B which explains why their respective disciplines attain or require different levels of exactness. There is, in addition, the difficulty of how the builder-geometrician analogy is to be applied in the case of ethics. The builder and the geometrician are supposedly asking questions about the same subject, for example, the right angle, and each could be said to obtain knowledge about the same thing that varies in exactness from that obtained by the other. But to whom is one supposed to compare the questions and the exactness of the one who inquires into the nature of matters of conduct? Is there a purely theoretical inquiry in matters of conduct as there is in the case of geometrical figures or the phenomena of marine life, and is one to compare Aristotle's practical inquiry into matters of conduct to that theoretical one? Or does Aristotle's own practical inquiry differ in its exactness from other disciplines by simply asking different questions than they do, since it deals with a subject matter that is different from theirs? In that case each discipline will differ in exactness from any other that has a different subject matter simply because each one will necessarily be asking different questions. No two disciplines that differ in subject matter could be equally exact, not even all the mathematical ones.

It seems, therefore, that something has to be added to this line of argument if we are to explain how and where differences in exactness enter the picture. Perhaps the methods used by the builder and geometrician are, on account of the questions they ask, essentially different, and this is what introduces differences in exactness.^[10] Perhaps there is something in the questions that each asks that in some way or to some degree affects the method they use. The method may not be different, but it may not be applied in the same manner across disciplines. The questions asked, in other words, affect in some way the epistemological character of the discipline.

The last supposition appears to have some plausibility. For Aristotle in 9.2 is not merely saying that the builder asks one question and the geometrician another about the right angle—for example, how can I make this angle right vs. how can I bisect the right angle geometrically? Rather, the geometrician is asking questions about the essential nature of a certain kind of geometrical figure and the properties it has in virtue of such an essential nature. Since he is interested in discovering the truth about such a geometrical kind, his questions can be only answered by the method that can attain the truth about this type of subject matter. But the builder's questions are presumably not about the nature of this geometrical kind,

— 329 —

its attributes, and the relations among them. Since he is not aiming at the systematic truth about such matters, his questions do not require the application of the method the geometrician uses and in the way he uses it—that is, the fully axiomatic-demonstrative way of the mathematician that starts from the axioms, common principles, and definitions of the essential nature of some geometrical kind. Thus, the nature of the questions asked by a discipline may affect at some level its epistemological character, in this case its demonstrative character.

The context in which 9.1 and 9.2 occur seems to me to lend some support to the above, for Aristotle's remarks occur right after he has offered his account of the human

good or happiness in terms of the function argument. As seen earlier, he finds this account to be lacking in detail, to be only an outline that needs to be completed (see chap. 5). He further cautions us not to seek the same exactness everywhere (9.1) and proceeds to give the illustration of the builder and the geometrician (9.2). But Aristotle goes on to argue that we should not make the same demand for an explanation in all cases, for in some cases—for example, in the case of the principles—it is enough to show that something is true without explaining it (1098b).^[11] Aristotle, then, may have looked upon the results his own inquiry had achieved so far as being the results of a practical inquiry that had not fully addressed the question of the essential nature of goodness. And hence what has been said about the human good, although it can be further explained by reference to the nature of goodness and possibly other things, is sufficient; a further explanation in terms of the nature of goodness is not required by the practical goals of the inquiry. We can admit, he might be saying, the account of the good given so far, just as we admit without explanation the first principles. For the questions of the practical discipline we are engaged in are not those about the nature of goodness, that is, the kinds of questions that exercised Plato, but rather, as in the case of the builder, the questions about the good of man and his excellences. If we only raise the questions that the goals of our inquiry dictate, then we cannot expect the exactness that can be attained by the inquiry that proceeds in a fully axiomatic-demonstrative fashion from the essential nature of the subject matter. An inquiry such as the latter will perhaps be the counterpart to the inquiry of the geometrician in the way that of the builder can be looked upon as the counterpart to the practical investigation in matters of conduct. It will be the inquiry that, as seen earlier (chap. 3), Aristotle hints at in the E.E. and Polit.

It is obvious, however, that the easiest way of explaining why Aristotle thinks there are differences in exactness across disciplines is to suppose that he takes such differences to stem from the differences in the methods that they employ. To read, that is,

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in 9.1 to mean method, and consequently to take Aristotle as asserting that different methods call for

— 330 —

different exactness. And thus to interpret his remarks as saying that whatever method the builder uses it is different from that the geometrician uses. If we were to assume in addition that ethics uses a method which is more like that of the builder rather than that of the geometrician, then we will have an explanation of why ethics and the building art are in some way inexact, for presumably different methods imply or require different levels of exactness. One method may result in certain knowledge whereas the other may produce only probable knowledge.

Yet Aristotle does not identify in the present context any method for the builder and, more importantly, he does not identify any method for inquiring into matters of conduct. But those who are convinced that Aristotle takes differences in exactness to stem from differences in method are not deterred by this. They are most probably convinced by the very example Aristotle uses and perhaps some things Plato says about related matters, for, after all, one may easily argue that what the builder does is not what the geometrician does. The art of the former is inexact because it does something quite different from what the discipline of the latter does: It employs a different method. Some of the ancient commentators saw matters in this way. Eustratius, in particular, tends to favor this view. Accordingly, he gives a rather elaborate interpretation of Aristotle's remarks (9.2) which attempts to show that the tools or means the builder uses and the way he investigates or constructs the right angle are fundamentally different from the things the geometrician uses and the way he investigates this geometrical figure.^[12]

The ancient commentators most probably found support for their view that the differences in exactness across disciplines are due to the different methods employed by them in Plato's discussion of these issues in the *Philebus* that I alluded to earlier (chap. 2). Plato argues in that dialogue that differences in methods give rise to differences in exactness. Some arts or disciplines rely, according to him, on conjecture and experience, for example, music, medicine, agriculture. These are the arts that Plato

describes as what would be left "if arithmetic and the sciences of measurement and weighing were taken away from all arts" (55E). But the art of building is unlike them because it employs measurement and a number of instruments, and therefore is more exact than they are: "But the art of building, I believe, employs the greatest number of measures and instruments which give it great accuracy [

figure

] and make it more scientific than most arts. In what way? In ship-building and house-building, and many other branches of wood-working. For they use a rule, I imagine, a lathe, compasses, a chalk-line, and an ingenious instrument called a vice" (56B). Plato, then, seems to anticipate the thesis of the ancient commentators that the source of inexactness across disciplines is due to different

- 331 -

methods, and most certainly anticipates the list of instruments Eustratius gives that presumably define the method of the builder.

Yet Plato is much more cautious than some of the ancient commentators seem to be. He is much more cautious in what he says about the methods of the various disciplines or arts. The differences in exactness across disciplines do not necessarily stem from or imply differences in methods. So that when he distinguishes between two geometries, one pure and most exact and the other applied and less exact, he is not saying that these two disciplines use two different methods. Both disciplines are, according to him, geometries that differ in exactness, as are the two arithmetics. Philosophical geometry is purer (

figure

) than the reckoning and measuring of the building art (57A-B); it possesses a higher degree of exactness and purity (57C). Similarly, philosophical arithmetic is immeasurably superior in exactness and truth about measures and numbers than the applied arithmetical arts (57D). Plato's emphasis is on the differences in the degree to which these disciplines do the same kind of thing rather than on each doing something different in kind from what the other does.

The variation in exactness in the above disciplines stems, according to Plato, primarily from the nature of the objects they deal with. Applied arithmetic reckons by using as a unit the ox or the army, whereas the philosophical one by using the true unit that does not "differ at all from each and every other unit." Plato goes on to argue that dialectic is even more exact than the pure mathematical disciplines for "the knowledge which has to do with being, reality, and eternal immutability is the truest kind of knowledge" (58A). But the disciplines that deal with the things of the physical world cannot attain any exactness for "how can we gain any certainty whatsoever about things that have no certainty whatsoever?" (59B). It is true, as seen above, that Plato takes certain arts like music and agriculture to rely on conjecture, perception, or guessing, and thus perhaps on different methods. But these kinds of arts that rely on such "methods" are for him what is left after "arithmetic and the disciplines of measurement and weighing were taken away from all arts, what was left of any of them would be, so to speak, worthless" (55D). The comparisons of exactness Plato presents are between disciplines that share to some degree a common method: both kinds of arithmetic use computations and both geometries use reckoning and measuring.^[13] The differences in exactness among such disciplines stem from the differences in their objects, purity, rigor, and so forth, and not from different methods.

Plato's concern is with the relation of exactness to the goals of a discipline. Although he does not connect the two as explicitly as Aristotle appears to do, there is no doubt that he thinks that the goals affect the exactness of a discipline.^[14] Thus, dialectic is for him the most exact in part

— 332 —

because its goals are purely theoretical, its aim solely that of attaining the truth, completely disregarding any concern with usefulness (58D).

Aristotle's own remarks can be understood along the lines suggested by Plato's discussion. That is, Aristotle himself, in contrast to the interpretation offered by some of the ancient commentators, is not saying that the builder uses a method that is

altogether different from that of the geometrician. He is not arguing that differences in exactness are the result of different methods. Rather, he thinks of such differences in exactness as being a consequence of the fact that the same method is differently used by various disciplines. Degrees of exactness may correspond to the levels to which the various disciplines make use of a common method, with the levels being fixed by the nature of the disciplines themselves. If, for example, the common method is the demonstrative one, there will be disciplines whose subject matter permits and whose goals require the use of demonstration of the most rigorous and pure kind. There may be others which are such that, while their subject matter may either permit or not permit rigorous or exact demonstration, their goals do not require it. This way of reading Aristotle's remarks takes

figure

in 9.1 to mean discipline, investigation, or inquiry, and connects the exactness Aristotle speaks of in 9.1 and 9.2 to the nature or goals of an inquiry.

It can be seen, to begin with, that 9.1 refers back to what was said earlier—"we must also keep in mind what was said earlier [

figure

]"—and this reference must be, as the translators agree, to *N.E.* I.iii, 1-4, (6.2). And as seen earlier, Aristotle discusses in that passage the nature of the subject matter of ethics and argues that the exactness to be sought in ethical investigation should be commensurate to a subject matter that is fluctuating and is only for the most part. And now he asks us in 9.1 "to keep in mind what was said earlier and not seek exactness in the same way in all cases, but in each case in accordance with the subject matter and in such a degree as is appropriate to the particular

figure

." The only thing we find there that may be taken as a discussion of the connection between exactness and procedure, way, or method is the remark, touched upon earlier, that "it is the mark of an educated mind to expect that amount of exactness in each kind [genus—

figure

] which the nature of the subject admits. It is equally unreasonable to accept merely probably conclusions from a mathematician and to demand demonstrations from a rhetorician" (6.2). Obviously there is a difference between what the mathematician and rhetorician do and perhaps a different type of exactness is relevant to their different procedures or ways, but it is apparent that Aristotle is primarily concerned with the exactness in relation to the subject matter and the nature or goals of the discipline. The goals of mathematics would not be satisfied and the subject matter would not be adequately treated if the mathematician were to produce conjectures.

— 333 —

And conversely, neither the goals of rhetoric nor its subject matter demand proofs. So it is equally unreasonable to demand proofs from the latter and accept conjectures from the former.

The case is similar with the passage at hand where Aristotle contrasts what the geometrician does to what the builder or carpenter does (9.2). The emphasis is on what the goal, task, purpose, or work (

figure

) of each one is. The goals that define each of the two disciplines are different and different investigations would satisfy them. The builder investigates into the right angle only to the extent that it satisfies the goals of his discipline or art; and the mathematician to the extent that it satisfies his: nothing short of grasping the essential nature of the right angle and demonstrating the attributes that follow from it. Here, then, are two different disciplines that in a sense deal with the same subject—the right angle—but the goals are different and therefore what would satisfy the goals of each are different kinds of investigation. So that one would be dealing with secondary matters to the goal (

figure

) if one were to investigate into the essential nature of the right angle in the context of the art of building or into the problem of reproducing a right angle in different parts of a structure in the context of geometry. The goal of the one discipline is the study of the

239 of 362

nature or essence of geometrical objects and the causes or reasons for having the other necessary properties that they have.^[15] But the goals of the other discipline are practical and therefore it seeks knowledge of some geometrical facts only insofar as it is needed in order to construct a building, or anything else of the kind, that has certain geometrical characteristics. It need not, therefore, concern itself with grasping the essential nature or giving perspicuous proofs of the necessary properties of geometrical figures. Similarly, Aristotle argues in 9.3, exactness beyond a certain level about the physical plan of a city will be a waste of time. So a discipline, which is to be in part understood in terms of its goals, requires some particular degree of exactness in order to realize its goals. It may require a rather high level of exactness, as presumably geometry does, or it may need a rather low level, as building supposedly does.

We also see that what we translate, following almost all the translators, as "the builder [or carpenter] and geometrician inquire into [seek after] the right angle differently [in different ways—

figure

]" is somewhat less straightforward than it appears in our translations. For such translations obviously emphasize differences among types of procedures or ways—methods in the narrow sense—of investigation. But this term

figure

, as Liddel and Scott point out, may mean either "in different ways" or "in different degrees." According to them, it means "in different degrees" in its occurrence in the passage under discussion. So that the difference between the builder and the geometrician is not really to be found in the different ways or methods they use to investigate the right angle, but in

- 334 -

the different degrees they investigate it. The one whose goals are theoretical and who aims at the truth, the geometrician, investigates its nature and necessary attributes whereas the other whose goals are practical, the builder, is concerned with these sorts of things to a far lesser degree. And it is the language of degrees that Aristotle uses here when he insists that we must not seek exactness in the same way (

figure

) in all cases, but in each what is appropriate to the subject matter and "as much as [in such a degree—

figure

] is appropriate to the inquiry [or method—

figure

]." His own emphasis then, in contrast to that of the translators, may perhaps be on the different degrees rather than on the ways the geometrician and the builder investigate the right angle or any other geometrical object or fact. The degree to which each discipline investigates something, the degree to which it justifies or proves what it claims as being true, is fixed by the nature or goals of each discipline. We have here not different methods, then, but different applications of the same method.

Thus, Aristotle's remarks can be understood in terms of the weaker pragmatic thesis stated earlier: Differences of exactness may stem from differences in the goals of the various disciplines. This, of course, does not show that the strong pragmatic thesis that connects exactness to method is false, for differences in method may also imply differences in exactness. What it does show is that it is not necessary that there be different methods in order for there to be variation in exactness. The strong pragmatic thesis, then, is not needed in order to account for the phenomena of exactness/inexactness Aristotle has in mind. All he needs in order to explain the variation in exactness is to claim that there are differences in the goals of disciplines and it is the goals that determine the required level of exactness. This is the weaker pragmatic principle, which is also intended as a general principle, as something that is true in all cases. Aristotle insists that there is a level of exactness that is appropriate for each and every discipline and that the level is relative to its goals. The level can range from that required in the case of geometry to that appropriate for the art or discipline of building or to that proper to rhetoric. The examples Aristotle gives in 9.2 of the geometrician and the builder and in 6.2 of the mathematician and rhetorician are meant to illustrate not the range of methods, but rather that of the different levels of

exactness that correspond to disciplines with different goals or in some cases to disciplines with inexact subject matter. The range, as the contrast between mathematics and rhetoric suggests, is quite wide according to Aristotle.

Aristotle's intention in asserting a general pragmatic principle that relativizes exactness to goals is obvious. The truth of the principle is taken for granted. We have, strictly speaking, no proof or justification for it in the present context. The sole example of the builder and the geometrician Aristotle gives is more an illustration of the principle than a proof or

— 335 —

justification of it. Indeed, it could hardly offer by itself a proof or justification of a thesis that is intended to have the scope of application of the pragmatic thesis. But once the truth of such a thesis is accepted, Aristotle can use it to offer some justification for his specific claim about ethics—namely, that there is some proper level of exactness for ethics that is fixed by its goals and that is different from that proper to theoretical disciplines. The level for ethics, and perhaps for other disciplines with similar goals, will fall somewhere on the spectrum of exactness that is defined at one end by geometry (or mathematics) and at the other by rhetoric.^[16]

Understanding Aristotle's remarks in terms of the weak pragmatic thesis acknowledges his insistence that pragmatic considerations affect or even determine some aspects of a discipline, but it also leaves open the possibility that different considerations may determine other aspects of a discipline. For the weak thesis relativizes exactness, but not the nature of the method, explanation, or proof, to pragmatic considerations. These latter aspects could be invariant across disciplines, for they could be determined by identical nonpragmatic considerations, for example, epistemic ones. This seems to me quite plausible given the fact that Aristotle does not identify any other method than the demonstrative one^[17] and that he considers disciplines which, according to him, differ considerably among themselves with respect to exactness to be sciences (

figure

), for example, mathematics, medicine, and gymnastics.^[18]

Goals and Proofs

Although I find this line of interpretation guite plausible and in agreement with much of what Aristotle says elsewhere about the nature of ethics as a practical discipline, it is clear that it does not by itself rule out the earlier interpretation which claims that Aristotle identifies a method for ethics that in some way or other implies a type of inexactness. It does not rule out the strong pragmatic thesis. Either one of these interpretations may be what Aristotle has in mind in the present context, and both of them could be applicable in certain circumstances. There could be a case where a discipline is inexact by virtue of the method it employs as well as on account of the fact that its goals can be satisfied by a rather low level of exactness. Both the strong and weak pragmatic principles may be applicable to the same discipline in some cases. Medicine, for example, may consist to a considerable extent of empirical generalizations, and thus be less exact because of its method than those disciplines which are purely demonstrative. But it may also be less exact than other disciplines because it is practical, and therefore its goals can be satisfied without reaching the level of exactness that is required by the goals of a theoretical discipline. Similarly, the arts of building and geometry may be taken to differ with

— 336 —

respect to exactness for at least two reasons: first, because their different goals presumably demand different levels of exactness, and second because they employ different methods. For one may very well argue that building and geometry do not merely differ in their goals; they use different methods. Whereas demonstration is needed to know what the geometrician aims at—the essence and necessary properties of a geometrical figure—no demonstration of the kind the geometrician uses is required

in order to know what the builder needs to know for his purposes. Indeed, we can easily see why some of the ancient commentators opted for the line of interpretation that assigns different methods to the art of building and geometry, and it is therefore difficult to dismiss this line of interpretation altogether. For one wonders, and for precisely the same reasons some of the ancient commentators probably wondered, whether the art of building and geometry share a common ground: What, after all, is the similarity between the method the geometrician uses and the one the builder uses? Is what the builder does when he has recourse to geometry for his practical purposes a kind of demonstration? Does anything and everything qualify as an instance, or an application, of the demonstrative method or is there a cut-off point?

The same can be the case with ethics. One strand of inexactness may be due to its practical goals, another to the method it uses. Perhaps, ethics, like the art of building, does not involve demonstration at all. Ethics may very well be a discipline where either the strong or weak pragmatic thesis applies or perhaps both.

Although both interpretations I sketched above are possible and to some extent plausible, I do not think Aristotle puts forth the strong pragmatic thesis that is favored by Eustratius and others. Despite the ambiguity in his words, there are reasons that tilt the balance in favor of the weak pragmatic thesis. The reasons include what has been said so far in considering the various interpretations of Aristotle's remarks—namely, that when Aristotle in the present context speaks of

figure

he most probably means inquiry rather than method; he does not identify a method for ethics or for the art of the builder; the language of degrees he uses suggests that he has in mind differences of degree in the application of one method rather than differences of kind. We may also add what Plato says about these matters. He was, as seen above, willing to accept in the *Philebus* two arithmetics and two geometries. The two arithmetics differ between themselves in the level of exactness they attain, and so do the two geometries. But all these disciplines—that is, the counting or calculating while using "incomparably large units" (two armies and two oxen) vs. the unit of pure arithmetic; the reckoning and measuring in the art of building vs. that in pure geometry—are, according to him, mathematical ones. There is, despite the differences in exactness, a common core of method or proof.

— 337 —

Indeed, additional reasons can be adduced on behalf of attributing the weaker pragmatic thesis to Aristotle by following the Platonic line. For Aristotle, as I argued in previous chapters, is willing to relax somewhat his conception of demonstration or proof. In this case, the question is whether he is willing to accept some common ground between what the builder does and what the geometrician does. Or, in other words, does his enlarged view of demonstration also accommodate disciplines whose goals may require a low level of exactness in order to be satisfied?

Aristotle looks at demonstration as comprising a spectrum of activities or conditions. It includes the most rigorous and pure proofs of the most exact disciplines and it also reaches down to the less rigorous and impure proofs of the least exact ones. But there is some core that all these disciplines have, a core that need not be trivial or empty. In this vein one may argue, as Plato does in the Philebus, that even the case of the builder's art is a form of demonstrative discipline. As Hippocrates G. Apostle has suggested,^[19] in the example Aristotle gives both the geometrician and the builder aim at the construction of the right angle, and there would be many more similarities in the concerns of the two-the geometrical construction of other figures, the bisection of a line, of an arc, and so on. This is perhaps to be expected from a geometry which is viewed as axiomatized but not formalized and from an art like that of building which, like structural mechanics and dynamics, involves a considerable amount of geometrical facts, constructions, and secondary proofs. It is arts like these, together with the art of land measuring, that provided the first sources of geometrical proofs and constructions. It is quite possible, then, that Aristotle views the example of the builder as an example of someone who is pursuing a lower form of a demonstrative science, someone who investigates into the right angle and is not exclusively concerned, or not as much as Eustratius suggests, with the manual aspects of realizing a structure. In this sense, the art that Aristotle has in mind here would be a practical or productive discipline, one that uses some type of demonstration. The demonstrations it uses may not be as pure and perspicuous as the ones the geometer uses—for they may not derive from the ultimate principles of the genus that geometry studies—they may include constructions of geometrical figures, proofs by transposition and superposition of figures, and so forth—but they would nonetheless fall within the wider spectrum of demonstration spoken of earlier.

As seen in that earlier discussion, Aristotle's conception of ideal, absolute, or unqualified demonstration is as good as Plato's. But, as was also seen, he was willing to admit weaker forms of it. The contrast between him and the Plato of Middle Platonism on this point can best be seen by quoting the famous passage from the *Republic* where Plato banishes ordinary proofs of geometry from the science of geometry:

- 338 -		
9.4	"This at least," said I, "will not be disputed by those who have even a slight acquaintance with geometry, that this science is in direct contradiction with the language employed in it by its adepts." "How so?" he said. "Their language is mo: ludicrous, ^[20] though they cannot help it, for they speak as if they were doing something and as if all their words were directed towards action. For all their talk is squaring and applying and adding and the like, whereas in fact the real object of t entire study is pure knowledge." (527A)	

It may very well be that ideally one should dispense with such means in geometry, or it may be true that one does not have absolute knowledge unless one knows the reasons for which such geometrical constructions are possible.^[21] But this does not rule out that one may have some form of knowledge and proof even when staying at the level of the adepts Plato ridicules above, or at least that one may come to realize such geometrical truths as Plato has in mind by doing geometrical constructions. Aristotle, although strongly pulled by Plato's views, most probably finds the exclusion of typical geometrical constructions are discovered; for we find them by dividing. If the figures had been already divided, the construction would have been obvious; but as it is they are present only potentially . . . it is by making constructions that people come to know them" (*Met.* 1051a22).^[22] But not only is Aristotle willing to accept such means as constructions for coming to know truths like those of geometry which are taken to be the models of absolute or unqualified truth or knowledge, but, as has been seen, he is willing to accept less perfect types of truth and knowledge and the means (types of demonstrations) that lead to them.

Demonstrations can be less exact by consisting wholly or partially of premises that are not necessary, or that are not universally true. Or they may be less exact because the discipline to which they belong does not abstract sufficiently from matter (see chap. 4), or because our knowledge of the basic principles from which demonstrations proceeds may not be of the kind that Aristotle requires of the basic principles of a discipline.^[23] Indeed, we can see that the premises may be, or what one studies may exhibit properties that are, necessary and yet the demonstrations such premises produce in some contexts may not be exact. Some of the premises the builder uses in his calculations or inferences may be necessary, but this may not be known to him. For he may lack the perspicuous axiomatic structure that reveals the necessity of such premises. He presumably has no need to know such an axiomatic structure, since his goals can be satisfied without it.

If what has been said so far is correct, we have uncovered another way in which a practical discipline may be less exact than or differ from a

— 339 —

theoretical one. And this way, like the one discussed earlier, has to do with the nature of the goals of a discipline. But whereas in the earlier case Aristotle was arguing that the goals of a practical discipline require it to reach a level of exactness that surpasses that of theoretical disciplines, in the present case he is arguing that a high level of exactness may not be required. In the former case, Aristotle claims, the goals demand ever greater detail, they dictate that we reach the particular. And inexactness results from failing to do so. In the latter case, they seem to push in the opposite direction, away from exactness. For they do not require the demonstrative rigor or purity that theoretical goals require in order to be satisfied. These two types of inexactness are clearly different despite the fact that they stem from the same considerations: the supposed practical goals of ethics. The one is the failure to reach the ever greater detail or specificity that, according to Aristotle, is required by the practical goals of ethics. The other is the lack of demonstrative rigor or purity that is permitted or required by these same goals, since, Aristotle claims, the cognitive goals of ethics are subordinate to its practical goals, and it is the latter that dictate the level of exactness proper to the discipline. But what does the subordination of knowledge to practice in nontheoretical disciplines imply? And can the inexactness that Aristotle associates with such a subordinate role of knowledge be eliminated from practical disciplines? These are some of the questions I want to turn to next.

Goals and the Proper Degree of Exactness

The types of inexactness and their sources examined in previous chapters can, with some justification, be looked upon as being difficult or impossible to eliminate. Aristotle, as seen above, often views them as being such. In this he was most probably influenced by the assumptions that some of these types of inexactness are characteristics of the subject matter ethics studies and that there is some kind of congruence between the material and formal level of a discipline. Doubts were raised earlier about the truth of the congruence thesis as a general thesis, but even so the types of inexactness Aristotle attributes to the subject matter provided him with good reasons for claiming that certain kinds of inexactness at the formal level may be difficult or impossible to eliminate.

Thus the assumption that the subject matter of ethics exhibits nonnecessary properties leads Aristotle to the conclusion that matters of conduct and our accounts of them are essentially inexact by being contingent. If matters of conduct are in addition only for the most part and our accounts of them are true for the most part, then our demonstrations in ethics are also inexact for the reasons discussed above. The assumption that matters of conduct themselves suffer from vagueness leads him to the conclusion

— 340 —

that the same type of inexactness at the formal level is more difficult to deal with. Even in the case of the inexactness discussed in chapter 5, which Aristotle associates with the goals of ethics, he has good reasons for taking it to be difficult or impossible to eliminate. For if we assume that ethics is practical, that action deals with particulars, and that ethics needs to reach the level of the particular in order to realize its goals, then the possibility of producing accounts that are exact in the sense that they reach the particulars is likely to be out of reach.

But when we turn our attention to the inexactness under discussion in this chapter we may feel that things are somewhat different: Inexactness in this case does not seem to be as permanent a feature of ethics as in the other cases. First, it does not reside in nor is it caused by some feature of the subject matter. To use Aristotle's illustration, what the builder investigates without attaining exactness, can in fact be investigated exactly or at least more exactly. The geometrical figures he investigates inexactly can be investigated in the way geometry does, and thus their nature and attributes can be given the kind of rigorous demonstration associated with geometry. If we take Aristotle's analogy seriously, we will have to say that the same may be true in the case of that which a practical ethical inquiry investigates. There might be, in other words, an even more exact account of that which ethics investigates. For, after all, what is there in the case of ethics, other than the sorts of things discussed in earlier chapters, that rules out the possibility of giving demonstrations in matters of conduct that are more exact than those encountered in a practical ethical inquiry?

Second, and perhaps most important, is the fact that the way Aristotle describes in the present context the relation of exactness to the goals of a discipline seems to lead to the same conclusion: although a high level of exactness may not be needed in some disciplines, it may not be impossible. The deficiency in exactness in the case of the builder or his discipline is due to the fact that his or the discipline's goals can be satisfied without reaching accounts or explanations of the ideal type sought or needed elsewhere. Such ideal types of explanation are inappropriate, beside the point, or not needed for his work. To seek such ideal explanation in the discipline of building is to be concerned with matters that are secondary, matters that may be outside the function (figure

) of the discipline. But this of course does not show that explanations of a high level of exactness are impossible. Indeed, as 9.3 suggests, the problem with highly exact accounts in political matters is not their impossibility but rather their alleged uselessness. The same could be said about ethics. Thus, this argument may not rule out as impossible Spinoza's or Rawls's vision of a moral geometry, nor Plato's vision of a discipline even more rigorous than geometry that studies matters of conduct and shows demonstratively their necessary structure from that of the Good. And, of course, it does

- 341 -

not rule out as impossible Aristotle's own conception of a more theoretical investigation of matters of conduct that he hints at in the *Protrept.*, *E.E.*, and *Polit.*

Aristotle's argument emphasizing the connection between the proper exactness for a discipline and its goals, and his claim that in practical disciplines the level of exactness may be lower than that which is required in theoretical ones, are understandable when seen against the Platonic tradition. That tradition raises ethics and politics to the level, and even above the level, of the most rigorous of the disciplines. Plato argues in the Republic that the greatest exactness is demanded in our study of matters of conduct because such matters are of the greatest importance: "Or would it not be absurd to strain every nerve to attain to the utmost exactness and clarity of knowledge about other things of trifling moment and not to demand the greatest exactness for the greatest matters?" (504E). And, although in the *Philebus* he comes quite close to embracing the view that exactness is relative to the goals of a discipline, he conspicuously omits ethics and politics from the list of the disciplines that exhibit or require lower levels of exactness. Plato seems not to have changed his mind about the level of exactness that is required for the disciplines concerned with matters of conduct. The political discipline or art in the *Statesman* is described by him as aiming at knowledge of the most exact kind. But this level of exactness, Aristotle argues, is not required by these disciplines. We do not need to surpass, nor even equal, the level of exactness of the mathematical disciplines in our investigations into matters of conduct in order for such investigations to satisfy their purposes. If the practical goals of these kinds of inquiries can be achieved without knowledge that has the exactness Plato requires, then knowledge of such exactness is beside the point.

Yet Aristotle is saying something more than merely that the exactness Plato requires in inquiries about matters of conduct is not needed. For this does not undercut completely the Platonic position. Plato can retort that, although the Platonic level of exactness may not be needed, knowledge of matters of conduct that has that level of exactness can nonetheless be used in the context of practice. It may not be necessary, Plato might argue, but it might be sufficient, or at least useful. Aristotle's argument in 9.1 and 9.2 is also, I think, partly aiming to undercut the claim that knowledge possessing the exactness Plato requires is sufficient or useful in the context of practice.

Consider, to begin with, some of the terms that figure prominently in Aristotle's argument about the relation of exactness to the goals of a discipline. In 9.2 Aristotle characterizes the exact knowledge geometry attains as being a secondary matter or beside the point (

figure) in relation to the purposes of the builder. This term figure

occurs rather

- 342 -

rarely in the Aristotelian corpus, but in at least one occurrence in the *Polit*. the term is used to signify what its etymology implies—that is, something that is beside, or falls outside, the function of something. At 1324a13 Aristotle raises two questions that seem

to be the types of questions political inquiry has to answer: (a) Which mode of life is most desirable (i.e., the life of participation in politics or that of detachment from political activity)?; (b) What constitution or what organization of a state is the best? He then remarks: "But as it is the latter question that is the function [

figure

] of political study and contemplation, and not the question of what is desirable for the individual, and as it is the political investigation that we have now taken up, the former question would be beside the function [

figure

], and the latter is the function [

figure

] of this investigation."

If the function, purpose, or end of political inquiry is the specification of the best form of political association, and ultimately the practical realization of such form, then its function will not be served by inquiring into questions of different matters. It is not part of the function of this inquiry to investigate into which life is desirable for the individual and its function will not be realized by doing so. The connection between the function of something and the activities and conditions that realize it is, according to Aristotle, a strong one. The function can be realized only by a unique activity and only when certain conditions are present. The function of a builder can be realized only by the activity of building and by using those skills required for such activity. If the builder is in addition a musician and possesses the gualifications required for the latter activity, it does not follow from this that the musical activity and qualifications realize the function of the builder. These are necessary and sufficient for realizing a different function and are therefore beside the point when considered in relation to the function of the builder.^[24] But Aristotle is not merely claiming that some conditions need to be satisfied in order for the function to be realized. He often insists that these conditions must be satisfied in a rather precise way. Thus, although the function of the brain cannot be realized if the condition of fluidity is not satisfied, not any degree of fluidity will do: "If the brain becomes unduly fluid or unduly solid, it will not perform its proper function, but will either fail to cool the blood or else will make it set fast, thus producing various forms of disease, madness, and death" (P.A. 653b3).[25] Not only must the organ of the sense of smell be constituted by the appropriate matter but it must also be located in the appropriate part of the body if it is to do its function (P.A. 657a5). The eye, Aristotle argues, must be fluid to a certain degree in order to do its function, and it needs protective coverings because of its fluidity. But the solidity of the eye cannot be increased in order to improve its safety: "If the eye had been constructed with a hard skin it would of course have been less liable to injury by impact from without, but its vision would

— 343 —

have been duller" (*P.A.* 657a30). Vision or the function of the eye, Aristotle claims, is "bound to be dimmed by the hardness of the eye" (*P.A.* 657b35).

The above examples show that Aristotle often views the conditions needed for realizing the function of something as having a rather specific character. If, for instance, they admit of degrees, the degree required for performing the function falls within a specific range. A fluidity or solidity that is outside a certain range will make it impossible for the brain to do its function. Similarly, an undue hardness of the eye will certainly perform some function well-it will protect the eye. But it will impede, and in some cases make impossible, the performance of the function of the eye, that is, the purpose for which this organ exists. Thus, increasing to the utmost degree a condition required for doing some function F does not necessarily imply that the function can be performed. On the other hand, there might be things that, although not necessary for the performance of some function F, may not impede its performance or may even be sufficient. Fish, according to Aristotle, have no eyelids because they do not need protective coverings of the eyes, since the medium in which they live does not contain objects that can strike the eye (P.A. 658a8). But if they had eyelids, it would not impede their vision. Similarly, overdesigning a building against earthquakes of a magnitude that will never occur may not be necessary, but it is sufficient to protect the building against earthquakes of the kinds of magnitude that usually occur. But what may be neither

necessary nor sufficient for doing some function F may be necessary or sufficient for performing some other function Y.

What Aristotle says about the relation between the level of exactness and the goals of a discipline is to be understood along the same lines. It is not, in other words, merely the case that the exactness of geometry is not necessary for the goals of the builder. It may also not be sufficient or useful for what he does. That kind of exactness is necessary and sufficient for achieving what the geometrician aims at. But we should not assume that if we were to raise the level of exactness in the builder's investigation, or were to achieve that of the geometrician, or, to follow Plato, were to surpass the level of the geometrician we would be able to achieve the goals of the building discipline. For the builder, Aristotle argues, to pursue that level of exactness is to get sidetracked; it is to pursue something that may realize the goals of the geometrician but not necessarily his own goals. He will impede or make impossible the realization of his goals just as continuous hardening of the eye will impede or make impossible the realization of the goals of the eye, although it will certainly protect the eye from injury. And just as the conditions required for the function of the eye must be within a certain range, the exactness for the realization of the practical goals of the builder must remain within a certain range.

The view that exactness surpassing a certain level may not be sufficient

— 344 —

or useful in attaining some practical goals is stated clearly by Aristotle in two passages from the *Rhet.* At 1369b32, and with regard to the definitions of the pleasant and the beneficial, Aristotle remarks: "And we must regard our definitions as sufficient, if in each case they are neither obscure nor too precise [

figure

]." Definitions in rhetorical contexts are sought after for practical purposes. And for these purposes, Aristotle claims, the appropriate definitions must meet some level of exactness, but they need not and cannot be of an exactness that surpasses a certain level if they are to function in practical contexts. This is brought out even more clearly in what Aristotle says at 1414a8 where he is concerned, among other things, with the level of exactness required by various rhetorical styles in order that they achieve the goals for which they have been devised: "The style of public oratory is in every respect like a rough sketch [scene-painting,

figure

], for the greater the crowd, the more distant is the point of view: wherefore, in both of them too much exactness [detail,

] is superfluous [

figure

figure

] and a disadvantage [

figure

]." If one's goal is to convey a scene from a distance, one will not achieve it by producing the most detailed painting. The detail or exactness, for example, of a pen and ink drawing is not the sort of thing that will succeed in conveying an image from a distance. Similarly, the practical objectives of public speaking will not necessarily be achieved by making one's speech more and more precise. There is presumably some definite range of exactness that is necessary and sufficient if the goals of these practical pursuits are to be realized.

The idea that some level of exactness fits a discipline in the way described here is what lies behind Aristotle's remark in 9.1 that we must seek the exactness appropriate (

figure

) to a particular discipline. For this term

figure

is often used by him to characterize a rather strong and unique connection that may obtain between certain things. Thus, Aristotle often characterizes in this fashion the function of a thing (*N.E.* 1139a17, 1167b34, 1175a36, 1176a5).^[26] The function of the eye is proper to the eye, that of the hand proper to the hand, and so forth. In each case the function is essentially connected to the nature of the thing of which it is a function. Similarly, Aristotle characterizes the excellence of something as being proper to it. The

excellence of something is the set of those conditions that are necessary and sufficient for doing the proper function of the thing well: "A function is performed well when it is performed in accordance with its proper [

figure

] excellence" (1098a15); "[the excellence of anything] renders the thing good and makes it to perform its function well. For example, the excellence of the eye renders it good, and makes it perform its function (since it is by the excellence of the eye that we see well)" (1106a16; see also 1177a17, *Met.* 1021b21). The excellence of the eye—that is, the required degree of fluidity, softness, roundness,

— 345 —

and so forth—is, then, proper to it and to its function because it comprises those conditions that, when present in the appropriate degree, are necessary and sufficient for performing the function of the eye. These conditions must be present if the function is to be performed well.

In the same way the exactness Aristotle characterizes as being proper to a discipline is part of the set of conditions that are necessary and sufficient for performing the function of the discipline. The function of the building art and of the builder is, Aristotle claims, different from that of geometry and the geometrician. And corresponding to these functions are, presumably, different proper excellences. The exactness proper in each case, being some component of the excellence required for realizing the function in each case, cannot be the same for both disciplines. When in 9.1 Aristotle speaks of an exactness that is proper to a discipline or its goals, he means to say that the objectives of the discipline cannot be realized without it. They cannot be realized by an exactness that is either above or below that range which the discipline claims as its proper exactness. The range of exactness for the building art, and perhaps for all practical disciplines, cannot match, let alone surpass, that of geometry. And if ethics is such a discipline, then what is required and is sufficient for the realization of its goals is something less than the exactness of the theoretical disciplines.

Aristotle's contention that a certain level of exactness may not merely be useless for some practical purpose (i.e., in the sense that we can realize our purpose without such a level) but it may also not be sufficient (i.e., in the sense that we cannot realize our purpose with it) will undoubtedly seem odd. But upon reflection it seems that Aristotle is pointing to something important about practice and the means for successfully realizing it. Aristotle's example about scene painting shows that not all practical goals can be realized by raising the level of exactness higher and higher. And we should not assume that this is peculiar to some arts like painting or rhetoric. It may also be true in relation to practice that requires theoretical knowledge in order to bring about its goals. Should we assume that the most exact knowledge will enable us to realize our goals? It is not obvious that we will succeed, for example, in counting the apples in a basket by using the axioms and theorems of the *Principia Mathematica*. Or, to adopt an example that Putnam has given, the most elaborate description in terms of quantum mechanics of the structure of a system consisting of a board with holes and pegs of different geometrical shapes need not be the description that will help to put the appropriate pegs through the holes on the board.^[27] As Wittgenstein says in the *Philosophical Investigations*, "Is an indistinct photograph a picture of a person at all? Is it even always an advantage to replace an indistinct picture by a sharp one? Isn't the indistinct one often exactly what we need?" (I, 71).

— 346 —

If our interpretation of Aristotle's views on the exactness that is proper to a discipline is correct, we see why he might have viewed even the inexactness under discussion in the present context as being difficult or impossible to eliminate. For just as the brain's fluidity cannot be eliminated if it is to perform its function and the eye's softness cannot be eliminated if it is to perform its function, so in the case of a practical discipline, its inexactness cannot be eliminated if its goals are to be attained. What Aristotle says in 9.1 and 9.2 gives no indication that he took the inexactness due to the goals of ethics or the building art to be eliminable. On the contrary, his urging us not to seek an exactness that is higher than is proper and his reminding us of the inexactness that he took the

inexactness resulting from the goals of ethics to be ineliminable. It is obvious that Aristotle understood the relation between exactness and the goals of ethics to be rather strong. It is also clear that his claim that only some specific range of exactness in some sense fits the goals of a discipline assumes that the goals are fixed. These are by no means obvious assumptions, and I wish to offer next some further observations about them.

Proper Exactness and the Fixity of Goals

As I said earlier, Aristotle's attempts to relativize exactness to the goals of a discipline have their analogue in the recent attempts to relativize explanation to the goals that it serves. Perhaps Aristotle's views on the nature of the relation between exactness and goals, on the alleged ineliminability of inexactness that has its sources in the goals of a discipline, and on the nature of the goals of a discipline can be better understood when seen against these recent discussions of explanation.

Many philosophers have recently attempted to give an account of explanation that incorporates its supposed pragmatic aspects. These philosophers may be referred to as neo-pragmatists, although they do not all speak with the same voice. Some see the pragmatic aspects as indispensable but not at the exclusion of the formal features that are fixed by epistemic considerations and that are the central focus of any account of explanation. Others, however, tend to emphasize the pragmatic aspects to the extent that they call into question the view that there is an account of explanation in terms of some set of formal features that captures the core of the notion of explanation. Here are some representative views that seem to me to reflect the differences among the neo-pragmatists.

Let us begin with two rather moderate views, those of Sintonen and Putnam. In his *The Pragmatics of Scientific Explanation*, Sintonen writes:

— 347 —

Several pragmatically-minded philosophers have stressed that the acceptability or at least acceptance of explanations and theories is contingent on straightforwardly non-cognitive values. This is one of the most sweeping claims made in recent philosophy of science, for it challenges the most basic and the most deeply cherished assumption of the prevailing analytic tradition, viz. objectivity. I shall argue . . . that this further step ought not to be taken. . .. Briefly, I hold that although non-cognitive, practical and even ideological, values influence the choice of the problems (es-questions), they do not enter into the assessment of the solutions (se-answers).^[28]

This view does not dismiss the pragmatic features of explanation. On the contrary, Sintonen argues that they must be included in any complete account of explanation, and that these features can even be treated, like the syntactic and semantic ones, formally. Yet it restricts the impact of the pragmatic considerations on the kinds of questions asked. The character of explanation is determined by epistemic or methodological considerations. Thus, the pragmatic considerations may vary, even from one individual to the other, without necessarily affecting the character of explanation.

A view similar to the above has been put forth on several occasions by Putnam. Consider what he writes about two kinds of explanation we might give of the following:

Suppose we have a very simple physical system—a board in which there are two holes, a circle one inch in diameter and a square one inch high, and a cubical peg one-sixteenth of an inch less than one inch high. We have the following very simple fact to explain: *The peg passes through the square hole, and it does not pass through the round hole*.^[29]

One kind of explanation we may give of this fact is in terms of the microstructure of the system and its properties—for example, that the peg and the board are rigid lattices of atoms that have certain properties that are to be explained by quantum mechanics. It will also compute all possible trajectories of the peg, and will deduce from the laws of particle mechanics or quantum electrodynamics that the peg goes through the square hole and not through the round one. But there is, Putnam argues, a much simpler explanation:

The explanation is that the board is rigid, the peg is rigid, and as a matter of geometrical fact, the round

hole is smaller than the peg, the square hole is bigger than the cross-section of the peg. The peg passes through the hole that is large enough to take its cross-section and does not pass through the hole that is too small to take its cross-section.^[30]

Putnam goes on to argue that the last explanation, the one in terms of the structural features, is the correct explanation and not the one in terms of the microstructure of the system: "I think that in terms of the *purposes*

— 348 —

for which we use the notion of explanation , it [the microstructural one] is not an explanation. If you want to, let us say that the deduction *is* an explanation, it is just a terrible explanation, and why look for terrible explanations when good ones are available?" But claiming that the macrostructural explanation is superior to the microstructural one is, according to Putnam, not a subjective matter: "Goodness is not a subjective matter. . . . Explanation is superior not just subjectively, but *methodologically*, in terms of facilitating the aims of scientific inquiry, if it brings out relevant laws. An explanation is superior if it is more general."^[31] While discussing this same example, as well as other ones, in his *Meaning and the Moral Sciences*, Putnam elaborates further on the methodological objectives or purposes of scientific inquiry:

That is why I count such `pragmatic' features of explanation as the ones illustrated as of *methodological* interest and not *merely* `psychological' interest. But it does not follow that *any* explanation at all (even one that is `complete' in the sense of Hempel's model) *canbe good given suitable interests.* For given our *normative* outlook, we are only interested in explanations which are compatible with such aims of inquiry as *stating truths, uncovering errors, stating laws* (in the case of scientific inquiry), *finding out what can possibly happen and what is impossible, describing various important kinds of processes, aiding technology and control of nature in general*, etc.^[32]

Thus, Putnam takes the goals, objectives, or purposes of scientific inquiry to be primarily epistemic (methodological), although there are some practical (pragmatic) ones as well, for example, those of aiding technology and control of nature. And they are not just my or somebody else's goals; they constitute the goals of scientific investigation. An explanation, in turn, has to meet certain standards; it has to be measured against the goals of scientific inquiry. Hence, the goodness of an explanation, Putnam claims, is not a subjective matter. Putnam's position, like that of Sintonen, assigns some fixity and objectivity to the goals of scientific inquiry, and therefore to the conditions that explanation must meet. The goals of inquiry and the conditions of explanation are not, according to these views, relativized to just anybody.

The more radical proponents of the pragmatic conception of explanation have, however, argued that explanation is context-bound and therefore is always relative to someone. Michael Scriven has defended the view that explanation cannot be given a purely formal treatment since it is not context-free, but is instead a "description which fills in a particular gap in the understanding of the person or people to whom the explanation is directed."^[33] A similar line of argument has been systematically defended by van Fraassen, who also insists that there are no context-free necessary and sufficient conditions for explaining. As he has recently written, "I

— 349 —

think almost any bit of information could play the crucial role of allowing a questioner to complete his understanding in the particular respect in which he wants to be complete."^[34]

It is clear that these less moderate pragmatic conceptions of explanation abandon the view that there is some set of goals that can be identified as the goals of explanation. They often speak of the subjective or psychological purposes, in contrast to the epistemic ones, explanation serves, which of course are not context-free. Such purposes are to be relativized to a particular situation or agent. These philosophers also abandon the idea that there are some conditions an explanation must meet in order to satisfy those relativized goals. If something "fills in a particular gap in the understanding" of some person, then it is an explanation. Thus, not only do they relativize the goals to some particular context, they also relativize to an equally particular context the relation anything that in their view counts as an explanation has to the goals. Not only can the goals vary from one context to the other but also what satisfies a given goal can vary from context to context.

The debate between those who assign a rather modest role to pragmatic considerations in explanation and those who assign a rather radical one has not been settled. But I shall not take sides in this debate here. For my concerns are with Aristotle's conception of exactness and the way certain pragmatic considerations affect it. If what was said above is correct, Aristotle's views on the nature of explanation or method are similar to those of the moderate pragmatists: its character is determined by epistemic considerations. Its nature does not vary from context to context. In addition, the discussion above suggests that Aristotle's views on the relation of exactness to goals are also closer to the moderate views on the relation of explanation to goals than to the radical ones. Leaving aside the status of the goals at the moment, exactness is constrained and determined, according to Aristotle, by the goals it serves, just as explanation is constrained and determined, according to Putnam and Sintonen, by the goals it serves. Both exactness and explanation may be relativized to goals but this does not imply that any level of exactness might do or anything may count as an explanation. Once the goals are given, the level of exactness or the character of explanation is fixed.

Yet the analogy between exactness and its goals on the one hand and explanation and its goals on the other may be somewhat more problematic than it at first appears. For whereas, one might argue, it is easy to see how the goals explanation serves fix its nature—they determine some set of conditions that need to be satisfied by whatever is to be an explanation—it is difficult to see how we can identify an analogous set of conditions for exactness. Aristotle, of course, is not necessarily speaking of a narrowly defined level of exactness relative to some goals. As I said earlier, he is

- 350 -

most likely thinking of some range in the level of exactness relative to some goals. But is this sufficient? Can we specify the range of exactness appropriate for practical disciplines? Is there a common range for building, medicine, ethics, applied mechanics, and so forth? Aristotle, however, is not saying that there is one range of exactness for all practical disciplines. The exactness appropriate to practical disciplines, he insists, differs from that appropriate to theoretical ones, but also the exactness appropriate for one practical discipline may differ from that appropriate for another practical discipline. Practical disciplines differ not only from theoretical ones with respect to exactness but also among themselves. What 9.1 and 9.2 are insisting upon is just that: We must seek the exactness proper to each inquiry, the one which is appropriate to its goals. The range of exactness, then, is to be fixed not relative to something generic, for example, practical goals, but rather to the specific goals of a discipline—for example, producing or restoring health (medicine), producing or maintaining strength (gymnastics), building a structure (the art of building).

But is the relativizing of exactness to the specific goals of a discipline sufficient for fixing some range as the appropriate range for the discipline? Could we, for example, set a lower and upper limit for the level of exactness appropriate in medicine? The level of exactness in our understanding of whatever is required for the purposes of repairing fractured bones may be quite low when compared to that required for doing gene therapy or medical treatment at, or below, the cellular level. The exactness required for the latter sort of things is quite high. There are, it seems to me, two options open to someone who, like Aristotle, insists that some reasonably well-defined range of exactness can be correlated with a discipline: Either he will be dividing a discipline into subdisciplines, thus hoping to make the range of exactness more well-defined; or he will be raising the upper limit of exactness to the point that it approaches the level of the most exact disciplines and will be lowering the lower limit to the point it approaches the level of the least exact ones. Thus, one will not be aiming to fix the range of exactness for medicine in general, but that for, let us say, orthopedics, gene therapy, or cell grafting. But by subdividing disciplines into narrower ones we will not necessarily be more successful in fixing the range of exactness appropriate to each subdivision. For it is not obvious that the most exact kind of understanding may not be required for some aspects of orthopedics, while for some other aspects even the lowest level of exactness will be sufficient. And, thus, we might opt for the second option: widening the range of exactness we correlate with a discipline so that it encompasses the highest as well as

the lowest levels.

To opt for the second alternative is to considerably weaken Aristotle's claim that we can speak significantly of a range of exactness proper to a

— 351 —

discipline. First, because if most disciplines could turn out to require both high and low levels of exactness, roughly the same range of exactness would be proper for all of them. Second, because if a practical discipline like medicine can require and use exactness of the highest kind, what sense can we then make of Aristotle's insistence that the builder has no use for the exact knowledge of the geometrician? Can this claim about geometrical knowledge be asserted in relation to the building art in general or about all practical disciplines, for example, applied mechanics or hydrodynamics? The assumption that geometrical knowledge possessing the exactness that the geometrician aims at is of no use to the building art, or any other practical art—an assumption that forms the basis of Aristotle's claim that in practical disciplines we do not need and should not aim at such exact-ness—is by no means obvious. It surely does not follow from the well-known Platonic and Aristotelian assumption that the geometrician, as well as any other theoretical inquirer, pursues geometrical investigation, or any other theoretical inquiry, for the sake of knowledge itself and not for its uses. Thus even Plato, the philosopher who tried the hardest to disassociate pure geometry, as well as all theoretical disciplines, from any practical objectives, admits that it may have its practical uses. While geometry is not, according to him, to have any connection with the empirical world and is not to admit any demonstrations that resemble what ordinary geometricians do, it nonetheless may be used to satisfy some practical objectives: "For even the by-products of such study [of pure geometry] are not slight.... We mentioned its uses in war, and also we are aware that for the better reception of all studies there will be immeasurable difference between the student who has been combined with geometry and the one who has not-shall we then, lay this down as a second branch of study for our lads?" (Republic 527C). Aristotle himself, despite the fact he is concerned as much as Plato is to disassociate theoretical disciplines from practical goals, also agrees with him that theoretical knowledge has practical uses: "Inasmuch as astronomy and the study of nature and geometry have no other end except to get to know and to contemplate the nature of the things that are the subjects of these disciplines, although it is true that nothing prevents them from being useful to us accidentally for many of our necessary requirements" (E.E. 1216b12).

But if knowledge of the highest exactness may be required and may be used for practical purposes, the question arises whether knowledge of lesser exactness can be used for theoretical purposes. Why is mathematics thought to require the highest exactness? Does it really require it? It may, of course, be true that no one ever attains the highest exactness in mathematics, that every proof is in some sense deficient. It could also be the case that no one is even actually trying to attain such exactness. Yet there is no doubt that in part our conception of mathematics is constituted by

— 352 —

the assumption that mathematical knowledge aims or should aim at the highest exactness. At least, there is no doubt that Plato's and Aristotle's, as well as many other philosophers', conception of mathematics is so constituted.

The sources, nature, and significance of the above assumption deserve a study in their own right. I shall, therefore, restrict myself to only a few comments that pertain to the topics of this book. One reason, perhaps, Plato and Aristotle associate the highest exactness with mathematics is their belief that its objects are the most exact. But it is clear that this does not by itself imply that we should aim at obtaining knowledge of the highest exactness about such objects. At best what it implies is that knowledge of the highest exactness may be possible in relation to such objects, assuming that there are no other factors that make it impossible. What is needed in addition is an assumption about the goals and nature of theoretical knowledge: For example, that the mathematician aims at the understanding of the essential structure of the objects he studies (9.2), at explaining or representing the necessary nature of these entities, and that such understanding, explaining, or representating is in terms of absolute
demonstrative inference. The mathematician aims solely at knowledge and knowledge has, presumably, the nature Aristotle says it has: it is demonstrative. No other consideration or goal outside that of knowledge motivates, and hence influences, his inquiry. His goals are then purely epistemic. If these are the mathematician's goals, and if the nature of the objects he studies is what Plato and Aristotle say it is, then they can be satisfied only if he obtains in his accounts the exactness that fits that of the objects he studies. If, that is, he represents the most exact objects by accounts that are equally exact in terms of their demonstrative rigor, and thus achieves the congruence between the exactness of the material and that of the formal level spoken of earlier.

It is clear that this justification of why mathematics aims or should aim at the highest exactness can be questioned in a variety of ways. One may, for example, question whether the objects the mathematician studies are as Plato and Aristotle say they are. For if they are not as exact as they say, if the highest demonstrative rigor is not possible in their case, then it would be at least unreasonable to demand or aim at such exactness. Another way of questioning this model of the ideal exactness of mathematics is to leave the issue of the nature of the objects mathematical knowledge, understanding, or explanation. Those who advocate the radical pragmatic accounts of explanation question that the goals of inquiry are non-pragmatic and context-free, in the same way they question that what we designate as knowing, understanding, or explaining is ultimately motivated by cognitive and context-free considerations.

The radical pragmatist insists that the goals of inquiry are context-

— 353 —

bound, just as explanation is context-bound. The goals or objectives which explanation and inquiry satisfy are relative to some context, relative to those who inquire or seek explanations, and they may be relative even to a single inquirer or explanation-seeker. Why, then, can't the builder have as his goal a rather highly exact knowledge, especially since what he at times investigates, for example, some mathematical constructions, can be given a highly exact account? And why can't we in ethics aim at the most exact knowledge, why not seek to realize the moral geometry Rawls has in mind? Why, in other words, can we not set aside the practical goals that may require only a low level of exactness in order to be satisfied and simply aim at a more exact understanding of matters of conduct or moral phenomena? By doing so, one might argue, we can eliminate inexactness from ethics. Conversely, the radical pragmatist wonders, what rules out the possibility that a mathematician aims at probable conclusions or most-likely explanations, that is, the kind of inferences, explanations, or exactness that both Plato and Aristotle rule out categorically in the case of mathematics.^[35] There is no fixed goal mathematics has, according to them, it all depends who the inquirer is and what his goals are.

There is no doubt that Aristotle does not share the views of the radical pragmatists with regard to the status of the goals of a discipline. Such goals are not, according to him, merely the goals of some individual or individuals, but literally the goals of the discipline. And they, thus, cannot vary from context to context but are fixed. The invariability of goals is in part what allows Aristotle to speak of a proper exactness for a discipline, by which he means of course the proper exactness for a discipline. For if the goals do not vary, we will not merely have an exactness that is appropriate in each case to the particular goals of the inquirer, but the exactness that is proper for the inquiry in all contexts. The goals of a discipline are, according to Aristotle, at least as fixed as the goals that, according to Putnam and Sintonen, explanation serves. Indeed, they are more fixed than the cognitive or methodological goals that explanation supposedly serves according to these philosophers. True, the methodological goals the moderate pragmatists assign to explanation or inquiry are not mere psychological interests. Yet the goals Aristotle assigns to an inquiry appear to be even more strictly fixed than these methodological goals of explanation, whatever their nature might turn out to be.

Aristotle views the goals of a discipline as being its function, and therefore the purpose for the sake of which it exists. And sometimes he refers to the goals in terms of the specific purposes of a discipline—for example, producing health in the case of medicine—while at other times in terms of the generic purposes—for example, theoretical or practical. Thus Aristotle speaks of the function of the building art as being

the making of a house, that of medicine health, and that of the mathematical disciplines

— 354 —

theorizing (*E.E.* 1219a15). And he holds that if a thing has a function its definition is in terms of its function. The function of a thing constitutes its nature or essence. Thus, the respective functions of the eye and of the axe constitute the essence of each of these functional things and give their definitions as well (*Anim* . 412b20).^[36] To say, then, that the mathematical disciplines have as their function theorizing about their proper objects is to provide an essential characterization of them. Similarly, to say that the function of the building art is the production of buildings is to give the essence of it. For the same reason, Aristotle claims, producing health belongs to medicine essentially (*Top.* 143a4).

If, indeed, Aristotle takes the relation between a discipline and its goals to be what has just been described, it becomes clear why he thinks that the goals cannot be changed, for they are not merely psychological, subjective, even intersubjective, or contingently connected to the discipline..^[37] They are not merely the goals of someone or other, but form instead the essence of an activity or inquiry. They are part of the necessary and sufficient conditions that define a discipline. They cannot therefore be changed without changing the activity or inquiry which they define. The builder who pursues the theoretical activities of the geometrician is not pursuing the goals of his discipline and is therefore doing something which is not part of the discipline of building. In a passage from the *Rhet*. Aristotle ponders what would happen if we were to change the goals of rhetoric or dialectic from those of a practical art or skill to those of a theoretical activity. To do so, he argues, would change the character of these activities altogether: "But in proportion as anyone endeavours to make of dialectic or rhetoric, not what they are, faculties [or skills—

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]' but sciences [

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], to that extent he will, without knowing it, destroy their real nature, in thus altering their character, by crossing over into the domain of sciences, whose subjects are certain definite things, not merely words" (1359b12). And if ethics is, like rhetoric, a practical discipline or art, then its goals cannot be altered without altering its nature.

But if Aristotle views the goals of a discipline to be related to the discipline in the manner described above, in what way can they be considered to be pragmatic? Obviously, not in the way the radical pragmatists speak of interests, objectives, or goals as being pragmatic factors. For these, as I said earlier, are totally context-bound and are relativized to the individual. Aristotle's goals are the goals of a species; they are fixed in relation to their corresponding disciplines, faculties, or capacities. They serve some interest, but it is the interest of a certain kind of animal. And if this last consideration provides a reason for taking them to be pragmatic, it is important to keep in mind the differences between his conception of goals and that of the radical pragmatists. For Aristotle the goals of a discipline are essentially related to it; they define its nature.

— 355 —

It can now be seen how Aristotle's assumptions about the nature of the goals of a discipline and the existence of a level of exactness that is proper to a discipline imply that even the inexactness that is a consequence of the goals of a discipline may be impossible to eliminate. Consider, for example, a practical discipline like ethics for which there is presumably a level of exactness that can satisfy its goals and which falls below the level required for the goals of theoretical disciplines.^[38] Such a discipline would be inexact on account of its goals. But if there is, as Aristotle claims, a proper level of exactness relative to its goals, then the level cannot be changed; inexactness cannot be reduced beyond a certain point or eliminated, if the goals of ethics remain the same. But the other Aristotelian assumption about the fixity of goals or their essential connection to a discipline rules out the possibility of changing the goals of a discipline. If ethics, then, is inexact on account of its goals, it is so essentially. Its presumed inexactness cannot be eliminated while the discipline remains what it is; it cannot be eliminated from ethics when conceived as a practical discipline.

What conclusions, then, can be drawn about the level of exactness that is possible, proper, or desirable in ethics? Can it be concluded that knowledge of matters of conduct must remain less exact than knowledge of some other domains on account of the fact that ethics is practical? If this is so, then Plato's, Spinoza's, and Rawls's vision of a moral geometry is an impossible or useless one. No investigation into matters of conduct that has the exactness of theoretical disciplines would be possible or useful. Furthermore, can there be a theoretical study of matters of conduct in the sense that it is motivated by an interest to know for the sake of knowledge?

The above questions cannot be answered easily. The difficulty of doing so stems in part from what was said earlier about the problem of fixing the proper level of exactness for ethics. But primarily it stems from the way Aristotle most often characterizes the nature of ethical investigation: namely, as an inquiry that has practical goals. And this characterization of ethical inquiry leads Aristotle to conceive of the investigation into matters of conduct in a way that overlooks or undervalues the cognitive goals of the inquiry or to subordinate totally its cognitive objectives to the practical ones. At times, however, both objectives are equally prominent and compete against each other in Aristotle's own conception of ethical inquiry.

Aristotle may have, to a certain extent, good reasons for arguing against Plato that we do not need the exactness of mathematics for ethical practice. He may thus have reasons for reminding us that we must not lose sight of the fact that our practical concerns can be satisfied with a knowledge which, for various reasons, falls short of the exactness of mathematical knowledge. Yet, if the previous discussion is correct, even this Aristotelian

- 356 -

line of argument may not succeed in showing that a high level of exactness is not needed in an investigation into matters of conduct. For we cannot rule out a priori that some context of practice may not require knowledge of a rather high exactness. The practice, for instance, of distributing goods may require a rather precise account of distributive justice, something like what Aristotle himself gives in the *N.E.* in terms of the mathematical relationships between the worth of the relevant agents and the value of the goods to be distributed...^[39] Practice, itself, then, may demand considerable exactness if its objectives are to be satisfied. It may require the exactness we seek in theoretical investigations.

Indeed, after reflecting upon the concerns that motivate Plato's claim that it would be absurd not to strain every nerve in order to attain knowledge of the highest exactness about matters of conduct, we might conclude that Aristotle did not quite see the significance of Plato's point. For, like Plato, we may argue that it is more important to know exactly how things are about matters of conduct, about what we must do or be, than about some subject that both Plato and Aristotle assign to theoretical disciplines. The consequences of having inexact knowledge about matters of conduct can, as Socrates and Plato often argue, be grave: we may be led astray and harmed.

Suppose, for example, that the use of humans as slaves is of great practical importance. Should we accept any justification of slavery that is sufficient for our practical purposes? Obviously, we should not. As Plato would insist, the importance of the matter demands possession of knowledge of the greatest exactness and clarity, for the treatment of many members of our society depends on such knowledge. Ironically, when Aristotle offers a defense of slavery in *Polit.* I, he does not offer a justification of it that is exact only to the degree required for our practical purposes. On the contrary, he attempts a rigorous proof of it on the basis of the nature of human faculties, their functions, and some universal principles or laws about the hierarchical structure of all nature with respect to being a ruling and a ruled element. Indeed, he considers his own arguments in defense of slavery to constitute a theoretical justification or proof (

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) of it (*Polit.* 1254a22). Whether he succeeds in this project is, of course, another matter.

Similarly, we may insist, with Plato, that our account of the ideal or just society should be most exact, for it is the pattern by which we organize our lives. If our pattern fails to represent the correct way of structuring our society, if it is inexact, then we may be led astray. For the same reasons, we can understand Rawls's demand that the

principles of justice he is proposing should be deductively derived from propositions which it is rational to accept as true. In the same vein we may argue that it would be wrong not to strain every nerve to attain exact knowledge about the

— 357 —

effects food additives or contaminants have on our health. We should not be satisfied by mere guesses, generalities, or haphazard studying of these important matters. For our health, and even our lives, may depend on possessing exact knowledge about them.^[40] So practice may, after all, place greater demands on exactness, and not merely in the sense of reaching down to the particulars, than theorizing itself does. Or, at least, there may be no difference with regard to exactness between the two.

Thus, the level of exactness Aristotle associates with theoretical disciplines or with certain domains may be neither useless nor undesirable in practice. So that even if we were to insist that the cognitive goals of ethical inquiry are subordinate to its practical objectives, that the degree of its exactness is determined by these practical objectives, we cannot rule out that the level of exactness required for such objectives will be the same, or even higher than, that required for theoretical purposes.

But Aristotle himself appears to be of a divided mind about the need of an understanding of matters of conduct or practical matters that resembles that which we seek in the theoretical disciplines. For he seems to recognize that practical or productive disciplines are inquiries or investigations into the nature of certain domains; they therefore are quided by certain cognitive principles. It is true that he is often concerned with avoiding the Platonist tendency of making every discipline a theoretical one that aspires of the highest exactness. Against this form of Platonism he emphasizes the practical objectives of the ethical inquiry and tends to assign a dominant role to them. Yet he is fully aware of, and is himself attracted to, the view that any inquiry, including that into matters of conduct, has cognitive objectives. The Platonist line which insists that certain epistemic conditions must be met in our investigations into matters of conduct because such an investigation has cognitive goals cannot be dismissed. Aristotle himself is in his own investigation guided primarily by cognitive considerations. What he aims at and what he does is guided most often by the considerations that guide any inquiry into a certain domain. There is no doubt that he is often attracted by the anti-Platonist line that emphasizes the practical side of ethics at the expense of the cognitive or theoretical one, but the latter is never really abandoned.

Perhaps Aristotle's divided mind or predicament about ethical inquiry can best be seen in connection with his view of the study concerned with rhetorical phenomena. As shown in the passage from the *Rhet.* quoted above, Aristotle was concerned with preserving the character of rhetoric as a practical discipline or art, and thus saving it from being assimilated or transformed into something that has the character of a theoretical discipline. He was interested in saving it, that is, from becoming a rigorous discipline that aims at the study and understanding of the rhetorical phenomena. But, as Jacqueline de Romilly has rather convincingly shown,

— 358 —

Aristotle was continuously struggling with these two conceptions of rhetoric: that of the rhetorical practice and that of Plato who in the *Gorgias* presents a picture of philosophical rhetoric as a rigorous and abstract discipline..^[41] Against Plato, Aristotle often urges us to remain faithful to the conception of rhetoric as an activity with practical goals. But what he himself does in the *Rhet* . and the way he often sees his own investigation is quite often much closer to Plato's picture. Aristotle in the process of his own inquiry in the *Rhet* . comes to recognize that the investigation of the rhetorical phenomena he is pursuing is not a bit of rhetorical practice. He is not trying to persuade anyone by rhetorical means, but is instead investigating the nature of these phenomena and trying to convince others by nonrhetorical means that rhetorical phenomena are so-and-so, that their essential character is such-and-such.

The same is, of course, true in the case of ethics and other practical disciplines. Despite the pronouncements concerning the overriding role of practice in the case of ethics, politics, or medicine, Aristotle is strongly pulled by the cognitive concerns of these disciplines. Aristotle's, as well as our own, immediate goals in the philosophical inquiries about ethical or rhetorical phenomena are cognitive. We are interested, as Aristotle himself is, in our ethical or rhetorical inquiries in understanding the nature of goodness, the nature of the human good, the nature of virtue and so forth, or the character of persuasion, its means and their effectiveness, and so forth. What Aristotle does or aims at in his own ethical investigation is not practical in the sense of being a bit of practice or of practical thinking concerned with some particular action or other. Similarly, what he does in *Rhet*. is not an instance of rhetorical speaking. It is possible that Aristotle is in some contexts influenced by the examples he often gives to illustrate the character of ethics and the degree of exactness it requires. Examples such as that of building, shoe making, or rhetorical speaking tend to emphasize practice which is, of course, to be contrasted to theoretical disciplines or activities. And if one were to focus on such examples one might easily overlook the differences between the practical and cognitive concerns in ethical practice and philosophical ethics.

But we need to distinguish between practice and the knowledge, understanding, or explanation of the elements of conduct that we seek in our philosophical endeavors. Although the boundaries between the two may not be sharp, there are differences. When Rawls speaks of a moral geometry of matters of conduct, he is obviously speaking of philosophical ethics and not of practice. Aristotle's own philosophical activities with respect to conduct exhibit this theoretical character. Joachim is, I think, in some respects correct when he describes Aristotle's endeavors in the following way: "But in fact his [Aristotle's] own intelligence is actively engaged in the theoretical study of conduct and in that study it is free

— 359 —

and unperverted by emotion or by the aims of action: and very few thinkers have contributed so much to the theoretical investigation of the facts of conduct as Aristotle himself has done in the *Nicomachean Ethics* and the *Politics*.".^[42]

Joachim is correct in pointing out that Aristotle's activities in his own ethical investigations are not different from those in other investigations, including theoretical ones. He is, in other words, doing in the ethical investigations what he does in other disciplines: explaining the nature or giving accounts of a certain subject matter. In this sense, his activities could be described as theoretical. For although Aristotle unequivocally asserts that ethics is practical, and therefore that its cognitive concerns are subordinate to practice, and although he at times insists that his own inquiry aims at making his listeners good, these pronouncements or supposed practical objectives do not really affect the character of his investigation. We may not wish to call his investigation "unperverted by emotion or by the aims of action," for there is nothing perverse about subordinating knowledge to action or emotion, but Joachim has a point: Aristotle's endeavors in the ethical treatises are similar to those in his other treatises.

Yet there are problems with any effort to construe an Aristotelian investigation into matters of conduct as a theoretical discipline, if what is meant by this is that the investigation meets Aristotle's own requirements for being a theoretical discipline. For, first, there are the problems discussed in previous chapters that concern the inexactness Aristotle associates with disciplines like ethics. Such disciplines are required, according to him, to also include accounts of particulars, whereas theoretical ones do not. But perhaps we could focus on that part of ethics that is concerned only with the general or universal aspects of conduct, as Aristotle's own inquiry does, and thus point to the similarities between ethical and theoretical disciplines. Aristotle, however, insists that our accounts in ethics are, in addition, inexact for all the other reasons discussed earlier: they presumably fail to reach the demonstrative rigor of the purely theoretical disciplines because of the inexactness of matters of conduct. Yet even this may not show that ethics is fundamentally different from the theoretical disciplines. For it may be, as was seen, not very different from those theoretical disciplines whose subject matter is also inexact, that is, all those theoretical ones whose domains consist of some part of the natural world.

The difficulty is, however, far greater when we attempt to construe Aristotle's own investigation, as well as his conception of any investigation, into matters of conduct as a theoretical discipline, if we mean by this that the investigation aims at knowledge for the sake of knowledge: that its cognitive goals are not subordinate to practical ends, but that they constitute instead its ultimate goals. There is no doubt that this is the peculiarly Aristotelian way of understanding the notion of a theoretical discipline,

— 360 —

and it is quite certain that this is in part what Joachim has in mind when he says that Aristotle's inquiry is free of the aims of action. Aristotle's study is, according to Joachim, theoretical not only because it deals with the general or abstract aspects of conduct or attains a certain level of demonstrative or explanatory rigor but also, and perhaps primarily, because it aims at the attainment of knowledge for its own sake; it is motivated by a theoretical interest. Such a theoretical interest into matters of conduct is taken for granted by Plato and recognized by Rawls as being the interest that guides ethical inquiry.

The problem with the above construal of Aristotle's own investigation and his conception of any investigation into matters of conduct is the one I alluded to earlier (chap. 3)—namely, the problem of seeing how an inquiry into matters of conduct that is guided by a theoretical interest can be fitted into Aristotle's own conception of ethics as a practical discipline. It is not obvious that this can be done without abandoning such a conception of the nature of ethics, without changing the goals of the discipline.

For to say, as Aristotle does, that ethics is practical is to say that its ultimate goals are noncognitive and that whatever cognitive goals it has are subordinate to the noncognitive ones. Aristotle views his own investigation in terms of this conception: that is, as an investigation whose ultimate goals are practical—for example, to make us good—and whose cognitive objectives are subordinated to the practical goals—the latter ones determine the level of detail, demonstrative rigor, and so forth. And these noncognitive goals or interests in part define, according to him, the nature of the discipline.

But to construe ethics in general, or Aristotle's own investigation in particular, as theoretical is to take its ultimate goals to be cognitive. It is to assign to the inquiry a theoretical interest; it is to assume that in matters of conduct we aim at knowledge for the sake of knowledge. There is clearly a problem here: the ultimate goals of one and the same discipline cannot be both practical and cognitive.

As I said earlier, there is nothing that rules out the possibility of there being a theoretical interest in matters of conduct, of our aiming at attaining knowledge about them for the sake of knowledge. The problem is with fitting such theoretical interest or aim into a discipline that is defined as being nontheoretical, as having ultimate goals that are noncognitive. Again, the difficulty is not that of making practice subordinate to cognitive goals by admitting that there is a theoretical interest in matters of conduct. We do not need to do that about matters of conduct as we do not need to do it about other kinds of subject matter. For example, we do not make economic practice subordinate to economic theory, in the sense that the former is not pursued for the sake of the latter. Nor will our practice involving geometrical or measuring operations be made subordinate to

— 361 —

our theoretical interests if we were to admit that geometry aims at knowledge for the sake of knowledge—such practice will not be pursued for the sake of knowledge.

Do we need, then, to change the goals of ethics from the way Aristotle conceives them in order to say, with Joachim, that ethics is theoretical? This is, I believe, to some extent true, but not necessarily because it is required in order to make ethics theoretical in the sense of assigning to it the same demonstrative rigor or exactness some theoretical disciplines have. For this may be required by the practical goals themselves, and thus there may be no need to change the goals of ethics from the way Aristotle conceives them in order to aim at the exactness or rigor of theoretical disciplines. But if we were to ascribe to ethical inquiry a theoretical interest we will be facing the problems Aristotle himself was confronted with in relation to the investigation of the rhetorical phenomena: namely, his problem of deciding what the inquiry into rhetorical phenomena is. Is it the inquiry that has, as the Platonists say, knowledge as its ultimate goal or is it the inquiry that has rhetorical phenomena could not be made to fit into a discipline theoretical interest about rhetorical phenomena could not be made to fit into a discipline with the theoretical interest about matters of conduct and the discipline of ethics as Aristotle conceives it: the former cannot be made to fit into the latter.

Aristotle recognizes our theoretical interest in matters of conduct. He acknowledges that in our investigation into matters of conduct we can aim at attaining the kind of explanations we seek in theoretical disciplines as well as seek knowledge about the domain of conduct that is motivated by our theoretical interests (see chap. 3). Yet it cannot be said that he explains how such theoretical interests can be accommodated into ethics as he most often conceives it. Perhaps he realized that it cannot be done without making two disciplines out of ethics, one whose ultimate goals are practical and one whose ultimate goals are theoretical. By creating, that is, two distinct disciplines that inquire into matters of conduct: practical ethics and theoretical ethics. But if we are not willing, as Aristotle is not, to do that, the only way I see of accommodating our theoretical interests into the one discipline of ethics Aristotle advocates is to follow his own admonition about the importance of seeing beyond utility in all branches of knowledge:

9.5 And it is also clear that some of the useful subjects as well ought to be studied by young not only because of their utility, like the study of reading and writing, but a because they may lead on to many other branches of knowledge; and similarly th should study drawing not in order that they may not go wrong in their private purchases and may avoid being cheated in buying and selling furniture, but rathe because

— 362 —

this study makes a person able of contemplating bodily beauty, and to seek utilit everywhere is entirely unsuited to persons that are great-souled and free. (Polit.1338a37)

But to apply Aristotle's admonition to ethics is to admit that the cognitive interests in it need not be subordinate to practical ends or utility. It is to admit that, whatever uses the knowledge we acquire from an investigation into matters of conduct might have, our investigation itself is guided by a theoretical interest that also dictates the character of the knowledge we seek. Plato would have agreed.

— 363 —

Ten Exactness, Universality, and Truth

Introduction

The characteristics of inexactness which Aristotle attributes to ethical accounts, whether they stem from the nature of the subject matter of ethics, the goals of the discipline, or even other sources, raise at least two questions that have occupied a prominent place in recent ethical theory: that of the necessity, desirability, or even possibility of general or universal principles or propositions in normative theory and that of the possibility of truth in ethics. His claim, for instance, that matters of conduct are indefinite or vague, and that this makes it difficult to give definitions of matters of conduct or to provide general principles about them, may be taken to imply that ethics can do without definitions or general principles..^[1] Similarly, his contention that our concerns in ethics are practical, and that therefore our focus should ultimately be with the particular, may be taken to imply that general definitions or principles are undesirable or dispensable for practical purposes. They may be of no use in ethical contexts. Again, if Aristotle is correct in saying that ethical propositions are lacking in definiteness, the question arises whether truth values can be assigned to them. In other words, we face in ethics the problem associated with any vague propositions—namely, that neither truth nor falsity can be determined in their case. There is, in addition, the problem of dealing with propositions that are true for the most part. If logic requires that such propositions have the logical form of universal propositions, they are, strictly speaking, false. Could there be a discipline which is such that its theorems, or even its basic principles, are false? And is this unique to ethics or is it common to most disciplines?

Different ethical theories vary in their views of the role generality or

— 364 —

universality plays in conduct or in a normative ethical system. Some of them assign an important, and at times the most important, role to it—for example, the theories of Kant, Richard Hare, and of rule utilitarianism. Others, however, assign a marginal role to it or exclude it altogether from either conduct or any normative accounts or both. Act utilitarians, for instance, are willing at times to admit that general principles or rules play a role in normative ethics and conduct, but the role they have in mind is clearly marginal. Those who are convinced that ethics is essentially situational deny altogether that general principles have any role to play in ethics. In this last group we may include Jean-Paul Sartre, since he at times denies both that general principles or rules can be of any use in determining a course of action in a particular context—for example, in deliberating about and choosing what to do—and that there are any such rules, either of what he takes to be the Kantian a priori type or of any other type.^[2] The task of normative ethics, according to these views, could not be to provide general principles or rules, since, presumably, there aren't any. Or, if there were some, they would not be of any use in conduct.

The Sartrcan position has, in one form or another, been defended recently by a number of philosophers for a variety of reasons, some of which are attributed to Aristotle. Thus, John McDowell has argued that we cannot reduce the knowledge of what virtue is to a set of generalizations:

As Aristotle consistently says, the best generalizations about how one should behave hold only for the most part. If one attempted to reduce one's conception of what virtue requires to a set of rules, then however subtle and thoughtful one was in drawing up the code, cases would inevitably turn up in which a mechanical application of the rules would strike one as wrong—and not necessarily because one had changed his mind; rather, one's mind on the matter was not susceptible of capture in any universal formula.^[3]

And the supposed uncodifiability of universal principles has, according to McDowell, rather far-reaching consequences about understanding virtuous action and justifying or explaining some key elements of ethics. So, McDowell argues, the application of the Aristotelian practical syllogism to explaining virtuous action produces an explanation whose major premise is a proposition stating "the virtuous person's conception of the sort of life a human being should lead."^[4] And if such a conception were codifiable we will have a deductive explanation or justification of virtuous action. "But the thesis of uncodifiability," McDowell claims, "means that the envisaged major premise, in a virtue syllogism, cannot be definitely written down."^[5]

More recently, Baler, influenced perhaps more by Hume than by Aristotle, has defended views similar to those of McDowell. One way of looking at virtues, she argues, is as fixed dispositions to behave in ac-

— 365 —

cordance with certain well-defined principles. But this view does not do justice to those virtues that are not, and perhaps cannot be, correlated with any principles. Dispositions such as kindness, humility, or gentleness are not associated with principles that specify kind, humble, or gentle behavior, yet they are virtues. There are no principles in these cases, Baler argues, that justify or explain why such dispositions are virtues.^[6] But Baler also questions the role general rules or principles play even where they seem to be available. Such rules cannot perform the function traditional moral theory assigns to

them—namely, the function of premises in deductive explanations or justifications—because they are by themselves vague or empty. A code consisting of general principles is not, according to Baler, by itself capable of giving us any definite directions or generating any specific conclusions in deductive arguments.

Either it [a set of general rules] is a purely formal code, not yet prohibiting or enjoining anything, or else the form gets its determinate filling, in which case we are committed not merely to these "negative" rules but to the rules of background institutions and ways of life that supply the determinate content to these prohibitions.^[7]

Thus, according to Baler, we have the primacy of practice over theory in ethics.

Traditional moral theory aims at justifying or explaining certain matters of conduct by deductively deriving them from some basic principles. It thus presupposes that some principles can be precisely stated. But if they cannot be so stated, if they cannot be formulated without reference to the network of our institutions and practices themselves, then clearly they cannot explain or justify our practices. Baier's view of the priority of practice over theory is also shared to a considerable extent by Williams. Williams has tended to minimize the role ethical theory plays on the grounds that, unlike scientific theory, it does not describe some real structure that can then be used to explain moral practice. Thus, he arrives at the view, antecedents of which he also finds in Aristotle, that the task of ethical theory cannot be the formulation of general or universal principles that play the role that laws play in scientific explanation.^[8]

Yet others concentrate more on the role particular knowledge plays and tend to emphasize the primacy of the particular in ethics. Martha Nussbaum, although acknowledging the role general principles play in Aristotle's ethical theory, assigns a central role to the particular.^[9] Irwin finds an element of casuistry in Aristotle's ethical theory, ^[10] while Stephen Toulmin and Albert Jonsen take the theory of the *N.E.* to be a theory that defends and advocates casuistry.^[11]

The views that I have briefly sketched above are quite important, and some raise foundational questions about the discipline of ethics. They

— 366 —

clearly deserve in their own right the most serious consideration. But this is something that cannot be done here. My purpose is the more limited one of seeing whether Aristotle's views on exactness/inexactness imply anything like what these theories claim or at times attribute to him with respect to the matter of general principles, or whether he himself took positions that are similar to those of the above theories. From what I said in previous chapters, it should be apparent that some of his concerns when speaking about exactness/inexactness in ethics are similar to the concerns raised in the recent theories sketched above. But it remains to be seen whether he is willing to go as far as the recent theorists in denying the importance of the general or universal for ethical theory and practice.

In order not to beg any questions, I shall not begin by examining the role universal or general principles play in Aristotle's own theory or the role he assigns to such principles in ethical theory in general. For those who see Aristotle as someone who emphasized practice over theory, or the particular at the expense of the universal, may question whether Aristotle has a theory or that he assigns any role to the universal or general.^[12] Therefore, I begin with what Aristotle says about practice and practical knowledge. If Aristotle thinks that general principles or knowledge of such principles is required for acting in a certain way or for explaining someone's acting or failing to act in a certain way, then ethical theory must in some way concern itself with general or universal principles.

The Universal, Practice, and Practical Knowledge

Consider first the role of the universal or general in practical knowledge. The reason for doing so is this: if, as some claim, ethics is to be identified with practical knowledge or wisdom, thus denying that there is any room for ethical theory, then it is important to determine whether knowledge of general or universal principles is in part what we obtain by practical wisdom. What sorts of things, according to Aristotle, does practical

wisdom know?

Aristotle claims that there is a faculty or capacity, that of practical knowledge or wisdom, by which we come to know the truth about matters of conduct (*N.E.* VI.ii). He at times considers this faculty to be something like a calculative capacity whose activity resembles the activity of deliberation (*N.E.* VI.i). Aristotle takes it for granted that practical wisdom aims at knowledge of the general or universal. This is to him beyond doubt; it is not questioned. On the contrary, what he feels we need to be reminded of, or what he feels compelled to assert as a corrective measure is that practical knowledge deals, or must deal, with the particular as well: "Nor is practical wisdom concerned only with the universal [or general princi-

— 367 —

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] but must also know the particulars since it is concerned with action and action deals with the particulars" (1141bl5). $\cite{[13]}$

Similarly, according to Aristotle, a certain role must be assigned to the general in relation to the activity of deliberation as well, since we are told that there is a double possibility of error in such activity—"You may go wrong either in your general principle or in your particular fact: for instance, either in asserting that all heavy water is unwholesome, or that the particular water in question is heavy" (1142a20). The role of the general or universal is again emphasized in relation to deliberation and to the practical syllogism when Aristotle attempts to explain moral weakness, where indeed the explanation is given in terms of failing to have knowledge of the particular while one has knowledge of the universal only (1147a; see also Aristotle's discussion of the relation between voluntary or involuntary and ignorance of the general or universal at 1111a).

These failures in deliberation and action clearly point to the conclusion that knowledge of the general or universal without knowledge of the particular is not sufficient for doing what is right or correct, even though the other conditions for doing what is correct are satisfied.^[14] This may come about in at least two different ways: One knows the general but does not know that a certain particular is an instance of the general, although the rule does indeed apply to the present particular—for example, one knows that heavy water is unwholesome but does not know that what is in front of him is heavy water; but also in the sense that a general rule one knows about a type of action may nonetheless fail to apply to a particular case of this type on account of the kind of inexactness spoken of earlier—for example, one may know the general rule stating that one ought to pay back debts, but fail to realize that the present case, although similar to the cases that fall under the general rule, nonetheless possesses many features which place it outside the rule (1168a).

But although knowledge of the appropriate universal or general principle may not be sufficient for acting correctly, it may nonetheless be necessary. Despite the fact that Aristotle gives a number of examples which suggest that he does not think that such knowledge is necessary, when he attempts to draw a distinction between merely doing an action that is required by some particular virtue—for example, justice, courage, or temperance-and acting from such a virtue, he appears to be pointing to the necessity of knowing the general or universal. In the passage on practical wisdom quoted above, for example, he says,

10.1 Nor is practical wisdom concerned only with the universal, but must also know the particular since it is concerned with action and action deals with particulars. That i why men who are ignorant of general principles are sometimes more successful ir action than others who know them: for

- 368 -

instance if a man knows that light meat is easily digested and therefore wholesome

262 of 362

but does not know what kinds of meat are light, he will not be so likely to restore you to health as a man who merely knows that chicken is wholesome; and in othe matters men of experience are more successful than theorists. (1141b15)

The contrast between knowledge of the universal and knowledge of the particular is perhaps not drawn sharply enough here, and one might even say that knowing that chicken is wholesome is itself a general or universal principle. It is nonetheless clear that this principle is less general than the one Aristotle takes to be the universal: Light meats are easily digested and therefore wholesome. "Chicken is wholesome" is, according to Aristotle, particular when compared to a more general principle.

There are unfortunately too many textual questions with this part of the text, and so many emendations have been proposed that it is indeed difficult to speak with any certainty about Aristotle's intentions. We can however as a start take the weaker reading of it—namely, that Aristotle does not mean to say that knowledge of the universal alone will never be sufficient to do what is correct, but is instead only saying that knowledge of the particular alone is more likely to be successful than knowledge of the universal alone. For although he probably holds the former as well, since knowledge of the particular circumstances are viewed by him as crucial to action (see *N.E.* III.i), it is the latter that is important here. For even if there is only one instance where knowledge of the particular alone succeeds, then clearly knowledge of the universal is not necessary. But is Aristotle actually allowing for the possibility of acting correctly without knowledge of the universal? He immediately proceeds to say that "practical wisdom is concerned with action [

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], so that we must have [

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] both forms [of knowledge], or indeed knowledge of the particulars more than the other." And this seems to be saying that knowledge of the universal is necessary, although knowledge of the particular has greater importance for action, for action deals with the particular and is therefore more immediately and directly in need of such knowledge of particulars. Although the textual problems cast doubts on any and every interpretation of this passage, it is quite possible that Aristotle does indeed take the view that knowledge of the universal is necessary and that he only intends to emphasize the greater role knowledge of the particular plays in action, but without implying that the latter by itself is sufficient. The context of this passage makes this reading plausible: Aristotle takes it for granted that practical wisdom deals with the universal, so his task could be to show that knowledge of the particular is part of practical wisdom and is in fact more important, but not that either of them alone is sufficient: "Nor is practical wisdom concerned with the universal only, but must also know the par-

— 369 —

ticular." Again, when in *Met.* (981a15) Aristotle is once more concerned with the role knowledge of the particular or individual plays in practice, he does not say that knowledge of the universal is not required: "If, then, a man has the theory without the experience, and recognizes the universal but does not know the individual included in this, he will often fail to cure; for it is the individual that is to be cured." So one would have to provide additional evidence in order to show that Aristotle thinks knowledge of the universal is not necessary.

One may look for additional evidence by considering what Aristotle says when he uses almost the identical example in a different context. In *N.E.* (X.ix), where he is concerned with the proper way of educating the citizens, he argues that "a physician or trainer can best treat a particular person if he has general knowledge of what is good for everybody or for people of the same kind: for the sciences deal with the universal." But obviously what is necessary (knowledge of the general) for doing X best (treating people) may not be necessary for simply doing X, or perhaps for doing X in relation to someone or in some particular context. And so Aristotle remarks, "Not but what it is possible no doubt for a particular individual to be successfully treated by someone who is not a scientific expert [

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], but has an empirical knowledge based on careful observation of the effects of various

forms of treatment upon the person in question; just as some people appear to be their own best doctors, though they could not do any good to someone else" (1180b15). The present healer seems to be more appropriately described as not knowing the universal or general than the previous one, who knows that some type of food (chicken) has a certain property (wholesomeness), for he presumably only knows that some treatment has this or that effect when applied to this individual or when applied to himself. There is, one might say, a total lack of universal knowledge here—Aristotle's healer does not know that the treatment has such effects or properties in general, and most likely he does not even know why it has such effects in this particular case. This may be a true instance of one who lacks general knowledge and can yet bring about or do the correct thing.

This is a case, according to Aristotle, where it is possible to act correctly without the use of general or universal knowledge—and hence such knowledge is not necessary. And this conclusion does not seem to be affected by what Aristotle proceeds to add: "But nevertheless it would doubtless be agreed that anyone who wishes to make himself master of an art [

] and of a science [

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figure] must advance to general principles, and acquaint himself with these by the proper method: for science, as we said, deals with the universal." For even if one were to s the above situation and to insist that in order to cure more than one person (few or many) knowledge of the universal is necessary or is re-

— 370 —

quired—since our inexpert would not know how to treat any additional persons—it is nonetheless true that in one case he succeeds. And this need not be an accident: Aristotle describes the case as being one where our inexpert who has empirical knowledge based on careful observations of the particular effects (

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); he has particular knowledge and can repeat the treatment to himself or to the same individual. But should we still insist that he would not be able to treat anyone else? This is not obvious. Why can't our expert on chicken meat, the one who knows the particular (chicken is wholesome) but not the universal (light meats are wholesome), treat more than one person? And how much knowledge is required here? One may argue that our inexpert healer above can apply the treatment he successfully applied to himself or to one individual to others. Why should one need to know the cause (universal) to do something correctly or successfully? Need one know the causal workings of aspirin (the universal) in order to treat anyone successfully with it for the condition of fever? Socrates and Plato speak at times as if we needed knowledge of the universal to do almost anything, but perhaps there is no such need. And Aristotle himself, although he allows acting correctly with only knowledge of the particular, seems reluctant to do so and wants to restrict such acting only to a single case.

That knowledge of the universal is not necessary for doing the correct thing seems clear if we are to speak of actions where there appears to be no such knowledge involved. What shall we say, for example, in the case of children—a class of beings that may not occupy a place in Aristotle's list far above the animals, but do nonetheless participate in action, whereas, according to him, animals do not? Need we attribute knowledge of the universal to them? There is also here the question of actions from habit which nonetheless can be the correct actions. Need we ascribe knowledge of the universal or any knowledge at all in such cases? And, of course, one can do the correct thing by chance, accident, mistake, inadvertently, and so on, although in such cases it is unclear not only what sorts of knowledge it is necessary to ascribe but also whether we can ascribe actions to anyone. But there is a class of actions, somewhat similar to the above types, that Aristotle clearly accepts as cases where one does the right or correct thing without having knowledge of the universal. These are the actions that he describes in *N.E*. (II.i, ii, and iv) as a means of acquiring the virtues or excellences.

These types of actions, and in particular the ones by means of which we acquire the virtues, are important because they bring to the surface a question that always arises in this context: Should we ask for knowledge at all or knowledge of the universal in all

actions or only in connection with certain types where indeed it may be necessary? For one may argue that of course it is possible to do the right or correct thing by accident,

— 371 —

by chance, from habit, in ignorance, from ignorance, and so on. The point is, however, not only that what is done is the correct thing, but that the way it is done satisfies some conditions and it is these latter conditions that are relevant to the ethical dimension of an action or of an agent. So, as Aristotle often says, what one does may be the just thing or what justice prescribes, but the action itself does not spring from a certain disposition that we identify as the disposition (virtue) of justice. And it may well be that knowledge of the general or universal is a necessary condition for acting justly, and in general correctly or rightly, in contrast to merely doing something that happens to be the right or correct thing to do. Indeed, we see that Aristotle is thinking along these lines and appears to view knowledge of the universal as indispensable if we are to ascribe to agents virtuous actions in the ethical domain and excellence of performance in the domain of the arts and sciences. For when in *N.E.* II.iv, he attempts to provide the conditions that differentiate an act that is done from virtue from one which is simply required by virtue (the right or correct one), one of the conditions he includes there is that the agent must have knowledge (

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). Unfortunately, Aristotle does not explain what type of knowledge he has in mind, and for this reason commentators are divided between those who think that it is primarily knowledge of the general or universal principle that specifies the proper conduct in relation to a virtue and those who think that it is knowledge of the particulars pertaining to some one act.^[15] There are, I believe, several considerations that tilt the scale in favor of the first view, or at least of the view that knowledge of the general or universal principle must be included in what the agent knows. Aristotle could not by "knowledge" mean only knowledge of the circumstances of an act that he lists at 1111a5 in his discussion of the voluntary, where he attempts to draw a distinction between acting from and through ignorance—that is, knowledge of the agent, the act, the thing affected, the instrument, the effect of the act, and the manner of doing (e.g., gently or violently). For all these conditions could be satisfied by actions which are not done from virtue and most of them could be satisfied by something which is done correctly by chance—for not all of these conditions have to be satisfied (1111a7).

Perhaps all that is needed in addition to the above conditions is to introduce the requirement that the agent has knowledge that the particular act at hand is right or correct, and thus avoid introducing knowledge of the universal—for example, one may know that repaying this debt is right but not know that the general principle of paying debts is right. Is such knowledge, however, systematically possible? If so, how? And if it were possible, would it be sufficient for the distinction Aristotle wants to draw between acting from virtue and doing an act that is the correct one to do? Such knowledge would have to be systematically possible and not only in

— 372 —

isolated cases, for it is supposed to satisfy the cognitive requirement for acting from virtue—in all cases where we act from virtue knowledge is supposedly of the particular only. But how does one know that it is right to repay just this debt? As Hare and others have pointed out, we need to know why such a claim of knowledge is made here; we need to know the reasons for the moral judgment. And when pressed for reasons, we are likely to point out that an agreement or promise or contract was made to return the money, thus subsuming the case to the general principle of the rightness of acts of fulfilling promises, agreements, or contracts. For unless we are willing to allow for some sort of justification of our claim to know that this particular act is right, we will be inevitably led into the most extreme form of intuitionism: that the correctness of every particular element of conduct is known intuitively. Intuitionism of general principles is, as is well known, problematic, but intuitionism that is meant to apply to every individual case is certainly more problematic. And I see no evidence that Aristotle advocates such a form of intuitionism.

Whatever the answer to the question of the possibility of systematic knowledge of the particular, the question still remains whether, assuming such knowledge to be

possible, it is what Aristotle has in mind and whether it can satisfy the cognitive condition of acting from virtue in contrast to merely doing what happens to be the right thing. For when Aristotle contrasts the two ways of acting he speaks of the agent as being in "a certain state" or "certain state of mind" (

figure

) in the case where he acts from virtue but not in the other.^[16] And this "state of mind" in the case of virtue has its analogue in the case of doing well in the various sciences, arts, skills, or activities. For one can spell a word correctly by chance or because someone else prompts him; in such a case one may even be said to know, because he has been told by someone else, how to spell a word, but "he would be an expert grammarian, only if he has both done something grammatical and done it grammatically; and this means doing it in accordance with the grammatical knowledge in himself" (1105a25). A performance then would not be grammatical (

figure

) unless it both satisfied the rules of grammar and stemmed from the knowledge of grammar in the performer, just as a performance of an act would not presumably be virtuous unless it stemmed from virtue. But the knowledge of grammar here is the knowledge of the general principles of the discipline of grammar which are applied to a particular case—for example, in spelling a particular word—and this is what sets the expert who performs from knowledge of grammar apart from the one who does it by chance or who is repeating what someone tells him.

There is no doubt that this is the sort of knowledge involved in grammar or medicine or the arts in general. As shown earlier, it is this knowledge that distinguishes the expert from the nonexpert: "whoever wishes to make

— 373 —

himself a person of science must advance to general principles" (1180623). And again at 1137a5-25 the similarity is pointed out between acting from virtue and performing from the appropriate knowledge of an art: one element of the similarity is that both cases must involve the exercise of a certain knowledge. In relation to justice one must know how a distribution must be made in order to be just, while in relation to medicine how and when and to whom to apply certain drugs, surgery, and so on. And these are general truths. Indeed, when Aristotle compares the case of acting from virtue and performing from grammar, he speaks of knowledge in both cases and contrasts the roles that such knowledge plays in the case of virtue and the arts, but without hinting that different kinds of knowledge are involved in the two cases: "For the possession of an art, none of these conditions is included, except the condition of knowledge [

figure

]; but for the possession of virtues, knowledge [

figure

] is of little or no avail, whereas the other conditions . . ." (1105b). One would have to assume here that Aristotle is talking about the same kind of knowledge in his comparison. And the supposed relative unimportance knowledge has in relation to virtue, which Aristotle contrasts to that it has in relation to the arts, does not affect the point. Having knowledge of the general, or universal principles, of what is just, temperate, or brave may not be the same as having the virtue of justice, temperance, or courage. For, unlike the arts, where presumably the possession of the appropriate knowledge is the same as the possession of the art—for example, knowledge of grammar is the same as having the art of grammar—possessing a virtue includes something more than knowledge; it includes possessing a state of character or a disposition. Nevertheless, the appropriate universal knowledge has to be present if one is to act virtuously.

Oddly enough, more evidence about the nature of knowledge required for acting virtuously is to be found where Aristotle tries to explain how we at times fail to act so, despite the fact that we know what is the virtuous thing to do—where, that is, he tries to explain the phenomena of weakness of the will or incontinence. But this may not be so odd after all. For in order to explain such phenomena, one has to show how the continent agent differs from the incontinent one. Aristotle, as is well known, does this by comparing the practical reasoning used by, or required for explaining the behavior of, the continent and incontinent agent. Some of the premises of such practical reasonings

or syllogisms represent the types of knowledge the agent has or that can be attributed to him. Aristotle leaves no doubt that one of the premises in such practical syllogisms represents knowledge of the universal or general kind (N.E. VII.iii). Such knowledge (or belief) must be present for ascribing either continence or incontinence to an agent. It is required for setting up the appropriate practical syllogisms for continent and incontinent action, for exhibiting

— 374 —

the conflict within the incontinent agent, and for identifying the cause of the final breakdown of such a syllogism in the case of incontinent action. Where there can be no universal knowledge, Aristotle thinks, there can be no incontinence either. So, he remarks that "lower animals cannot be called incontinent, if only for the reason that they have no power of forming universal judgments [or concepts—

figure

] but only mental images and memories of particular things" (114765).^[17]

The above considerations show beyond any reasonable doubt that Aristotle takes general principles to be an indispensable element of practical knowledge and virtuous action. Both of them may need to take account of the particulars, but it does not follow from this that they are concerned only with the particulars. Aristotle's views on these matters are not of the kind that it would be correct to characterize as being those of casuistry.

But, it might be objected, Aristotle is not entitled to appeal to universal principles, that his own diagnosis of inexactness in ethics casts doubt on the usefulness of universal principles in ethical theory and conduct. This, however, is a separate matter to which I shall return after I discuss the role universal principles play in his conception of ethical inquiry. I shall have something to say then about the problems of uncodifiability and vagueness in connection with general principles. Something, however, needs to be said at this point about McDowell's worries concerning the explanation of virtuous action.

McDowell concedes that Aristotle's explanatory schema of virtuous action, the one that has a deductive structure with a universal proposition as its major premise, is at least part of the explanation of such action. He writes, "It is not wrong to think of the virtuous person's judgments about what to do, or his actions, as explicable by interaction between knowledge of how to live and particular knowledge about the situation at hand But the thought needs a more subtle construal than the deductive paradigm allows."^[18] McDowell may be right both in claiming that the Aristotelian explanatory schema needs to be supplemented and in identifying the way in which it must be supplemented. But if the Aristotelian explanatory schema is part of the explanation of virtuous action, then we cannot get away from general principles that formulate the correct behavior correlated with each one of the virtues.

If we could formulate general principles that state what virtuous behavior is or how we should live our lives, we would thus, McDowell claims, be undermining the importance virtue has in moral philosophy: "If the question 'How should one live?' could be given a direct answer in universal terms, the concept of virtue would have only a secondary place in moral philosophy. But the thesis of uncodifiability excludes a head-on approach to the question whose urgency gives ethics its interest."^[19] Leaving aside the question of uncodifiability for the moment, the claim that the impor-

— 375 —

tance of the concept of virtue in moral philosophy will be diminished if we were to formulate general principles is not obvious. For the general thesis that "if some concept C of some discipline D can be defined in universal terms, then C cannot be of primary importance in D" is not self-evident. Take, for instance, the capacity to speak grammatically or to rec-oguize grammaticality and the universal rules of grammar. That there are such rules does not necessarily affect the importance this capacity has for linguistic theory. But perhaps the capacity for grammar is not like virtue.^[20] Take, then, health, which Aristotle treats very much like virtue: health is to the body what virtue is to the soul. Now there are rules as to what health is and what things or activities generate it or maintain it, and being healthy is not the same as knowing the

principles of health. Yet that there are such principles about health does not make the concept of health of secondary importance in medicine. Again, choice is of great importance to ethics. But if there are or could be general principles about choice, as choice theory maintains, the importance choice has for ethics will not be diminished because of that. Similarly, if there were general rules specifying virtuous behavior, this would not necessarily make the concept of virtue of secondary importance for ethical theory, for the latter may be concerned as much with how we should do as with what we should be, or as much with the principles specifying what is correct to do as with the kind of persons or characters we should be.

Universality and Ethical Theory

If I am correct in distinguishing among practice, practical knowledge, and ethical theory, then the question arises as to whether Aristotle, in spite of the inexactness he attributes to the subject matter of ethics and the accounts of it, nonetheless takes general principles to be indispensable to ethical theory. I argued earlier (chap. 3) that his own investigation in the N.E. is exclusively concerned with the general or universal aspects of conduct and not with the particulars. It is concerned above all with the basic elements of the discipline, that is, the things that are principles in the sense that Aristotle understands the term. And so Aristotle puts forth a number of universal propositions that comprise the basic elements and principles of the discipline: The good is the end, happiness is the end that is and can only be pursued for its own sake, happiness is the most perfect end, virtue is a disposition or state of character, virtue is related to a mean, and so forth. Aristotle's investigation is also concerned with the specific virtues, with formulating the universal principles that define the nature of each of the virtues—for example, the one defining distributive justice: "Justice is therefore a sort of proportion, for proportion is not a property of numerical quantity only, but of quantity in general, proportion being

— 376 —

equality of ratios, and involving four terms at least" (*N.E*. 1131a30). And some of these general propositions could be construed as being normative: they tell us what justice, courage, gentleness, and so on are or what just, courageous, gentle, and so on behavior is.

But there is also the concern with general or universal principles in our sense of the term "principle," that is, general propositions that are unequivocally normative: All malice, shamelessness, envy, adultery, theft, and murder are bad (1107al 0); among friends who are unequal, the one who is benefited in possessions or excellence must repay what he can, namely honor (1163b12); a son never ought to disown his father (1163b18); a debtor ought to pay what he owes (1163620); for the most part one ought to return services rendered (1164632); and so forth.

Yet the fact, if it is one, that Aristotle in his own investigation sought general principles does not show that he considered ethics to necessarily aim at the universal or general. It does not show by itself that he considered principles, either in his or in our sense of this term, of the general or universal type to be indispensable in ethics. Different considerations, however, show that Aristotle did think ethics to be essentially concerned with the universal. For it is a systematic investigation; it is a discipline, and every discipline is, according to him, concerned with the universal.

That scientific knowledge or that any discipline (

figure

) is essentially concerned with the universal is, of course, never doubted by Aristotle (see *Met* . 1003a14, 1059b24, 1060b19; *Post. Anal* . 87638, 88630). But does he also take this to be true of practical disciplines like ethics, politics, the legislative discipline, medicine, rhetoric, and so forth? There is no question that Aristotle does so. In *Rhet* . (1356b29) he remarks about medicine and rhetoric: "no art has the particular in view, medicine for instance what is good for Socrates or Callias, but what is good for this or that class of person (for this is a matter that comes within the province of an art...); similarly, therefore, rhetoric will not consider what seems probable in each individual case, for instance to Socrates or Hippias, but that which seems probable to this or that class of person." And in *N.E*. (1180b15), where Aristotle is concerned with the problem

of the moral education of the citizens by means of the appropriate laws and constitution, he insists again that the legislative or political art aims, like medicine, at the universal: "for the sciences [

figure

] both are said to be, and are, concerned with what is common." The person who lacks knowledge of the universal in medicine, although he might be able to treat someone successfully, is nonetheless without the science or art (

figure

1180bl7). And so, Aristotle concludes, that anyone in medicine or the legislative and political art who wishes to make himself a master of the art or discipline "must advance to general principles, and acquaint himself with these by the proper method: for science, as we said, deals with the universal. So pre-

— 377 —

sumably whoever wishes to make other people better (whether few or many) by his care, must endeavor to acquire the science of legislation—assuming that it is possible to make us good by laws" (1180b23). And law, that which the political or legislative art studies or aims at, is always or in all cases universal (

figure

, 1137b13).

But ethics is, according to Aristotle, a practical discipline like medicine or politics, and, therefore, at least in part, its concerns should also be with the universal. Aristotle takes it for granted that this is indeed the primary task of ethics: to provide general accounts or rules. This is assumed to be something that is obvious, something that needs no further discussion or explanation. On the contrary, it is the concern of ethics with the particular that we need to be reminded of or that requires explanation. Some types of formal inexactness are discussed primarily in relation to universal or general accounts, and we need to be reminded, therefore, that they apply, and perhaps more so, to less general or more specific accounts (see 8.2). Aristotle reminds us again (1107a27) that we must not stop at the general account of virtue, but must proceed down to the individual treatment of each one of the virtues and give details of the particulars. But, unlike the concern of ethics with the universal which Aristotle takes to need no explanation, he feels compelled to explain why we need to reach the level of the particulars: We need to do so, according to him, because conduct deals with the particulars. What Aristotle does in his own investigation, that is, focusing on general or universal accounts, is, then, no accident. It is for him a necessary consequence of the assumptions that ethics is a discipline and that a discipline is essentially concerned with the universal.

As I said at the beginning of this chapter, the role assigned to generality or universality may vary from one ethical theory to another. Some rule utilitarians, for example, introduce general rules in order to avoid the well-known problems raised by act utilitarianism when it insists that utility calculations for determining rightness or wrongness must be done for each individual action. Doing so, the critics argue, leads easily to situations where an action that has a certain moral property (e.g., being right or wrong) because of its relation to a general rule may have the opposite property because of the outcome of a particular utility calculation in a particular context. Hence, the move of rule utilitarians to calculate the utility of general rules which are then used to determine the moral properties of particular actions. To some, however, universality is itself a substantive moral maxim; it is a normatire principle implying parity of treatment. But to others, for example, to prescriptivists like Hare, it is a formal feature of morality, a logical, and hence defining, characteristic of moral judgments.

It is not altogether clear how Aristotle construes the universality or

— 378 —

generality of ethical principles that presumably theory aims at and action requires. Even if universal principles were to be considered necessary for acting virtuously, this by itself would not be sufficient for distinguishing, and therefore for defining, ethical actions from actions pertaining to the various skills, competences, or arts. For speaking grammatically in the strict sense requires, according to him, knowledge of the general rules of grammar, and there is no clear evidence that Aristotle thought that every moral judgment implies a universal, and that this is a logical feature of moral discourse.

Yet Aristotle insists that maxims are universal (*Rhet*. 1394a31) and that law is general (*N.E*. 1137b13). But what is the status of the universality or generality of maxims or law? Is Aristotle making an empirical observation about maxims when he says "a maxim is a statement, not however about particulars, as, for instance, what sort of man Iphicrates was, but general"? This may not be altogether implausible. Perhaps he is asserting an empirical generalization about maxims—namely, that as a matter of fact maxims are general. The same, of course, could be said about the generality of law. Yet there seems to be something more to the relation between universality and law or maxims than is conveyed by the empirical generalization view. Admittedly, there can be laws dealing with particulars, for example, a law decreeing that Pericles is to be honored on such and such a day or that Aristeides is to be ostracized on a specific day. But laws and maxims cannot be systematically particular if they are to be guides to practice. There cannot be a law or maxim for each particular for, as Aristotle observes, the particulars are infinite (*Rhet*. 1374a30).

But the fact that generality seems to be almost an essential feature of law and maxims shows that it cannot by itself define what is essential to morality, for it appears to be a characteristic of anything that can be a guide to practice, for example, of prudential maxims or rules of etiquette, and not only of prescriptive judgments or language. In a way any judgment can be a guide to action. If, for example, I inform you that your car is on fire while you are driving, I am telling you something with the intent of guiding your action. And such nonprescriptive guides to action are often general, for example, "There is no man who is happy in everything" (*Rhet* . 1394b) or "Crocodiles will attack humans when hungry."

But for Aristotle the relation universality has to ethics seems to rest as much on his supposition that universal knowledge is a necessary element of practice as it does on his assumption that ethical inquiry is a discipline. The universal is, according to him, the goal of every discipline. To perform an action or produce something by using the practical or productive dis-ciplines—since these are, after all, their goals—is to do or make something from a cognitive state that is in part characterized by knowledge of uni-

— 379 —

versal principles. But this also implies that universality so understood cannot be the distinctive feature of ethics, since it is what all disciplines aim at and is presumably required in order to act, make, or theorize by using any and every practical, productive, or theoretical discipline. For example, to act correctly, to build properly, or to solve a geometrical problem one must presumably rely upon the appropriate practical, productive, or theoretical discipline or art and the knowledge of universal principles that are proper to it.

Yet the question raised earlier still remains: Is Aristotle entitled to appeal to universality given what he says about exactness/inexactness in ethics? And are not those philosophers correct who have recently argued that the quest for universality in ethics must be abandoned because of the supposed inexactness of the discipline? As noted in earlier chapters, Aristotle is rather cautious with regard to the conclusions he draws from the supposed inexactness in ethics. Take, for instance, the matter of exceptions in ethical principles or the uncodifiability issue. In spite of what he at times says about the pervasiveness of inexactness in ethics, he recognizes some propositions as having no exceptions, for example, that happiness is always desired for its own sake or that murder is wrong. And the supposition that many, or even most, propositions in ethics have exceptions does not for Aristotle imply that universal propositions are useless in practice or theory. And he has good reasons for taking such a position.

For exceptions are, as Aristotle observes, to be encountered in law, the propositions of medicine, and the propositions of the disciplines studying natural phenomena. If exceptions imply an uncodifiability for ethics of the kind McDowell speaks of—that is, there are no general propositions or that such propositions are of no use in practice or theory—then the same would be true for law, medicine, and natural sciences. But there are general propositions; there are general legal principles, general medical rules, and natural laws. There is, in other words, codification of what is legal, what is proper in medicine, or what is true in nature. It is, indeed, because we have such codification that we can speak of exceptions.

The correct thing to do when we recognize that ethical, legal, medical, or scientific propositions are inexact because they have exceptions is not, according to Aristotle, to abandon universal propositions, but rather to pay heed to the exceptions. For example, we need to examine whether a particular legal case is really a case that can be handled by the law: The lawmaker is, Aristotle argues, "obliged to make a universal statement, which is not applicable to all, but only to most, cases; . . . one must have recourse to general statements; so that, if a man wearing a ring lifts up his hand to strike or actually strikes, according to the written law he is guilty of wrongdoing, but in reality he is not; and this is a case of equity" (*Rhet* . 1374a30). The same is true in medicine. There are, perhaps, ex-

- 380 -

ceptions to every medical rule or general statement, but this does not mean that what pertains to medicine is not codifiable or that general propositions are useless in medical practice or theory.

General propositions are indispensable for the purpose of explanation in any field. Explanations in medicine or ethics may not be as exact as those in mathematics, for their demonstrations are inexact, and for the reasons discussed earlier, but they are explanations nonetheless. That chicken is wholesome, for example, is explained by showing that it can be deductively inferred from propositions stating that light meats are wholesome and chicken is a light meat. The general proposition provides, according to Aristotle, part of the causal explanation of the property of wholesomeness in chicken.^[21] The same is true in the case of the law and ethics—more general propositions can be used to explain or justify less general ones.

But are explanations in ethics or law explanations at all if the general propositions in these disciplines do not describe or represent some real structure in the way scientific laws presumably do? Might not general propositions in such disciplines be, after all, theoretically useless? This is clearly a difficult and complex matter, and cannot be discussed in any detail here. But the contrast drawn between scientific laws and universal propositions in ethics presupposes that a metaphysical realism obtains in the domain of science—laws describe a real structure—but not in the domain of ethics. I do not wish to defend metaphysical realism either in science or in morals, but those who accept it in science owe an explanation of why it is not true in morals. Aristotle, of course, accepted metaphysical realism across the board, and therefore for him general propositions and explanations in ethics do not pose the problems that they pose for the moral antirealists.

Suppose, however, that the moral antirealists are correct, and that universal propositions in ethics, unlike laws of nature, do not represent a real structure. What, then, happens to explanations outside of science? There is explanation after metaphysical realism. For such realism has not been shown to obtain anywhere, and therefore it cannot be said that the possibility of explanation in any domain has been established on the basis of the truth of such a realism. Do we know that a deductive inference in physics that uses as one of its premises Newton's first law of motion is an explanation because we know that this law captures the metaphysical structure of the world? And do we know that a deductive inference in Euclidean geometry is a proof or explanation of the Pythagorean theorem because we know that Euclidean axioms represent the metaphysical geometrical structure of the world?

Aristotle embraced metaphysical realism, and therefore the doubts about explanation the antirealists raise did not concern him. The important point to keep in mind` however, is that we can speak of explanation, and

- 381 -

hence of the universal propositions required for it, even if we set such realism aside. We can speak of explanations from propositions that are simply true or even from propositions that stipulate what is legal, correct, or right and, of course, the opposite of these. The most general of such propositions can explain the less general ones. Now such explanations may not reveal the ultimate structure of the world, but they may

271 of 362

reveal the structure of a system of rules or beliefs. They might show how a system hangs together, how some of its elements are subordinate to and justified by others. Not all explanations are, after all, alike. They need not all invoke or presuppose a view about the underlying structure of reality.^[22] Thus, we appeal to the Addition Property of Equality—if the same number is added to equals, the sums will be equal—in order to explain why two teams that are tied at halftime will also be tied at the end of the game if they score the same number of points during the rest of the game.

But what about the consequences of vagueness for universality? The vagueness that Aristotle associates with ethics is not necessarily the vagueness Baier attributes to moral rules or principles. Baier is primarily concerned with the lack of determinate content of moral rules, their supposed emptiness or vagueness when they are viewed independently of the network of cultural practices and institutions that provide the necessary content. Baler writes:

Behind the short prohibition "Thou shalt not kill" lie as many tacitly understood qualifications and cultural and legal discriminations as lie behind "Thou shalt not love thy neighbor's wife." Just as the latter presupposes determinate institutions of marriage, determining individual marital rights, so "Thou shalt not murder" presupposes a complex set of culturally specific rights, powers, and prerogatives ... Any popular version of a short set of moral don'ts, such as "don't kill," "don't steal," "don't break promises," "unless you are an official don't coerce," brings with it a very rich cultural baggage, if it is to have any content at all.^[23]

The problem for Aristotle is not that there is a rule which is empty when it is detached from the practices and institutions that give it content, but rather that there are difficulties with providing precise rules about what is presumably inexact. Thus, it is difficult, Aristotle thinks, to provide a rule that specifies when we are required to return a favor to a benefactor rather than to give a gift to a companion, assuming that we cannot do both (*N.E*. 1164625). Any rule about such matters is, Aristotle thinks, defeasible, and even if there are institutions or practices—for example, those of benefiting people, doing favors, or giving gifts—it is not clear how and whether their existence solves Aristotle's problem. The phenomena exhibit such variation that an institution or a practice need not necessarily fare better than a rule.

- 382 -

Baier may be correct in pointing out that a rule presupposes a way or form of life, and therefore cannot really be understood independently of the things it rests upon or presupposes. But, if Wittgenstein is correct, this is true of every rule and of all language. Language is, according to him, itself a practice, an institution, or a form of life, and a linguistic expression has whatever meaning or content it has by virtue of its being part of such a practice, institution, or form of life. A simple rule like that of the directional arrow rests on a practice that gives it the content or meaning it has for us. But so does a rule or law of physics, for example, that F = ma. This law cannot be understood without presupposing a whole system of thought and practice. But these facts, if they are facts, about the way rules acquire content or meaning do not necessarily show or imply that general rules have no place in a discipline or that they cannot guide actions. The law that F = ma is a component of a theory and the rule of the directional arrow is a guide to action.

Now it may be that ethical rules or principles are more dependent on institutions or practices than other rules. And it may be, if Aristotle is correct, that they also are more difficult to arrive at or that they have more exceptions than other rules. Yet general rules need not be useless because of such characteristics. They could play the role they can play as long as we are aware of their limitations. And this is, I believe, Aristotle's own conclusion. He does not urge that we abandon general rules, but that we keep in mind their inexactness and that we are aware of the consequences such inexactness has for the epistemic and practical functions general rules or principles have.

Inexactness and Truth

The issue of the relation of truth to ethical judgments has figured prominently in many of the recent ethical theories, both normarive and metaethical. In most cases, these theories have claimed that ethical judgments in particular, and value judgments in general, lack truth values. The reasons given for denying truth values to ethical judgments have not always been the same.

In some theories the thesis that ethical judgments lack truth values is assumed or in some way established prior to giving an account of the nature or logic of ethical discourse or language. The next task for such theories is to produce an account of the nature or logic of ethical discourse that explains the thesis or that is not inconsistent with it. Other theories, however, proceed by giving an analysis of ethical discourse which implies the thesis that ethical judgments do not have a truth value.^[24] In both types of theory the result is the same: ethical judgments are construed as having, strictly speaking, no cognitive significance, as not being statements or as-

— 383 —

serting propositions. The function of ethical judgments, according to these noncognitivist theories, is to express or evince something (e.g., an attitude or a feeling) and not to assert or state anything that can have a truth value.

What function, or functions, do ethical judgments have for Aristotle? Quite frequently in the *N.E*. Aristotle points out that we praise the virtuous person as well as the dispositions or states of character that are virtues and we blame the person of vice as well as the dispositions that are vices (1101b14, b29, 1103a7, 1106al, 1106b25, 1107b33, 1109b23, 1119b22, etc.). Although Aristotle does not say how, or by what linguistic means, we praise or blame agents or dispositions, it is reasonable to suppose that he takes the utterance of judgments such as "A is brave," "B is just," or "Pettiness is not noble" to be, among other things, means of praising agents A and B and disapproving of petty behavior. One of the functions, then, some ethical judgments may have for Aristotle is that of expressing praise or blame.

There is, however, no evidence that Aristotle segregates completely, as the noncognitivists often do, the functions of linguistic expressions. There is no evidence, in other words, that he thinks that there are two totally distinct sets of judgments, each set having a different function: one set consisting of those judgments whose function is cognitive (they assert or state a proposition) and the other consisting of those judgments whose function is noncognitive (they express or evince something). Noncognitivists, especially the emotivists, have invariably accepted or argued for such a segregation of the function of judgments or linguistic expressions, but no convincing reasons have been given in support of such a view. In any case, Aristotle does not say that if an ethical judgment is used to express an attitude or to praise or blame someone or something, it therefore does not state or assert something and consequently cannot have truth values.

Some philosophers have, however, argued that certain judgments may lack truth values for reasons that are different from those the noncognitivists give. Dispositional judgments are, according to these philosophers, such a kind of judgment. Thus, Gilbert Ryle argued that a judgment such as "Sugar is soluble" is not really a statement asserting that sugar has a property, but rather it is a means or way of licensing an inference about sugar—that is, it licenses us to infer that sugar will dissolve under certain conditions^[25] Now Aristotle gives a dispositional analysis of the virtues and vices, and therefore many ethical judgments will, in his theory, turn out to be dispositional ones. But, again, there is no evidence that Aristotle considers dispositional judgments not to be statements asserting (or denying) that a subject has a property, and therefore not to have a truth value.

In general, Aristotle does not say that ethical judgments lack truth values. On the contrary, he often speaks of propositions or principles as

— 384 —

being true or false, of our accounts as agreeing or not agreeing with the facts, of accounts that are correct or mistaken, and so forth. Thus, Aristotle claims that his account of virtue in terms of the mean must be tested for its truth and that particular or specific accounts are more true than general ones (1107a30), that the principle of the mean is true (1138625), that accounts in ethics must agree with the facts of conduct (1177a19), that the thesis that all things aim at the same good is not true (*E.E.* 1218a30), that the claim that the happy man needs no friends is not true (*N.E.*

1169625), that self-love is wrong does not agree with the facts (1168a30), that pleasure is the good is mistaken (1172a25), that the highest good or happiness is contemplation agrees with the truth (1177al 9), and so on.

But is Aristotle entitled to claim that ethical judgments have truth values in view of what he says about the inexactness of the domain of ethics and our accounts of it? To begin with, not all types of inexactness need imply that truth values are impossible. Aristotle correctly points out that certain accounts are inexact but true. Thus, accounts or ethical statements that are inexact by lacking in detail or specificity can, nonetheless, be true. So, Aristotle says, the thesis that the virtues are means between excess and deficiency "although true, is not precise" (1138625; see also *E.E.* 1216b32, 1220a16, 1249b5; *Met* . 1035b3; *Pol* . 1341b39). Inexactness, then, in the form of lack of detail or specificity does not imply a lack of truth values. Indeed, the fact that an account is general and lacks detail does not even affect the kind of truth value it has; it does not affect whether the account is true or false. The truth value it has will depend on other factors.

But while it is perhaps easy to see that inexactness in the form of lack of detail or specificity in a statement S does not pose any particular problems with respect to assigning truth values to S, or with respect to S's being true, other types of inexactness may be more problematic. Consider first the matter of indefiniteness or vagueness. The moderate view holds that statements with vague predicates can be assigned truth values only in certain cases—that is, in those cases where it is possible to determine whether the property signified by the vague predicate obtains or not: the clear-cut or well-defined cases. But there are cases of statements with vague predicates where, according to this view, we cannot assign truth values—that is, in those cases where it is impossible to determine whether the property signified by the predicate obtains or not: the cases where it is is impossible to determine whether the property signified by the predicate obtains or not: the cases where it is is impossible to determine whether the property signified by the predicate obtains or not: the cases where it is is impossible to determine whether the property signified by the predicate obtains or not: the cases where it is is impossible to determine whether the property signified by the predicate obtains or not: the cases that are not well-defined or fall at the fringes.

The more extreme view, on the other hand, claims that no truth values can be assigned to any statement containing a vague predicate. Frege's claim that the law of the excluded middle fails whenever statements contain vague predicates is such a view. More recently, S. C. Wheeler has argued that vague predicates purport to signify properties that are not true of anything. He writes:

— 385 —

I begin with a pair of premises:

(a)If a putative property is a real property, then it is a matter of fact whether an object has that property or lacks it.

(b)Whether a purported object exists or not is a matter of fact. A purported object either exists or doesn't exist.

I take these to be basic "realistic" principles of ontology, which state what is to be and to have a property.... Since we are very sure that any precise borderline between having this purported property [of being a tall person] and lacking it is absolutely arbitrary, it seems clear that there is no property of being a tall person. Since it is up to us, it is not a matter of any fact about the world. Since there is no property nothing has it. There are no tall persons.^[26]

In a way, Wheeler's rather drastic conclusion does not deny that vague statements can have truth values, but it does deny that some or many vague statements are true—namely, those that assert that something has a property that is supposedly signified by a vague predicate. Thus Wheeler takes the statements "a is tall" or "b is a table" to be false, while he takes "a is not a table" or "There are no tall persons" to be true. If ethical accounts or concepts are as vague as Aristotle claims, then Wheeler's thesis implies that many propositions in ethics are false. For example, all those containing any of the predicates purporting to signify any of the virtues and that assert of anything that it is an instance of a virtue will be false. To assert that "a is brave" or "b is just" is, presumably, to assert something that is false, since the predicates "brave" or "just" do not signify any real properties, there is no bravery or justice.

Wheeler's argument is intriguing, but its conclusion is clearly unpalatable. As he points out, if the argument is valid there are no ordinary objects. But Wheeler's move

from "P is a vague predicate" to "P signifies no property" or from "Some things are borderline cases of P" to "There are no P's" is not obvious. It seems to dismiss the possibility that there are vague properties that have both a well-defined region and a not well-defined region. As Russell argued some time ago, a vague predicate, although it has fuzzy boundaries, may signify any member of a set of well-defined properties. For example, the predicate "being tall" may signify any one member of the disjunctive set "being 6 feet 2 inches, 6 feet 3 inches, and so on."^[27] This is, essentially, Aristotle's own solution to the problem of the truth of some vague predicates. For as he says in *N.E*. (1170b30), the predicate "city" may be vague and perhaps the proper size for a city "is not one particular number, but any number between certain limits" (see 8.11). Similarly, while it may be difficult to draw the exact boundaries of gentleness or irascibility, there is nonetheless a range of behavior exhibiting anger which is clearly gentle or irascible behavior.

Aristotle is not willing to accept that, since the predicate "animal" has

— 386 —

borderline cases (e.g., the Sponges), there are no clear-cut cases, there are no animals. He seems even unwilling to concede the moderate view stated above—namely, that there are no truth values for the borderline cases. For most often what he stresses is the difficulty of determining the truth value—determining, for instance, whether the Sponges or the Ascidians are animals or not. Of course, things may be such (they may exhibit the kind of "continuous gradation" Aristotle speaks of) that it is impossible to determine what the truth values of some statements are. Yet Aristotle does not embrace the extreme view concerning truth values of vague statements, and he does not even seem to be concerned with, and he certainly does not address, the problem about the truth values in the borderline cases that the moderate view raises.

The kind of inexactness in ethical accounts that Aristotle identifies with being true for the most part has, however, some interesting consequences. A universal proposition that fails to apply in some cases is, strictly speaking, false, although it may be true of most things denoted by the subject-phrase of the proposition. So, the proposition "Honey-water is beneficial when sick with fever" is false, although it may be true that in most cases of being sick with fever honey-water is beneficial. Thus, Lukasiewicz remarks in his study of Aristotle's syllogistic theory that "If there is no general law that every old man should go grey, because this is merely 'usual' [for the most part], and some old men do not go grey, then, of course, the latter proposition is true and therefore possible, but the former is simply false."^[28]

Now, if Aristotle is correct in claiming that all or most statements in ethics are true for the most part, then clearly all or most statements in ethics will be simply false. But of what value is a theory about a certain domain if all or most of the propositions that constitute the theory are false? Does truth matter for theories, laws, or explanations? Some philosophers, motivated by a variety of reasons, have argued recently that truth is not or should not be a goal of scientific investigation or that truth does not really matter as far as explanation is concerned. Kuhn has, for example, put forth the view that truth drops out of the picture as a goal of science, and that theories must not be judged in terms of how true they are or how well they approach the truth, but rather how they are able to solve puzzles. Van Fraassen has argued against the idea that explanation requires true theories, although he thinks that the truth of the observational contents of theories are needed for explanation. But Cartwright has defended the view that truth does not matter at all for explanation, since all laws are, strictly speaking, false and laws are indispensable for explanation.^[29]

Cartwright's view rests on a claim about the truth of general statements which is identical to Aristotle's claim that general statements about the domains of conduct and of nature are true for the most part and therefore, strictly speaking, false. Yet Aristotle does not draw the conclusion that

— 387 —

Cartwright draws. I know of no evidence where Aristotle argues that truth does not matter in any domain of investigation because the general statements about the domain have exceptions or are true for the most part. And I know of no evidence where

Aristotle defends, or simply adopts, the view that truth is not needed for explanation or is not what we aim at in our investigation. The truth of the propositions about some domains may be deficient, the propositions about these domains may be inexact, but the task, according to Aristotle, of anyone investigating these domains is the attainment of truth, the discovery of how things are. Aristotle looks at the deficient or inexact propositions not as the logician often does—Aristotle, of course, does exactly this in his works on logic—that is, as simply false, but as reasonable approximations of the truth about domains that are themselves deficient or inexact.

Yet there is a problem here. For while it is true that if our propositions are almost true they provide us with good reasons for the truth of the conclusions we draw from them, Aristotle expects much more. He expects propositions that are almost, but not strictly, true to give syllogistic explanations or to reveal the causes of things. But consider again the two syllogisms about the hare and the elephant ("The hare is a fissepede and Fissepedes produce many offspring, therefore the hare produces many offspring" and "The elephant is a fissepede and Fissepedes produce many offspring, therefore the elephant produces many offspring"). These syllogisms have the same logical form and their premises are almost true (they are true for the most part), while only the conclusion of the first is true for the most part. Aristotle wants to say that the first syllogism gives an explanation or the causes of what is stated in the conclusion. But if the facts that the hare is a fissepede and fissepedes produce many offspring provide us with the explanation or the cause why the hare produces many offspring, why don't the corresponding facts about the elephant give us the explanation or the cause of the number of offspring in its case? It is clear that what is needed in order to avoid these problems is to have as premises of causal or explanatory syllogisms propositions that are strictly true. As Aristotle observes, one needs to move away from the characteristic of being a fissepede and seek the characteristic that is the cause why some living things produce many offspring, that is, the characteristic of being small (see chap. 7). Is then Aristotle's syllogism about the hare, which uses propositions that are true for the most part (i.e., "Fissepedes produce many offspring"), altogether useless? Doesn't it tell anything about the reasons why the hare produces many offspring? Aristotle probably looks at it as a first approximation, as something that applies to almost all the fissepedes. And by focusing on those to which it applies we can perhaps identify an even better approximation to the truth. Since the fissepedes

— 388 —

to which our syllogism applies are the small ones, we are led to correlate the number of offspring of a kind to its size and thus to obtain more reliable syllogisms and causes. By such steps we come closer to identifying causes that, though they may not be universal, are very close to being so. They lead us along the way to finding universal causes, which is, after all, the aim of inquiry.

- 389 -

Notes

One Introduction

1. I shall follow the practice of listing at the beginning of the appropriate chapters all the relevant remarks Aristotle makes on exactness in the ethical treatises, starting with those from the *N.E*. I will also append any relevant remarks from *M.M*., although I shall not draw any conclusions that are based solely on them since the authenticity of this treatise remains in doubt. I shall number Aristotle's remarks by using a system that indicates by the first digit of the number assigned to a remark the chapter in which the remark occurs. This system will make it easier to refer to Aristotle's remarks throughout the various chapters of this study. At times, I will also number some other passages that I quote from Aristotle and Plato in order to facilitate subsequent reference to them.

Following standard practice, I shall refer to passages in Aristotle's works by identifying the appropriate Aristotelian treatise followed by a Bekker page (e.g., N.E. 1097a15). Occasionally, I refer to a portion of Aristotle's text by identifying the appropriate Aristotelian treatise followed by the book and chapter of that treatise which contains the text (e.g., N.E. 1.x). Where the identity of an Aristotelian treatise is obvious from the context, I omit identification of the treatise in referring to a passage. Again following standard practice, I refer to passages in Plato's works by identifying the appropriate Platonic work followed by a Stephanus page (e.g., *Republic* 602B).

2. Xenophon, Atheniensium Respublica , 1.5.3.

3. Euripides, Hippolytus , 460ff., 1115. For a discussion of the different aspects the ancients associated with

exactness, see D. Kurz, AKRIBEIA (Goppingen: Verlag Alfred Kummerle, 1970).

4. A. Grant argues in his commentary on the *N.E*. that its method is demonstrative, that the investigation proceeds by giving deductions from a priori principles—see his *The Ethics of Aristotle* (New York: Arno Press, 1973), pp. 396-397. More recently, T. Upton in his "Aristotle's Moral Epistemology," *The New Scholasticism* 56 (1982), pp. 169-184, and A.M. Wiles in her "Method in The Nicoma- *chean Ethics," The New Scholasticism* 56 (1982), pp. 239-243, defend a view which

is quite similar to that of Grant. D. Keyt's reconstruction of Aristotle's derivation of the human good in the N.E. provides the best evidence for the use of the deductive method; see his "Intellectualism in Aristotle," in J. P. Anton and A. Preuss (eds.), Essays in Ancient Greek Philosophy, vol. 2 (Albany: State University of New York Press, 1983), pp. 364-387. H. D. P. Lee, in his "Geometrical Method and Aristotle's Account of First Principles," Classical Quarterly 29 (1935), pp. 113-124, argues that Aristotle's epistemological model is that of the axiomatic-deductive method we encounter in Euclid's works and that Aristotle's views influenced Euclid. That the inductive method is the method of Aristotle's own ethical investigation has been advocated by J. A. Stewart, Notes on the Nicomachean Ethics of Aristotle (Oxford: Clarendon Press, 1892), vol. 1, p. 48, and more recently by R. A. Gauthier and J. Y. Jolif, Aristote: L'Ethique a Nicomaque (Louvain: Publicationes Universitaires, 1970), vol. 2, pp. 19-20, and N. O. Dahl, Practical Reason, Aristotle, and Weakness of the Will (Minneapolis: University of Minnesota Press, 1984), pp. 70ff. And that the method is dialectical has been advocated by J. Burnet in his text of and commentary on the N.E., The Ethics of Aristotle (London: Methuen, 1900), p. v, L. H. G. Greenwood, Aristotle: Nicomachean Ethics, Book VI (Cambridge: Cambridge University Press, 1909), pp. 131-133, and H. H. Joachim, Aristotle, The Nicomachean Ethics (Oxford: Clarendon Press, 1962), p. 3. More recently, some version of the dialectical method has been defended by T. Irwin in his "Aristotle's Methods in Ethics," in D. J. O'Meara (ed.), Studies in Aristotle (Washington: Catholic University of America Press, 1981), his "First Principles in Aristotle's Ethics," *Midwest Studies in Philosophy*, vol. 3 (1978), his translation and commentary of the N.E. (Indianapolis: Hackett, 1985), and his Aristotle's First Principles (Oxford: Oxford University Press, 1988), as well as by J. Barnes, "Aristotle and the Methods of Ethics," Revue *Internationale de Philosophie* 34 (1980), pp. 490-511. For some critical comments on the view that the method of ethics is dialectical, see W. F. R. Hardie, *Aristotle's Ethical Theory* (Oxford: Clarendon Press, 1968), pp. 32-45.

5. G. E. L. Owen, "*Tithenai ta Phainomena*," in *Aristote et les Problemes de Methode* (Louvain: Publicationes Universitaires, 1961), pp. 83-103. For further discussion on the issues Owen raises, see M. Nussbaum, *The Fragility of Goodness* (Cambridge: Cambridge University Press, 1986), ch. 8, and T. Irwin, *Aristotle's First Principles* (Oxford: Oxford University Press, 1988). Irwin in the latter work distinguishes between strong and weak dialectic.

6. Of course, as Hardie, *op. cit.*, p. 36, has suggested, it is not obvious that we should be speaking of *the* method in ethics.

Two The Philosophical Background

Aristotle advocates, as well as uses, this approach in his own investigations in *Met.* A and *Anim.* I.
 See Heliodorus, *In Ethica Nicomachea Paraphrasis*, in G. Heylbut (ed.), *Heliodori in Ethica Nicomachea Commentaria* (Berlin: Reimer, 1889); *Aspasii , In Ethica Nicomachea Commentaria*, in G. Heylbut (ed.), *Aspasii in Ethica Nicomachea Ethica Commentaria* (Berlin: Reimer, 1889); Eustratius, *In Ethica Nicomachea I Commentaria*, in G. Heylbut (ed.), *Lestratii et Michaelis et Anonyma in Ethica Nicomaehea Commentaria*

(Berlin: Reimer, 1892); J. Burnet, *The Ethics of Aristotle* (London: Methuen, 1900); L. H. G. Greenwood, *Aristotle: Nicomachean Ethics, Book VI* (Cambridge: Cambridge University Press, 1909).

3. See, for example, W. Jaeger, *Aristotle: Fundamentals of the History of His Development* (Oxford: Oxford University Press, 1948), especially chs. 9 and 10; W. F. R. Hardie, *Aristotle's Ethical Theory* (Oxford: Clarendon Press, 1968), especially ch. 3; G. E. R. Lloyd, *Aristotle: The Growth and Structure of HIS Thought* (Cambridge: Cambridge University Press, 1968), pp. 36-37; C. J. Rowe, *The Eudemian and Nicomachean Ethics* (Cambridge: Proceedings of the Cambridge Philological Society, 1971); T. Irwin, *Nicomachean Ethics* (Indianapolis: Hackett, 1985).

4. I follow tradition here and consider the following of Plato's dialogues to be among the Early or Socratic ones: *Apology, Crito, Ion, Hippias Minor, Hippias Major, Charmides, Euthydemus, Euthyphro, Gorgias, Laches, Lysis, Protagoras, Meno*. For a discussion of some of the problems about the dating and ordering of the Platonic Dialogues, see C. H. Kahn, "Did Plato Write Socratic Dialogues?" *Classical Quarterly* 31 (1981), pp. 305-320.

5. See, for example, the discussion in I. M. Crombie, *Plato: The Midwife's Apprentice* (London: Routledge & K. Paul, 1964). It is difficult to see how there could be any doubt about Socrates' interest in obtaining definitions when we consider the number of definitions that Socrates and his interlocutors put forth, examine, amend, and utilize in their discussions. The best account of these matters is to be found in G. X. Santas, *Socrates* (London: Routledge & K. Paul, 1979). Santas gives a list of all the definitions presented by Socrates' interlocutors and by Socrates himself, and shows that many are clarified and used in subsequent discussions (see especially ch. 4). Much of what I say here on Socrates follows Santas's line of argument.

6. Indeed, the refutations of definitions themselves may serve purposes that go beyond refutation. As Santas points out, *op. cit.*, p. 100, refutations may serve the purpose of showing that Socrates objected to some dominant ethical ideas, of showing that his contemporaries had unclear ideas about certain ethical ideals, of making clear the conditions that must be met by definitions, and so forth.

7. Santas comes to the same conclusion on this matter: "Socrates thought that the search for definitions is a viable and fruitful philosophical enterprise," *op. cit.*, p. 101.

8. The definitions that are presented or examined in the Socratic Dialogues are not all of the same type. For a discussion of the differences among them, see Santas, *op. cit.*, and R. E. Allen, *Plato's "Euthyphro" and the Earlier Theory of Forms* (New York: Humanities Press, 1970). That Socrates is not interested in ostensive definitions or definitions by example is made clear when in the *Euthyphro* he rejects as an answer to his request for a definition of piety Euthyphro's reply that piety is what he is doing now. None of the definitions that are given by others and that have the form Socrates approves of, and none of the definitions that

Socrates himself gives, are ostensive or definitions by example. See on these matters the discussions by J. Beversluis, "Does Socrates Commit the Socratic Fallacy?" *American Philosophical Quarterly* 24 (1987), pp. 211-223, and A. Nehamas, "Confusing Universals and Particulars in Plato's Early Dialogues," *Review of Metaphysics* 29 (1975),

pp. 287-306. Nchamas in fact argues that even those definitions offered by some of Socrates interlocutors that seem to be definitions by example are not really in terms of concrete particulars but in terms of narrow universals. I do not of course mean to imply that Socrates does not use examples at all—e.g., in illustrating or testing definitions. For Socrates' use of examples, see G. X. Santas, "The Socratic Fallacy," *Journal of the History of Philosophy* 10 (1972), pp. 127-141; M. F. Burnyeat, "Examples in Epistemology: Socrates, Theaetetus, and G. E. Moore," *Philosophy* 52 (1977), pp. 381-398; and J. Beversluis, *op. cit.*

9. Socrates uses inline image at *Charmides* 160D, where he asks his interlocutor to take into account what has been said and derive, or arrive at, a definition of temperance. Although it is clear that Socrates has no theory of the syllogism, he is nonetheless using the term to signify something like the drawing of a conclusion from some other facts or propositions—and this is the ordinary meaning of the term.

10. Thus at *Top* . 100a25 Aristotle writes, "A syllogism is an argument in which, certain things having been laid down, something other than these things necessarily results through them." See also some comments on this issue by J. Barnes in his "Proof and the Syllogism," in E. Berti, *Aristotle on Science* (Padova: Editrice Antenore, 1981).

11. The problem of distinguishing between knowledge and belief is more complex than the way Socrates presents it in the *Meno*. But even in this discussion, Socrates hints that at least two issues can be distinguished: one concerns the state of mind or cognitive state of the person who knows in contrast to the state of the one who believes; the other concerns a possible difference in the contents of the two cognitive states. Sometimes Plato uses the latter distinction as a way of showing that there is a difference in cognitive states. Socrates, however, in the *Meno* is not saying that the objects of the two states are different, in the sense that what is believed cannot be known and vice versa. Yet he is pointing to some difference: the structure of the contents of the two cognitive states is different—in the case of knowledge the contents have the structure of causal explanations while in the case of belief they don't. Whether the distinction between knowledge and belief should be attributed to Socrates instead of Plato is still a matter of dispute among scholars of Plato's writings. The *Meno* is considered by some to be a transitional dialogue whose contents perhaps reflect the views of Plato rather than Socrates. But the fact that Socrates hints at the same distinction in the *Euthyphro* suggests that Socrates' views may not differ from those of Plato.

12. Vlastos makes this point in his "Reasons and Causes in the *Phaedo*," in G. Vlastos (ed.), *Plato*, vol. I (Garden City, N.J.: Anchor Books, 1971).

13. See also Vlastos's comments on this matter in his "*Anamnesis* in the *Meno*," *Dialogue* 4 (1965), pp. 143-167. Vlastos argues elsewhere that we find in the Platonic dialogues two different philosophers that can be identified as Socrates. The one is a moral philosopher who has hardly any interest in any branch of knowledge or in the nature of knowledge (epistemology). The other is someone with strong interests in certain branches of knowledge (e.g., mathematics) as well as the nature of knowledge itself; see his "Socrates," *Proceedings of the British Academy* 74 (1988). P. Woodruff has argued that Socrates is represented by Plato

as "making a distinction in use between two conceptions of knowledge with different epistemic standards." The one is common or nonexpert knowledge. The other is expert knowledge, the kind that has to meet quite high epistemic standards; see his "Plato's Early Theory of Knowledge," in S. Everson (ed.), *Epistemology* (Cambridge: Cambridge University Press, 1990).

14. The argument using the first hypothesis can be represented as an instance of the Aristotelian syllogistic form AaB, BaC inline image AaC (*Barbara*) and the one using the second hypothesis as an instance of AeB, AaC inline image CeB.

15. Some of these conditions for having a proof or demonstration are, of course, the conditions that Aristotle himself discusses in the opening sections of the *Post. Anal*. That Socrates sees the limitations of the method of hypothesis is made clear at *Meno* 89, where he recognizes that a hypothesis used in a proof must be true and we must know it to be so in order to accept the conclusion. The importance of knowing the truth of the premises of a demonstrative argument along the lines Socrates suggests is also discussed extensively by Aristotle. In *Post. Anal*. (84a5) he says that, when we do not know the premises of a demonstrative argument better than we know the conclusion, we will not have knowledge absolutely, "but only by hypothesis [inline image]." Of course, the term "hypothesis" has many other uses in both Plato and Aristotle that may be different from the one we are discussing here.

16. Aristotle, in whose philosophical thought demonstrative knowledge figures more prominently than any other kind of knowledge, argues that there are other kinds, and indeed that there must be, if there is to be demonstrative knowledge. The basic principles of the various disciplines cannot, according to Aristotle, be known by demonstration; they are instead known by intuitive induction or rational intuition. His arguments for the impossibility of knowing demonstratively the basic principles of the various disciplines are to be found in the opening chapters of *Post. Anal.* I and his account of the nature of nondemonstrative knowledge in the last chapter of *Post. Anal.* II. If P. Woodruff is correct (*op. cit.*), Socratic common or nonexpert knowledge is not knowledge by demonstration.

17. When speaking of kinds in the present context I am using the term "kind" to mean what it ordinarily means, i.e., a kind or type of thing, and do not mean to imply that matters of conduct constitute natural kinds. 18. Santas, *op. cit.*, designates this use of definitions as "epistemic use" and differentiates it from what he calls the "diagnostic use" (see below for a discussion of this use). In its diagnostic use a definition of F is to be used for determining whether some x is F whereas in its epistemic use it is a means for determining whether whatever is F is also G or whether F-ness itself is also G. Thus both these uses are epistemic in character and therefore designating one as epistemic does not really differentiate it from the other. Designating the use under discussion in the present context as demonstrative seems to me to better capture this role of definitions that Aristotle identifies in the Socratic theory/practice—namely, that they function as elements of demonstration.

19. Santas, op. cit. , pp. 125-126.

20. Socrates says, "If virtue is a kind of knowledge. . ." (86C), thus making a hypothesis about the nature of

virtue. The form of the assumed definition of virtue

is that used elsewhere by Socrates, e.g., "Courage is a kind of endurance of the soul" (*Lathes* 192B) or "Temperance is a kind of quietness" (*Charmides* 159B).

21. Even at *Protagoras* 361, where Socrates gives the impression that the definition of virtue will be sufficient for knowing whether virtue is teachable, his strategy makes it clear that he presupposes additional premises that he considers to be self-evident—i.e., that all knowledge is teachable and whatever is not knowledge is not teachable: "If virtue were something other than knowledge, as Protagoras tried to prove, obviously it could not be taught. But if it turns out to be, as a single whole, knowledge . . . then it will be most surprising if it cannot be taught" (361C).

22. Santas, op. cit. , p. 123.

22. Santas, op. cit. , p. 123.

23. *Ibid.*, p. 126. J. Beversluis, *op. cit.*, argues that Socrates does not take the definition of F to be a necessary condition for knowing other things about F.

24. See, for example, R. Robinson, *Plato's Earlier Dialectic* (Oxford: Clarendon Press, 1953); W. D. Ross, *Plato's Theory of Ideas* (Oxford: Clarendon Press, 1951); N. Gulley, *The Philosophy of Socrates* (London: St. Martin's Press, 1968).

25. Socrates, for example, claims at *Apology* 29B that acting unjustly is bad and shameful although he does not give nor is there evidence that he has a definition of justice or injustice. This may very well be the kind of knowledge P. Woodruff designates as nonexpert, ordinry, or common knowledge.

26. J. Beversluis, *op. cit.*, recognizes this, but contends that Socrates does not hold the general thesis that the definition is necessary for diagnostic purposes. It is quite possible, however, that Socrates generalizes from the contexts of disagreement and dispute to the general diagnostic thesis that makes the definition necessary for *knowing* that some particular is of a certain kind.

27. If forming a belief that some x is F by using the definition of F is to be of use in settling disputes about x being F, we must assume that those disputing about x at least agree on the definition of F. We must also assume that they agree on the relation the definition bears to the belief that x is F, that such relation justifies believing that x is F, and so forth. These assumptions may not be unreasonable to make, but it is not clear that, once they are made, what we have is only a belief and not knowledge, or whether anything less than knowledge will be sufficient.

28. This, of course, may not be so simple. For whatever is sufficient for knowing may be said to provide objective reasons that are sufficient for believing. Yet there could be subjective factors that might render these reasons insufficient for believing.

29. The strongest argument supporting the view that Socrates commits the Socratic Fallacy is made by P. Geach, "Plato's *Euthyphro* : Analysis and Commentary," *The Monist* 50 (1966), pp. 369-382. Santas had argued earlier ("The Socratic Fallacy," *Journal of the History of Philosophy* 10 (1972), pp. 127-141) that Socrates does not commit the Socratic Fallacy, but in his *Socrates* he claims that most likely Socrates did commit the Fallacy. But Santas argues that Socrates does not hold that the definition of F is necessary for forming a belief or judging that some x is F. Hence, he argues, Socrates does not make it impossible to proceed with the search for definitions by requiring knowledge of the definition of F in order to have a belief or judgment that some x is F. He does not require knowledge of the definition of F in order to believe or judge that something is a sample of F that can in turn be used as a basis for formulating a definition of F (see pp. 120-122

and 311-312). For criticisms of the views of Geach and Santas, see J. Beversluis, op. cit.

30. Socrates and Plato at times refer to the entities they are trying to define by using the abstract noun, e.g., Justice (inline image), or the neuter of the adjectival form, e.g., the just (inline image).

31. Thus, Aristotle writes, "But Socrates did not make the universals or the definitions exist apart; they [the Platonists], however, gave them separate existence, and this was the kind of thing they called Forms" (*Met.* 1078b30).

32. N.E. I.vi and E.E. I.viii.

33. Meno 74D.

34. I mean that there could be factors other than the nature of the objects of definition that make it difficult or impossible to define such objects. Such reasons may, for example, include our inability to express or formulate certain things, our ignorance, and so forth.

35. Whether what we demonstrate does not only follow necessarily from some other things but is also necessary is, of course, another matter (see below).

36. As I said earlier, most often Socratic definitions are indefinite but are meant to be universal in form. See the list of Socratic definitions in Santas, *Socrates*, ch. 4.

37. See on this matter J. Hintikka, "Time, Truth and Knowledge in Ancient Greek Philosophy," *American Philosophical Quarterly* 4 (1967), pp. 1-14, and A. Wedberg, "The Theory of Ideas," in G. Vlastos (ed.), *Plato*, vol. 1 (Garden City, N.J.: Anchor Books, 1971).

38. It is true that Socrates speaks at times precisely about this feature of some matters of conduct, that some properties of matters of conduct do not belong to them in all cases. Thus Socrates at *Lathes* 192C argues that endurance is not in all cases something noble, at *Meno* 87E that wealth is not always beneficial (see also the *Euthydemus*). But in spite of this, it cannot be said that Socrates recognizes some feature of matters of conduct that other domains of inquiry do not presumably possess in the way Aristotle does. Socrates does not argne, in the way Aristotle does, that there is something problematic with the subject matter of ethics. Perhaps he did not see the implications of some of his observations or he did not generalize his isolated findings.

39. I have in mind here Socrates' remarks about the various arts or disciplines in the *Charmides* and Gorgias that focus on their subject matter and their goals.

40. Thus Socrates remarks at *Meno* 81A-B: "Thus the soul, since it is immortal and has been born many times, and has seen all things both here and in the other world, has learned everything that is. So we need not be surprised if it can recall the knowledge of virtue or anything else which, as we see, it once possessed. All

nature is akin, and the soul has learned everything, so that when a man has recalled a single piece of knowledge . . . there is no reason why he should not find out all the rest." Considerable controversy, as is well known, surrounds the view presented by Socrates in the above words, and there is even doubt as to whether Socrates accepts the view expressed by them or only Plato does, or whether either of them does.

41. Plato, however, does not explicitly connect his claims that justification or proof may vary across disciplines to exactness, whereas Aristotle does.

42. I shall discuss Plato's remarks in the *Philebus* concerning the variation of exactness across disciplines in later chapters.

43. H. Cherniss, "The Philosophical Economy of the Theory of Ideas," in G. Vlastos (ed.), *Plato*, vol. I (Garden City, N.J.: Anchor Books, 1971).

44. See in this connection the discussion by J. Hintikka, "Time, Truth and Knowledge in Ancient Greek Philosophy," *American Philosophical Quarterly* 4 (1967), pp. 1-14; and his "Knowledge and Its Objects in Plato," and the comments of G. Santas, "Hintikka on Knowledge and Its Objects in Plato," both in J. M. E. Moravcsik (ed.), *Patterns in Plato's Thought* (Dordrecht: D. Reidel, 1973); also, N. P. White, *Plato on Knowledge and Reality* (Indianapolis: Hackett, 1976).

45. See the discussion by G. Vlastos, "Reasons and Causes in the *Phaedo*" in G. Vlastos (ed.), *Plato*, vol. 1 (Garden City, N.J.: Anchor Books, 1971).

46. My discussion on the *Republic* draws from recent commentaries on that work by N. P. White, *A Companion to Plato's "Republic"* (Oxford: Blackwell, 1979), and J. Annas, *An Introduction to Plato's "Republic"* (Oxford: Clarendon Press, 1981).

47. The term inline image (or inline image , inline image often means more clear, but sometimes it means more exact or precise. Practically all translations take it to mean the latter in this passage. For more discussion on this term and its relation to other terms that signify exactness, see chapters 4 and 5.

48. At 548C, however, Plato writes: "Such, then, would be the origin and nature of this polity if we may merely outline [inline image] the shape of a constitution in words and not elaborate it precisely [inline image], since even the sketch will suffice to show us the most just and the most unjust type of man, and it would be an impracticable [inline image] task to set forth all forms of government without omitting any, and all customs and qualities of men." Here Plato appears to be saying that the most exact (detailed) description is not needed, and that the difficulties with attaining the most exact ones are practical rather than logical. But even this passage should not be taken as clear evidence that Plato was concerned with the problems of the level of exactness required in disciplines whose goals are practical or the attainability of such levels. For in this passage he is more concerned with describing the degenerate forms of government than with providing a guide to action.

49. It is often said about Plato that the Forms are treated as if they are individuals. But this does not solve the difficulty at issue. It rather merely acknowledges that there is a difficulty in Plato's conception of the Forms, a conception that seems at times to treat Forms as being both universals and individuals.

50. Aristotle raises a number of objections against Plato's views of the Good in *N.E.* I.vi. The objections I am speaking of in relation to exactness/inexactness are those concerning the efficacy of knowledge of the Platonic Good for action, which we need to distinguish from the many other criticisms Aristotle raises against Plato's views. In particular, we need to distinguish Aristotle's question about the efficacy of our knowledge of the Platonic Good from the other question Aristotle often raises as to whether Plato's Good is the goal of anyone's practice.

51. Statesman 294Bff.

52. Statesman 295B, 297Aff.

53. It might be said in this connection that the problems Aristotle raises stem from the fact that he denies the existence of Platonic Forms. This is not, however, the problem For Aristotle denies Platonic Forms of everything, including those

of mathematical objects, and yet some disciplines deal, according to him, with subject matter that does exhibit essential structures.

54. Actually, much in Aristotle's account of demonstrative knowledge can, as J. Barnes has argued, be formulated independently of Aristotle's own logical theory; see his translation and commentary of the *Post. Anal., Aristotle's Posterior Analytics* (Oxford: Clarendon Press, 1975), pp. xiv-xv.

55. I am following tradition here and translate inline image as knowledge. J. Barnes in his recent translation has, for good reasons, translated the term as understanding. This has allowed Barnes to differentiate easily between what is produced by demonstration, i.e., understanding, and what is produced by other modes of cognition, e.g., intuition. At times, however, Aristotle uses inline image to refer to the various disciplines in general or to the various demonstrative disciplines, e.g., at 99a23.

56. I will return to some of these issues later.

57. See *Post. Anal.* 75a and J. Barnes's comments on this passage in his translation and commentary of this work.

58. For the role of definitions in Aristotle's conception of demonstrative science see the discussion of J. Barnes, *op. cit.*, pp. xi, 103, 109; M. Fetejohn, "Definition and the Two Stages of Aristotelian Demonstration," *Review of Metaphysics* 35 (1982-1983), pp. 375-395; and R. Bolton, "Definition and Scientific Method in Aristotle's *Posterior Analytics* and *Generation of Animals*," in A. Gotthef and J. Lennox (eds.), *Philosophical Issues in Aristotle's Biology* (Cambridge: Cambridge University Press, 1987), pp. 120-166.

59. See on this matter the perceptive discussion of R. Bolton in his "Essentialism and Semantic Theory in Aristotle," *The Philosophical Review* 75 (1976), pp. 514-544.

60. See in this connection the commentary of J. Barnes on the *Post. Anal.* as well as his introduction, p. xi. The same view is put forth by M. F. Burnyeat in his "Aristotle on Understanding and Knowledge," in E. Berti, *op. cit.*, pp. 97-140.

61. Questions about the scope of Aristotelian essentialism have recendy been raised by W. Leszl, "Knowledge of the Universal and Knowledge of the Particular in Aristotle," *Review of Metaphysics* 26 (1972-1973), pp. 278-313, and N. P. White, "Origins of Aristotle's Essentialism," *Review of Metaphysics* 26 (1972-1973), pp.

57-85. D. M. Balme, "Aristotle's Biology Was Not Essentialist," in A. Gotthell and J. Lennox (eds.), *Philosophical Issues in Aristotle's Biology* (Cambridge: Cambridge University Press, 1987), pp. 291-312, has also argued that Aristotelian explanations in biology, especially those concerning the development of an animal, do not depend on essentialist views. The evidence I give from the treatises on conduct provides additional support for the view that Aristotle at some point began to question the scope of the kind of essentialism that Socrates, Plato, and at times he himself advocated.

62. See W. Jaeger, *Aristotle* (Oxford: Oxford University Press, 1948), pp. 228-258. The *Protrept.*, of which only fragments remain, is considered to be an early Aristotelian dialogue modeled after Plato's own dialogues. 63. C.J. Rowe, *op. cit.*, especially pp. 63-76.

64. D.J. Allan, "Quasi-mathematical Method in the Eudemian Ethics," in Aristote

et les Problemes de Metbode (Louvain: Publications Universitaires, 1961), pp. 303-318.

65. See H. D. P. Lee, "Place-names and the Date of Aristotle's Biological Works," *Classical Quarterly* 13 (1948), pp. 61-67, and "The Fishes of Lesbos," in A. Gotthelf (ed.), *Aristotle on Nature and Living Things* (Pittsburgh: Mathesis Publications, 1985), pp. 3-8; M. Greene, *A Portrait of Aristotle* (Chicago: University of Chicago Press, 1963); G. E. R. Lloyd, *Aristotle: The Growth and Structure of His Thought* (Cambridge: Cambridge University Press, 1968), pp. 19-41; G. E. L. Owen, "The Platonism of Aristotle," in P. E Strawson (ed.), *Studies in the Philosophy of Thought and Action* (Oxford: Oxford University Press, 1968).
66. I assume here that, contrary to Burnet's claims, the *E.E.* is a work of Aristotle. The chronological order of the Aristotelian ethical treatises has not, however, been settled to everyone's satisfaction. Among those who

take the *E.E.* to precede the *N.E.* are Case, Jaeger, Dirlmeier, Gauthier, and more recently J. Cooper. But others, among them Schacher, Verbeke, and more recently A. Kenny, have argued that the *N.E.* precedes the *E.E*

Three The Goals of Ethical Inquiry

1. For the differences among practical, productive, and theoretical disciplines, see below.

2. See Eustratius, *In Ethica Nicomachea I Commentaria*, in G. Heylbut (ed.), *Eustratii et Michaelis et Anonyma in Ethica Nicomachea Commentaria* (Berlin: Reimer, 1892), p. 19; Aspasius, *In Ethica Nicomachea Commentaria*, in G. Heylbut (ed.), *Aspasii in Ethica Nicomachea Commentaria* (Berlin: Reimer, 1889), p. 7; and Heliodorus, *In Ethica Nicornachea Paraphrasis*, in G. Heylbut (ed.), *Heliodori in Ethica Nicomachea Paraphrasis* (Berlin: Reimer, 1889), p. 7; and Heliodorus, *In Ethica Nicornachea Paraphrasis*, in G. Heylbut (ed.), *Heliodori in Ethica Nicomachea Paraphrasis* (Berlin: Reimer, 1889), pp. 4-5. See also the comments on these matters by J. A. Stewart, *Notes on the Nicomachean Ethics of Aristotle* (Oxford: Clarendon Press, 1892), vol. 1, pp. 26-27; J. Burner, *The Ethics of Aristotle* (London: Methuen, 1900), p. 11; A. Grant, *The Ethics of Aristotle* (New York: Arno Press, 1973), p. 427.

3. D.J. Allan, "Aristotle's Account of the Origin of Moral Principles," *Actes du Xle Congress Internationale de Philosophie* XII (1953), p. 124. By "practical reason" Allan understands ethics and, although he goes on to argue that practical reason is a type of knowledge, when he attempts to explain the difference between theoretical and nontheoretical disciplines he seems to disregard altogether the cognitive goals of ethics, which, Aristotle claims, are not any different from the cognitive goals of any other discipline—i.e., the attainment of truth (see below).

4. That Plato understands the transitivity principle in this way is also made evident in his discussion of friendship and love in the *Lysis* and the *Symposium*, where he again argues that we desire or love only the final object and that the only desire we have is that for the final object.

5. See *N.E.* 1094a where Aristotle states that the end of medicine is health, of shipbuilding a vessel, of economic management wealth, of strategy victory, and so forth (see also 1097a15 for similar claims). All of these arts are, according to Aristotle, subordinate to the political art or science—"Strategy, economic management, oratory, are subordinate to political science" (1094b3).

6. See *Met.* (1027a) where Aristotle argues that, although someone can produce health accidentally, there is a faculty or art (medicine) that is productive of health. Aristotle's views on this matter echo those of Plato in the *Gorgias* (464E-465E) and the Republic (438C-439). The view that medicine is to be differentiated from all other ways of producing or restoring health is defended in the treatise "The Science of Medicine" that is part of the Hippocratic writings. And as G. E. R. Lloyd observes, this view of medicine as a specific art or discipline evolved rather slowly in the Greek tradition. See his introduction to his edition of the *Hippocratic Writings* (London: Penguin Books, 1978), pp. 13-14.

7. I shall use the term "discipline" in the present context in order to avoid any commitment to a particular view of the epistemological character of medicine. I do not, for example, wish to assume that medicine is a demonstrative science like geometry.

8. See also *Top.* (141a10) where the definition of medicine as "science [inline image] of matters of health for animals and humans" is criticized only on the grounds that the inclusion of humans in the definition is redundant since what the term "human" designates falls under or is included in what "animal" designates. That medicine is a science was the prevalent view in antiquity has been recently defended by M. Frede; see his "Philosophy and Medicine in Antiquity," in A. Donagan, A. Perovich, Jr., and M. V. Wedin (eds.), *Human Nature and Natural Knowledge* (Dordrecht: D. Reidel, 1986), pp. 211-232.

9. W. F. R. Hardie, Aristotle's Ethical Theory (Oxford: Clarendon Press, 1968), p. 30.

10. D.J. Allan, *op. cit.*, p. 76. Allan in this discussion is quite critical of Jaeger's views on practical wisdom. Jaeger took Aristotle to be advocating the view that practical wisdom is solely concerned with the means and the particulars; see Jaeger, *op. cit.*, pp. 83, 84, 88, 242.

11. See also 1141b8: "Practical wisdom, on the other hand, is concerned with things human and things about which it is possible to deliberate; we say this is above all the work of the man of practical wisdom, to deliberate well."

12. See J. D. Monan, *Moral Knowledge and Its Methodology in Aristotle* (Oxford: Clarendon Press, 1968). Monan argues that the view of moral knowledge as theoretic in character is to be found in the *Protrept*. and that, with the exception of a few isolated passages in *N.E.* I and X, it is not to be found in the later treatises on conduct. Monan's discussion of the problems about practical wisdom and the views of Jaeger and Allan on its nature is most informative.

13. See his introduction to his commentary on the N.E., op. cit.

14. See D.J. Allan, *op. cit.*, pp. 73-75; also, W. F. R. Hardie, *op. cit.*, p. 30, and T. Ando, *Aristotle's Theory of Practical Cognition (The* Hague: Martinus Nijhof, 1971), especially pp. 21 Off., and J. D. Monan, *op. cit.*, pp. 48-59.

15. Julius Walter argues for the position outlined here in his *Die Lehre yon der praktischen Vernunft in der Griechischen Philosophie* (Jena, 1874), especially pp. 189-190, 537-555.

16. See R. A. Gauthier and J. Y. Jolif, *Aristote: L'Ethique a Nicomaque* (Louvain: Publicationes Universitaires, 1970), vol. 1, pp. 267-283.

17. D. Wiggins, "Deliberation and Practical Reason," Proceedings of the Aristo-

telian Society 76 (1975-1976), pp. 29-51; also R. Sorabji, "Aristotle on the Role of Intellect in Virtue," *Proceedings of the Aristotelian Society* 74 (1973-1974), pp. 107-129; M. Nussbaum, *Aristotle's "De Motu Animalium"* (Princeton: Princeton University Press, 1978), pp. 170ff.; and N. O. Dahl, *Practical Reason, Aristotle, and Weakness of the Will* (Minneapolis: University of Minnesota Press, 1984), pp. 73-83.

18. J. Cooper, *Reason and the Human Good in Aristotle* (Cambridge: Harvard University Press, 1975), pp. 19-22, 58-72.

19. T. Irwin, "First Principles in Aristotle's Ethics," *Midwest Studies in Philosophy* 3 (1978), pp. 252-272, especially 262-263. See also his comments in his translation of the *N.E.* Irwin, in fact, translates inline image as "intelligence" instead of as "practical wisdom," "practical thought," "practical reason," or "prudence," and thus makes the connection to theoretical thought even closer.

20. N.E. X.vi-ix.

21. W. F. R. Hardie, *op. cit.*, p. 30, uses the passage just quoted (3.10) to support the view that Aristotle takes ethics and politics to be "an exercise of practical intellect." This, however, does not explain either what the nature of ethical inquiry is or how we are supposed to distinguish between the two kinds of practical wisdom Aristotle himself identifies in this passage.

22. For a discussion of this, see C.J. Rowe, *The Eudemian and Nicomachean Ethics: A Study in the Development of Aristotle's Thought* (Cambridge: Proceedings of the Cambridge Philological Society, 1971), especially pp. 63-73.

23. Or we make all deliberation similar to theoretical inquiry. This is done to some extent by T. Irwin who moves in this direction by making what he takes to be the type of reasoning ethical inquiry uses (i.e., dialectical) a part of deliberation (see T. Irwin, *op. cit.*, p. 262). But doing so, I think, obscures the contrast Aristotle wishes to draw between the two kinds of practical wisdom.

24. That practical wisdom is concerned with the universal is one of the reasons Teichmüller gives for equating it with ethical inquiry. But he understood practical wisdom in the wide sense; he took it to be not much different from theoretical inquiry. See G. Teichmüller, "Die praktische Vernunft bei Aristoteles," *Neue Studien zur Geschichte der Begriffe*, vol. 3 (Gotha, 1879).

25. For although deliberation resembles other kinds of reasoning, even theoretical reasoning, it is important not to obscure the difference.

26. On at least two occasions (1142a25, 1143b5) Aristotle argues that the particulars are known by perception or intuition (inline image). But even if we were to construe the reaching of particulars as a kind of deliberation, there still would be the parts of ethics dealing with the universal aspects of conduct.

27. This term may mean either "inquiry" or "method." Although in the passages I cite here it means the former, Aristotle uses it at times to mean the latter (see chap. 9 for a discussion of this matter).

28. Concerning the similarities between medicine and ethics, see D. S. Hutchinson, "Doctrines of the Mean and the Debate Concerning Skills in Fourth-Century Medicine, Rhetoric and Ethics," in R.J. Hankinson (ed.), *Method, Medicine and Metaphysics: Studies in the Philosophy of Ancient Science* (Edmonton: Academic Printing and Publishing, 1988).

29. This line of argument has been taken by several commentators. Thus, Burnet,

op. cit., p. 257, and Stewart, *op. cit.*, vol. 2, p. 35, take Aristotle to be restricting the application of the term "knowledge" only to disciplines that deal with that which is necessary. And when he applies it to disciplines like medicine Aristotle is, according to this view, using the term rather loosely. A similar position is put forth by Greenwood, *op. cit.*, pp. 150-152, where he argues that the term "knowledge" or "science" is used in the *N.E.* "in the loose sense of 'art', 'practical science', sometimes almost 'profession', which is the popular usage." And he refers to 1138b26 where Aristotle calls medicine a science, but claims that "inline image in the strict sense has nothing to do with it."

30. W. F. R. Hardie, op. cit., p. 31.

31. See Aristotle's remarks on the highest science among theoretical sciences, i.e., the one that deals with the highest genus, as well as his claim, "For not even the mathematical sciences are all alike in this respect—geometry and astronomy deal with a certain particular kind of thing, while universal mathematics applies alike to all" (*Met.* 1026a; see also 1064b).

32. See, for example, the uses that, according to Plato, pure geometry has in warfare and the upbringing of the young (*Republic* 527B).

33. See Aristotle's discussion at *Met.* 1025b25ff. and 1064a10. When Aristotle speaks of movement most often he means change in general and not only locomotion.

34. "Mathematics also, however, is theoretical; but whether its objects are immovable and separable from matter, is not at present clear; still, it is clear that *some* mathematical theorems *consider* them *qua* separable from matter" (*Met.* 1026a7). But at 1064a32 we are told: "Mathematics is theoretical, and is a science that deals with things that are at rest, but its subjects cannot exist apart."

35. Thus, Aristotle writes at *Met.* 1064a33, "Therefore about that which can exist apart and is unmovable there is a science different from both of these [i.e., from physics and mathematics], if there is a substance of this nature (I mean separable and unmovable), as we shall try to prove there is."

36. "While in the case of things done it [movement or rest] is in the doer" (Met. 1025b25; see also E.E.

1223a5 and the rather elaborate discussion of the differences in the sources of motion or change that is due to nature and is internal, and of change that is in something external to what moves or changes at *Phys.* II.i). 37. Plato, as is well known, insists that there are different faculties that correspond to different types of cognitive activities and objects. The distinction between knowledge and belief in the *Republic* rests partly on such a claim.

38. See Met. 995a15 and the discussion in chapters 6 and 7 below.

39. Thus, Aristotle claims that the subject matter of physics is inexact but physics is nonetheless a theoretical discipline (*Met.* 1025b26, 1026a7, 1064b).

40. J. Rawis, *A Theory of Justice* (Cambridge: Harvard University Press, 1971), p. 121, also p. 126. I take Rawls in this context to be saying that the interest in a moral geometry is a theoretical one. He certainly gives no indication that moral geometry is required by or is to be used for some practical end. Of course, others have denied that there is any knowledge whose goals are purely theoretical in the way Plato, Aristotle, and possibly Rawls claim they are.

41. See Aristotle's discussion of the architectonic structure of desires or pursuits

at *N.E.* I.i. We need to assume here that A is different from B and that the relation is relativized to some one agent, since it is quite possible that, while some agent desires A for the sake of B, some other agent desires B for the sake of A. See on this last point the discussion by B. Williams, "Aristotle on the Good: A Formal Sketch," *The Philosophical Quarterly*, vol. 12, no. 40 (1962), pp. 289-296. Of course, I am not here endorsing Aristotle's claim concerning the supposed asymmetry of the relation of subordination.

42. G. E. R. Lloyd (ed.), Hippocratic Writings (London: Penguin Books, 1978), p. 71.

43. H. H. Joachim, op. cit. , p. 16.

44. This would, of course, imply that several theoretical disciplines whose subject matter or accounts exhibit the kind of inexactness that ethics and its subject matter exhibit will also be nondemonstrative.

Four Exactness: Some Basic Questions

1. The forms that are most frequently used are the following: inline image , inline image (adjectival form, *N.E.* 1094b13, b24, *Met.* 1053a); inline image , inline image (the comparative and superlative of the adjectival form, *E.E.* 1231b2, *N.E.* 1106b14, 1107b15, 1141a9, a16); inline image (adverb, *N.E.* 1104a2, 1146b25, 1164b28, 1180b17); inline image (verb form, *G.A.* 778a6, *Meteor.* 363b32). Also the compound verb forms inline image (*E.E.* 1227a1, *N.E.* 1178a23), inline image (*N.E.* 1096b30, 1101b34, 1102a25, 1175a31, b14, 1180b11, *H.A.* 583a30) and inline image (*N.E.* 1139b17, *Cael.* 306b27, *Polit.* 1258b34, *Rhet.* 1369b1). Finally, inline image (*H.A.* 513a9, *Met.* 959a15, *Polit.* 1341b30, *Rhet.* 1361b34).

2. See inline image , *N.E.* 1108a17, *Top.* 157a14; inline image , *G.A.* 769a35; inline image , *Anim.* 413a10, *Phgn.* 213a4; inline image , *Met.* 986b4, 993a22, *Cael.* 303a9; inline image , *Met.* 986b29, 1035b3, *Cael.* 286b5, *PA.* 692a15, *N.E.* 1144a21; inline image , *P.A.* 647a33, *TOP*. 140b5, *Met.* 986b22; inline image , *Anim.* 414b29, 416b29, *N.E.* 1108a18.

3. J. Barnes in his commentary on the *Post. Anal.* (Oxford: Clarendon Press, 1975) refers to the above passage from the *Top.* and claims that Aristotle glosses the term inline image by inline image (p. 182). I assume that Barnes means that Aristotle takes the two terms to be used at times to signify the same thing(s). That is, that the gloss is a proper one.

4. See also Polit. 1341b31, Top. 101a22, Mund. 397b12 for similar contrasts.

5. The term occurs most frequently in the dative as inline image : *Anim.* 413a9, 416b30, 424a16, *N.E.* 1094a25, b20, 1101a27, 1104a1, 1107b14, 1113a13, 1114b27, 1117b21, 1176a31, *H.A.* 487a12, *Met.* 1029a7, *Polit.* 1276b19, 1302a19, 1335b5, *Top.* 101a22, 103a1. But also in the following forms: inline image , *N.E.* 1179a34; inline image , *Polit.* 1341b31; inline image , *P.A.* 676b9; inline image , *Cat.* 1b28, 11b20, *Probl.* 916a35, *Top.* 101a18, 103a7, 105b19; inline image , *N.E.* 1129a11, *H.A.* 491a8, *Polit.* 1323a10.

6. The term occurs primarily in the phrase inline image (to speak in summary): *Anim.* 433b20, *N.E.* 1109b11, *Phys.* 216a7, *Polit.* 1312b34, *Probl.* 955a28, *Rhet.* 1360b5. In a few instances it occurs as an adverb, inline image (summarily): *Met.* 958a17, *Rhet.* 1415b7, 1419b31.

7. But Lidell and Scott, A Greek-English Lexicon (Oxford: Clarendon Press), correctly point out that the term is used at times as opposite of inline image .

8. See also *Mund.* 397b10.

9. See also *M.M.* 2.1.1.5, "those things the law giver is unable to define exactly [inline image] for each case, but lays down general rules [inline image]."

10. J. Barnes, Aristotle's Posterior Analytics (Oxford: Clarendon Press, 1975), p. 182.

11. The idea of certainty that Barnes takes to be the common element uniting the various uses of inline image seems to be more related to inline image and the older adverbial form inline image (clearly, plainly, assuredly). When used with verbs of knowing or speaking inline image signifies something like "clearly" or "with certainty" (see Homer, Odyssey II.31; Pindar, *Olympian*. 8.46). Aristotle himself uses the adverbial form inline image with verbs of speaking or saying (*Met.* 989b18, 993a22) but the context makes it clear that most often certainty is not what is at issue in such cases. 'inline image is most likely used to mean something like "certainty" where Aristotle contrasts the term in one of its grammatical forms to inline image . As pointed out earlier, the term seems to mean something like "certainty" or "necessity" when used in relation to proofs or arguments.

12. See Grant's discussion, The Ethics of Aristotle (New York: Arno Press, 1973), pp. 392-393, 452.

13. I have in mind here Plato's discussion of the Good in the *Republic* where he seems to suggest that the Good is the cause of the existence and essence of all there is and that all knowledge depends in a way on knowledge of the Good. To be sure, these are some of the most cryptic remarks in the Platonic corpus and seem to defy any interpretation. The most important recent discussion on the Good in the *Republic* is to be found in G. Santas, "The Form of the Good in Plato's *Republic," Philosophical Inquiry*, vol. 2, no. 1 (1980). Santas concentrates on what he considers to be one function of the Good in Plato's account—e.g., that its nature determines some formal features of the Forms. But it is not clear that this is the sole function the Good

has in Plato's scheme of things.

14. Yet at *Met.* 982b5 Aristotle remarks: "And the science which knows to what end each thing must be done is the most authoritative of the sciences, and more authoritative than any ancillary science; and this end is the good of that thing, and in general the supreme good in the whole of nature. Judged by all the tests we have mentioned, then, the name in question falls to the same science; this must be a science that investigates the first principles and causes; for the good, i.e., the end, is one of the causes." The science however which, according to Aristotle, is most authoritative and investigates the first principles and causes is not ethics. It is metaphysics or first philosophy. The good this science investigates is not anything practicable, but it is what pertains to action on the other hand that ethics investigates.

15. Traditionally, metaphysics or first philosophy has been thought to be not like the ordinary Aristotelian disciplines or sciences. But M. Frede has recently argued that the study of being qua being and the study of the supreme being form a discipline or science that does not differ much from the typical Aristotelian

disciplines, e.g., mathematics or physics; see his *Essays in Ancient Philosophy* (Minneapolis: University of Minnesota Press, 1987), ch. 6.

16. See T. Irwin's discussion of these matters in his "The Metaphysical and Psychological Basis of Aristotle's Ethics," in A. Rorty (ed.), *Essays on Aristotle's Ethics* (Berkeley and Los Angeles: University of California Press, 1980), and "First Principles in Aristotle's Ethics," *Midwest Studies in Philosophy*, vol. 3 (1978), p. 261.

17. For a recent discussion of the relation of ethics to politics, see J. Cooper, *Reason and Human Good in Aristotle* (Cambridge: Harvard University Press, 1975), especially p. 108. See also L. H. C. Greenwood, *Aristotle: Nicomachean Ethics, Book VI* (Cambridge: Cambridge University Press, 1909), pp. 60ff., and T. Irwin, "First Principles in Aristotle's Ethics," *op. cit.*, p. 258.

18. I have in mind here Aristotle's remarks at *N.E.* 1094b25 where he claims that there are differences in exactness between mathematics and rhetoric, the rest of the disciplines falling somewhere between these two; and the remarks at 1098a27 where he indicates that there is an exactness appropriate to the inquiry. The supposed inexactness of ethics is not however connected to the number of basic elements making up the subject matter of ethics. It is not connected to its simplicity or lack of it.

19. Aristotle's language makes it clear that we should in all cases do as (inline image) the arithmetician and geometer do. We should use the mathematicians as examples of the way to abstract rather than of what to abstract.

20. Ross in his commentary on the *Met.* (Oxford: Oxford University Press, 1958), vol. 2, p. 417, says that since geometry abstracts from maguituide, it is above solid geometry, solid geometry is above all sciences of motion, astronomy is above sublunary kinetics, which studies noncircular movement, and still more above biology, which studies generation and corruption.

21. See Barnes, *op. cit.*, p. 182. The term inline image occurs in three other places in Aristotle's writings, leaving aside the occurrence at *N.E.* 1122b7 where it is used to signify a type of vice that is contrasted to magnificience. In all these three occurrences it seems to mean something like "detailed" or "elaborate" treatment of a subject: e.g., a detailed treatment of the nature of blood vessels (*H.A.* 513a9), a detailed discussion of the study of music (*Polit.* 1341b29), a minute examination of what constitutes a happy old age (*Rhet.* 1361b33). Commenting on the passage from the *Met.* that speaks of inline image , Alexander of Aphrodisias in his commentary on the *Met.* takes the term to signify something like concern with detail, or minutiae (inline image , see *In Aristotelis Metaphysica Commentaria* 168.3).

22. Thus, at *Met.* 1039b27 Aristotle claims that "there is neither definition nor demonstration about sensible individual substances, because they have matter whose nature is such that they are capable both of being and of not being If then demonstration is of necessary truths and definition is a scientific process—clearly there can neither be definition of nor demonstration about sensible individuals."

23. But see below for Aristotle's claim that some properties of the good are to be proven by the mathematical sciences.

24. In the case of some of these disciplines, e.g., optics, Aristotle identifies a

level that is purely mathematical. But he identifies no such level in the case of biology. See below for a discussion of these matters.

25. And these disciplines (i.e., physics, biology, and optics) are, according to Aristotle, bona fide sciences. 26. That knowledge or understanding consists in giving explanations and determining the causes of things and that these in turn are explicated in terms of demonstration is argued for in *Post. Anal.* I.ii; see also *Phys.* 194b20, *Met.* 1025b, 1064a5. Aristotle of course recognizes other types of knowledge, e.g., intuition. But he restricts intuition to a grasp of the first principles of science which cannot be demonstrated. Intuition is not scientific or demonstrative knowledge; see for a discussion of these matters, M. F. Burnyeat, "Aristotle on Understanding Knowledge," in E. Berti (ed.), *Aristotle on Science* (Padova: Editrice Antenore, 1981), pp. 97-139.

27. But as Barnes, *op. cit.*, p. 154, has pointed out, Aristotle's own treatment of the rainbow is one of the most mathematically sophisticated parts of his corpus. This view is shared by T. L. Heath, *Mathematics in Aristotle* (Oxford: Oxford University Press, 1949), pp. 180-190.

28. Aristotle characterizes again *H.A.* as a desciptive discipline that is not concerned with causes at *P.A.* 646a8 when he writes, "I have already described with considerable detail in my *Researches on Animals* what and how many are the parts of which the various animals are composed. We must now leave on one side what was said there, as our present task is to consider what are the causes through which each animal is as I there described it." D. M. Balme, however, has recently questioned the view that the *H.A.* is a purely descriptive or

nonexplanatory inquiry. Although he claims that it is Aristotle's "nearest approach to a descriptive collection of data, and it is very wide and perceptive," this is not the only aim of Aristotle's treatise. Balme claims that it is in part concerned with causes and there is evidence that portions, or perhaps all, of *H.A.* is later than the other biological treatises which have always been taken to provide the explanations of the phenomena described in it; see his "Aristotle's Use of Differentiae in Zoology," in J. Barnes, M. Schofield, and R. Sorabji (eds.), *Articles on Aristotle* (London: Duckworth, 1975), vol. 1, pp. 183-193. Balme may be right about the nature of *H.A.*, but this does not affect the point I wish to make: namely, that Aristotle distinguishes between descriptive and explanatory disciplines, and in fact characterizes some of his own investigations as being purely descriptive.

29. See W. D. Ross's commentary on the *Post. Anal.* (Oxford: Oxford University Press, 1965), p. 555, and Heath, *op. cit.*, pp. 58-61. See also Barnes's comments, *op. cit.*, p. 154, for an example of how premises from purely mathematical and observational disciplines are used to produce a demonstrative syllogism. 30. The best recent discussion of Aristotle's views on the relation of subordination among sciences is to be found in Barnes's commentary, pp. 151-155.

31. W. D. Ross, commentary on Post. Anal. , p. 555.

32. See Barnes, *op. cit.*, **p.** 154. The problem here stems partly from the fact that Aristotle recognizes no other type of explanation than the demonstrative one. There are no inductive explanations. But even if there were other types of explanations, it would not resolve the problem. For Aristotle's distinction seems to be

between explanatory and nonexplanatory disciplines. It is not the case that the latter disciplines offer explanations that are different from the demonstrative ones. They offer no explanations at all.

33. We are likely to disagree with Aristotle's claims about the possibility of children, as well as animals, being happy. Our disagreement stems partly from the fact that our conception of happiness is not exactly Aristotle's conception. But this, of course, does not affect the point under discussion: namely, that Aristotle sees his task as being partly to give explanations of what he takes the facts to be.

34. See for a discussion of this matter M. F. Burnyeat's remarks in "Aristotle on Learning to Be Good," in A. Rorty (ed.), *op. cit.*, pp. 71-72, and T. Irwin's comments in his translation of the *N.E.* While it is true that Aristotle claims at 1095b4-8 that the starting point of our investigation is the fact and what is known to us, this is not the end of ethical inquiry. Its aim is to explain the facts or to give the "causes." In speaking of causes in the present context, I do not mean to assert that Aristotelian causes are exactly the sorts of things we designate as causes. This has been pointed out by several scholars recently—Barnes, Burnyeat, Moravcsik, Sorabji. But this, of course, does not exclude the possibility that some Aristotelian causes are causes in the way we most often understand causes—namely, as efficient causes.

35. Thus, Aristotle remarks at *Met.* 1078a31: "Now since the good and the beautiful are different (for the former always implies conduct as its subject, while the beautiful is found also in motionless things), those who assert that the mathematical sciences say nothing of the beautiful or the good are in error. For these sciences say and prove a great deal about them; if they do not expressly mention them, but prove attributes which are their results or their definitions, it is not true to say that they tell us nothing about them. The chief forms of beauty are order and symmetry and definiteness, which the mathematical sciences demonstrate in a special degree."

36. This is of course not to say that Aristotle does not raise the question of exactness/inexactness in relation to second-order disciplines. He does raise such questions in the case of the logical treatises, including *Rhet.* and *Top.* Disciplines such as the logical ones have often been viewed as not being first-order disciplines.

37. Plato also speaks of the fairest and most exact (inline image)of material things (*Republic* 529D).

38. The root of this term inline image means "load" or "burden." Although it retains in part this meaning, Aristotle uses it often to signify the "coarse," "common," or "vulgar" (see *Polit.* 1340b8, 1341b11; *Rhet.* 1395b1; *Poet.* 1462a4).

39. Thus, Alexander of Aphrodisias in his commentary on the *Met.* : "It even seems to some illiberal to demand in arguments [or accounts] exactness in excess and examination of little things, as is the case in exchanges" (*In Aristotelis Metaphysica Commentaria*, 168.9).

40. Aristotle uses distinct terms to name the disposition and the person who has the disposition or corresponding character—for example, irascibility (inline image) vs. irascible person (inline image), rashness (inline image) vs. rash person (inline image), and

41. At E.E. 1233b20 Aristotle says that the emotion corresponding to the un-

named extreme is also unnamed. But the character is given as that of the malicious person (inline image). At *N.E.* 1108b2 "malice" (inline image) is given as the name of the extreme that in the *E.E.* is nameless. 42. Aristotle gives the name "insensitiveness" (inline image) to this unnamed extreme (1221a) and calls the corresponding character, which he says happens to have no name, "insensitive" (inline image -N.E. 1107b7). But he probably finds these names too wide, for they suggest lack of sensation in general and not only in relation to pleasures.

43. See also *E.E.* 1231a35 for a statement of the same claim.

44. See *H.A.* where Aristotle says that the following lack names: the part in which touch has its natural place (489a17); the groups that have dermatous or membranous wings (490a12); the soft-shelled animals (490b10); some kinds included in the group of viviparous quadrupeds (490b31); one part of the ear (492a14); the outer surface of the hand (494a2); the upper part of the foot (494a2); and for more unnamed things see 505b29, 515b9, 525b5, 552b30, 553a1, 623b5. In the *P.A.* see 642b15, 644b4, 669b10, 678a9, 680a14, 683b23.

45. Among recent translators and commentators, T. Irwin has most clearly recognized the importance of Aristotle's remarks on the nameless dispositions. He correctly recognizes that an examination of the nameless dispositions is necessary for saving the validity of Aristotle's thesis even in the cases where the lack of names may suggest that the thesis is false—see T. Irwin, *Aristotle: Nicomachean Ethics* (Indianapolis: Hackett, 1985), p. 315. We must keep in mind, however, that Aristotle himself recognizes that "not every action or emotion however admits of the observance of a due mean." Aristotle gives the cases of malice, shamelessness, envy, adultery, theft, and murder as cases that do not admit of the mean (1107a10; see also *E.E.* 1221b20).

46. I agree with Irwin in adding "only" to the text, for without it Aristotle's statement makes little sense. Most translations make no such addition.

47. Aristotle insists that in all cases the mean is to be praised: "In order to discern better that in all things the observance of the mean is to be praised, while the extremes are neither right nor praiseworthy, but reprehensible" (1108a15), "it is the mean disposition that is to be praised" (1109b23), "the mean disposition is praiseworthy . . . while the various forms of excess and defect are blameworthy" (1126b5, also 1126b17).
48. At 1108b15 he writes concerning the apparent opposition between the mean and the two extremes: "So

the middle states of character are in excess as compared with the defective states and defective as compared with the excessive states, whether in the case of feelings or actions. For instance, a brave man appears rash in

contrast with a coward and cowardly in contrast with a rash man; similarly a temperate man appears profligate in contrast with a man insensible to pleasure and pain, but insensible in contrast with a profligate; and a liberal man seems prodigal in contrast with a mean man, mean in contrast with one who is prodigal."

49. Bonitz goes a step further and claims that inline image in this occurrence is synonymous with inline image (easiness of comprehension). This seems unlikely to me.

50. In a more problematic passage at Anim. 418a Aristotle writes, "But since

there are no names [inline image] for the differences [in potentiality], and we have now explained that there are differences and how they differ, we must continue to use 'to be acted upon' and 'altered' as though they were ordinary [inline image] names." Some translations, e.g., W. S. Hett in the Loeb Classical Series, take inline image to mean something like "precise" and Aristotle to be concerned with using nonprecise terms to make a difference that is not marked. It is true that the terms, as Aristotle points out, do not mark the two types of potentiality he distinguishes. In that sense they are imprecise. But this term inline image , as most translators recognize, when applied to names signifies something like "actual," "current," or "ordinary."

51. The instructional role of the Aristotelian treatises and of the demonstrative method in general has been most clearly recognized by J. Barnes. He gives some of the strongest arguments in support of the position that not only has the demonstrative method instructional uses but that instructional use is its sole purpose. I find Barnes's arguments quite convincing as far as the former claim is concerned but I remain unconvinced about the latter; see J. Barnes, "Aristotle's Theory of Demonstration," *Phronesis* 14 (1969), pp. 123-152.

52. The passages quoted above, stressing the role that the data familiar to us (inline image) play in relation to investigation or inquiry, emphasize the method of inquiry that Aristotle at times refers to as the dialectical method. These passages raise important substantive issues about the elements used as starting points of investigation. This and related matters have been discussed recently by J. Barnes, "Aristotle and the Methods of Ethics," *Revue Internationale de Philosophie* 133-134 (1980), pp. 490-511; T. Irwin, "First Principles in Aristotle's Ethics," in *op. cit.*, pp. 257-259, "Aristotle's Methods in Ethics," in D.J. O'Meara (ed.), *Studies in Aristotle* (Washington: Catholic University of America Press, 1981), pp. 194-201, and his translation of and commentary on the *N.E.*, p. 398.

53. Some translators and commentators doubt that Aristotle is referring to a separate treatise on food. R. D. Hicks in his commentary on the *Anim*. (Amsterdam: A. M. Hakkert, 1965), p. 349, argues that most probably Aristotle is referring to such a treatise. A reference to such a treatise is also made at *G.A.* 784a2 when Aristotle writes, "A more detailed account of this cause [food] will be given in the treatise *Of Growth and Nutrition* [inline image]."

54. For Aristotle's own discussion of encomia, see Rhet. I.xxxiii, xxxiv.

55. See also 1102a25: "The student of politics therefore as well as the psychologist must study the nature of the soul, though he will do so as an aid to politics, and only so far as is requisite for the objects of inquiry that he has in view: to pursue the subject in greater detail would doubtless be more laborious than is necessary for his purpose."

56. See also Anim. 402a for the claim that some knowledge is more valuable because it is of better and more wonderful things and N.E. 1141b for the claim that wisdom, the most exact knowledge, is knowledge of the things that are most honorable in nature.

57. Thus, Plato writes at *Timaeus* 29 B-C: "Our world must necessarily be a likeness of something . . . concerning a likeness, then, and its model we must make this distinction: an account is of the same order as the things which it sets forth—an account of that which is abiding and stable and discoverable by the aid of reason

will itself be abiding and unchangeable . . . while an account of what is made in the image of that other, but is only a likeness, will itself be but likely" (translated by F. M. Cornford); see also *Republic* 511E. 58. I owe this example to Professor Charles Young.

Five Outline, Exactness, and the Particular

1. See also *M.M.* 1.5.1.3, 1.34.3.2, 1.4.10.4, 1.12.1.5, 1.13.4.4.

2. There are two more occurrences of the term inline image in the *N.E.* (1094b20 and 1104a1), which I will discuss in later chapters. For even though the term is used in these occurrences to mean in part something like lack of detail or being only an outline, it also means something different.

3. The term inline image , in a variety of forms and embedded in different phrases, is also used quite frequently by Plato (Republic 403E, 414A, 491C; Laws 718C) to mean the same thing it means in Aristotle. Its original meaning (i.e., an impression or imprint) is also in part preserved in the way Plato uses it (see also Liddell and Scott, *A Greek-English Lexicon*).

4. See Liddell and Scott, op. cit. , for the meaning of inline image .

5. It is worth noting here that the term inline image does not occur at all in the *E.E.* And we also see that the number of times the other terms that signify the same kind of inexactness occur in the *E.E.* is considerably lower than that of their occurrences in the *N.E.* or *Polit.* Is there any significance to this? Perhaps there is. It may indicate that Aristotle places a greater emphasis on the practical nature of ethics. As we shall see below, in many cases Aristotle locates the source of the inexactness under consideration here in the goals of ethics. He, thus, often characterizes his accounts as inexact because they fail to meet the level of detail or specificity that he thinks is required by the practical goals of the discipline. The difference, then, between the number of occurrences of the terms signifying this type of inexactness in the *E.E.* and that in the *N.E.* may very well indicate a difference between a predominantly theoretical and a more practical conception of ethical inquiry.

6. What Aristotle says in this remark seems to be somewhat puzzling. Its context, being that of describing various aspects of the physical plan of the ideal city, suggests that the exactness Aristotle considers useless is detail in the description of these aspects. His use of inline image —detail, concern with minutiae—supports this. Yet Aristotle, in claiming that such exactness is useless, contrasts the difficulty of practice relating to the physical plant to the presumed easiness of understanding or explaining (inline image) whatever relates to it. Thus H. Rackham, in his translation of the *Polit.*, sees the contrast as being between theory and practice (Loeb Classical Library, p. 595). Is the inexactness Aristotle is willing to forego a deficiency in descriptive detail

or in (theoretical?) explanation and understanding?

7. Thus Aristotle anticipates J. Cooper's complaint when the latter criticizes the functional account of the good in the following way: "Now what is disappointing about this argument . . . is that it is too abstract to be informative. It tells at most only that the excellences, whatever these may turn out to be, are the essential condition of a flourishing life, but if one is in doubt . . . then the abstract statement

in Aristotle's conclusion is not very interesting or helpful," *Reason and Human Good in Aristotle* (Cambridge: Harvard University Press, 1975), p. 145. Aristotle seems to be quite clear about the purposes and limitations of his account of the good from function and the relation among function, the good, and the excellences. But these limitations of Aristotle's argument from function and its conclusions do not render the argument of no interest or help. For the argument aims at providing the theoretical account of the good and its relation to the excellences that forms the foundation of the subsequent discussion in the *N.E.* This theoretical framework needs to be elaborated upon, but it is by no means of no interest or help.

8. For the role definitions play in Aristotelian demonstrations, see *Post. Anal.* and our discussion in chapter 2: Definitions are some of the basic propositions from which, together with the axioms and common principles, the various properties that belong to a kind are demonstrated or proved to belong to the kind.

9. The use of ge to modify inline image at 1094a25 (5.1) adds support to the idea that inexact accounts may be sufficient for Aristotle's purposes: we should try to attain accounts that are at least in outline. But it also suggests that this is all that can be expected in such contexts: we should try to attain an account of the good even though it will be inexact.

10. This is a rather obscure passage in which Aristotle claims that accounts of the particulars are more inexact than those of the more general or universal aspects of conduct. I shall discuss this matter in a later chapter (8), but it is clear that the type of exactness/inexactness Aristotle has in mind in this passage cannot be the one we have isolated in this chapter—detail or specificity/lack of detail or generality. For Aristotle says that the accounts of particulars are more inexact than the ones of the general or universal aspects of conduct.

11. The example Aristotle uses can be very easily interpreted as meaning the particular in the strict sense. It is the sort of thing one can learn from experience of particular instances. I agree, however, with Irwin here that what Aristotle contrasts in this passage is knowledge of general types to knowledge of more determinate types (see Irwin's comments on this passage in his translation of *N.E.*, p. 343). But there are, as Irwin points out, passages where it is not clear what Aristotle means when he speaks of particulars (p. 418).

12. *Aristotle: The Nicomachean Ethics* (Cambridge: Loeb Classical Library, 1962), p. 120. The best discussion on Aristotle's views regarding the ontology of actions is to be found in D. Charles, *Aristotle's Philosophy of Action* (Ithaca, N.Y.: Cornell University Press, 1986).

13. Although Aristotle does not explicitly discuss this, both types of actions consist of action-tokens or spatio-temporally located individuals. For with both types, and regardless of what they deal with, we can at least specify the agent, place, and time.

14. Actually, what Aristotle writes here is that the physician does not study the health of the species *man* (inline image), but that of the individual.

15. Aristotle, as Plato did earlier, is at times concerned about the difficulty law presumably has in reaching what he considers to be the required level of detail. See, for example, *N.E.* V.x, *Polit.* II.vii, and *Rhet.* I.xiii. 11-14. Plato discusses this problem in both the *Republic* and *Statesman*.

16. There is somewhat of a problem in determining with certainty what Aristotle means when he says about the accidents of life that "to distinguish between them in detail [inline image] . . ." Some translators take him to be concerned with distinguishing each individual accident, while others with distinguishing the various types of accidents. Thus, W. D. Ross, "to discuss each [event] in detail . . .," H. G. Apostle, "to discuss each [fortune] of them individually. . . "; but H. Rackham, "to distinguish between them [the accidents] in detail . ," T. Irwin, "to differentiate all the particular cases [of fortunes] . . . " In all probability Aristotle is not speaking of the individual accidents, events, or misfortunes. The term inline imageinline image in this occurrence probably means the more specific. And the use of inline image (divide, distinguish) makes it more likely that he is thinking of distinguishing the various types of accidents, dividing them into smaller classes in terms of some distinguishing feature that each class possesses. A discussion of the accidents of life that distinguished the various types or divided them into smaller classes would be less general and in outline than one that did not but instead spoke in general about them, or did not distinguish the various types at all or sufficiently, or did not divide them into classes at all or not far enough. What Aristotle goes on to do after he tells us that a detailed account of the accidents of life is not possible, and that one that is in outline may be sufficient, confirms this interpretation. Aristotle proceeds to distinguish the various misfortunes or divide them into smaller classes in terms of some of their features: for example, their weight and influence on our lives, the relation the person to whom they happen has to us (e.g., whether they happen to our friends), and so forth. Such an account can, however, fail to be exact by not reaching some desired level of specificity-hence Aristotle is correct in viewing his own account as one that is in outline only.

17. See *Post. Anal.* I.viii and the comments of W. D. Ross and J. Barnes on this chapter in their respective commentaries. Ross takes Aristotle to be saying that "we do not strictly prove that or explain why the moon is eclipsed, because it is not an eternal fact that the moon is eclipsed but only that which has an opaque body interposed between it and its source light is eclipsed; the moon sometimes incidentally has the latter attribute because it sometimes incidentally has the former." Yet in his comments on I.xxxi, where Aristotle argues that perception does not give us demonstrative knowledge, Ross writes "but the principles thus grasped [by intuitive induction] may become premises from which the particular facts may be deduced." But Aristotle need not necessarily be speaking here of demonstration of particular facts, if what is meant are individual occurrences. What he seems rather to be concerned with is proving or showing that the nature of the phenomenon of the eclipse of the moon in general is such and such, which is of course a more particular case of the even more general phenomenon of interposing an opaque object between another object and the latter's source of light. And knowledge of the wider universal (knowledge of the eclipse) may provide us with the means of showing what the nature of the narrower universal (the eclipse of the moon) is.

18. Aristotle often concludes a topic of discussion in the biological treatises by indicating that the account he has just given is complete, and thus without suggesting that it is in some way or other inexact: "I have now

described the arrange-

ment of the external parts" (*H.A.* 494b20), "We have now given a description of the parts, both internal and external, of man . . ." (497b), "We have now described blood-vessel, sinew, and skin; fibres and membrane . . ." (519b25; see also 527a35, 527b35, 538b28, and so on). And where he indicates that his account of some phenomenon is inexact and refers us to another treatment that is presumably more exact the latter may not provide any greater detail. See, for example, his treatment of menstruation at *G.A.* I.xx, which Aristotle finds inexact (728b13). He refers us there to a more exact treatment of the topic in *H.A.* But the treatment of this topic at *H.A.* 572b29ff. does not provide an account that is significantly more exact.

19. J. Lukasiewicz, Aristotle's Syllogistic (Oxford: Clarendon Press, 1967), p. 2

20. *Met.* 1026b10. At *Post. Anal.* 75b15 Aristotle writes about accidental attributes of geometrical objects: "Nor can geometry prove that anything belongs to lines not as lines and as from their proper principles—e.g., whether the straight line is the most beautiful of lines or whether it is the contrary to the curved."

21. See *Post. Anal.* 79a15. As I said earlier, it is not clear that there is a geometrical proof of this proposition. 22. As we saw above, at *N.E.* 1107a30 Aristotle claims that the accounts "that are more specific are more true, since actions deal with particulars and our accounts must agree with them."

23 I am not, of course, saying that there are no problems with following rules or applying general statements to particulars. As Wittgenstein has pointed out, there are many problems with the most common explanations we give of how we understand, follow, or apply any rule. Yet I am not convinced that Aristotle's problems are, as J. McDowell has argued, the skeptical problems Wittgenstein has raised about rule-following; see J. McDowell, "Virtue and Reason," *The Monist*, vol. 62, no. 3 (1979).

Six Being for the Most Part: Its Meaning, Scope, and Nature

1. In 6.2 Aristotle says that we should be content (inline image), when dealing with subject matter that is for the most part, with conclusions that are of the same kind. Aristotle does not mean merely that we should be satisfied when we reach a certain level of exactness, but rather that, given the nature of the subject matter, a high degree of exactness is not possible. We should therefore be satisfied when we reach that level that is commensurate with the nature of the subject matter.

2. I shall discuss the nature and implications of difference or variations (inline image) in chapter 8.

3. The term occurs at *N.E.* 1155a20 where Aristotle writes: "We may see even in our travels [inline image] how near and dear every man is to every man."

4. When Aristotle speaks of bravery in this context he probably means something like the psychological trait of fearlessness rather than the virtue of courage as he defines it. This use of the term is rather common in Greek, and indeed Socrates uses it in this manner in some of the Socratic Dialogues. At *Meno* 88, for example, he speaks of the harm that comes at times from bravery or quickness of mind.

5 See *N.E.* 1134b25: "What is by nature is immutable and has the same validity anywhere, as fire burns both here and in Persia, but what is just is seen to vary."

6. This phrase, inline image, is best rendered in English as "for the most part" or "in most cases" and not, as is sometimes rendered, as "in generality," "in general," or "speaking in general" (Grant, Rackham). For Aristotle is clearly concerned with what does not hold in all cases or is in a certain way in most cases. He is not concerned with what is a generality which is often contrasted to what is in detail or possesses specificity. It certainly should not be rendered as "speaking in general" or "generally speaking" if we mean by this "speaking without knowledge of specifics or details." For what Aristotle wishes to say is that we know how things are and certain things are such that they exhibit some property for the most part. As we shall see later, when Aristotle characterizes something as being for the most part he is not making an epistemic claim.

7. In claiming that the exactness/inexactness under consideration here is a formal feature and that it pertains to the truth of an account, I do not mean to assert that truth itself is a formal property, if we mean by this that it is a syntactic feature. Truth is considered to be a semantic property, and Aristotle himself conceives of it as a relation between an account and what the account is about. But an account can be exact or inexact in virtue of the way it satisfies this relation, e.g., in all cases, for the most part, roughly, and so forth.

8. See also Met. 1027a11 where Aristotle says that, outside the domain of matters of conduct as well, most things are for the most part

9. As a matter of fact Aristotle does not need to assume that all of the premises of a syllogism have to be for the most part in order that its conclusion be also for the most part (see below for this point)

10. Aristotle defines wealth at *N.E.* 1119b26 as follows: "By wealth we mean everything whose value is measured by money." He gives no evidence in this context that he thinks there is some problem with the nature or essence of wealth. The definition is clearly intended as holding true in all cases. In chapter 8, I shall discuss in some detail several examples of things whose definitions are, according to Aristotle, problematic because their nature is problematic. The concept *beard*, for example, may be vague and therefore difficult to define. But we should not assume that this is necessarily the reason that "Males have a beard" is true for the most part. For even if the definition of the concept *beard* posed no problem, it still could be the case that "Males have a beard" is true only for the most part.

11. Aristotle sees this clearly when at *Pr. Anal.* 43b35 he remarks that "And propositions that are for the most part are [derived] from syllogisms with premises that are for the most part, either all or some of them."

12. The way I have quoted 6.11 may give the impression that the for-the-most-part locution does not occur in Aristotle's text. Actually 6.11 is a continuation of 6.10, and it is quite clear that the for-the-most-part locution which appears at the beginning of 6.10 applies to both: "One ought for the most part to return services . . . [6.10] just as [inline image] one ought to pay back a loan [6.11]." In both examples Aristotle's concern is with the exceptions to these two statements. In 6.12, however, Aristotle does not use the locution. But here again the concern is with what is true

for the most part, what has exceptions or fails to hold in all cases: "As a general rule [inline image] . . . but they may not be best for a particular case."

13. I append here one example from M.M. : "If for the most part and at most times left retains the familiar
character of life, and right of fight, the distinction [between left and right hand] is a natural one" (1.33.20.7). On the other two occasions where the author of *M.M.* uses the phrase "for the most part" (1.33.21.4, 2.8.2.4) he gives no particular examples of things that are for the most part or propositions that are true for the most part but instead makes some observations about the nature of being for the most part.

14. Some of the examples from the logical treatises may not be examples of things that Aristotle actually takes to be for the most part or propositions that he considers to be true for the most part. They could be only examples for the purpose at hand, namely, to illustrate some logical features. They seem, however, not to be any different from the examples he gives elsewhere. It is reasonable to conclude that most probably Aristotle views them as examples of things that are for the most part or propositions that are true for the most part.

15. For additional things that are for the most part, see *G.A.* 725b17, 727b13, 728a3, 739a32, 750b33, 768a24, 774b9, *P.A.* 663b30, 690a10, *H.A.* 508b2, 522a3, 522a12, 545b4, b18, b22, 553a6, 560b20, 562b4, b15, and so forth.

16. It may seem in this context that Aristotle is putting forth a view that can best be described as act-consequentialism. For he seems to be suggesting that, regardless of the contracts or debts one has entered into or incurred, what is proper for him to do depends on the consequences of the action and not on previous contracts or agreements. But this is not so. Aristotle takes the general rule stating that we are required to pay our debts to be true: "For a debtor ought to pay what he owes" (1163b20). His point, of course, is that there are exceptions to such rules.

This suggestion was made to me in conversations with Professors Charles Young and Mikael Karlsson.
The view that Aristotle links what is always with what is by necessity has been forcefully defended by J. Hintikka, "Necessity, Universality and Time in Aristotle," *Ajatus* 20 (1957), pp. 65-90, and more recently by S. Waterlow, *Passage and Possibility* (Oxford: Clarendon Press, 1982).

Richard Sorabji, *Necessity, Cause and Blame* (London: Duckworth, 1980), especially pp. 128-135.
Kant argues that there is no real distinction between universality and necessity in the *Critique of Pure Reason*, especially B 3-4.

21. I owe this example to Professor Charles Young.

22. Aristotle refers to such assertoric syllogisms at *Rhet* . 1356b17: "But when, certain things being posited, something different results from them, from their being true universally or for the most part, in Dialectic such reasoning is called a syllogism, in Rhetoric an enthymeme."

Seven Demonstration and What Is for the Most Part

1. Among the ancient commentators, Eustratius and Alexander of Aphrodisias are clearly among those who concluded that the inexactness of ethics makes it non-demonstrative. The latter, in particular, thought that there could be no syllogisms whose premises consist of for-the-most-part propositions (see below). More recently, the view has, in one form or another, been defended by W. Jaeger, Aristotle: Fundamentals of the History of His Development (Oxford: Oxford University Press, 1948), especially, pp. 228-258; C. J. Rowe, The Eudemian and Nicomachean Ethics: A Study in the Development of Aristotle's Thought (Cambridge: Proceedings of the Cambridge Philological Society, 1971), especially pp. 63-76; J. Burnet, who in his commentary on the N.E. (London: Methuen, 1900) maintains that inexactness implies that Aristotle's own treatise is not demonstrative but dialectical throughout (especially pp. v-xvi); L. H. G. Greenwood, who, although critical of some of Bur-net's views, nonetheless agrees with him that ethics is dialectical because its propositions are not necessary or universally true-see his Aristotle: Nicomachean Ethics, Book VI (Cambridge: Cambridge University Press, 1909), especially pp. 131-133; H. H. Joachim, who also concludes from the supposition that ethical propositions are not necessary that ethics cannot be demonstrative—see his Aristotle: The Nicomachean Ethics (Oxford: Clarendon Press, 1955), especially p. 15. W. F. R. Hardie argues against the views of Burnet, Greenwood, and Joachim and does not take inexactness to imply that ethics cannot be demonstrative. Yet he remarks that, "It is reasonable to think that, in holding this view [that ethical statements have exceptions or are true for the most part], Aristotle is right as against those philosophers who have believed that moral rules can be demonstrated as in geometry, a company which includes Locke as well as Spinoza," Aristotle's Ethical Theory (Oxford: Clarendon Press, 1968), p. 32. Last, T. Irwin, who at times claims that ethics is an inexact science (see next note), on at least one occasion argues that because ethical propositions are about what is for the most part, ethics cannot be a science: "Concern with the usual [what is for the most part] deprives ethics of exactness, and prevents it from being a science"-see his translation of and commentary on the N.E. (Indianapolis: Hackett, 1985), p. 430. The view that ethics cannot be a science is not confined to Aristotelian scholars; it is accepted by many philosophers who at times appeal to Aristotle's authority. Thus H. Putnam, invoking Aristotle's remarks at N.E. 1094b19-27, claims that, "In fact, there is no prospect of a 'science' of ethics, whether in the sense of a laboratory science or of a deductive science;" see his Reason, Truth and History (Cambridge: Cambridge University Press, 1984), p. 135.

2. Many scholars have glossed Aristotle's own words by claiming that ethics is not an exact or strict science. Most recently, T. Irwin has made such a claim in his commentary on the N.E.: "For the same reason, ethical truths are only usual [for the most part] and hence lack the exactness that would be needed for a science in the strict sense. . . . This lack of exactness [having exceptions] means that ethics cannot meet Aristotle's strictest criteria for science," *Nicomachean Ethics* (Indianapolis: Hackett, 1985), pp. 398, 399.

3. Most translators and commentators have assumed that Aristotle takes ethics

to be like rhetoric or the exactness of ethical investigations to be that proper to rhetorical practice or activity.

4. This is most often overlooked by those concerned with Aristotle's conception of the natural sciences, and in particular of the ones studying biological phenomena. But such phenomena are, according to Aristotle, quite inexact and therefore pose the same problems in relation to demonstration that matters of conduct or medical phenomena do. Thus, in his excellent article on the axiomatic-demonstrative character of *P.A.*, A. Gotthelf seems to overlook this problem altogether; see his "First Principles in Aristotle's *Parts of Animals*," in A. Gotthelf and J. Lennox (eds.), *Philosophical Issues in Aristotle's Biology* (Cambridge: Cambridge University Press, 1987). I agree, however, with Gotthelf that, contrary to Barnes's claims, the *P.A.* is implicitly an

axiomatic-deductive treatise.

5. By insisting that not every valid and sound inference is an explanation, Aristotle avoids the problem empiricists face by identifying explanation with such an inference and analyzing cause in terms of it—namely, the problem of having to admit that the inference from the length of the shadow of a tower to the height of the tower is a causal explanation of the height of the tower.

6. Aristotle, of course, recognizes different kinds of induction. Besides ordinary or enumerative induction, he also speaks of intuitive or rational induction, the cognitive activity he associates with grasping the basic principles of the various disciplines (see *Post. Anal.* II.xix). Aristotle argues at length that this latter kind of induction is not demonstration; it does not prove anything. But enumerative or ordinary induction has always been thought to resemble in some respects demonstrative reasoning that produces scientific knowledge or explanation (see *Post. Anal.* 71a5, 81a40). The question, however, is whether ordinary induction can be a proof in the way a demonstrative syllogism presumably is or can produce knowledge of the kind produced by such a syllogism.

7. The necessity Aristotle speaks of here is most probably that which he associates with the relation of premises to conclusion in a valid argument and not that of the necessity of the premises or of the conclusion. His point is that the person who uses division does not make a deductive inference, whereas demonstration is a deductive inference (71b18).

8. The view that the term Aristotle uses when he speaks of demonstration encompasses anything that shows or reveals that something is the case has been defended by J. Barnes, "Aristotle's Theory of Demonstration," *Phronesis* 14 (1969), pp. 123-152. Barnes's view has been criticized by J. Hintikika in his "On the Ingredients of an Aristotelian Science," *Nous*, vol. 6, no. 4 (1972), pp. 55-69, where he argues that the term Aristotle uses for demonstration has a core of meaning that excludes a variety of ways or means that we may be willing to designate as means or ways of showing that something is the case. Most interpreters of Aristotle's account of demonstration or demonstrative science hold views that differ from those of Barnes on this issue. See, in particular, H. Scholz, "The Ancient Axiomatic Theory," in J. Barnes, M. Schofield, and R. Sorabji (eds.), *Articles on Aristotle* on Understanding Knowledge," in E. Berti (ed.), *Aristotle on Science* (Padova: Editrice Antenore, 1981).

9. As Barnes says, "A demonstration is a species of modal syllogism. In a demonstration all the propositions are necessary . . .", *Aristotle's Posterior Analytics* (Oxford: Claredon Press, 1975), p. xvi. Barnes's way of explicating Aristotle's notion

of demonstration rules out the possibility that there are demonstrations with premises that are not necessary or that are true for the most part. Aristotle, I believe, does not share this view. What Barnes says is true of strict or absolute demonstration only and not of all demonstration.

10. J. Barnes, "Aristotle's Theory of Demonstration," *Phronesis* 14 (1969), pp. 123-152. But Aristotle need not necessarily share Barnes's views on this matter, for he seems to think that some demonstrations are better or "more truly demonstrations" than others (see below).

11. For a discussion concerning the assumptions about teleology, rationality, and so on that underlie Aristotle's opening statements in the *N.E.* about the good and the structure of desire and pursuits, see B. Williams, "Aristotle on the Good: A Formal Sketch," *The Philosophical Quarterly*, vol. 12, no. 49 (1962), pp. 289-296. Concerning action and teleology, see D. Charles, *Aristotle's Philosophy of Action* (Ithaca, N.Y.: Cornell University Press, 1986).

12. Thus J. L. Austin has remarked that "the relation between 'being inline image ' and 'being desired' is one of the most baffling puzzles in Aristotle's, or for that matter Plato's, ethical theory"; see his "Agathon and *Eudaimonia* in the Ethics of Aristotle," in J. M. E. Moravcsik (ed.), *Aristotle* (Garden City, N.J.: Anchor Books, 1967), p. 296. Austin's paper is a response to H. A. Prichard's "The Meaning of *Agathon* in the *Ethics* of Aristotle," in J. M. E. Moravcsik (argues that the relation between "being inline image " and "being desired" is one of meaning.

13. P. Shorey takes Plato to have anticipated G. E. Moore's thesis that Good is indefinable; see his comments in his translation of Plato's *Republic* (Cambridge: The Loeb Classical Library, 1969), vol. 2, p. 95.

14. The classic discussions on these issues are to be found in Poincaré's essays, "Mathematics and Logic" and "Why Space Has Three Dimensions" in his *Mathematics and Science: Last Essays* and "Intuition and Logic in Mathematics" in his *The Value of Science*. See also in this connection the discussion of some of these issues by M. Steiner, *Mathematical Knowledge* (Ithaca, N.Y.: Cornell University Press, 1975).

15. Professor Mark Wilson has also pointed out to me that the same problem arises when we try to formalize in a systematic way the informal Peano axioms for natural numbers.

16. R. Gale, The Language of Time (London: Routledge & K. Paul, 1968).

17. On at least two occasions when Aristotle defines "syllogism" he appears to rule out suppressed premises, for he insists that the conclusion of a syllogism follows from the propositions that have been laid down as premises (*Pr. Anal.* 24b20; *Top.* 100a18). Elsewhere, however, he recognizes syllogisms whose premises may not have all been laid down. In this connection, see M. Frede's discussion of some features of Aristotle's account of syllogistic reasoning, "Stoic vs. Aristotelian Syllogistic," *Archiv für Geschichte der Philosophie* 56 (1974), pp. 1-32.

18. This view of the role of enthymematic reasoning is stated throughout the *Rhet* . and at times in the *Top*. 19. J. Barnes, *Aristotle's Posterior Analytics* (Oxford: Clarendon Press, 1975), p. 135.

20. I have in mind Quine's discussion of necessity in "Two Dogmas of Empiricism." Quine has, of course, attacked the whole idea of necessity, but what he says about the way some propositions stand fast or are less likely to be revised can

be looked upon as offering a notion of necessity that admits of degrees. Putnam suggests that there can be degrees of necessity in his "The Analytic and the Synthetic" in his *Mind, Language, and Reality* (Cambridge: Cambridge University Press, 1975). The view is, however, explicitly stated and defended in his "It Ain't Necessarily So," in his *Mathematics, Matter and Method* (Cambridge: Cambridge University Press, 1975), where he argues that statements about species (e.g., "Cats are animals") are less necessary than purely analytic statements (e.g., "Bachelors are not married"). 21. That the essence cannot be demonstrated is the main topic of discussion in *Post. Anal.* II.iii-x, as well as *Met.* 1025b14, 1064a.

22. See Anim. 422b26, 436b3; E.E. 1229b; G.A. 722b32, 741b11, 782a, etc.

23. This tendency in Plato's thought is most strongly expressed in the Middle Dialogues, especially the *Phaedo* and the *Republic* (see *Republic* 529); at least Aristotle understood him as excluding the world of the senses from the domain of knowledge (see *Met.* 987a34).

24. Alexandri in Aristotelis Analyticorum Priorum Librum I Commentarium, 169.5; J. Lukasiewicz, Aristotle's Syllogistic (Oxford: Clarendon Press, 1967), p. 203.

25. J. Barnes, *Aristotle's Posterior Analytics* (Oxford: Clarendon Press, 1975), p. 184, and see also his "Aristotle's Theory of Demonstration," *Phronesis* 14 (1969), especially p. 133ff.

26. Barnes claims that Aristotle pursues this line of argument at *Post. Anal.* 75b33-6 and 98b29 and refers to H. H. Joachim's discussion of the topics of these passages in the latter's edition of the *Gen. et Corr.* (see Barnes, "Aristotle's Theory of Demonstration"). But what Aristotle is concerned with in the first passage is the relation of demonstration to intermittent events, e.g., the occurrence of an eclipse. In the second passage Aristotle is concerned with the problem of whether a cause is commensurate with its effects. And these are the topics Joachim discusses in the introduction to his edition of *Gen. et Corr.* (Oxford: Oxford University Press, 1922).

27. "The Science of Medicine," in G. E. R. Lloyd (ed.), *Hippocratic Writings* (London: Penguin Books, 1978), p. 142.

28. See Barnes, *op. cit.*, and *Pr. Anal.* 25b14 and *Rhet.* 1357a37. Barnes has also suggested that Aristotle sometimes "treats 'for the most part' as a quasi modal operator . . . and uses it to express laws of nature. . . . From *By nature C's are B* and *by nature B's are A* it does not obviously not follow that *By nature C's are A* "; see his *Aristotle's Posterior Analytics* (Oxford: Clarendon Press, 1975), p. 184. I think Barnes is correct. I also argued earlier that Aristotle takes what is for the most part to be a component of the regularities of nature. And there is no doubt that the conclusions of some such syllogisms where "for the most part" is treated as being equivalent to "by nature" are true. Such syllogisms are nonetheless not valid. To use an example from Aristotle, the premises of the syllogism, "By nature fissepedes produce many offspring and by nature the elephant is a fissepede, therefore by nature the elephant produces many offspring," are true, but the conclusion is not (see below).

29. This is not to say that Aristotle does not recognize inductive reasoning. He does, but he tends to restrict its use to purposes that are different from those he

assigns to demonstrative reasoning, i.e., different from explanation or scientific understanding.

30. As Barnes has pointed out, Aristotle does not distinguish between propositions which express truths that are necessary, e.g., "Every man is an animal," and propositions which express the necessity of truths, e.g., "Necessarily: every man is an animal" (see his *Aristotle's Posterior Analytics*, pp. 112-113). Similarly, he does not distinguish between propositions that are true for the most part and propositions asserting that something is true for the most part. Aristotle almost invariably thinks in terms of the former.

31. Barnes writes, "And the paradigm demonstrative mood is *Barbara*... Aristotle never sets this paradigm out with any clarity or emphasis; and in several passages whether deliberately or by oversight, he lets the fetters of necessity relax and is even unfaithful to *Barbara*. For all that, it is, I think, surely right to take the syllogism in *Barbara* with necessary components as the model of demonstrative reasoning" (*Aristotle's Posterior Analytics*, p. xvi).

32. Aristotle's example comes from Euripides' Hecuba, 858.

33. Aristotle takes matter to be capable of being otherwise, to lack necessity (*Met.* 1039b27). And if universality in truth implies necessity, lack of necessity, as pointed out earlier, will imply lack of universality of truth.

34. Ross, in his commentary on this passage, speaks of mathematical proof, and 1 take him to be thinking of demonstrative proofs of the rigor encountered in mathematics and not of proofs that involve elements of mathematics. These are, of course, different kinds of things.

35. *Met.* 1080b25: "The case of lines, planes, and solids is similar. For some think that those which are the objects of mathematics are different from those which come after the Ideas; and of those who express otherwise some speak of the objects of mathematics and do so mathematically [inline image]—viz. those who do not make the Ideas numbers or say that Ideas exist . . . mathematically." The phrase, then, "to speak mathematically," that Aristotle uses in the above passage and in the one quoted in the text (995a6) when he speaks of the kinds of proofs demanded by listeners can, and does, mean "to use the language of mathematics." Notice, also, the identical grammatical structure of "speaking mathematically" (inline image) and "speaking by example" (inline image) in Aristotle's text.

36. That physics is a theoretical and demonstrative science is asserted at *Met.* 1025b26, 1026a7, 1064b.

37. So G. E. R. Lloyd, *Aristotle: The Growth and Structure of His Thought* (Cambridge: Cambridge University Press, 1968), p. 204, even translates Aristotle's words in 7.4 as saying, "It is inappropriate to demand demonstration in ethics," whereas what Aristotles says is that it is foolish to demand demonstrations from a rhetorician. In fact, we see that Aristotle does not even say that the rhetorician gives no proofs—perhaps sometimes he does or at least he can—but that it is unreasonable, inappropriate, or foolish to demand proofs from him. We must also keep in mind that when Aristotle speaks of the rhetorician in the present context he means someone who practices rhetoric and not someone who investigates the nature of rhetorical phenomena. And whereas it may be inappropriate to demand proofs

from the former it may not be from the latter, for their activities and purposes are different (see chap. 9). In any case, the important point to stress is that Aristotle does not say that ethics is like the practice of rhetoric or that it does not give proofs.

38. That several of Aristotle's propositions about the good and happiness and their relation to goals or desires are necessary propositions is maintained by B. Williams, *op. cit.*, p. 294; see also my "Aristotle on Function and the Attributive Nature of the Good," in D. Depew (ed.), *The Greeks and the Good Life* (Indianapolis: Hackett, 1980).

39. As I said earlier, the technique of restricting the universal or the subject is used by Plato. That Aristotle also uses it has been recognized by W. F. R. Hardie, *op. cit.*, p. 33. 40. See also 771a20 where Aristotle explains why size is the cause.

Eight Variation, Indefiniteness, and Exactness

1. Aristotle takes children to have debts toward their fathers: "Hence it would appear that a son never ought to disown his father, although a father may disown his son; for a debtor ought to pay what he owes, but nothing a son can do comes up the benefits he has received, so that a son is always in his father's debt. But a creditor may discharge his debtor, and therefore a father may disown his son" (1163b18).

2. H. L. Hart in his *The Concept of Law* (Oxford: Clarendon Press, 1961), pp. 122-126, points to problems with formulating laws or rules that are similar to the ones Aristotle identifies. But Hart argues that such problems may stem from two different sources. One is the use in formulating rules or laws of general terms that often defy precise definitions. The other, however, is what he calls "our relative indeterminacy of aims." And the indeterminacy of aims results, in turn, in an indeterminacy of our rules. So that the indeterminacy of a law concerning the distribution of land may not necessarily result from the indeterminacy of the term "land" or the concept *land*, but from the indeterminacy of our aims regarding land.

3. F. Waismann, "Verifiability," in A. Flew (ed.), *Logic and Language*, First Series (Garden City, N.J.: Anchor Books, 1965). The most detailed examination of the notion of open texture is to be found in J. M. Brennan, *The Open-Texture of Moral Concepts* (New York: Macmillan, 1977). Brennan makes some important distinctions in his discussion of open texture, but at times he seems to identify open texture with so many and quite different features of our moral concepts that he almost undercuts the usefulness of the notion (see especially pp. 116-134).

4. At *Polit.* 1326a35 Aristotle remarks, "But there is a due measure of magnitude for a city-state as there also is for all other things—animals, plants, tools; each of these if too small or excessively large will not possess its own proper efficiency, but in the one case will have entirely lost its true nature and in the other will be in a defective condition; for instance, a ship a span long will not be a ship at all, nor will a ship a quarter mile long, and even when it reaches a certain size, in the one case smallness and in the other excessive largeness will make it sail badly."

Aristotle seems to be saying that our concepts provide us with answers even in situations that are similar to those Waismann imagines.

5. G. Frege, "On the Concept of Number," in H. Hermes, F. Kambartel, and F. Kaulbach (eds.), *Frege: Posthumous Writings* (Chicago: University of Chicago Press, 1979), p. 77.

6. G. Evans, "Can There Be Vague Objects?" *Analysis* 38 (1978); N. U. Salmon, *Reference and Essence* (Princeton, N.J.: Princeton University Press, 1981), p. 243ff.; P. Unger, "There Are No Ordinary Things," *Synthese* 41 (1979), pp. 117-154; S.C. Wheeler, "On That Which Is Not," *Synthese* 41 (1979), pp. 155-173. 7. *Op*. *cit.*, p. 166.

8. P. Geach and M. Black (eds.), *Translations from the Philosophical Writings of Gottlob Frege* (New York: Rowman and Littlefield, 1952), p. 139. Wittgenstein responds to Frege's claim at *Philosophical Investigations* I.71 as follows: "Frege compares a concept to an area and says that an area with vague boundaries cannot be called an area at all. This presumably means that we cannot do anything with it.—But is it senseless to say: 'Stand roughly there?' Suppose that I were standing with someone in a city square and said that. As I say it I do not draw any kind of boundary, but perhaps point with my hand—as if I were indicating a particular *spot*. And this is just how one might explain to someone what a game is" (see also 76, 77).

9. Thus, M. Black, *Margins of Precision* (Ithaca, N.Y.: Cornell University Press, 1970), writes "So far as I can see all empirical concepts are 'loose' in the sense which I have explained" (p. 6) and "Now if all empirical concepts are loose, as I think they are . . . " (p. 7).

10. For a discussion of the claim that knowledge of the definition of F is necessary for knowing that some x is F and of the Socratic Fallacy in general, see chap. 2 and the references in notes 8 and 29 of that chapter. See also J. L. Austin's discussion of this issue in his "Are There *A Priori* Concepts?" in his *Philosophical Papers* (Oxford: Oxford University Press, 1970).

11. This line of argument is developed by G. Ryle in his *The Concept of Mind* (London: Hutchinson University Library, 1949).

12. The most important criticisms of the claim that any definition of F is by itself sufficient for determining whether something is an F are those developed by Wittgenstein in the *Philosophical Investigations*. Wittgenstein, by examining the conditions that need to be met for applying a rule correctly, concludes that no rule is by itself sufficient for determining anything. A whole system of beliefs and practices is, according to him, presupposed or required in applying any rule.

13. See Aristotle's discussion of this matter in *Post. Anal.* II.xix and *Anim.* II and the perceptive comments of M. Wedin in his "Aristotle on the Mechanics of Thought," *Ancient Philosophy* 9 (1989), especially pp. 80-81.

14. See the discussion by M. Black, op. cit. , pp. 11-12.

15. For the problem of the identity of vague objects, see G. Evans and N. U. Salmon, *op. cit.* The problem with the transitivity of identity of such objects has been discussed by S. Kripke, *Naming and Necessity* (Oxford: Oxford University Press, 1980), p. 51.

16. Thus, Frege writes that "The law of the excluded middle is really just another

form of the requirement that the concept should have a sharp boundary," op. cit. , p. 139.

17. B. Russell, "Vagueness," *Australasian Journal of Psychology and Philosophy* I (1923), p. 88. See Wittgenstein's criticisms of this view in *Philosophical Investigations* I, 104, 105, 106, 107.

18. This point has been made by J. Lear, *Aristotle and Logical Theory* (Cambridge: Cambridge University Press, 1980), pp. 110-111.

19. Black, who agrees with Aristotle that all empirical concepts are "loose" or that "nothing perceptible can be precisely defined," points to the unwelcome consequence of denying the possibility of valid reasoning with imprecise or vague concepts: "Now if all empirical concepts are loose, as I think they are, the policy becomes

one of abstention from *any* reasoning from empirical premises. If this is a cure, it is one that kills the patient" (*op. cit.*, p. 7). Black goes on to argue along lines that Aristotle would probably have found congenial: "In using a loose concept, I must know that there are instances that are indisputably 'clear' and must be able to recognize such cases; and I must also be able to recognize 'borderline cases'. I must understand that the use of the customary logical principles presupposes an *ad hoc* demarcation, somewhere in the region of cases that are not indisputably clear; and, finally, I must understand that there are no rules for drawing such lines. Provided I understand all this, I may properly use a loose concept and reason with it, even at times about cases which are not indisputably clear" (*op. cit.*, p. 12).

20. See Post. Anal. I.xxvii and Met. A.3, as well as the discussion in chap. 4 above.

21. It may be objected in this connection that Aristotle takes the moral virtue (vice) of courage (cowardice) not to be simply a natural disposition, since, according to him, it cannot exist without practical wisdom (*N. E.* VI.xiii). But we cannot conclude from this that no causal-explanatory account of the moral virtue (vice) of courage (cowardice) can be given. For, among other reasons, it is not obvious that no causal-explanatory account cannot be given in the case of practical wisdom itself.

22. I do not, of course, mean that there are no causal explanations purporting to explain why cities come into being or why they grow the way they do. I am only questioning whether the causal explanation of these kinds of phenomena about cities is relevant to the question concerning the vagueness or indefiniteness of "city" or of the concept *city*.

23. A. Grant, *The Ethics of Aristotle* (New York: Arno Press, 1973), p. 488, and Eustratius' commentary in G. Heylbut (ed.), *Eustratii et Michaelis et Anonyma in Ethica Nicomachea Commentaria* (Berlin: Reimer, 1892), p. 126.

24. Aristotle himself defines art (craft) in a few lines at *N.E.* 1140a20 while he devotes most of the *Poet.* to defining tragedy. Concerning the problems with defining tragedy, see the discussion by B. Vickers, *Towards Greek Tragedy* (London: Longman, 1973), especially chs. 1 and 2.

25. For a discussion of the problem of trying to make ethical concepts more exact by assigning to them numerical values, see K. Baier, *The Moral Point of View* (Ithaca, N.Y.: Cornell University Press, 1958), pp. 66-72.

26. I have in mind here Aristotle's argument from function at *N.E.* I.vii where he concludes that the "human good turns out to be activity of soul in conformity with excellence [or virtue]" (1098a15).

27. J. Rawls, A Theory of Justice (Cambridge: Harvard University Press, 1972), p. 399.

28. W. D. Ross, The Right and the Good (Oxford: Oxford University Press, 1930), p. 67.

Nine Exactness and Pragmatics

1. See Post. Anal. I.xii, xxvii, and discussion above (chap. 4).

2. W. F. R. Hardie, *Aristotle's Ethical Theory* (Oxford: Clarendon Press, 1968), p. 31, for instance, claims that "what methods and procedures are proper in a science depends on its purpose . . ." but stops short of concluding that the method of ethics is nondemonstrative.

3. *Post. Anal.* 71b16, 92b19, 93a10, 98a20; *Anim.* 402a. The term inline image , however, is often used to mean simply the way something is done, which may have nothing to do with the method an inquiry or investigation uses—e.g., *Top.* 156a15, *Pr. Anal.* 32b8.

4. Aristotle uses this term most often to signify the manner of obtaining the elements or premises of a syllogism, e.g., *Pr. Anal.* 53a2, 43a21. At other times, however, he uses it to signify something that is closer to the way or method of proving something, e.g., *Pr. Anal.* 46b24, *Post. Anal.* 82b30. But in many instances what Aristotle considers to be different methods are really different syllogistic forms.

5. Aristotle, using the same term, speaks again of the way to the first principles at Post. Anal. 84b23.

6. For the use of inline image see *N.E.* 1099b14 (where some inquiry that studies matters pertaining to the gods is distinguished from the inquiries of ethics and politics), 1102a12, 1146b14. For the use of inline image , see *E.E.* 1217a3, *Top.* 152b12, and for that of inline image , *N.E.* 1096a11, 1112b21, *Anim.* 403b25.

7. At *E.E.* 1216b35-39 Aristotle writes, "And in every investigation [or method, inline image] arguments [accounts] stated in philosophical form are different from those that are not philosophical . . . since that is the philosophical way in every investigation [inline image]." Although it is not altogether certain that the term means "inquiry" in its first occurrence, it most probably does. The term is, however, used at 1214a14 to clearly mean "field of inquiry."

8. See Polit. 1260b35, 1279b12, 1289a25, 1293b29, 1295a1, 1317a18, b33, 1324a2, a21.

9. M. Sintonen, *The Pragmatics of Scientific Explanation* (Helsinki: Acta Philosophica Fennica, vol. 37, 1984), p. 29. I quote Sintonen's statement below.

10. W. F. R. Hardie, *op. cit.*, p. 31, claims that "what methods and procedures are proper in a science depends on its purpose, *on what are the questions to which answers are sought*..." (my italics).

11. What Aristotle says in this passage (1098b) is not without its problems. He urges that we do not demand the cause in the same way in all cases (inline imageinline image). Aristotle's words have been rendered in a variety of ways: "In all matters alike . . . an explanation of the reason why" (Rackham), "The cause in all things alike" (Apostle), "The cause in all matters alike" (Ross), "The same demand

for an explanation in all cases" (Irwin). Rackham and Irwin, in rendering inline image as explanation, express agreement with the view defended recently by several scholars that Aristotelian causes are to be understood in terms of explanation-see J. Barnes, *Aristotle's Posterior Analytics* (Oxford: Clarendon Press, 1975) and R. Sorabji, *Necessity, Cause, and Blame* (London: Duckworth, 1980). Apostle and Ross, however, take Aristotle to be speaking about causes. These translators also go on to render differently what Aristotle says about what we might do if we are not to seek the "causes." Aristotle says that in some cases, and in particular in the case of the principles, it is sufficient to show adequately that something is so (inline imageinline image). Most translators render Aristotle's words in such a way that they distinguish, as Aristotle seems to want to do, between proving or explaining (by giving the causes of) the principles on the one hand and in some way showing or establishing (Rackham, Ross) or indicating (Apostle) them on the other. Irwin,

however, renders Aristotle's words by saying, "It is enough to prove that something is true without explaining why it is true." There is, at least prima facie, something puzzling with the idea that it is possible to prove something without explaining it.

12. See Eustratius's discussion, *op. cit.*, pp. 73-74, where he contrasts sharply what the builder does by using the T-square, the carpenter's orthogonal triangle, and the leaden weight for obtaining a straight line or a right angle to what the geometrician does.

13. "And after having given an art a single name in what has preceded, thereby making us think that it was a single art, does not the discussion now assume that the same art is two and ask whether the art as practiced by the philosopher or the non-philosopher was the more exact?" (57C).

14. Sometimes Plato's words at *Philebus* 57B are translated as follows: "Well, had not the discussion already found in what preceded that the various arts had various purposes [inline image] and various degrees of exactness" (translated by H. N. Fowler, Loeb Classical Library). But actually what Plato says in this passage is that "different arts, dealing with different things [inline image]" possess different degrees of exactness. R. Hackforth's rendering of this passage in which he attributes variation in exactness to the differences of the objects arts or disciplines deal with is the correct one— *Plato's Examination of Pleasure* (Indianapolis: The Library of Liberal Arts, 1945).

15. Its goals are, as Plato and Aristotle often insist, purely theoretical; it aims at knowledge for the sake of knowledge.

16. Grant in his commentary on 1098a30 (9.2) seems to me to have something like this in mind when he points to the different aspects or conditions of demonstration and the possibility that ethics may differ from mathematics because it does not satisfy all of these conditions or at least not to the degree or in the way mathematics does.

17. I do not mean to claim here that Aristotle does not identify any methods other than demonstration for investigating into certain domains or for discovering the basic principles. He clearly does. In *Post. Anal.* II.xix he argues that some type of induction, and not demonstration, is the way by which the basic principles are to be grasped. At *Top.* 101a37 he argues that the starting points of the sciences are arrived at by using dialectic. And at *N.E.* 1098b3 he claims that principles "are

studied by means of induction, perception, habituation and other means." But these methods, as G. E. L. Owen has pointed out, are not methods of explaining, proving, or producing scientific understanding—see G. E. L. Owen, "Aristotle: Method, Physics, Cosmology," in C. C. Gillespie (ed.), *Dictionary of Scientific Biography* (New York: Scribner, 1970).

18. See Post. Anal. 79a15, 88b13; Met. 1025a, 1064a.

19. See his commentary on this passage in his translation of the N.E. (Dordrecht: D. Reidel, 1975).

20. This translation is by P. Shorey in the Loeb Classical Library edition. Shorey, commenting on Plato's use of the word "ludicrous" to characterize the language of doing that is employed by some in relation to geometry, says that "the very etymology of 'geometry' implies the absurd practical conception of the science." Why the conception is, however, absurd is not obvious. Plato himself did not remove geometry from any and all practical applications (see below).

21. The goal of eliminating from mathematics the kind of language or proofs that Plato finds ludicrous has always been a part of the ideal of mathematical knowledge, even in the earliest stages of the history of the discipline of mathematics. This is brought out quite clearly in the comments of T. L. Heath on Euclid's *Elements* . Heath quotes the following from Schopenhauer: "I am surprised that, instead of the eleventh axiom [the Parallel-Postulate], the eight is not rather attacked: 'Figures which coincide are equal to one another.' For coincidence is either mere tautology, or something entirely empirical, which belongs, not to pure intuition, but to external sensuous experience. It presuposes in fact the mobility of figures; but that which is movable in space is matter and nothing else. Thus this appeal to coincidence means leaving pure space, the sole element of geometry, in order to pass over to the material and empirical" (Die Welt als Wille und Vorstellung , vol. 2, 2d edition, p. 130). Euclid himself expresses reservations about the use of superposition of figures in geometry, but, as Heath observes, superposition is fundamental in geometry and an inseparable element of some of the common notions or axioms, especially 1.4-"Things which coincide with one another are equal to one another"--: "But seeing how much of the *Elements* depends on 1.4, directly or indirectly, the method can hardly be regarded as being, in Euclid, of only subordinate importance; on the contrary, it is fundamental. Nor, as a matter of fact, do we find in the ancient geometers any expression of doubt as to the legitimacy of the method," Euclid's Elements (New York: Dover Publications, 1956), vol. 1, p. 225. The problems associated with interpreting Plato's views on the nature of mathematical and scientific knowledge in general have been recently discussed by G. Vlastos, "The Role of Observation in Plato's Conception of Astronomy," and A. Mourelatos, "Plato's Real Astronomy: Republic VII 527D-531D," in J. P. Anton (ed.), Plato on Science and the Sciences (New York: Eidos Books, 1980); see also my discussion of these papers in "Plato on the Sciences," Inquiry 26 (1983), pp. 237-246.

22. According to Heath, *op. cit.*, p. 226, Aristotle accepts the method of superposition in geometry. But it would not be true to accuse Aristotle of failing to understand the nature of mathematical knowledge and of mathematical propositions—that is, of confusing them with empirical propositions on the basis of the

fact that he accepts the kinds of proofs that presumably Plato rejects. For he draws a sharp distinction between the proof one uses and the nature of what one proves—"the geometrician does not infer anything from the existence of the particular line which he himself has mentioned, but only from the facts which his diagrams illustrate" (*Post. Anal.* 77a). See also *Met.* 1078a20, 1089a25, and Heath's discussion of Aristotle's views in his *A History of Greek Mathematics* (New York: Dover Publications, 1981), vol. 1, pp. 336-337. 23. Aristotle argues at *Post. Anal.* 72a30 and *N.E.* 1139b32 that our knowledge of the basic principles of a science must be superior to our knowledge of the propositions derived from them (its theorems).

24. See *Met.* 1027a: "And that the builder produces health is an accident, because it is the nature not of the builder but of the doctor to do this—but the builder happened to be a doctor. Again, a confectioner, aiming at giving pleasure, may make something wholesome, but not in virtue of the confectioner's art; and therefore we say 'it was an accident', and while there is a sense in which he makes it, in the unqualified sense he does not. For to some things correspond faculties productive of them."

25. The point here is not affected by the fact that Aristotle is mistaken about the function of the brain.

26. See in this connection the important discussion by R. Kraut in his "The Peculiar Function of Human Beings," *Canadian Journal of Philosophy* 9 (1979), pp. 467-478. Aristotle has at times been criticized for assuming that things have unique functions or for equating the function of something with any activity that might be unique to it; see, for example, T. Nagel, "Aristotle on *Eudaimonia*," in A. Rorty (ed.), *Essays on Aristotle's Ethics* (Berkeley and Los Angeles: University of California Press), pp. 7-14.

27. For a discussion of Putnam's example see below. That an inexact explanation, instruction, or concept may he what is required in certain contexts or for certain purposes is a view put forth by Wittgenstein in the *Philosophical Investigations*. Our language, Wittgenstein often argues, is just the way it should be if it is to serve the purposes it serves: "If I tell someone 'stand roughly here'—may not this explanation work perfectly? And cannot every other one fail too? But isn't it an inexact explanation?—Yes; why shouldn't we call it 'inexact'? Only let us understand what 'inexact' means. For it does not mean 'unusable' " (*Philosophical Investigations*, I, 88).

28. M. Sintonen, *op. cit.*, p. 29; see also pp. 92-100. For "es-questions" and "se-answers" read "Explanation-seeking questions" and "Scientific-explanatory answers," respectively.

29. H. Putnam, Mind, Language and Reality (Cambridge: Cambridge University Press, 1975), p. 295.

30. *Op. cit.* , p. 296.

30. Op. cit. , p. 296.

31. *Ibid.*

32. H. Putnam, Meaning and the Moral Sciences (London: Routledge & K. Paul, 1979), p. 47.

33. M. Scriven, "Explanations, Predictions, and Laws," in H. Feigle and G. Maxwell (eds.), *Minnesota Studies in the Philosophy of Science*, vol. 3 (Minneapolis: University of Minnesota Press, 1962), p. 196.

34. B.C. van Fraassen, "Salmon on Explanation," *The Journal of Philosophy*, vol. 82, no. 11 (1985), p. 640. 35. The view that mathematics can, and in fact does, use less rigorous types of proofs, e.g., inductive

evidence, has been recently defended by M. Steiner, *Mathematical Knowledge* (Ithaca, N.Y.: Cornell University Press, 1975), especially ch. 3.

36. See on this point my "Aristotle on Function and the Attributive Nature of the Good," in D. Depew (ed.), *The Greeks and the Good Life* (Indianapolis: Hackett, 1980).

37. The goals of ethics, then, are not merely psychological, as Hardie suggests, *op. cit.*, p. 31. Or, at least, they are not psychological in the sense we often understand this term, i.e., as implying something that is merely subjective.

37. The goals of ethics, then, are not merely psychological, as Hardie suggests, *op. cit.*, p. 31. Or, at least, they are not psychological in the sense we often understand this term, i.e., as implying something that is merely subjective.

38. Wittgenstein remarks at *Philosophical Investigations*, I, 88:" 'Inexact' is really a reproach, and 'exact' is praise. And that is to say that what is inexact attains its goal less perfectly than what is more exact. Thus the point here is what we call the 'goal'. Am I inexact when I do not give our distance from the sun to the nearest foot or tell a joiner the width of a table to the nearest thousandth of an inch?" In some cases, of course, the exact is what attains its goals—e.g., as Aristotle claims, an account in ethics is exact if it attains the level of detail or specificity that is needed in order to attain the goals of the discipline. It is also true, however, that sometimes we designate certain accounts, descriptions, or explanations as inexact because they fail to meet certain standards of exactness—e.g., Aristotle considers explanations in ethics to fail to meet the exactness of the explanations we give in mathematics. But, Wittgenstein retorts, "No *single* ideal of exactness has been laid down; we do not know what we should be supposed to imagine under this head—unless you yourself lay down what is to be so called. But you will find it difficult to hit upon such a convention; at least any that satisfies you" (*ibid.*).

39. For Aristotle's use of geometric proportion in his account of distributive justice, see the excellent discussion of D. Keyt, "Distributive Justice in Aristotle's *Ethics* and *Politics*," *Topoi* 4 (1985), pp. 23-45.

40. This is, of course, Plato's line of argument in the *Gorgias*, where he argues in support of the view that rhetoric, medicine, cooking, and so forth cannot be left to mere sophistic treatment or guesswork. Too much depends on such arts, and if we go wrong when using them the effects can be at times fatal.

41. J. de Romilly, *Magic and Rhetoric in Ancient Greece* (Cambridge: Harvard University Press, 1975). See also the comments of T. Irwin in his translation of the *Gorgias* (Oxford: Clarendon Press, 1979).

42. H. H. Joachim, Aristotle: The Nicomachean Ethics (Oxford: Clarendon Press, 1955), p. 16.

Ten Exactness, Universality, and Truth

1. When speaking of principles in the present context I shall sometimes mean general or universal statements, and not necessarily what Aristotle often has in mind when he speaks of principles—namely, the basic propositions of a discipline.

2. See Sartre's discussion of the place or role of general principles in ethical choice in his essay

"Existentialism," in his Existentialism and Human Emotions (New York: Philosophical Library, 1957), p. 25ff.

3. J. McDowell, "Virtue and Reason," The Monist, vol. 62, no. 3 (1979), p. 336.

4. Op. cit. , p. 343.

5. *Ibid.*

6. A. Baier, *Postures of the Mind* (Minneapolis: University of Minnesota Press, 1985), p. 218ff. See also the somewhat similar views of P. Foot in her "Moral Arguments," *Mind* 67 (1958), pp. 502-513, and "Moral Beliefs," *Proceedings of the Aristotelian Society* 59 (1958-1959), pp. 83-104.

7. A. Baier, op. *cit.*, p. 274. The "negative" rules Baier refers to here are some of the Ten Commandments of the Old Testament.

^{4.} Op. cit. , p. 343.

8. B. Williams, *Ethics and the Limits of Philosophy* (Cambridge: Harvard University Press, 1985), especially chs. 1 and 2; see also his "Ethical Consistency," *Proceedings of the Aristotelian Society*, suppl. 29 (1965), pp. 103-124, and "Consistency and Realism," *Proceedings of the Aristotelian Society*, suppl. vol. 40 (1966), pp. 1-22. For a critical discussion of Williams's views, see P. Foot, "Moral Realism and Moral Dilemma," *The Journal of Philosophy*, vol. 80, no. 7 (1983), pp. 379-398.

9. See M. Nussbaum, *Aristotle's "De Motu Animalium"* (Princeton: Princeton University Press, 1978), especially essay 4, and *The Fragility of Goodness* (Cambridge: Cambridge University Press, 1986), pp. 298-307. Nussbaum stresses Aristotle's concern with the universal aspects of ethical theory in her "Nature, Function, and Capability," *Oxford Studies in Ancient Philosophy*, suppl. vol. 1 (1988), pp. 145-184, and "Non-Relative Virtues: An Aristotelian Approach," *Midwest Studies in Philosophy* 13(1988), pp. 32-53.

10. T. Irwin, Aristotle: Nicomachean Ethics (Indianapolis: Hackett, 1985), p. 430.

11. A. Jonsen and S. Toulmin, *The Abuse of Casuistry: A History of Moral Reasoning* (Berkeley and Los Angeles: The University of California Press, 1988).

12. Unlike Plato, Aristotle has often been looked upon as having no interest in theory or as failing to develop a theory about something or other. Thus, J. L. Ackrill claims, "He [Aristotle] does not direct his gaze steadily upon the questions 'What *is* an action?' and 'What is *an* action?' " Ackrill concludes that, although Aristotle had the means of developing a theory of action, he does not; see his "Aristotle on Action," *Mind*, vol. 88, no. 348 (1978), pp. 595-601. For Aristotle's theory of action, see D. Charles, *Aristotle's Philosophy of Action* (Ithaca, N.Y.: Cornell University Press, 1986).

13. See also 1142a15 where Aristotle writes, "The reason is that practical wisdom in addition [inline image] is

concerned with the particular . . ." The inline image in this phrase is omitted by one of the manuscripts (M $^{\rm b}$) but all the editors of Aristotle's text agree on its inclusion. The context makes it clear that Aristotle is again contrasting theoretical knowledge (e.g., geometry or arithmetic) that deal only with the universal to practical knowledge that deals with both the universal and the particular.

14. Aristotle is often concerned with what he takes to be the insufficiency of the knowledge of what is virtuous or what is healthy to produce virtuous actions or healthy and vigorous conditions respectively (1105b10, 1143b25). He is thus critical of the Socratic thesis that virtue is knowledge. But the problem Aristotle sees with the Socratic thesis about virtue is different from the more narrow question of whether the knowledge required for action is of the universal or particular kind.

15. Among the commentators, Burnet, Stewart, and Grant seem to emphasize knowledge of the particular. H. G. Apostle even translates inline image as "he knows what he does," which suggests that the agent knows the particular circumstances, although it may also mean that he knows the nature of his action. H. Rackham thinks that both kinds of knowledge are involved.

16. See also N.E. 1105a30 and 1144a18.

17. I do not, of course, mean to endorse Aristotle's claim about the alleged inability of animals to form general concepts or rules. Aristotle's claim is, indeed, a puzzling one, for it seems to imply that a dog has no general concept or precept of, for example, cat, but only images of individual cats. It also implies that, in contrast to what Aristotle says about the shading of nutritive soul into the sensitive soul (see the discussion in chap. 8 about the gradations in nature and the "dualizing" between being a plant and an animal of certain living things), there is no shading of the sensitive into the intellectual soul (or faculty). Yet at other times Aristotle seems to be of different mind about this. Thus, at *Protrept*. B29 he remarks, "Animals have some small sparks of reason [inline image] and practical wisdom [intelligence, prudence—inline image] but are entirely deprived of theoretical wisdom." And at *G.A.* 731a32 he claims that "all animals have in addition, some measure of knowledge of a sort [inline image] . . because they have sense-perception, and sense-perception is, of course, a sort of knowledge." Finally, at *N.E.* 1141a27 he claims that "even some of the lower animals are said to have practical wisdom [or intelligence, inline image], namely those which display a capacity of forethought as regards their own life."

18. J. McDowell, op. cit. , p. 344.

19. Op. cit. , p. 347.

20. And for the reasons Aristotle gives and that I discussed above.

21. See *Post. Anal.* 85b26 where Aristotle claims that "therefore, the universal is the cause" and see also 88a5.

22. The most sustained argument against any explanatory role for ethical theory has been developed by G. Harman in his *The Nature of Morality* (New York: Oxford University Press, 1977). Harman's argument, however, rests on a rather narrow empiricist conception of causal explanation—a conception that has little to do with Aristotle. For critical discussion of Harman's argument see, W. Quinn, "Truth and Explanation in Ethics," *Ethics*, vol. 96, no. 3 (1986), pp. 524-544, and G. Sayre-McCord, "Moral Theory and Explanatory Impotence," in G. Sayre-McCord (ed.), *Essays on Moral Realism* (Ithaca, N.Y.: Cornell University Press, 1988). 23. Baier, *op. cit.*, p. 273.

24. Compare the views of Ayer, Carnap, and Stevenson on this matter. All deny that ethical judgments have truth values, but for different reasons.

25. G. Ryle, *The Concept of Mind* (London: Hutchinson University Library, 1949), ch. 5.

26. S. C. Wheeler, "On That Which Is Not," Synthese 41 (1979), pp. 164-165.

27. B. Russell, "Vagueness," Australasian Journal of Psychology and Philosophy 1 (1923).

28. J. Lukasiewicz, Aristotle's Syllogistic (Oxford: Clarendon Press, 1957), p. 204.

29. See T. Kuhn, "Logic of Discovery or Psychology of Research," in I. Lakatos and A. Musgrave (eds.), *Criticism and the Growth of Knowledge* (Cambridge: Cambridge University Press, 1970), pp. 171, 206; B. van Fraassen, *The Scientific Image* (Oxford: Oxford University Press, 1980), ch. 1; N. Cartwright, "The Truth Doesn't Explain Much," *American Philosophical Quarterly*, vol. 17, no. 2 (1980), pp. 159-163.

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— 439 —

Index: Passages from Aristotle's Works

de Anima 402a 408, 423 402a3 106 , 124 402a15 326 403b25 423 412b20 354 413a9 106 , 402 413a10 133, 402 413b13ff 134 414b13 134 414b29 402 416b29 402 416b30 137, 402 418a 407 419a9 106 421a12 106 421a22 106 422b26 418 424a16 402 429a10 134 433b20 402 436b3 418 Athenian Constitution 9.2.1 104, 105 de Audibilibus 804a28 106 804a30 124 804a31 106 de Caelo I.xii 223 IV.i-iv 134 269b22 134

269b23 124
279a29 106
286b4 134
286b5 402
287b19 106

- 440 -

287b20 124

288a 124 303a9 402 306b27 141 , 402 Categories 1b28 402 8b12 63 11b20 402 Eudemian Ethics II.i 110 II.iii 315 1214a14 326 , 423 1216b12 70 , 73 , 74 , 95 , 351 1216b20 69 , 70 , 74 , 95 , 97 1216b23 384 1216b33 133 1216b35 94 , 97 , 326 1216b35-39 423 1216b39 326 1217a3 423 1217b18 158 , 161 , 162 1218a30 384 1219a15 353 -354 1219b26 284 1220a15 131 , 158 , 166 1220a16 133, 384 1220b13 202 , 214 , 217 1221a 407 1221a3 127

1221a15 317

1221a29 127 1221a35 407 1221b8 105 , 158 , 160 , 161 , 170 , 317 1221b9 124 1221b20 407 1222b38 138 , 158 , 161 , 162 , 275 1222b40 124 1223a5 401 1227a1 402 1227a10 124 , 138 , 158 , 161 , 162 1227a11 105 1228a24 158 , 161 , 170 1228b4 202 1228b5 214, 217 1229b 418 1231a25 214, 215 1231a28 202 1231b 124 , 134 , 159 , 170 1231b2 317, 402 1233a29 127 1233b20 406 1234b 170 1236b15 124

1247a32 202

- 441 -

1247a33 224 , 225 1247a35 202 1247b 268 1247b28 202 , 214 , 215 1249b5 159 , 166 , 384 *de Generatione Animalium* IV.iii 229 715a3 174 716b32 124 718b16 193

718b26 219
718b30 193
719b 212
721b32 160
722b32 418
725b17 414
727b13 414
727b29 203
727b30 221
728a3 414
728b14 124
730a30 212
730b33 212
731a32 429
732b10 212 , 227
734a34 272
738a16 295
738a18 124
739a32 414
741b11 418
747a24 212
749b28 188 , 193
750a12 193
750b33 414
751a8 226
751b8 226
751b32 226
752b16ff 137
753a32 226
753b15 124 , 137
756a34 327
763b8 226
767b33 175
768a24 210 , 414

768b13 177 769a35 402 770b12 203 , 219 771a20 272 , 420 771a25 187 771b3 187 , 272 771b6 286

- 442 -

771b10 272

771b11 286
771b35 295
772b3 273
774b5 273
774b9 414 , 273
774b35 273
775a 273
775a10ff 273
776a23 295
777a20 220 , 221
777a21 203
777b16ff 295 , 296
778a5 295
778a6 402
778a7 145
778b8 295
778b17 194
779a31 193
779b29 193
781b5 193
781b10 188 , 193
782a 418
784a2 408
784b37 124

de Generatione et Corruptione 329a27 136

333b8 222 333b24 105 , 238 , 260 337b35 223 Historia Animalium 487a12 402 487b10 131, 309 488b24 124 , 134 489b17 137 490a12 407 490b10 407 490b31 407 491a7 132 491a8 124 , 402 491a10 117 491b4 215 , 216 , 277 492a1 215 , 216 , 277 492a14 407 492a25 310 493b 124, 134 493b24 215 , 216 , 222 -223 494a2 407 494b16 106 494b20 412 497b 412 497b15 310 498a17 407

499b12 310

- 443 -

499b21 310 500b20 310 501a8 310 501b23 215 , 216 502a6 310 502a16 310 04a35 310

05b28 137
505b29 407
507b3 137
508b2 414
509a27 310
509b23 124
511a13 124
511b11-515a 137
513a9 402 , 404
515b9 407
517b10 310
519b25 412
521b16 226
522a3 414
522a12 414
522a30 137
525b5 407
527a35 412
527b35 412
529b24 310
538b28 412
542b5 216 -217
542b13 226
545b4 414
545b8 414
545b22 414
545b27 295
548b18 309
549a8 309
552b30 407
553a1 407
553a6 414
554b12 226

558b10 212 , 227

560b20 414	
561a3-562b 137	7
562b4 414	
562b15 414	
564b10 226	
574a16 188	
583a20 402	
584a35 295	
623b5 407	

- 444 -

Magna Moralia 1.4.10.4 104 , 105 , 409

1.5.1.3. 409 1.12.1.5 104 , 105 , 409 1.13.4.4 409 1.33.20.7 202 , 414 1.33.21.4 202 , 414 1.34.3.2 409 2.1.1.5 403 2.8.2.4 202 , 414

de Memoria et Reminiscentia 450a31 160

450b5 160

Metaphysics A.3

422

958a17 402 959a15 402 981a10 284 -285 981a15 173 , 176 , 178 , 369 982a15 124 982a25 106 , 107 , 124 982a27 111 982b5 403 985a12 106 , 133 986a13 106 , 124

986b22 402
986b29 402
987a34 418
988a17 105
988a34 133
989b18 403
990b15 106
993a20 403
993a22 402
993b20 70 , 72 , 73
995a 126
995a6 279
995a8 280
995a15 114 , 124 , 145 , 212 , 233 , 234 , 237 , 279 , 280 , 401
998b15 59
999a25 192
999a27 183
999a28 192
999b2 192
999b34 175
999b35 177
1003a13 192
1003a14 85 , 376
1005a11 251
1021b21 344
1025a 72 , 86 , 425

1025a15 221

- 445 -

1025a21 221 1025b 120 , 405 1025b7 105 , 239 1025b10 124 1025b14 418 1025b25ff 401 1025b26 401, 419 1026a 401 1026a7 401, 419 1026b10 412 1026b30 218 1026b32 218 , 221 1026b36 215 , 216 , 217 , 218 , 221 , 277 1027a 399, 426 1027a11 236, 413 1027a18 218, 221 1027a20 229 1027a22 210 1027a25 215 , 216 , 218 , 231 , 233 , 234 , 237 , 264 1027b12 239, 242 1029a7 402 1030a15 105 1030a16 124 1031a7 106 1034a20 59 1035a13 124 1035b3 384, 402 1039b27 192, 404, 419 1039b30 192 1043b25 253 1048a35 250 1051a22 338 1053a 111 , 124 , 402 1053a1 106 1058b2 188 1058b13 188 1059b24 85, 376 1060a4 183 1060b19 85, 376 1064a 72 , 120 , 418 , 425

1064a5 124 , 405 1064a5 105 , 218 , 239 , 405 1064a7 106 1064a10 401 1064a32 401 1064a33 401 1064b 401 , 419 1064b15 218 1064b33 218

1064b35 218 , 221

- 446 -

1064b36 218 1064b37 218 1065a 231 -232, 233 , 234 , 237 , 264 1065a34 268 1071a20 175 1078a 113 1078a4 114 1078a9 113 1078a10 108 , 112 , 124 1078a15 108, 114 1078a16 113 1078a20-26 113 , 426 1078a21 113 1078a31 406 1078b18-30 17 1079a13 124 1080a10 124 1080b25 419 1089a25 426 1090b8 263 1094b25 404 1098a27 404

Meteorology 341a12 137

363b32 402 382b3 137 388b10 137 de Mundo 397b10 403 397b12 402 Nicomachean Ethics I.i 110, 283 I.iii 110 , 111 , 332 I.vii 110 , 166 , 422 I.xiii 110 II.i 370 II.ii 370 II.iv 370, 371 II.vi 110 III.i 368 III.v 168 III.vi-ix 135, 168 III.x-xii 135 IV.i 135, 366 V.x 410 VI.i 110 VI.ii 135, 366 VI.iii 110 VI.iv 110 VI.v 110 VI.xiii 422 VII.iii 373 X.vi 167

- 447 -

X.ix 369

1094a 72 , 326 , 398 1094a10 70 , 71 1094a23 74 1094a25 84 , 149 , 156 , 160 , 165 , 167 , 170 , 402 , 410 1094a27 74

1094b 69 1094b3 84, 398 1094b10 84, 326 1094b11 74, 103 1094b13 67 , 83 , 123 , 124 , 144 , 149 , 201 , 202 , 203 , 204 , 205 , 273 , 402 1094b14 124 1094b15 202 , 203 , 204 , 205 , 206 , 207 , 208 , 210 , 211 , 213 , 215 , 232 , 265 , 270 , 273 , 275 , 289 , 291 , 292 , 299 , 332 , 334412 1094b17 213, 215 1094b18 213, 215 1094b19-24 415 1094b20 145 , 151 , 402 , 409 1094b23 174 1094b24 106 , 232 , 233 , 234 , 237 , 264 , 282 , 402 1095a5 69 , 70 , 74 , 83 1095b2 120 1095b4 406 1096a11 423 1096b23 80 1096b30 138 , 156 , 161 , 402 1097a10 85 1097a12 178 1097a15 398 1097a24 156 , 170 1098a15 166 , 344 , 422 1098a19 106 1098a20 131 , 151 , 156 , 160 , 165 , 166 , 167 , 170 1098a25 144 , 149 , 202 , 203 , 205 , 206 , 273 , 322 -323, 327 , 329 , 332 , 341, 344, 345, 346, 350 1098a27 124, 140 1098a28 84 1098a30 323, 327, 328, 329, 330, 332, 333, 334, 341, 346, 350, 352, 424 1098b 329 1098b3 424

1098b20 149 1098b23 80 1099b14 423

1106a1 383

- 448 -

100a 120

100b23 183 101a 183 101a25 156 , 161 , 182 , 183 101a26 105 101a27 140 , 402 101a30 189 101b14 383 1101b29 383 1101b34 402 1102a 138 , 156 , 157 , 162 1102a12 84 , 423 1102a25 402, 408 1102a26 126 1103a5 80 1103a7 383 1103b22 211 1103b25 69 , 70 , 74 , 84 , 95 1104a 124 , 144 , 145 , 149 , 151 , 289 , 291 , 292 , 299 , 315 , 377 104a1 104 , 402 , 409 104a6 85, 172 104a12 211 105a5 84 105a10 84 105a25 372 105a30 429 105b 373 1105b10 428 1105b15 97

1106a15 284 , 315 1106a16 344 1106b14 124 , 402 1106b25 383 1107a 284 1107a10 376, 407 1107a12 143, 211 1107a27 377 1107a28 175 1107a29 172 1107a30 384, 412 1107a31 173 1107b1 128 1107b3 128 1107b6 128 1107b14 104 , 149 , 151 , 157 , 160 , 161 , 168 , 170 , 402 1107b15 124 , 135 , 402 1107b29 127 1107b33 383

108a 129

- 449 -

1000 129

108a5 127
108a15 407
108a16 128 , 130
108a17 402
108a18 402
108b2 407
108b10 129
109a 119
109a5 119
109b11 402
109b13 289 , 291 , 292 , 299 , 315 , 377
109b15 189
109b23 383 , 407

110a32 213, 215 1110b7 176 , 289 , 291 , 292 , 297 , 298 , 299 , 305 , 407 1110b32 176 1110b33 173 1111a 367 1111a5 371 1111a7 371 1111a24 176 1112b9 202 1112b21 423 1113a13 402 1113a14 149 , 157 , 160 , 168 , 170 1114b26 149 1114b27 402 1115a4 149 , 157 , 160 , 168 , 169 , 170 1115b25 128 1117b20 149 , 157 , 160 , 168 , 169 , 170 1119b22 383 1119b26 413 1122b7 404 1122b8 127 1125b18 127 1125b20 130 1125b26 128, 305 1126a32 290 , 291 , 297 , 299 , 305 , 306 1126b5 407 1126b17 407 1126b20 128 1127a11 129 1127a15 128 1127a16 129 1128a25 290 , 291 , 297 , 299 1129a4 84 1129a6 326

1129a11 157 , 160 , 161 , 166 , 402 1129a24 202 , 213 , 215

```
1130a30 174
```

- 450 -

1131a30 375 - 376 1134b25 413 1135a5 176, 373 1137b13 377, 378 1137b15 124 , 270 -271 1137627 290 , 291 , 292 , 306 1137630 124 , 144 1138625 133 , 157 , 166 , 384 1138b26 401 1139a5 91 , 233 , 234 , 237 , 242 , 281 1139a12 77 1139a17 344 1139a28 75 1139a30 74 1139b11 74 1139b15 80 1139b17 402 1139b18 238 , 242 , 281 1139b22 281 139632 426 1140a 90 1140a15 90, 194 1140a20 422 1140a32 233 , 234 , 237 , 242 , 281 , 283 1140b 209 14063 90 1141a 233 , 234 , 237 , 242 , 281 1141a9 402 1141a16 402 1141a27 429

1141b 408 1141b8 399 1141b15 81 , 174 , 175 , 177 , 367 , 368 1141b16 173 1141620 82 1141623 80 1141625 174 1142a15 258, 428 1142a20 367 1142a21 175 1142a22 82 1142a25 400 1142a26 59 1143a26 59 1143a32 173 1143b5 400 1143b25 428 1144a18 429 1144a21 157 -158, 402 1146a6 77 , 173

- 451 -

1146b3 138

1146b14 423
1146b25 402
1147a 173 , 367
1147a5 176
1147a24 120
1147b5 374
1155a20 412
1155b8 84
1159a3 124 , 149 , 151 , 290 , 291 , 292 , 297 , 299 , 307
1161a25 213 , 215
1161a27 202
1163b12 376

1163b18 376, 420 1163b20 82, 376, 414 1164a23 149 1164624 124 1164625 189 , 290 , 291 , 292 , 299 , 381 1164b28 402 1164b31 202 1164b32 376 1164b33 214 , 217 , 413 1164b34 214 , 217 , 413 1165a 292 - 293 1165a3 82 , 214 1165a13 123 , 124 , 144 , 149 , 290 , 291 , 292 , 299 1167b34 344 1168a 367 1168a30 384 1169b25 384 1170b20 290 -291, 292 , 294 , 297 , 299 , 385 1170b30 385 1171a 149, 294 1171a8 294 1172a25 384 1174b23 158 , 161 , 162 , 163 1175a31 402 1175a36 344 1175b14 402 1176a5 344 1176a30 150 , 158 , 160 , 167 , 170 1176a31 402 1176b21 402 1177a17 344 1177a19 384 1178a23 138 , 158 , 161 , 162 , 163 , 402 1179a32 158 , 161 , 167 , 170 , 171

1179a33 149 , 150 1179a34 402

— 452 —

1179b 69		
1179b10 97		
1180b10 73 , 214 , 215 , 413		
1180b15 369 , 376		
1180b17 376 , 402		
1180b23 372 -373, 376 -377		
de Partibus Animalium 629a15 137		
642b15 407		
64464 407		
646a8 405		
647a23 402		
649a33 137		
650b27 312		
653b3 342		
653b23 316		
656b4 106		
657a5 342		
657a30 342 -343		
657b35 343		
658a8 343		
663b27 227		
663b30 221		
666a35 316		
667a15 312		
668b29 137		
669a15 311		
669a25 309		
669b8 311		
669b10 407		
676b9 402		
678a9 407		
680a14 407 681a12 309 681b3 309 681b10 309 683b23 407 689b32 309 692a15 402 692a23 312 696b15 137 697b14 309 Physics 191b29 136 192a35 136 193a31 218 194b20 405 196a 218 196b10 218 196b19 218 196620 218 196635 218 197a19 218

— 453 —

198b6 203

198636 222 199b24 203 , 218 213a4 134 216a7 402 Physiognomica 213a4 402 Poetics 1462a4 406 Politics II.vii 410 1252a17 326 1254a20 97 1254a22 362 1258b34 105 , 402 1258b38 126 , 159 , 161 , 164

1258b39 124
1260b35 423
1264a11 196
1264b30 196
1264b35 196
1265a 196
1265b3 124
1269a10 140 , 159 , 161 , 171 , 172 , 173 , 180
1269b10 105
1274b8 124
1276b19 159 , 402
1276b24 159 , 161 , 168
1276b25 124
1279b10 98
1279b12 423
1280a12 180
1280b34 296
1281a 296
1281a5 181
1282b2 271
1282b5 106 , 124
1289a25 423
1291b9 202 , 214 , 215
1293b29 423
1295a1 423
1302a19 159 , 160 , 170 , 402
1312b 402
1317a18 423
1317b33 423
1323a10 159 , 160 , 161 , 180 , 402
1324a 423
1324a13 342
1324a21 423
1326a35 420

1326b 291 , 292 , 294 1326b23 294 1326b33 159 , 161 , 170 1326b34 134

- 454 -

1331b18 159 -160, 164 , 165 1331b19 124

> 1331b20 140 , 323 , 333 , 340 1335b5 160 , 402 1336b41 202 , 214 , 216 1338a37 162 1338b 98 1340b8 406 1341b11 406 1341b29 404 1341b30 124 , 138 , 160 , 162 , 402 1341b31 402 1341b39 104 , 105 , 384 1341b40 160 , 162 Posterior Analytics I.i 133 I.ii 405 I.viii 411 I.xii 423 I.xiii 116, 240 I.xxvii 107, 245, 422, 423 I.xxx 61 II.iii-x 418 II.xix 416, 421, 424 70a15 116 71a5 241, 416 71a9 238 71b10 243 71b12 57 71b13 243

71b15 57
71b16 423
71b18 416
71b20 57 , 58 , 243
72a21 58 , 308
72a30 426
72b 245
72b15 238
72b30 240
73a20 58 , 243
73a22 238
73a25 243
73a28 288
73b16 243
73b26 288
74b5 58 , 243
75a 397
75a28 243
75b3 418
75b15 60 , 412
75b24 238
76a24 60

- 455 -

76b15 257
77a 426
78a13 58
78b13 117
78b35 119
78b38 117
78b39 60
79a 119
79a2 111 , 117
79a4 116

76b11 60

79a10 114 , 116 , 117 79a13 116 79a15 72 , 86 , 119 , 414 , 425 81a40 241 , 416 81b5 192 82b30 423 84a5 246 84b23 423 85b9 246 85b15 246 85b25 241 85b26 429 85b27 246 86a10 246 86a17 106 , 124 86b28 247 87a24 114 87a31 106, 124 87a32 114 87a35 111 87a37 111 87a38 117 87b20 218 , 221 , 229 , 231 , 233 , 234 , 237 , 264 , 265 , 270 , 275 87b23 228 87b26 203 87b32 228 87b35 242 87b37 192 87b38 85, 242, 376 88a5 241, 429 88a15 242 88b13 60 , 72 , 86 , 425 88b30 58, 85, 376 89a17 58

90b4 59
90b18 59
90b24 59
90b25 59
90b31 59

- 456 -

91b33 241	
91b35 241	
92b7 59	
92b19 423	
92b26 59	
93a10 423	
93a20 310	
93b5 311	
93b30 59	
96a8 246	
96a10 228	
96al2 210 , 214 , 216 , 27	7
97b20 315	
97b28 85 , 285	
98a20 423	
98b 310	
98b29 418	
99a23 59 , 308 , 397	
99a29 311	
100b8 106	
Prior Analylics I.ii 230	
I.xiii 223	
24a18 230	
24b14 63 , 106	
24b15 124	

24b20 417 25a 145

25b14 222, 418 32a5 210 32b5 214 , 216 , 221 , 277 32b7 218 32b8 423 32b15 222 36a10 270 43a21 423 43b35 203, 413 46a29 63, 106 46a30 124 46b24 423 46b33 270 53a2 423 70a4 214 , 216 , 221 , 277 Problems 912b25 124 916a35 104 , 402 955a28 402 Protrepticus B29 429 B48 124 B73 97 de Respiratione 477a7 137

— 457 —

Rhetoric I.ii. 13257 I.ii. 14270 I.xiii. 11 -14 410 I.xxxiii 408 I.xxxiv 408 1353a31 272 1356b17 414 1356b29 85 1356b32 183 1357a37 418

478b 104 , 137

1359b12 354 1360b5 402 1361b33 404 1361b34 134 , 402 1361b35 296 1362a34 214 , 216 1362b37 227 1364b7 141 1369a34 124 1369bl 222, 402 1369b31 103 1369b32 124 , 344 1370b10 214 , 216 1371a32 214 , 216 1371b14 215, 216 1371b23 215, 216 1374a 304 1374a28 271 1374a30 378, 379 1374a35 182 1374b16 226 1381a 296 1394a23 271 -272 1394a31 378 1394b 239, 263, 375 1394b3 272 1394b5 292 1395b1 406 1396a33 105 1414a8 344 1415b7 402 1419b31 402 de Somno et Vigilia 456b2 137

Topics 100a18 417

101a18 402
101a22 104 , 402
101a37 424
103a1 402
103a7 402

— 458 —

105b19 402

111a8 103 112b 220 112b15 221 129a 225, 226 129a3 225, 226 129a9 227 140b5 402 141a10 399 141b15 253 141b25 253 142a28 253 143a5 72 146b20 60, 301, 310 152b12 423 153a12 138 156a15 423 157a14 402

— 459 —

Index: Key Greek Words

inline image216 , 218 , 223 , 225 , 226 , 277 , 283
inline image223
inline image119 , 120
inline image63 , 103 , 104 , 106 , 156 -160, 202 , 232 , 322 -323
inline image114 , 126 -127, 233 , 280

inline image58, 218, 223, 225 inline image127 inline image290 ff inline image182, 183 inline image238, 240, 245, 246 inline image57, 58, 231, 238 ff, 240, 241, 242, 246 inline image241 inline image241 inline image202, 204, 289 ff inline image209 , 219 , 220 inline image241 inline image57, 58, 74, 85, 86, 119, 238 ff, 354 inline image84, 326 inline image171 -180 inline image104 , 175 -180, 228 , 271 , 374 inline image105, 263 inline image74, 84, 323-326, 329, 332, 334, 336 inline image344 inline image289 ff, 299 inline image323, 333, 340, 341-342 inline image74, 84, 326 inline image176, 177 inline image103 , 130 -131, 160 , 230 -231 inline image84, 326 inline image241 inline image218 inline image85, 326 inline image325 inline image63, 104, 156-160, 168, 206 inline image218 inline image77 -82, 233 inline image222, 224 inline image202, 220, 222, 224, 226, 227, 272

Index: Names and Subjects

Abstraction, 112 -113

Α

Action, as particular, 171 -180, 196 -198

Action-type:

and exactness/inexactness, 180 -183;

and particulars, 176 -180

Alexander of Aphrodisias, 267

Allan, Donald J., 62 , 70 , 74 , 77 , 78

Anaxagoras, 14

Antisthenes, 253

Apostle, Hippocrates G., 337

Architechonic structure of desires, 248 -249

Aristotle:

on exactness of ethics, 1;

philosophical significance of his views on exactness, 4, 5;

and philosophical tradition, 17, 19-20

Asymmetry of desire, 249

Augustine, Saint, 250, 256

В

Baier, Annette, 100, 364, 365, 381, 382
Barnes, Jonathan, 58, 106 -108, 114, 117, 119, 245, 257, 267
Being always:

and being for the most part, 222 -229;
and causal regularities, 224 -225;
and necessity, 222 -229

Being for the most part:

as affirmative universal proposition, 269, 273;
attribution of, 7;
and being always, 222 -229;
and causal regularities, 221 -222, 231, 277;
and congruence, 144, 145 -146;

and contingency, 7 -8, 216 -222; and criticism of Socrates, 42; and definition, 302 - 303; and demonstration, 8, 231 - 287; and domain of conduct, 37 -38, 61; as epistemic, 267 - 268; and exactness/inexactness, 234, 273-275; formal and material, 199, 203-207, 268, 270; and the fortuitous, 220 -222; and law, 270 -271; and maxims, 271 - 272; and method of ethics, 11; as modal operator, 268, 418 n.28; nature of, 213 -222; and necessity, 42, 216 -222, 265; nonformal reminders of, 275; restricting the subject, 146 -147; scope of, 199 -200, 207 -213; and syllogisms, 265; terms for, 63, 205; and truth, 270, 386; and validity, 8, 266 - 278; and variation, 291 . See also Fluctuation; True for the most part Being in outline, 7, 153 - 198; and account of virtues, 168 -169; eliminability of, 170; and formal inexactness, 154, 161; and goals of ethics, 171 -180; relative, 169; sources of, 154 -155; terms for, 154, 160 -161; textual references to in Aristotle's works, 156 -160

Burnet, John, 78, 176

С

Cartwright, Nancy, 386 Causal regularities: and being for the most part, 8 , 268 -269, 277 *Charmides* , 18 , 40 Cherniss, Harold, 44 Chomsky, Noam, 252 Circular proofs: and demonstration, 240 Cognitive faculties: related to objects they cognize, 91 Cognitive goals of ethics, 65 -66; and

- 461 -

ancient commentators, 68;

Aristotle on, 6 , 69 -101; and exactness/inexactness, 357 ; and practical goals, 339 , 358 , 360 ; and theoretical disciplines, 6 ; and ultimate goals, 87

Congruence:

Aristotle on, 102 -103;

and being for the most part, 199, 203;

between the world and our representations, 2;

and definitions, 34;

and domain of conduct, 284 ;

and eliminability, 339;

and Socrates, 37, 43;

and variation, 292

Congruence thesis, 140 -147;

Aristotle on, 7;

assumptions behind, 145 -146;

falsity of, 146 -147;

possible interpretations, 141 -144;

truth of, 144 -147

Contingency:

and being for the most part, 201, 216-222, 268, 302-303; and demonstration, 235; and domain of conduct, 209; and syllogisms, 275

Cooper, John, 79

D

Definitions:

in Aristotelian conception of knowledge, 23 ;

deficiency of, 37, 39;

demonstrative role of, 58 -59;

and essentialism, 60;

and exactness/ inexactness, 317;

nominal and real, 59;

and variation, 303 - 308. See also Socratic definitions

Degrees of exactness/inexactness. See Exactness/inexactness, degrees of

Degrees of investigation, 334

Demonstration:

and being for the most part, 222 , 231 -238, 415 n.1;

and causality condition, 240;

core of, 239 -242, 337;

and domain of conduct, 61;

and epistemological priority, 240;

and ethics, 99, 340;

and giving reasons, 118;

and goals of a discipline, 337;

and induction, 240 -241;

and mathematics, 352;

and method, 325, 336;

and necessity, 218, 229, 264-266;

and showing, 242;

and Socrates, 20 -22;

soft, 8, 9, 194-195;

strict, 8;

strict and soft, 61 , 234 -235, 237 , 238 -239;

and variation, 288 -289, 299 -303;

weaker form of, see Soft demonstration. See also Soft demonstration; Strict demonstration

Demonstrative disciplines:

and ethics, 60 -61

Demonstrative knowledge:

and definitions, 60;

and ethics, 56 -61;

and exactness/ inexactness, 11 -12, 189 -195;

and Forms, 46;

and necessity, 57 -58

Demonstrative method:

Aristotle's use of, 10

Demonstrative rigor:

and being for the most part, 206 -207;

and congruence, 352;

degrees of, 245;

in ethics, 340, 359;

and exactness/inexactness, 190 -191, 339

Demonstrative role of definitions, 27, 58-59;

problems with, 38 -39;

and variation, 307 - 308

Demonstrative syllogisms:

and being for the most part, 230;

and domain of conduct, 237;

two kinds of, 61 . See also Syllogisms

Detail, 141 . See also Being in outline

Development of Aristotle's thought, 61 -64

Diagnostic role of definitions:

problems with, 39 -40;

two interpretations of, 30;

and variation, 304 -305.

See also Socratic definitions, diagnostic role of Dialectic: and exactness in ethics, 49 $\,$

Dialectical method:

Aristotle's use of, 10, 11;

and exactness, 48;

and particulars, 50

Disciplines:

function of, 354;

medicine and ethics, 85;

and sciences, 72;

theoretical, practical, and productive, 69 -70, 73 , 74 , 86 , 88 , 195 , 341 ;

and universality, 376 -377

Division:

and demonstration, 241

Doctrine of the mean:

and lacunae, 128 -131

Domain of conduct:

and being for the most part, 207 -213;

and congruence, 203 -204;

and definitions, 32 -33;

and demonstration, 9, 280 - 281, 283;

and domain of nature, 311 -312, 315 -319;

and eliminability of inexactness, 339;

and ethics, 75;

and formal and material exactness/inexactness, 124 ;

knowledge in, 38;

and necessity, 46, 194;

and Socrates, 15;

and vagoeness, 9;

and variation, 316 - 319

Domain of nature:

and being for the most part, 236, 268;

and demonstration, 9, 280;

and vagueness, 9;

and variation, 295 , 309 -311 $\,$

Ε

Eliminability of inexactness, 7, 9, 147-152; Aristotle on, 103; and being for the most part, 200, 212 -213; due to burdensome task, 164 -165, 183 -184; and causal mechanism, 286 -287; and domain of conduct, 238; and fixity of goals, 355; and formal inexactness, 283 -287; and goals of ethics, 65; due to inappropriateness of discipline, 163 -164, 184 ; and material inexactness, 125; and practical goals of a discipline, 346; and pragmatism, 322; and variation, 308 - 319 Einpedocles, 260 - 261 Einpiricism: and development of Aristotle's thought, 61 -64 Enthymemes: and being for the most part, 272; and demonstration, 257; and soft demonstration, 247 Epistemic uses of definitions, 32 . See also Socratic definitions, epistemic uses of Epistemological condition: and Socrates, 21 Epistemological priority: and being for the most part, 277 Essence: of a discipline, 354; and universality, 36 Essential attributes: and being for the most part, 209, 217 -222; and definitions, 60; and domain of conduct, 284;

and necessity, 261 - 262, 302 - 303; and variation, 300 - 303 Essentialism: and Aristotle, 5, 6, 9, 37, 56-61; and definitions, 34, 35, 36, 38, 59; and domain of conduct, 37; and knowledge, 15; and variation, 300 - 303, 304 - 308 Ethics: Aristotle on the need for exactness in, 40; compared to medicine, 84; defined by cognitive goals, 75; as a demonstrative discipline, 1; as an exact discipline, 5; as an explanatory science, 119 -121; and fixity of goals, 355; identity of, 69; as an inquiry, 74 -75; as practical, 196 -198; and practical wisdom, 75 -87; Socrates' conception of, 42; subordinate to politics, 66, 69, 70 -71; and universality, 364 - 365, 375, 377 Eudoxus, 14 Eustratius, 14 , 330 , 331 , 336 , 337 Euthyphro, 15, 18, 20, 28, 29, 31, 32, 35, 40, 300 Evans, Gareth, 5, 298 Exactness: as a character trait, 4 ; impossibility of attaining, 180 -189; Plato on the need for, in ethics, 47 Exactness/inexactness: analogy to explanation, 349; ancient vs. modern usage, 2;

attribution of, 2, 7; and definitions, 23, 37, 59; degrees of, 332 -334, 345, 350; and demonstration, 117 -118; and demonstrative rigor, 232; and development of Aristotle's thought, 61 -64; epistemological consequences of, 3, 7, 12, 92, 189-195; and first principles, 109; and goals of a discipline, 323 - 325, 333 , 339 , 343 - 344; and goals of ethics, 65, 335; levels of, 122 -125; material and formal, 102; and method, 320 - 321, 327 - 335; misunderstanding of Aristotle's remarks on, 14; and particulars, 180 -189; and philosophical tradition, 3-4, 33, 37, 38-39; in Platonism, 282, 341; political dimension, 4; and practical disciplines, 155; and pragmatism, 321 - 322; and productive arts, 67 -69; and questions, 327 -329; relative, 353; simplicity of a discipline, 107; and Socratic theory/ practice, 27; terms for, 2, 7, 63-64, 102; and theoretical and practical knowledge, 91 -92; and tragedy, 4; and truth, 363, 382 - 388; types of, 2; and ultimate goals, 87; and universality, 363 - 382; and variation or indefiniteness, 37, 38. See also Being for the most part; Being

in outline; Terms for exactness/inexactness; Variation

Exceptions:

and syllogisms, 276 -277;

and universality, 277, 379-380;

and variation, 293

Explanation:

and pragmatism, 348;

and universality, 380

Explanatory disciplines:

and exactness, 116 -118

Extraneous premises:

and soft demonstration, 260

F

Family resemblance:

and variation, 302

- 463 -

Fermat's last theorem:

and suppressed premises, 255

Feyerabend, Paul, 327

Fixity of goals:

and exactness/inexactness, 355

Fluctuation:

and convention, 205;

of nonessential attributes, 210 -211;

terms for, 204 . See also Being for the most part

Formal inexactness, 7;

sources of, 102 , 126 -140

Forms:

Aristotle's criticisms of, as guides to conduct, 53 -56; and congruence, 142 ; and ethical knowledge, 45 ; examples of, 45 ; of the good; 48 , 49 , 50 ; knowledge of, sufficient for action, 51 -56; and the ontological thesis, 33 -34; and variation, 300 -303, 305 Fortuitous, the: and being for the most part, 7, 201, 220 -222; as epistemic, 268 Frege, Gottlob, 5, 9, 144, 298, 307, 308, 384 Function: and degrees, 342 -343; and exactness/inexactness, 341 -342; and fixity of goals, 353 -354

G

Gale, Richard, 256 Geach, Peter, 31 Goals of a discipline, 354; Aristotle on, 10; and degree of rigor, 93; and degrees of exactness/inexactness, 339 -346; and demonstration, 335 - 339; and eliminability of inexactness, 148; fixity of, 346, 353; and pragmatism, 322 , 324 , 347 -348 Goals of ethics, 65 -75; and abstraction, 112 -116; and ancient commentators, 67 -69; and eliminability, 155; and inexactness, 6, 7; many, 68; theoretical and practical, 65 -66 Goals of scientific inquiry: and explanation, 348 - 349 Godel's theorem: and suppressed premises, 255 -256 Goldbach's conjecture: and suppressed premises, 255

Good, the:

inexactness of Aristotle's account of, 165 -167, 409 n.7; and Plato, 249 ; and suppressed premises, 248 , 249 Goodman, Nelson, 252 *Gorgias* , 24 , 71 Grant, Alexander, 107 , 315

Н

Hardie, William F. R., 76 , 81 , 84 , 87

- Hare, Richard, 364, 372, 377
- Harman, Gilbert, 100
- Heath, Thomas, 117
- Hilbert, David, 255
- Hippias Major , 18 , 28 , 31
- Hume, David, 364
- Hypothesis, method of:
 - and Socrates, 20 -22, 393 nn.15 and 16;
 - and virtue, 24, 393 n.20

I

Immediate purpose: and goals of a discipline, 135 Inappropriateness of discipline: and inexactness, 148 , 162 -163 Indefiniteness, 146 . *See also* Vagueness; Variation Individuals: and action, 174 -180 Induction: Aristotle's use of, 10 ; and demonstration, 241 Inexactness: in all of nature, 92 ; of all preanalytic knowledge, 133 ; and eliminability, 7 Intellectual virtues: and practical wisdom, 76 Intuitionists: and primitives, 252 -253 Irwin, Terence, 79 , 110 , 365

J

Jaeger, Werner, 62 Joachim, Harold H., 96 , 358 , 359 , 360 , 361 Jonsen, Albert, 365

Κ

Kant, Immanuel, 228, 364

Knowledge:

Aristotle on, 23 , 58 ; of causes, 100 , 108 , 116 -118, 120 ; conditions of, 254 ; corresponding to subject matter, 91 ; and demonstration, 85 -86, 400 n.29, 239 -240, 241 , 252 ; and diagnostic role of definitions, 29 , 31 ; of Forms, 45 , 50 -56; as a goal of ethics, 66 ; Socratic/Platonic conception of, 14 -15, 16 , 19 -22, 392 n.11; theoretical vs. practical, 88 -94, 155

- 464 -

Kripke, Saul, 5 , 421 n.15

Kuhn, Thomas, 327, 386

L

Lathes, 18, 24, 25, 26, 32, 35, 40, 300

Lacunae:

and congruence, 143;

and doctrine of the mean, 129;

and opposition thesis, 129 -130

Laws , 196

Laws:

and particulars, 55, 197;

and universality, 270 -271, 376 -377 Less exact demonstration. *See* Soft demonstration Limits: and domain of conduct, 313 ; and variation, 293 -295, 299 , 306 -307 Lukasiewicz, J., 267 *Lysis* , 18 , 28 , 300

Μ

McDowell, John, 364, 274, 379

Material and formal inexactness. See Congruence; Congruence thesis

Material inexactness:

ancient and modern commentators on, 125

Mathematics:

and abstraction, 112 -116; and demonstration, 60, 62, 279 - 280; and essentialism, 35 - 36; and ethics, 120; and exactness/inexactness, 38, 43, 44, 56, 141, 351-352; and Forms, 45, 46; goals of, 74; and Meno, 20; and Platonism, 258; and suppressed premises, 247 -248, 251 , 255 ; theoretical or practical, 89 Maxims: and universality, 271 -272, 378 Medicine: analogy to ethics, 113 -114; as cognitive discipline, 73;

as explanatory science, 120 -121;

and particulars, 87;

and practical goals, 72;

proper goals of, 73;

and universality, 376 -377

Meno, 15, 18, 20, 21, 24, 25, 26, 35, 40, 41, 210 Metaphysical essentialism thesis, 35 . See also Essentialism Metaphysical realism: in ethics and science, 380; of Socrates, 34 Method: Aristotle's, and his predecessors, 13; of a discipline, 320; of ethics, 10, 99, 323-324, 330; and exactness/ inexactness, 11, 323-324, 327-335; and goals, 327 -335; and strong pragmatic thesis, 335; terms for, 325 - 326 Methodological inexactness: necessity of, 132 Methodology: data-driven, 3 Middle Platonism: and Aristotle's criticisms, 44 Modality: of premises in a demonstrative syllogism, 57 -58 Model of the painter: introduced, 52; problems with, 53 -56 Moderate pragmatists: and Aristotle, 349, 353 Monan, J. Donald, 78 Moore, G. E., 253, 254 Narrow universals: and demonstrative syllogisms, 192 -195;

Ν

and domain of conduct, 284 -285;

and exactness/ inexactness, 180 -183;

and particulars, 176 -180

Ο

Nature. See Domain of nature Nature of a discipline, 320 Necessity: and being always, 223 -229; and being for the most part, 7, 201, 216-222; degrees of, 261 -262; and demonstration, 264 - 266, 278 ; and domain of conduct, 209, 283; and exactness/inexactness, 110 -111; and narrow universals, 193; of premises, 57 -58; and soft demonstration, 247; and strict demonstration, 242 -243 Necessity condition: and being for the most part, 265 -266; and soft demonstration, 264 Neo-pragmatists: and explanation, 346 - 349 Nichomachean Ethics: account of the good in, 165 -167 Non-cognitivism: and truth, 382 - 383 Nussbaum, Martha, 365 Ontological thesis: and exactness/inexactness, 33 - 34 Open textured concepts: and variation, 297 Opposition thesis: of mean and extremes, 128 Outline: and congruence, 142; terms for, 63 Overview:

of argument, 5 -12

Owen, G. E. L., 10 -11

Ρ

Particulars: and demonstrative rigor, 191 -195; and dialectic, 50 ; and eliminability

- 465 -

of inexactness, 148;

epistemological consequences, 93;

and ethics, 10 , 11 , 83 , 357 ;

and exactness/inexactness, 171 -180, 340 ;

and experience, 54;

and medicine, 87;

and practical wisdom, 366 -367;

and practice, 7, 82;

and Socratic definitions, 29 , 30 , 31 , 33 , 39 ;

and sources of inexactness, 140;

two meanings, 174 -180;

and universal Forms, 53, 396 n.49

Pedagogy:

and inexactness, 131 -134

Perception:

and demonstration, 241 -242;

and diagnostic role, 305 -306;

in ethics, 11;

and variation, 306

Phaedo, 44, 45, 46, 56, 251

Philebus, 44, 131, 330, 336, 337, 341

Philosophical tradition:

as background for Aristotle, 5, 6, 13-64

Plato:

and assumptions, 6;

and essentialism, 5;

and exactness/inexactness, 2, 43-56;

and necessary truths in ethics, 46;

in philosophical tradition, 43 -56;

mentioned, 2, 4, 5, 9, 10, 14, 32, 36, 39, 40, 43, 56, 58, 59, 71, 81, 91, 94, 97, 109, 130, 141, 142, 195, 196, 210, 211, 241, 243, 249, 251, 253, 254, 266, 280, 282, 283, 300, 302, 303, 304, 305, 308, 330, 331, 336, 337, 338, 340, 341, 343, 351, 352, 353, 355, 356, 358, 360, 361, 362, 370

Platonic dialogues:

Early, Middle, and Late, 44

Platonic Forms. See Forms

Platonism:

and cognitive goals of ethics, 357;

and development of Aristotle's thought, 61 -64;

and ethics, 282;

and mathematics, 258;

and strict demonstration, 243, 281

Platonist conception of knowledge. See Knowledge, Socratic/Platonic conception of; Socratic/Platonic conception of knowledge

Poincaré, Henri, 255

Politics:

and subordination of ethics, 110

Potentiality:

and suppressed premises, 250

Practical disciplines:

analogy to productive arts, 67 -69;

and degrees of exactness/ inexactness, 350;

and universality, 376.

See also Disciplines, theoretical, practical, and productive

Practical goals of a discipline:

and exactness/inexactness, 321 - 322, 341 , 343 , 345

Practical goals of ethics, 6, 50;

and abstractness of the Forms, 53 -56;

and exactness/inexactness, 10 , 53 , 171 -180, 185 -189;

and variation, 314 - 315

Practical intellect:

and ethics, 76;

goals of, 74 -75

Practical knowledge:

and ethics, 66

Practical role of definitions, 32 -33;

problems with, 40 . See also Socratic definitions, practical role of

Practical wisdom:

Aristotle's use of the term, 79 -81;

and deliberation, 77 -79;

and ethical inquiry, 66, 75-87;

and politics, 80 -81;

and universality, 366 - 367, 374 ;

wide and narrow views of, 77 -87, 281

Practice:

and exactness/inexactness, 356;

and particulars, 7

Pragmatic principle:

and goals of a discipline, 324;

and method of ethics, 325 . See also Strong pragmatic principle; Weak pragmatic principle

Pragmatism:

and explanation, 10, 321, 327, 346-349;

and goals of a discipline, 322

Primitives:

and tacit knowledge, 252 -253

Productive arts:

analogy to ethics, 67 -69, 125 . See also Disciplines, theoretical, practical, and productive

Proper exactness:

and fixity of goals, 346 -362

Proper goals:

of all disciplines as cognitive, 73;

of ethics, 6 , 66 ;

and transitivity principle, 71

Protagoras , 24 , 26 , 32

Prudence. See Practical wisdom

Psychology:

and extraneous premises, 260 ;

and subordination of ethics, 109 -110

Putnam, Hilary, 261 , 345 , 346 , 347 , 348 , 349 , 353

Q

Questions:

and demonstration, 328 -329;

and method, 327 -335

Quine, W. V. O., 252, 261

R

Rackham, Harris, 176 Radical pragmatism: and explanation, 349 ; and mathematics, 352 -353 Rawls, John, 5 , 94 , 340 , 356 , 358 , 360

- 466 -

Realism:

and congruence, 145;

in ethics and science, 380

Republic , 18 , 26 , 44 , 45 , 47 , 49 , 51 , 53 , 54 , 56 , 91 , 196 , 254 , 337 , 341 , 351

Rhetoric:

cognitive goals of, 358

Robinson, Richard, 31

Romilly, Jacqueline de, 357 - 358

Ross, W. D., 31, 117, 119, 279, 318

Rowe, Christopher, 62

Rules of inference:

and soft demonstration, 262

Russell, Bertrand, 5, 9, 307, 308

Ryle, Gilbert, 383

S

Salmon, Nathan, 298

Santas, Gerasimos X., 28, 29, 30, 31 Sartre, Jean-Paul, 364 Science: and being for the most part, 272; and definitions, 60; demonstrative/ explanatory structure of, 118 -119, 405 n.32; domain and principles, 72; ethics as a, 84; method of, 11; and nontheoretical disciplines, 86; Socrates on, 42; and universality, 372 - 373, 376 Scriven, Michael, 348 Simplicity: anti abstraction, 108; and congruence, 142 -143; and demonstration, 112; epistemological consequences, 111 -112; and principles, 107 Sintonen, Matti, 327, 346, 347, 348, 349, 353 Socrates, 13 - 43; and assumptions, 6; on essentialism, 5; and Plato, 16; and rhetorical questions, 25 -27; mentioned, 5, 6, 9, 13-43, 56, 59, 97, 195, 196, 210, 211, 249, 251, 288, 300, 302, 303, 304, 305, 308, 370 Socratic definitions: abstractness of, 39, 40; aitiological role of, 23, 28-32; Aristotle on, 17, 26, 27; demonstrative role of, 22 -28; diagnostic role of, 23, 28-32; epistemic roles of, 17, 23, 32;

as necessary and/or sufficient for knowing properties, 24 -28;

practical role of, 32 -33;

roles of, 16 -19, 22 -33;

search for, 18;

and universality, $18\ \text{--}19,\ 27$, 34

Socratic Fallacy, 32, 394 n.29

Socratic/Platonic conception of knowledge:

and development of Aristotle's thought, 61 -64;

anti necessity, 41 , 244 -245, 261 ;

and soft demonstration, 244 -245, 262 -263, 266 . See also Knowledge, Socratic/Platonic conception of

Socratic/Platonic universality thesis:

Aristotle on, 210 -211

Socratic theory/practice, 15 -16;

Aristotle on, 27;

consistency between, 16, 28;

diagnostic and aitiological roles of definitions in, 28 -32;

and suppressed premises, 251

Soft demonstration:

Aristotle on, 263 - 266;

and ethics, 282;

and extraneous premises, 260;

as inductive, 269;

and Platonism, 243 -263, 337 -338;

terms for, 263 . See also Demonstration, strict and soft; Strict demonstration

Soundness:

and Socrates, 21

Sources of inexactness:

burdensome task, 126 -127, 164 ; discipline neutral, 139 ;

and eliminability of inexactness, 147 -148;

goals of a discipline, 139 -140;

immediate purpose, 134 -135;

inappropriateness of discipline, 136 -139, 162;

lacunae in classification, 127 -131; method or nature of a discipline, 320 -321; rhetorical or methodological, 131 -134; stage-specific, 135, 138; topic-specific, 135, 138 Spinoza, Benedict de, 5, 94, 340, 355 Standards of exactness, 164 -165, 170 ; and cognitive goals of ethics, 197; determined by ultimate goals, 171; and eliminability, 183 -189 Statesman, 55, 341 Strict demonstration: conditions of, 243; and domain of conduct, 281 -282; and necessity, 242, 261; and suppressed premises, 256 . See also Demonstration, strict and soft; Soft demonstration Strong pragmatic principle: and method of ethics, 325, 334 Subordinate arts: defined by proper goals, 71 -72 Subordinate goals: asymmetrical and not irreflexive, 94; and transitivity, 71

Subordination:

of disciplines, 70 -72, 109;

epistemological consequences, 110

Substrate:

and abstraction, 114;

and soft demonstration, 245

Suppressed premises:

and ethics, 248;

making explicit, 251, 255, 258;

and

- 467 -

nature of objects, 259;

and simples, 254;

and soft demonstration, 247 -260. See also Tacit knowledge

Syllogism:

Aristotle on, 8 , 56 -57; and being for the most part, 269 , 272 -273; and demonstration, 57 ; and essentialism, 38 ; and particulars, 191 -195; and practical goals of ethics, 7 ; premises, 81 ; and Socrates, 19 -20, 26 , 27 , 41 ; and universality, 36 , 38 ; and virtue, 21

Т

Tacit knowledge:

making explicit, 252;

and mystical experience, 254 . See also Suppressed premises

Teichmuller, Gustav, 78

Teleological aspect of desire:

made explicit, 249

Terms for exactness/inexactness, 102 -107;

inexactness of, 121 -122

Theaetetus , 43 , 44 , 253

Theoretical disciplines, 98;

ethics as one, 359 -360. See also Disciplines, theoretical, practical, and productive

Theoretical intellect:

and ethics, 76 -77

Theoretical interest:

and ethics, 360

Theoretical knowledge:

and domain of conduct, 94, 95;

U

and knowledge of causes, 94; and medicine, 96; neither sufficient nor necessary for acting correctly, 97; and practical importance of a discipline, 96, 97, 98 Toulmin, Stephen, 365 Transitivity of desires, 6, 66, 70, 71; made explicit, 249 Transparency: and soft demonstration, 245 Trendelenburg, Friedrich, 78 True for the most part: not preserved, 275 -277; and validity, 275 . Seealso Being for the most part Truth: and being for the most part, 206, 278; and ethics, 74, 363, 382 - 388; and exactness/inexactness, 363; and non-cognitivism, 382 -383; in science, 386 Truth condition: and being for the most part, 265; and soft demonstration, 263 Ultimate goals of ethics: Aristotle on, 6; as practical, 7, 66, 360; and proper goals, 66 Uncodifiability: in ethics, 364 - 365, 379 Unger, Peter, 298 Universality: and being for the most part, 222 -223, 236 , 269 -272; and causal mechanism, 286 -287; and domain of conduct, 38;

and ethics, 10, 82, 363-382; of every discipline, 85; and exactness/inexactness, 363 - 382; of Form of goodness, 33 -34; narrowing, 181 -189; and necessity, 41, 274; and practical wisdom, 366 -367; and Socratic definitions, 27, 31, 33, 34, 35, 36, 39; and soft demonstration, 246; of theoretical disciplines, 99 -100; and virtue, 364 - 365, 367 - 368, 370 - 375 Universality of truth of definition thesis, 34; Aristotle on, 37 Utmost exactness: Plato on, in ethics, 47 -49; and practical goals of ethics, 53

V

```
Vague concepts, 9;
    and logic, 307;
    and variation, 297 - 299
Vagueness:
    attribution of, 9;
    and method of ethics, 11;
    and truth, 384;
    and universality, 381 . See also Variation
Validity:
    and being for the most part, 234, 235 - 236, 264, 266 - 278;
    of deductive inference, 57;
    and universality, 38;
    and vague concepts, 308
Validity constraint:
    and Socrates, 21
van Fraassen, Bas, 327, 348, 386
Variation:
```
abstraction from, 146 -147; Aristotle on, 289 -291; and causal definitions, 310 -311, 312 -313; and definitions, 299 -303, 303 -308; and domain of conduct, 313 -314; elimination of, 308 -319; and essentialism, 288 ; and functional definition, 311 ; and limits, 293 -295; material and formal, 292 , 297 ; and necessary and sufficient conditions, 293 ; scope of, 299 ; sources of, 296 -297; and virtue, 316 -319

Virtue:

abstractness of Plato's accounts, 50 -56; and method of hypothesis, 21 ; Socrates on, 21 , 24 , 393 n.20, 394 n.21; and universality, 364 -365, 367 -368, 370 -375; and variation, 316 -319

W

Waismann, Friedrich, 297

Walter, Julius, 78, 79, 81

468 –
Weaker demonstration. See Soft demonstration
Weak pragmatic principle:

and exactness/ inexactness, 335 ;
and goals of a discipline, 334 ;
and method of ethics, 325 ;
reasons for, 336

Wheeler, Samuel C., 298 , 384 ,385
Wiggins, David, 79
Williams, Bernard, 100 ,365
Wittgenstein, Ludwig, 5 , 302 , 345 , 382

Ζ

Zeller, Eduard, 78

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