Cognition, Culture, and Institutions: Affinities within the Social Construction of Reality

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January Draft 1 2006

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Abstract

The most prominent theoretical argument about human capacity to cognitively construct collective reality is the *social construction of reality* (SCR) paradigm; a paradigm merging ideas about socialization, culture, and institutions that serves as the foundation for a growing branch of sociological empirical investigation known as "neo-institutionalism," which has lead to significant breakthroughs in the study of social institutions as the milieu for the construction of the cultural reality of any human society. Heretofore, neo-institutionalism has not empirically tested the SCR paradigm, instead it applies its assumptions and propositions to analyses of major social phenomena such the nation-state, formal organizations, mass education, individualism, and alternative models of economies. Since the founding of the SCR paradigm in the 1960s, the near simultaneous development of the extensive, multi-disciplinary undertaking of *cognitive science* has, both knowingly and unknowingly, empirically confirmed portions of the central theoretical tenets underlying the SCR paradigm. An *a posteriori* assessment of the SCR paradigm and its integration with findings from the cognitive science is presented and indicates the possibility of a universal process of construction of reality within the cognitive powers of humans that parallels, and may reinforce, the SCR process within institutions. Findings from these fields provide the beginnings of an expanded SCR paradigm that integrates key aspects of sociology and cognition science towards a more generalized image of *Homo sapiens* as having affinities among cognition, culture, and institution. Such a generalized theory of SCR among humans would in turn enhance sociological understanding of human capacity to form collective realities of everyday life and construct their institutionalized world.

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The central conclusion of over a century of modern inquiry into social development is that humans actively construct collective reality. Whether the essence of the construction is referred to sociologically as "institution," anthropologically as "culture," or psychologically as "cognition" the same basic process of active development, and use, of theory of everyday life is seen as the essential *Homo sapiens*' capability separating our species from other primates and all other known living organisms. The ability to construct complex shared reality may be the main reason why humans over 200,000 years have, for better or worse, come to dominate life on the planet.

In this paper we elaborate upon and present an exegesis of the most prominent and developed set of theoretical arguments about human capacity to construct social reality. The *social construction of reality* paradigm (hence forth SCR), generated chiefly from a merging of earlier sociological, philosophical, and phenomenology perspectives (Berger and Luckmann 1967; Berger, Kellner, and Berger 1971), has greatly influenced a growing branch of sociological empirical investigation known as "neo-institutionalism," which has lead to significant breakthroughs in the study of social institutions as the milieu for the construction of the cultural reality of any human society. Heretofore, neo-institutionalism has not empirically tested the SCR paradigm, instead it applies its assumptions and propositions to analyses of social phenomena such the nation-state, formal organizations, mass education, individualism, and alternative models of economies (Jepperson 2000). The SCR, as a core insight about institutions, remains by and large an untested theoretical basis for neo-institutional research. But in the almost four decades since Peter Berger and his colleagues used a number of strands of emergent social thought to forge the SCR paradigm, the extensive, multi-disciplinary undertaking of cognitive science has, both knowingly and unknowingly, empirically confirmed central theoretical tenets underlying the SCR paradigm.

Starting with the cognitive revolution in psychology during the middle decades of the 20th century that replaced behaviorism with an emerging psychology of the mind, there was gathering intellectual interest in human, animal, and artificial cognition across a range of disciplines from anthropology to linguistics (Miller 2003). New fields of computer science, including artificial intelligence, and neuroscience added to this sea-change in the study of thinking from the physics of circuitry and biochemistry of neural synapses to theory of theories of the human mind. The whole "cognitizing" of theoretical problems undertaking in sciences related to humans might be best described as the *cognitive paradigm*.[i]

Since the founding of the SCR paradigm in the mid-1960s, the main disciplines of the cognitive paradigm, plus an expanding set of hybrid-fields, such as folk psychology, evolutionary neurobiology, evolutionary anthropology and cognitive linguistics, have developed a set of core findings that now can be used to evaluate the basic propositions

of the SCR paradigm.[ii] Furthermore, this large set of research findings indicates the possibility of a human neurobiological capacity that parallels and makes possible the SCR process within institutions. Findings from these fields provide the beginnings of an expanded SCR paradigm that incorporates key aspects of the cognition paradigm in a step towards a more generalized image of the *Homo sapiens* as having affinities among cognition, culture and institution. Such a generalized theory of SCR among humans would in turn enhance sociological understanding of human capacity to form collective realities of everyday life and construct their institutionalized world (DiMaggio 1997).

An *a posteriori* assessment of the SCR paradigm and its integration with findings from the cognitive paradigm are developed in four sections. First, by way of demonstrating its impact on empirical sociology, is a brief summary of the use of the SCR paradigm in neo-institutional sociological research. Second, an exegesis of the main writings on the theoretical basis of SCR identifies the core propositions about the creation of institutionalized collective consciousness. Third is an evaluation of each proposition using new empirical evidence from the cognitive paradigm. And last is a critique of flourishing misinterpretations of SCR from a cognitive perspective, as well as thoughts on future integration of various perspectives on humans as constructors of collective reality.

I. *The SCR paradigm and Neo-institutional Sociological Research*

Thorough reviews, some very recent, of the intellectual impact of neo-institutional research point to an impressive array of empirical research, or in other words as one such review states (Jepperson 2000, pg. 229), "sociological neo-institutionalism is one of the most broad-ranging 'theoretical research programs' in contemporary sociology and one of the most empirically developed forms of institutional analysis" (Burlamaqui, l., A. Castro, and H. Chang 2000; DiMaggio and Powell 1991; Kruchen and Hasse 1999; Meyer and Rowan, 2005; Mizruchi and Fein 1999, Zucker 1987). These reviews make it unnecessary to describe specific empirical studies; instead, a summary of the overall contributions of neo-institutionalism with an emphasis on its use of ideas from the SCR paradigm motivates our assessment of its basic theoretical propositions.

At least since the institutionalism of Max Weber early in the 20th century, theorizing and studying institutions has been a hallmark of Western sociology, and building on this long tradition over the last three decades, neo-institutionalism has overcome earlier problems with actor-centric and overly normative notions of socialized humans by developing a radically new image about how institutions work (Dimaggio and Powel 1991; Jepperson 2000). From a neo-institutional perspective, institutions are the building blocks of any human society. Developed historically, institutions are thought of as packages of culture that define a particular sector of society. In this perspective on institutions, culture is everyday knowledge that is institutionalized as theories or models of the everyday world, also referred to as scripts, scenarios, and schemata. Culture is seen as the fundamental product of institutions, and its nature is that of a conceptual theory by which social actors define actorhood and meaningful action (Meyer and Jepperson 2000).

At the heart of this conceptualization is the idea that society is not made up of naturally occurring entities, such as individuals or organizations that enter into institutional arrangements as autonomous agents, rather at its most basic level society is made up of institutionalized culture that creates, maintains, and disseminates conceptual models of the individual and the social organization (formal and informal). In the production of collective reality, institutions are more cognitive than structural and their products are everyday theories of reality more than tight normative strictures; in short, they provide the "logics of action" within the social order (Friedland and Alford 1991; Swindler 1986).

Conceptualizing society as institutionalized culture has lead to robust new sociological research (Jepperson and Swindler 1994). For example, neo-institutional research yields an empirically based conceptualization of formal organizations as institutionally constructed from cultural models of what different types of organizations should be (e.g. DiMaggio and Powell 1991; Meyer and Rowan 1977; Scott and Meyer 1994). In turn, this has lead to a set of empirical examinations of institutional environments of economic strategies (e.g. Dobbin 1994; Fligstein 1990); the effects of variation in institutionalization across time and place (e.g. Hamilton and Biggart 1988; Meyer 1983); and, linkages between institutional environments and formal organizations (e.g. DiMaggio and Powell 1983; Scott 1995; Strang and Meyer 1993). Another example are analyses of the nation-state as embedded within an institutionalized world system produced out of world culture (.e.g. McNeely 1995; Meyer, Boli, and Thomas 1981, Strang 1990; Soysal 1994; Ventresca 1995). In the same vein, comparative analyses of formal education as the major foci of social stratification and producer of the knowledge society, neo-institutional studies have forged new ways to think about traditional status attainment and the worldwide spread of formal education (e.g. Baker and LeTendre 2005; Meyer et al. 1992; Meyer and Rameriz 2000). These are but several of a number of areas where neo-institutionalism has had a major impact on sociological research.[iii] And lastly it is not a surprise that this perspective on institutions has spread beyond sociology to the areas of economics and political regimes (e.g. Burlamaqui, l., A. Castro, and H. Chang 2000), and strategic studies and international relations (e.g. Finnemore 1996).

A major reason for the advance of neo-institutionalism is its integration of the SCR paradigm as a phenomenological account of the core process of institutionalization.[iv] The SCR paradigm, with its underlying theory of institutionalization, was developed in two influential monographs by Peter and Brigitte Berger, Thomas Luckmann and Hansfried Kellner over thirty years ago: *The Social Construction of Reality* and *The Homeless Mind: Modernization and Consciousness*. Taking off from an earlier sociology of knowledge, these works argue that institutions are the creators and transmitters of human culture at any given historical time period. Institutions generate, legitimate, and transmit culture into everyday consciousness of ordinary people formed from collectively adhered to meanings of reality.

The SCR paradigm is itself an innovative synthesis of 19th century Continental social thought incorporating central insights and philosophical concepts about the nature of human society common to Hegal, Marx, Weber, Durkheim, as well as the ideas of the American G.H. Mead.[v] These origins were augmented by lesser known theoretical writings of mid 20th century German phenomenologist and philosophical anthropologists,

most notable among them Alfred Schutz and Arnold Gehlen. Modern enhancement of the SCR paradigm in the mid-1960s was an attempt to employ these ideas to breathe life into the stilted American structural-functionalism of Parsons, Merton and others, and well as to address problems of formalistic doctrinaire Marxian analyses.[vi] The incorporation of the SCR paradigm into neo-institutionalism research has accomplished what could be considered three substantial sociological advances.

Firstly, the SCR paradigm has lead neo-institutionalism to bring back culture as a dynamic causal force in determining social order. The notion of culture as an independent force lost favor in sociological research of the mid-20th century. Max Weber, probably the last major sociological thinker of the 20th century to consider the distinct role of culture before the rise of both structural-functionalism and structural Marxian theories chased culture out as a social determinate, developed a clear image of culture as a cognitive process occurring within institutions (Weber soc og rel. Prot). And neo-institutionalists consider Weber's ideas as forerunners to the current application of the SCR paradigm to institutions (DiMaggio and Powell 1983, 1991). The SCR paradigm returns culture as a key determinate of social order in an integrated fashion by hypothesizing that institutionalization is the key vehicle by which culture defines society (see also DiMaggio 1997).

Secondly, neo-institutionalism's incorporation of the SCR paradigm provides a unique empirical description of society, including social phenomena that often went unobserved and un-theorized (Jepperson 2000). By offering theoretically driven observations of the considerable degree of stability, isomorphism, and homogeneity among human societies, it makes for fuller sociological accounts in a field of inquiry with a tendency towards exclusive focus on change over time, differences, and heterogeneity. Further, in doing so the SCR paradigm enhances the major functional and conflict perspectives, giving them a platform upon which to compete as accounts of social change and stability in terms of institutional change and stability. Sometimes mistaken as a theoretical alternative to conflict and functional paradigms, neo-institutionalism, based on the SCR paradigm, is a theoretically-driven, rich description of how society perpetuates itself through consistency and validation of social orders.

Thirdly, by using the SCR paradigm, neo-institutionalism turns away from abstract ideas of normative behavior and places emphasis on more cognitive aspects of human life (Scott 1987; Swindler 1986). And by doing so it enables the linking of the study of large-scale historical social phenomena with more micro aspects of how humans cognitively construct their worlds within the context of macro processes. It is this theoretical perspective that particularly opens the SCR paradigm to important empirical findings from a range of study of human cognition and related phenomena examined here.

Given the conceptual advantages that the SCR paradigm provides the understanding of institutionalization in neo-institutional research, it is notable that as a main theoretical foundation, the propositions that make up SCR have not been the subject of much empirical research from a neo-institutional perspective. In part this is because neo-institutionalism has grown as a research program through a proliferation of substantive applications to test theory directed outward not inward (Berger and Zelditch

1998; Jepperson 2000). Also the original writings about the SCR are somewhat difficult to penetrate; and too, paradoxically the term SCR itself has become largely a disembodied idea hovering above any clearly described formulations of the actual theory. Even in neo-institutional research, which relies so much on its assumptions, the SCR paradigm is often only nominally referenced.

Twenty-five years after the publication of *The Social Construction of Reality*, its authors disappointedly observed that it is one of the most cited, yet least read, books in modern sociology, and possibly one of the most misinterpreted works among all contemporary sociological theory (Berger). The more accessible prose of *Homeless Mind*, although far less cited than *The Social Construction of Reality*, has paradoxically had greater influence on neo-institutionalism even though it is much weaker on the theoretical foundations of how institutions create collective realities (DiMaggio and Powell 1991). It thus makes sense to turn to an assessment of the theoretical propositions of the SCR paradigm from the cognitive paradigm.

II. *The SCR Paradigm as a Theory of Institutionalized Consciousness*

With references to their origins in earlier social thought, the following lays out the central propositions of the SCR paradigm as developed circa 1967. Represented here are just the SCR arguments leading up to the creation of institutions and institutionalized consciousness as these have influenced neo-institutional research the most. Unless otherwise noted, the main reference throughout is Berger and Luckmann (1967).[vii]

Part I: From Externalization to Institutionalized Culture.

Proposition 1. *Human instinctual capability is phylogenetically underdeveloped*.

Compared to other animals, including other primates, human animalistic drives are highly unspecified and undirected. The origin of this proposition stems from German philosophical anthropology of the first half of the 20th Century, influenced by Arnold Gehlen (1940), on whose shoulders Berger and colleagues rest in applying anthropological ideas directly towards the concept of institutionalization (Berger and Kellner 1965).[viii] Human biology sets ontological limits, but is not in and of itself sufficient for physical survival. Consequently, the single human organism lacks the necessary biological means for stability to survive, and hence forms of social collectivity among humans arise. Social order, or culture, has been the main human phylogenetic advantage for survival.[ix]

Proposition 2. *Human ontology occurs in an interrelationship with natural and human-constructed (culture) environments.*

Unlike other species in which ontology occurs chiefly in interrelationship with the natural world, the human develops, and is developed, in a dynamic interrelationship with both the natural world and humanly constructed culture. The inherent social quality of human society, of course, is introduced into modern social thought most clearly by Marx (18?? The German Ideology), and as Berger and Luckmann paraphrase, “man’s self-production

is always, and of necessity, a social enterprise…*Homo sapiens* is always…*homo socius*." (1967, 51). As a pair, propositions 1 and 2 lead to a uniquely human phenomenon termed "externalization."

Proposition 3. *Externalization is the genesis of human culture.*

Just like other animals, a human *is* a body, but unlike other organisms, the human is aware of *having* a body. Necessary for human phylogenetical survival, externalization is the process by which humans experience themselves as entities-- an external being beyond the immediate experience of bodily needs and sensations. Both Hegalian and Marxian thought (cites??) stress human capacity to externalize their world as a key sociological insight into society. Externalization is an anthropological constant, it is at the root of all forms of culture, and it is a continual social process. Externalization makes self-awareness possible whereby humans are both the subject and object of knowledge (see also Foucault, 1972).

Proposition 4. *Significant others mediate the natural environment and culture for normal ontology.*

Human development is dependent upon a complex reciprocal relationship with conspecifics. This inextricable connection between human society and human sociality is a central theme in Durkheim's sociology (19?? Elementary Forms of Religion), as well as in the social psychology of Mead (and Cooley) in terms of "taking the role of the other," and too in Marxian cultural historical theorists (Luria, 1976; Leont'ev, 1978; Vygotsky, 1997). The relationship with significant others is world-building through bringing culture, and its relationship to the natural environment, to bear upon the developing individual (Schultz auf bau cite). Ontologically, humans gain the capacity to internalize (cognitively understand) an observed event or artifact or an act of communication as having meaning through understanding the other's subjective process, which then becomes subjectively meaningful to the observer. Not that there must be perfect or even necessarily accurate understanding, instead the human learns to attribute meaning through the assumption (belief in) that the other's actions are purposeful and logical (Rommetveit 1992). This idea along with Proposition 3 leads to and makes possible the institutionalization of culture.

Proposition 5. *Culture expands, stabilizes, and transmits itself by the institutionalization of human activity and meaning.*

Although human externalization is *sui generic* in character, it is not sufficient in and of itself to develop, maintain, and transmit culture within human societies across history. Further, the content of culture is never derived from the "nature of things" nor purely from human biology, it is a human product, constantly maintained (Durkheim elementaries). Culture, in this sense, is meaning derived from both ideas and physical artifacts, communicated and shaped by language (Gehlen). For example, culture can be thought of as "the collective assignment of functions to phenomena where the function cannot be performed solely by virtue of the sheer physical features of the phenomena. From dollar bills to cathedrals, football games to nation states, we are constantly

encountering new social facts where the facts exceed the physical features of the underlying physical reality" (Searle, 1995:228). Institutionalization yields robust culture (see Proposition 7), which in turn creates entities known as institutions, and Weber's ideas about networks of meanings is relevant here as well (Sicca).

Part II. From Institutions to Internalized Consciousness

Proposition 6. I*nstitutionalization is the reciprocal typification of habituated actions and beliefs.*

At its core, institutionalization is the tendency for actions and beliefs to become embedded as predictable routines; habitualization narrows choice and increases social stability (Gehlen). Reciprocity means that these routines are observable and available to all within a social group. Typification is the ability of institutions to make certain action typical of certain actors; a capacity that easily leads to the organization of the "everydayness" of social roles and actors within an institutionalized sector. Here the social psychology of Mead with it notion of "taking the role of the other" is expanded into an institutional framework. As a process, reciprocal typification of habituation becomes coextensive with institutionalization, and hence the core insight that institutions create models as everyday theories of why someone can do what with whom, and how to think and feel about the act. Further, a paucity of information about the complexity of the social world leads to scenarios, scripts, and schemata (bits and pieces of theories of everydayness) as the major institutional product that guides participation in institutions. Seen this way, institutions are guiding cognitive constructions more than they are rigid formal rules about social order, and as such they are the basic building block of any society—an entity which only exists as a historical "agglomerations of institutions" (Berger and Luckmann 1967, p.55).

Proposition 7: *Institutional historicity increases objectivation of culture.*

Given Proposition 6, over historical time institutions become stocks of "taken-for-granted" recipe knowledge, or in short, institutions are theories of everyday life, as the German philosopher-sociologists Alfred Schutz (1962) pioneered in his sociology of the commonsense world of everyday life. The content of culture is the "sum total of 'what everybody knows' about a social world, an assemblage of maxims, morals, proverbial nuggets of wisdom, values and beliefs, myths… every institution has a body of transmitted recipe knowledge, that is, knowledge that supplies the institutionally appropriate rules of conduct" (Berger and Luckmann 1967, p65). Even though culture is always socially-constructed, when as a theory of everyday life it is transmitted through interaction with significant others across generations, its subjectively experienced meanings become objective to the new generation. Transmission of culture makes humanly constructed reality massively objective (Berger and Kellner 1964). Or in the classic Durkheimian sense, social facts become objective things, and furthermore as institutions age historically members of new generations experience them as "a reality that confronts the individual as an external and coercive fact" (Berger and Luckmann 1967, p 58).

Proposition 8: *The dialectical relationship among externalization, objectivation, and internalization of culture creates institutionalized, socially constructed, consciousness of reality.*

Culture is a human product (externalization); *Culture is an objective reality* (objectivation); *Man is a cultural product* (internalization)--these three processes makeup the total constructivist properties of the human world and creates institutionalized consciousness (Hegel and Marx, also Marx and Hegel inspired Soviet psychologists such as Luria, 1976; Leont'ev, 1981; Volosinov, 1973; Vygotsky, 1997).[x] And to be in a culture, in other words to be human, is "to participate in this dialectic" (Berger and Luckmann 1967, p.61). All three occur continually; humanly produced culture is externalized and then internalized into consciousness as objective reality. Each process acts on the other two and in turn is acted upon by them. Holding these three conditions in mind is a conceptual balancing act that goes to the very essence of an institutionalized socially constructed consciousness of reality. Hence, socially constructed reality is always precarious to a degree, a higher degree of which in modern society (larger agglomerations of institutions) leads to an enlarged sense of self amongst a highly objective, and at times, alienating world.[xi]

Proposition 9: *Historically derived culture, a sense of self, and objectified reality is subjectively crystallized by the developing human.*

Putting all the propositions together leads to the image of human subjective consciousness as a progressive abstraction from concrete significant others (e.g. parents) and their roles to a sense of the generalized other acting out theories of everyday life. In effect, the human internalizes, via others, their whole culture, and the sense of a self derived by this culture. And importantly, this can only proceed across generations with culture as the main product of institutionalization.

III. *Evaluating the SCR Paradigm with Findings from the Cognitive Paradigm*

Since the 1960s when SCR was first developed the study of human cognition and related fields have experienced a watershed in new findings about how the human brain develops its cognitive capabilities to create. There have been significant advances in the measurement of, and experimentation on, brain activity through the basic circuitry of the chemical-electric processes of synapses up to the conceptual building-blocks of basic cognition. Consequently, this maturing of empirical findings about the ontogenetic brain has considerable implications for understanding how humans learn and develop cognitive capacities that now can be used to assess the basic propositions of the SCR paradigm.

Recent empirical findings within the cognitive paradigm from the nexus of evolutionary study of culture, developmental cognitive psychology of primates, and cultural psychology support the founding assertions of the SCR paradigm (Propositions 1 through 5), namely that humans' ability to produce and transmit complex culture is the specie's main survival advantage, and hence understanding the production and transmission of culture is the key to understanding human social order. While compared to other animals including primates humans are phylogenetically underdeveloped in

terms of basic instincts, specific qualities of human cognitive development facilitate participation in social orders and the achievement of common collective understandings and the "ratcheting up" of accumulated knowledge, even beyond extensive language skills (Tomasello 1999).

Further, human cognitive ability to produce robust culture is perhaps the only factor that differentiates humans from other primates, and the specie's advantage is not because of some overall cognitive superiority. For example, many of the attributes that in the past were thought to be unique to humans have since been shown not to be limited to our specie (e.g. Wilson 19??). From observational and experimental studies in their natural habitat, chimpanzees, the closest primate to the human, are known to use gestural communication, social organization for common ends, and tools, all of which require phylogenetically cognitive sophistication (Boesch 1991, 1993; Boesch et al. 1994). Further, these capabilities have been shown to be passed down across generations through some simple learning from conspecifics, and as such they could be considered a rudimentary form of culture production among nonhuman primates (McGrew 1992, 1998; Wrangham et al. 1994). But although strictly speaking some basic aspects of culture are shared across some species of primates, human culture on a cognitive level is qualitatively different in terms of both its abstracted complexity and in its affinity with human brain ontogeny (e.g. Tomasello 1999, Durham 1991).

That human cognitive capacity is uniquely suited for the production and consumption of culture is further verified by three empirically substantiated conclusions. First, only human culture exhibits considerable cumulative evolution as shown through anthropological studies of use of tools and other general technology modification over long historical developments (Basalla 1998; Boesch and Tomasello 1998). Non-human primates have never been observed to have evolving social organization. Further, human "cultural histories" are maintained by human's predilection to use intensive imitative learning and teaching among conspecifics, a unique form of social learning (Boyd and Richardson 1996). For example, in experiments comparing specific cognitive learning capabilities of young chimpanzees and human toddlers, the latter are much more likely to imitate adult behavior exactly even when the behavior is less efficient in achieving a desired goal (Nagell et al. 1993; Russon and Galdikas 1993; Whiten et al. 1996).

Second, human culture is not merely a function of social learning, there are deeper human cognitive capabilities that interact with social learning that are not present in other primates, even among the relatively intelligent chimpanzee. Acculturated apes, reared and trained through extensive human contact, produce what first appears as sophisticated cognitive capabilities including sign language (Hayes and Hayes 1952), but upon further systematic experimentation it is now known that non-human primates lack the cognitive skills needed to participate in extended joint attentional interactions, more sophisticated language skills, aptitude for collaborative learning and intentional teaching, which are all cognitive capabilities found in human children (Call and Tomasello 1996; Carpenter et al. 1995; Tomasello 1994). Also there is experimental evidence showing that faced with novel tasks of removing food from complicated structures, young chimpanzees and capuchin monkeys succeed only at chance levels and cannot appreciate the causal mechanism in the container, while two and three year-old children behave

much more adaptively and seem to understand the causal principles at work from the earliest trails on (Reaux 1995; Visalberghi and Limongelli 1996).

Lastly, a large literature on neuro-pathology indicates that humans born with certain neuro-deficits do not have the capacity to live culturally (Tomasello 1999). For example, many children with autism never develop language skills, but even among those who do speak, almost all have problems with precisely those cognitive skills most associated with the consumption of culture: joint attention skills, imitative learning, symbolic play, and self-understanding (Baron-Cohen 1995; Hobson 1993; Happe 1995; Jarrold et al. 1993; Loveland 1993; Sigman and Capps 1997).

Proposition 2 claims that human development involves considerable direct interaction between the natural and social worlds. Historically, the importance of this argument for the SCR perspective is that humans, as a species of animals instead of a special creation of a deity, are seen as creating their world through the unique production of culture and this is what chiefly sets them apart from all other known species. This was a central insight of nascent social theory early in the 20th century as a wave of anthropological and psychological evidence demonstrating variation in human cultures stripped away legitimation of religious accounts of the origins of man, and showed the inherent animality of humans. Although this proposition may now seem anachronistic in light of modern thought in some quarters that have embraced a secular form of a pan-uniqueness of humans in their social constructive abilities, its prediction of a balance between the natural and social world and the cognitive uniqueness of the production of culture matches emerging core-themes in the cognitive paradigm.

Recent empirical findings about genetic and environmental influences on human brain development have made the old *nature versus nurture* distinction passé; it is now clear from a large empirical literature that brain development is a function of an epigenetic process—namely, a process in which genes and environments interact (Cole 1996; LeDoux 2002). For example, it has been estimated that somewhere between 50 to 70% of all human genes are in the brain directing its development over the life-course. And this development is prodigious, as literally trillions of synaptic connections are formed into neuro-pathways that carry out numerous mental functions for the individual.

But unlike a human hand that is formed in the womb into its final shape and only goes through growth and strengthening, the brain of primates including humans is not close to being finished upon birth. The postnatal brain with its huge initial number of synapses is waiting to be shaped; or what neuroscientists term “exuberance and pruning” (O’Leary 1992). The former refers to an overabundance of possible connections and the latter refers to the process by which some connections are strengthened with use (chiefly in the social interactions of everyday life) and others whither away with inactivity. For example, in studies of the development of the vision in rhesus monkey infants, various experimental manipulations show that the rate of synapse production in the visual cortex is not related to visual experience, rather visual experience primarily influences maturation through strengthening, modifying, and eliminating unneeded synapses that have already been formed (e.g. Bourgeois, Jastreboff and Rakic 1989). A large research literature of direct experimentation supports the thesis that the development of the brain is fully epigenetic, or more accurately phrased “synaptogenetic.” As the developing

human engages in the world, the structure and functions of the brain emerge out of use--what brain scientists have long referred to as "activity-dependent development" (Hubel and Weisel 1962; Sperry 1963).[i]

Proposition 3 states that the human cognitive capability to externalize is the genesis of human culture. At its essence, externalization consists of two crucial cognitive abilities: one is the ability to have self understanding, and the other is the ability to understand that conspecifics have intentionality, not only in terms of manifest behavior but also in terms of beliefs, implicit goals, and unvoiced desires. In short, proposition 3 of the SCR paradigm argues that the human has the cognitive capacity to develop an everyday theory of mind, her own as well as others. Research comparing primate cognition, outlined above, suggests this is true, and there is detailed research on the functioning of the human brain that also supports this idea.

New methods of measurement applied to cognition show that the human brain is particularly well suited to externalize and the capacity to generate a theory of the self and others' intentionality. In its construction, the human's thinking style and capacity appears to have an almost unlimited capacity to externalize. Although the way that human cognition leads to externalization is more complex than originally thought.

Similar to the empirical verification of proposition 1, recent findings from comparative evolutionary anthropology point to the conclusion that instead of some overall cognitive capacity, the distinct cognitive capacity to externalize and thus produce culture is the human's defining quality. Such a conclusion both liberates the SCR paradigm from relying on the increasingly unsupportable idea of an overwhelmingly unique superior pan-humanness in either language or intelligence, and forms a basis to generalize SCR into a broader paradigm of human social order.

For example, extensive cognitive capacity, including even some PFC development, is not unique to humans. Tomasello's (1999, p.16) review of this literature concludes all mammals have basically the same sensory-motor cognitive capabilities involving permanence of objects arrayed in representational space, and many mammalian species and most all primates can "cognitively represent the categorical and quantitative relations among objects…evidenced by their ability to: remember 'what' is 'where' in their local environments; take novel detours and shortcuts in navigating through space; … pass rigorously controlled Piagetian object permanence tests; categorize objects on the basis of perceptual similarities; understand and thus match small numerosities of objects; and, use insight in problem solving." Also many mammals have the cognitive ability to live in hierarchical social worlds in which individual conspecifics are recognized and there are dominance and affiliation relationships. Moreover, all primates have an understanding of relational categories and at least a rudimentary understanding of third-party social relationships, such as the relationship of "mother-child" other than themselves (Dasser 1988a, 1988b) that other mammals do not (Tomasello and Call 1997). Compared to other primates, human cognition adds the two crucial pieces of understanding intentional relations and causal relations that make up the basis for our ability to externalize. Finally, recent neuroscience research has shown that humans are

[i] There is a healthy debate among neuroscientists about exactly how activity-dependence works to shape the brain, ranging from positions of selectionist nativism to full instructional constructionism (LeDoux 2002).

endowed with neurons that have specifically evolved to enable the internalization of observed behavior through purposeful imitation (e.g., Arbib, 2002; Meltzoff, 2002.

Since the development of basic cognitive capacities is an epigenetic phenomenon, externalization as a capacity is driven by interaction between genetic inheritance and the environment. And the most salient environmental factor is interaction with conspecifics, or in more sociological terminology "significant others." What has been a truism of sociology and employed so effectively in the SCR paradigm (Proposition 4), that interaction with others is the central socialization mechanism, has though a number of carefully controlled studies been shown to be a fundamental and perhaps a specie-defining quality. Moreover, it is not just that general cognitive abilities are developed through interaction with significant others, so are the specific capabilities needed to externalize at first simple ideas about the self and then more complex cultural ideas and theories of everyday life.

What the study of cognitive development of human infants in contrast to other primates shows is that the former rapidly develop the conceptual power to learn from conspecifics, while the later never do. In a review of a number of studies of non-human learning, King (1991) concludes that developing young among primates, except humans, learn next to nothing directly from adults. Around nineteen months into life, normal infants have specific cognitive skills to participate in learning from others. Imitative learning is more than mere mimicking of an adults behavior; instead, developmental cognitive psychological studies indicate that young humans quickly come to understand that the other is taking intentional actions to a goal and learn rapidly from significant others. In controlled experiments in which adults present new tasks (as intentional and accidental) leading to novel goals, infants around nineteen months, with only crude language skills, behave in ways indicating that they understand the adult's intentional actions compared to accidental ones, and can reproduce the actions that the adult meant to do at a much deeper conceptual level than surface mimicking (Carpenter, Nagell, Tomasello 1998; Carpenter, Kantar, Tomasello 1998; Meltzoff 1988, 1995). This recently uncovered cognitive ability of infants is the ontological capacity to externalize "the role of the other," a basic step in of the SCR process long assumed by early social theorists (Cooley, Mead, Vice, and Dithery).

This specific, early developing, cognitive ability to engage in learning from others, and in particular to understand intentionality and externalize a sense of one's self sets the stage by which the young human internalizes the culture meanings all around her. Proposition 5 argues that culture is the essence of institutions, and that institutionalized culture makes for robust culture that takes on collective, stable, and seemingly "natural" qualities (see also Proposition 7). Several major parts of the cognitive paradigm suggest that human cognition and the sociological process of forming institutions interact in a far more dynamic way than ever imagined just a few decades ago.

The human brain, with its cognitive capabilities, is not only epigenetic and develops unique capacity to externalize culture through imitative social learning, the reciprocal interaction between the ontological brain and culture interact much later into life than ever before appreciated. The exact nature of the interactive process is still hotly debated among cognitive scientists, with every new empirical discovery slightly shifting

the parameters of the debate, but it is fair to say that a clear picture of human brain development is emerging which applies directly to the Propositions 5 and 6 which argue that the SCR process, and hence the key link between humanly produced culture and the formation of institutions, is essentially a cognitive one (Powell and DiMaggio 1991). There are three important concepts driving the new perspective on human cognition: *automaticity, localization,* and *plasticity*.

There is a fair amount of evidence that brains learn concepts, and after they do these become *automatized* within the brain. Studies of mathematical cognition show that once certain ideas, such as quantity, are learned they quickly become automatized and it is hard to think without them. For example, if subjects are presented with a pair of digits printed in different sizes and asked to indicate which digit is larger in font size, such as **1** and 9, or 1 and **9**, subjects think longer on the former versus the latter pair (Henik and Tzelgov 1982). The automated concept of quantity between one and nine must first be inhibited before the font sizes can be compared. The way this particular study is designed, automatization is a barrier to accurate functioning, but in doing mathematics in the outside world automatization can be very beneficial; as when, for example, the automatization of quantity or basic operational facts "frees up" space in the working memory for other problems (Dehaene 1997).

The property of automated cognition is very similar to the SCR arguments about how institutionalization involves cultures in the form of scenarios, scripts, and schemata (Proposition 6). DiMaggio's (1997) useful review of empirical findings from cognitive psychology about how qualities of culture--fragmentation, incomplete information, complexity, vague normative instructions for actors—are all compatible with the way humans cognitively experience it and seem to turn it into scenarios, scripts, and schemata. New findings about the brain's ability to automate complex rules show that this process is fundamental to human thinking and take the affinity among cognitive, culture, and institutions a step further.

Like one of those turn-of-the-century maps that shows the human head marked up in various regions responsible for things like love, fear, jealousy, language, passion etc., a century later it is clear that brains are in fact *localized* and have specific functions preformed by specific structures and regions. While the phrenology of a hundred years ago has long been discarded as inaccurate, there is evidence of localization of a different sort, one of specialized neuronal function, with specific brain areas performing in a larger network of activation. There is localization, but not modularity; a particular part of the brain is usually *necessary* but not *sufficient* in and of itself for a particular task. Exactly how localization develops and functions is far more complex than the notion of independent regions just doing different tasks (Uttal cite).

Studies of subjects with various pathologies (usually lesions) of the brain illustrate the localization of the brain, as often when a particular area is disconnected from the rest of the brain the individual does not think in specific ways and cannot do specific things. Studying people with split brains (surgical lesions between the right and left hemispheres used to control epilepsy) has been particularly informative about how localization works (e.g. Gazzaniga et al 1996; Sherry et al 1969). A good example is the scores of experiments in which split brain patients have stimuli experimentally presented

to the left or right hemisphere and are asked to react to these. For example, when a split-brain patient has a representation of an object presented just to the left hemisphere, she or he cannot later pick out its likeness from a set of pictures with their left hand but are able to do so with their right hand as it is also controlled by the left hemisphere, which has the original information and because of the lesions cannot share it with the right hemisphere. From studying a variety of disconnection syndromes in these patients it is clear that brains are localized to a degree (Geschwind 1965). While there are many unexplained complexities about localization, nevertheless it is a central tenet of the neuroscience of human brains.[ii]

A crucial implication of how the brain is localized is that it functions through a system of interactions among parts. While cognitive science has yet to discover the exact nature of the system, there are some clear process that directly mirror the process by which culture is institutionalized into collective meaning (Propositions 5 and 6). Many cognitive scientists hypothesize that somewhere in the brain (the prefrontal cortex is the main candidate) there is a grand interpreter that makes meaning out of all the complex and fragmented information flowing in form the sensory organs. This is dramatically illustrated by further experiments with subjects with split brains (information cannot flow across hemispheres in these subjects' brains). When a command is given to the subject's right hemisphere (the silent, speechless half) to "talk a walk out of the lab." And as the subject does so, when asked "why are you doing that?" the subject's left hemisphere (uniformed about the original command to the right half) replies in a meaningful way such as "I need a drink from the fountain," or I need to stretch my legs" (Gazzangia et al. 1996; Gazzangia and LeDoux 1978).

IV. *Cognitive linguistics, brain science, and culture*

While research establishing the relevance of culture to the formation of human mental life has been carried out within the social sciences for over a century (i.e., Vygotsky 1978), we have thus far emphasized that contemporary neuroscience research demonstrates that phylogenetically recent cortical areas of the brain (specifically the prefrontal cortex) are hyper-adaptive to use and experience (LeDoux 2002). In particular, the cognitive and neuroscience research of the past few decades has strengthened, and even made necessary, explicit linkages between language, cognition, and culture. This trend offers an important corrective to Chomsky and related nativist theorizing. Based on extensive empirical research on human and animal communication, Tomasello, for example, notes that the representational innateness stance championed by Chomsky "is a very unlikely theory" of language function and acquisition (Tomasello, 2003: 284). Additionally, the nativist view that diversity among the world's languages (and by extension, cultures) is only surface deep, with the corollary that linguistic differences have no effect on cognition or its development, has been strongly contested. Recent studies in cognitive linguistics and cognitive neuroscience provide evidence for the co-evolution of intersubjective cognition within the institutional environments that comprise everyday cultural and linguistic practices. Based on a wide range of evidence, Tomasello develops what he describes as a "usage-based" theory that unites language and cognition

[ii] An example of the complexities is that some regional dysfunction is taken over by other parts of the brain and normal functioning resumes. To complicate things further, how localization develops in an organ which starts out mostly as a undifferentiated mass of neurons is still not fully clear.

with the systematicity of organized cultural practices (what we have been terming institutional culture). The model is thoroughly functionalist and "based explicitly in the expression and comprehension of communicative intentions (intention-reading)" (Tomasello, 2003: 325). From this perspective, language is used primarily to "direct people's attention to events and entities in the current joint attentional frame" (ibid, 325), and "language structure emerges from language use, both historically and ontogenetically" (2003: 327).

That the obligatory semantic distinctions of a linguistic variety correspond to habitual forms of thought has been robustly documented (for spatial cognition, see Levinson, 2003; Bowerman & Choi, 2003) and is termed the Sapir-Whorf hypothesis of linguistic relativity (e.g., Gumperz & Levinson, 1996; Gentner & Goldin-Meadow, 2003). Linguistic relativity suggests that the organization of communicative activity at the levels of grammaticization and lexicalization form a primary carrier of historically developed systems of meaning – i.e. culture – into the process ontology of unfolding activity (for a review, see Lucy, 1996). Levinson (2003: 41-42) sums up the cognition-language-culture connections of this position as follows: "(1) languages vary in their semantics just as they do in their form, (2) semantic differences are bound to engender cognitive differences, (3) these cognitive correlates of semantic differences can be empirically found on a widespread basis." From within the cultural-historical tradition of Marxist psychology, Vološinov makes a parallel formulation concerning the relationship between signs and consciousness: "Consciousness takes shape and being in the material of signs created by an organized group in the process of its social intercourse. The individual consciousness is nurtured on signs; it derives growth from them; it reflects their logic and laws. The logic of consciousness is the logic of ideological communication, of the semiotic interaction of a social group" (1973: 13).

Recent research in brain science has revealed a probable neurological mechanism, called mirror neurons, that provide biological evidence supporting arguments for social cognition and the reciprocal effects of linguistic structure, cognition, and culture. Mirror neurons enable the human capacity for imitation. It is worth noting that research into imitation fell out of favor in the wake of Chomsky's critique of Skinnerian behaviorism, but neuroscience researchers such as Meltzoff (2002) and Arbib (2002) have shown that the unique human ability to imitate, defined as the capacity to understand both the means and the goal of observed intentional behavior, is foundational to linguistic and cognitive development and supports the learning of complex social behaviors. This research shows that imitation of and participation in culturally organized practices, life-long involvement in a variety of institutions, and humans' ubiquitous use of tools and artifacts (including language) strongly and qualitatively impact cognitive development and functioning (see Lantolf & Thorne 2006). An understanding of culture as social construction as well as an objective force implies that human activity structures, and is structured by, enduring conceptual properties of the social and material world. In this sense, culture is 1) supra-individual and independent of any single person, and 2) is rooted in the historical production of value and significance as realized in shared social practice (Bakhurst 1991; Cole 1996). Language use and development are at the core of this objective characterization of culture both at the level of local interaction (actual communicative activity) as well as that of society and the nation state in arenas such as language policy,

language ideology, popular culture, and public education as mass social intervention (to name but a few).

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[i] In many literatures the cognitive paradigm is referred to simply as cognitive science, or sciences, but its structure as an intellectual endeavor, comprised of many separate disciplines working on similar problems, is best described as a paradigm. We use henceforth only the term "cognitive" and not the frequently mingled term of "mind" here to avoid confusion.

[ii] Even philosophy has gotten into the cognitive paradigm in a big way, see for example, work on both the philosophy of neuroscience and neurophilosophy (e.g. Churchland 1986; Chalmers 1996).

[iii] For a detailed analysis of these research areas influenced by neo-institutionalism see Jepperson (2000 and 20??).

[iv] There are, of course, other theoretical and empirical reasons for neo-institutionalism's relative success that are beyond the use of SCR paradigm and hence beyond the scope of this paper, see Jepperson (2000).

[v] For example, here is Marx's description of Hegel's phenomenology based in the notion of human constructed reality: "The greatness of Hegel's phenomenology and its end result [is that it] grasps the self-generation of man as a process, objectification as de-objectification, as alienation and the overcoming of this alienation; in other words, that he grasps the essence of labour and comprehends objective man, who is true man because of his reality, as the result of his own labour." [Marx, *Critique of Hegel's Philosophy in General*], quoted in Habermas (1968)/

[vi] Similarly, neo-institutionalism empirical research was originally motivated by this same frustration with mid-century American functionalism (Jepperson 2000).

[vii] A full exegeses of the other theoretical ideas of Berger and colleagues about inter-institutional dynamics, critique of external functionalities, social control, and canopies of legitimation are topics ripe for neo-institutional analysis but have tended so far to be overlooked in empirical research, most likely because they are more about interactions between institutions than the nature, development, and maitainance of an institution, the latter of which is the most frequent use of the SCR paradigm in neo-institutional research.

[viii] See also the philosophical anthropology of Hekmuth Plessner (1928), and Adolf Portmann (1956).

[ix] We use the term *culture* more than *social order*, as the former is more in keeping with current neo-institutional thinking. But it is helpful to note that Berger and Luckmann used the more sociologically traditional phrase social order through out their arguments.

[x] Related to Proposition 8, Berger and Luckmann offer a scathing critique of American empirical sociology of the mid-20th century. Noting that American sociology tends to conceptualize only two out of the three conditions of human life-- society as objective and man as its product, they argue that this makes for a reified, "or undialectic distortion of social reality" (p.199, FN53). By not including the reality that society is a human product, much American sociology is, in the authors words, "theoretical legerdemain."

[xi] Or as Marx writes in *The Eighteenth Brumaire* (pg. 1), "The tradition of all the dead generations weighs like an incubus (*lasten wie ein Alp*) on the brain of the living."