Culture and Cognition

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Abstract

Culture and cognition is a rapidly growing subfield within sociology. Scholars working in this area address how aspects of both social structure and culture impact the ways in which social actors think. From the literature, one learns about specific processes and styles that individuals adopt when engaged in thought, cognitive patterns that characterize certain groups or communities, and thought styles that emerge in specific situations and social contexts. New works pay special attention to the links between mind, body, and sociocultural context. In this essay, I define the general focus of the field, review its intellectual roots, discuss recent turns in its literature, and identify issues for future research.

CULTURE AND COGNITION

Culture and cognition is a rapidly growing subfield within sociology. Scholars working in this area address how aspects of culture (e.g., beliefs, norms, practices, frames, schemata, symbols, and values) as well as various elements of social structure (e.g., network configurations, power arrangements, and the organization of institutions) impact the ways in which social actors think. Researchers identify specific processes and styles that individuals adopt when engaged in thought. They also study the cognitive patterns that characterize certain groups or communities, and the thought styles that emerge in specific situations and social contexts. New works in culture and cognition do not isolate the mind, but rather problematize the connection between body, mind, and environment.

The theoretical roots of culture and cognition can be traced to various sociological literatures, including symbolic interactionism, social constructionism, the sociology of knowledge, ethnomethodology, and sociolinguistics. While contemporary works build on this diverse theoretical history, scholars are also entering into cross-disciplinary dialog, engaging works from cognitive anthropology, cognitive psychology, and neuroscience. As such, the most exciting research in the contemporary literature resides at the intersection of several academic fields.

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2

In this essay, I review in more detail the intellectual roots of culture and cognition studies, recent turns in the literature, and issues for future research.

THE ROOTS OF CONTEMPORARY CULTURE AND COGNITION RESEARCH

Culture and cognition, as a sociological concern, grew from theories specifically designed to conceptualize and understand the mind. But the works that form the core foundation of contemporary research are those that move us away from treating mind as a distinct entity and closer to considering cognition as a sociophysiological phenomenon—a joint product of mind, body, and environment.

Central to the history of culture and cognition is the work of George Herbert Mead. Mead was primarily concerned with mind, its formation, and its contribution to the development of self. In a challenge to Dualism, which conceived of mind and body as separate entities, and materialism, which equated the mind with the physiological properties of the brain, Mead brought a uniquely sociological lens to the study of cognition. He argued that minds exist only "in relation to other minds with shared meanings" (1982, p. 5), making consciousness a product of the social—specifically, the interaction and communication between social actors, and actors' simultaneous engagement with the surrounding social environment. Note that bodies were an important element of Mead's conception of mind. He saw bodies as vehicles of interaction, and thus, necessary enablers of mind.

Many scholars elaborated elements of Mead's work, adding new but solely social considerations to discussions of mind. Karl Mannheim (1936), for example, expanded on the important link between interaction and mind formation, particularly the collective mind and the building of shared knowledge. Manheim argued that a group or community's thoughts and understandings were formed by their members' social positions—that is, social class, context or situation, and generation. He urged us to study mind formation and thinking as a relational phenomenon—a product of multiple perspectives that traverse space and time. In another line of research, Peter Berger and Thomas Luckmann sought to understand how mind becomes culturally shared. Leaning heavily on philosopher Alfred Schutz, Berger and Luckmann argued that a collective mind emerges from a group or society's "stock of knowledge ... the facts a group recognizes, the beliefs it espouses, and the routine performances, logics, and symbols by which these facts and beliefs are created and sustained" (1967, pp. 41-46). For Berger and Luckmann, the stock of knowledge functions as a pocket dictionary of culture used to negotiate our mental images of the everyday world. Still other scholars began exploring the ways in which the social and cultural organize the mind. For example, Erving Goffman's classic *Frame Analysis* (1974) approached frames as conceptual tools derived from one's local cultural context. These frames become mechanisms that define and arrange individuals' awareness and understanding of social experience. Similarly, Eviatar Zerubavel's *Social Mindscapes* (1997) identifies and maps the interpretative procedures (e.g., lumping, splitting) and cultural tools (e.g., cognitive lenses) by which members of cultural communities organize thought and give meaning to situations.

Something Was Missing

These works, while establishing a distinctively sociological approach to understanding the cultural aspects of cognition, leave an important component of Mead's theory behind—namely, the mind-body-environment link. One must look to a different group of scholars for theories that sustain—even prioritize—this important relationship.

Noam Chomsky's work (1968, 1978) on transformational and generative grammar provides a good starting point. In these theories, Chomsky centralizes the brain. He contends that brains hold a set of innate linguistic competences that channel cognition, communication, and comprehension. These competences, called deep structures, represent a set of rules that guide how words can be combined to create grammatically correct and sensible ideas. For Chomsky, these rules emerge from a universal grammar that is common to all spoken and written language forms. As such, deep structures, the physiological components that build mind, are critical to the cognitive activity of human beings. When we move beyond deep structures, we also find room in Chomsky's theory for the role of culture and environment in language and thought. Chomsky contends that these factors prove relevant in the "performance" of language. In performance, individuals transform deep structures by rearranging a sentence's outward form, creating more variable surface structures that coincide with cultural contexts of action and community traditions.

Aaron Cicourel (1974) also foregrounds the mind-body-environment link in studying cognition. While language is an important part of his thinking, Cicourel also considers the role of human senses in the process of thought. He argues that social actors' sight, touch, gestures, and body movements often take control of the communication experience—particularly when language is unavailable; he contends people use these interpretive procedures to develop a "sense" of social structure—one that organizes their perceptions and ultimately their actions. Thus, Cicourel too builds a model that simultaneously recognizes mind, body, and environment. The mind is a product of the senses, and the senses are contingent on the body's situation.

Pierre Bourdieu's writings on "habitus" represent the most recent and perhaps the most currently influential theory of cognition. Bourdieu defines the habitus as a system of "durable, transposable dispositions" that are products of a culturally situated mind-body. The habitus organizes social fields of action, enables individuals, groups, or communities to perceive and understand their environment, and to negotiate and recreate action. In essence, the habitus allows individuals to practice culture without "in any way being the product of obedience to rules" ... to be "collectively orchestrated without being the product of the orchestrating action of a conductor" (1977, p. 72; see also 2000). Bourdieu's theory draws an important connection between mind and body—one that, like Chomsky or Cicourel's vision, describes a connection more intimate than that posited by Mead. Bourdieu's body is not simply a vehicle of action. Rather, he views thought and action as embodied—internalized through our material physical being. In this way, the structures of the habitus are physically grounded and pre-reflexive.

Mead, Chomsky, Cicourel, and Bourdieu are especially important to contemporary works in culture and cognition. By recognizing the physicality of thought in tandem with its culturally situated nature, these theorists encouraged scholars of culture and cognition to explore new links between mind, body, and environment—links that ultimately beckoned cross-disciplinary ideas to the sociological terrain.

NEW DIRECTIONS

Throughout most of the twentieth century, cognitive scientists dominated discourse on thought. In large measure, this was due to PET scans, CT scans, fMRIs, and related technologies which, in essence, made the brain visible. But beginning in the mid-1980s, psychologists, anthropologists, political scientists, and even economists began engaging the new science of the mind. Among social scientists, only sociologists clung to the sidelines of discussion.

Then came a turning point. In his classic essay "Culture and Cognition," Paul DiMaggio urged sociologists to take a fresh look at cognitive science: "Cognitivists have developed ingenious empirical techniques that permit strong inferences about mental structures, going far toward closing the observability gap between external and subjective aspects of culture" (1997, p. 266). Others joined DiMaggio in passionately pleading for disciplinary cross talk (see, e.g., Bergesen, 2004a, 2004b; Cerulo, 2002, 2006, 2010; Howard & Renfrow, 2003). The result is an exciting line of new research that brings sociology toe-to-toe with cognitive science. Sociologists are "continuing" stories that focus solely on the brain, elaborating them by linking the brain to a mind situated in varying cultural contexts.

CONTINUING THE STORY: SCHEMAS

Schemas are the first chapter of any culture and cognition story. These mental structures—abstract generalizations or composites—are built from exposures and experiences and aid in our understanding of the world. Sitting in a restaurant, for example, we develop a general notion of restaurants based on various attributes of the different eateries we frequent. Individuals use such restaurant schemas to interpret new encounters, remember past experiences, help in sense-making and problem solving, or steer action.

Cognitive scientists study schematic operations in the brain, showing that schemas do not function in isolation. Rather, schemas cluster in the brain, forming associated networks. When one schema is activated, it creates a neural "charge" that triggers other schemas in the network. How are schemas activated? Cognitive scientists believe that our routines and experiences repeatedly elicit certain schemas, keeping them "in the ready" within our brains. Schemas can also be deliberately activated via a process called priming—that is, presenting a concept (often subliminally) in order to steer individuals toward related or similar ideas. In this way, schemas have important effects on perception and behavior. As knowledge structures, they allow us to "fill in the blanks" and make sense of new experiences; they also filter our perception, making some of the things we encounter more germane to us than others. Schemas may even create perceptual biases, committing to memory "facts" more elaborate than those we actually experience. Thus, our memory of a restaurant may include tables, cutlery, or foods to which we were never exposed. We mistakenly remember such things because our restaurant schemas dictate that such objects belong in that setting (Solso, MacLin, & MacLin, 2008).

Sociologists acknowledge both the brain's schema "library" and its physiological workings. However, sociologists also expand our knowledge of schematic operations in important ways. Some, for example, identify schemas particular to certain status groups or subcultures and track the ways in which they steer group members' attentions, perceptions, and behaviors. Much of this work addresses schemas that influence perceptions of class, ethnic and racial identities, gender, or power inequalities (see, e.g., Auyero, 2010; Brekhus, Brunsma, Platts, & Dua, 2010; Brubaker, Loveman, & Stamanov, 2004; Harding, 2007; Hoffman & Bartkowski, 2008; Miller, 1995; Rosenfield, Lennon, & White, 2005).

Others have explored how schemas order group discourse and subsequent action. Gabriel Ignatow (2004), for example, used sequence and metaphor analysis to investigate the meeting transcripts of striking Scottish shipyard workers. Not surprisingly, he found that the group's discourse was shaped by historical context, situational factors, and elements of social structure.

Yet Ignatow also showed that the strikers' group interactions gave rise to schemas that influenced the coherence of the groups' discourse as well. This finding was important because it showed that cognitions arising from strikers' interactions impinged on group planning and became critical to the strikers' strategies and goals. In another venue, Johnson, Dowd, and Ridgeway (2006) studied the ways in which social objects gain legitimacy in groups and organizations. Here too, schemas proved central. The authors discovered that a group's local expectations are often formed by tapping widespread consensual schemas as they exist in the broader society. Johnson and colleagues suggest that bringing the general to the local can prove damaging, for such schemas often organize local action in ways that encourage both nonoptimal group practices and erroneous expectations of future action. [Also see Zuckerman (2004).] Recently, Pescosoliudo and Olafsdottir (2010) explored the role of schemas in public perceptions of disease and treatment. The authors noted a consistent mismatch between people's endorsements for mental health treatment and their actual usage rates. They found that the ways in which researchers question people about the liklihood of seeking treatment can invoke schemas that influence usage of mis-reports. Specifically, close-ended questions about mental health problems and treatments trigger widespread consensual schemas addressing the efficacy of modern medicine. Such questions target tacit agreement with the medical model and organize thinking in ways that encourage individuals to overestimate the likelihood of seeking mental health treatment.

Organizational sociologists are doing promising work on the sociocultural dimensions of schematic transfer. Studying organizational sense-making, for example, Elsbach, Barr, and Hargadon (2005, p. 423) explored the ways in which "cognitive schemas and cultural contexts come together to form "situated cognition." Situated cognition, a term developed by Lave and Wenger (1991), refers to transitory thought embedded in the interactive context of the moment. The study of situated cognition is important because it challenges the notion of schemas as stable units inextricably tied to certain situations or events. Instead, this work suggests that interaction patterns are critical triggers of schemas, with different patterns activating different schemas and different interpretive and behavioral outcomes. Viewing schemas as dynamic and transferable helps us understand unexpected decisions and outcomes that heretofore seemed unpredictable or unlikely. [See also Haynie, Shepherd, Mosakowski, and Earley (2010), Mezias and Lant (2010), and Ocasio (2012).] These themes also are being explored by those studying dyadic relationships—especially within the family (see, e.g., Beach, Fincham, & Stanley, 2007; Howe, 2007).

In another arena, Chung, McLarney, and Gillen (2008) use elder care organizations to identify ways of triggering schematic transfer. They suggest

several changes to managerial interaction patterns, changes that might effectively switch individuals' attention from "line-of-sight management schema" (schemas that tie definitions of success to employee presence) to "target-based schema" (those tying definitions of success to treatment results). The authors discuss how this particular schematic transfer could encourage strategies that make elder care less stressful and more effective. In a related piece, Gough and Hick (2009) address the role of schematic transfer in self-help behaviors. Studying ethnic minorities and their retirement plans and strategies, the authors identify practices that prompt schematic transfer in ways that increase productive investment activity.

CONTINUING THE STORY: COGNITIVE STYLES

Cognitive styles and their variations represent another promising line of culture and cognition research.

AUTOMATIC VERSUS DELIBERATE COGNITION

The dual processes of automatic and deliberate cognition have become a central issue in culture and cognition research. Automatic cognition involves rapid, effortless, unintentional thought; it ties experience to existing schemas and allows us to quickly process information without extended review. Deliberate cognition, in contrast, refers to slow, considered, and measured thought. Individuals engaged in deliberate cognition may reject or override their schemas, actively searching for characteristics, connections, relations, and expectations rather than assuming them.

Cognitive scientists have explored conditions under which automatic cognition might dominate deliberate cognition and vice versa. For example, automatic cognition can occur outside of consciousness, while deliberate thought demands consciousness; automatic cognition is more likely to occur when we are under stress; deliberate cognition can be triggered by the disruption of well-established routines (Solso, MacLin, & MacLin, 2008). But such findings simply begin the story of dual processing. What chapters can sociologists contribute?

DiMaggio (1997, p. 272) suggested one possible trajectory. He argued that including cognitive styles in our studies of cultural patterns and practices could help us better understand how culture enables or constrains and when social action is simultaneously institutionalized and agentic. Acting on DiMaggio's suggestion, Karen Danna-Lynch (2007, 2009, 2010) incorporated automatic versus deliberate cognition in her studies of multiple role enactments. Danna-Lynch attempts to explicate what she calls the "chameleon

factor"—that is, switching between social roles without becoming incapacitated by confusion or role conflict. While prior answers to this puzzle focused primarily on behavior, Danna-Lynch brings cognition into the mix. She recreates the meaning of role performance to include four ideal types of role states—types based on the interaction of automatic versus deliberate cognition and automatic versus deliberate behavior. Using interviews with parents working in various occupations, Danna-Lynch itemizes the cultural practices that help people establish role positions and continually switch between them. Her culture and cognition lens provides a new approach to role theory, presenting roles as a product of both physical and mental space. Vaisey (2009) provides another important response to DiMaggio. He tested the dual-processing model using survey and interview data that address morality in decision making. In analyzing respondents' reflections on moral circumstances, Vaisey documents the presence of automatic and deliberate cognition. He shows that these two cognitive styles can function independently or together, and he urges sociologists to further explore the cultural conditions associated with each cognitive style.

A number of recent works explore such associations, unpacking the contextual nature of cognitive styles. Javier Auyero and Debora Swistun (2008, 2009a, 2009b) examined cognitive styles among individuals facing uncertainty and risk—residents of an Argentine shantytown exposed to high levels of environmental pollutants. The authors addressed processes and practices that both sustained peoples' uncertainty and resulted in mis-assessments of environmental risks. Of particular interest were links between cultural routines and cognitive styles. Auyero and Swistun argue that when polluters avoid major disruptions to residents' daily routines (i.e., getting to work, getting children to school, preparing meals), the routines themselves encourage individuals to adopt an "automatic pilot" approach to their surroundings. In essence, familiar routines combine with automatic cognition to restrict deliberate attention to surrounding dangers; this process, in turn, suspends any initiatives toward organized actions against such dangers. It is worth noting, however, that levels of routinization must be considered when linking routines to cognitive styles. Carol Heimer (2001) approaches routines as existing on a density continuum—that is, situations vary from being abundantly or over-routinized to being scarcely or under-routinized. Heimer argues that over or under-routinization beckons deliberate cognition, while moderate routinization is associated with automatic cognition. According to Heimer, over-routinization triggers deliberate cognition because "people are so overloaded with routines that routines become noise rather than signal and cease to focus attention" (2001, p. 72). In under-routinized contexts, thought must be inductive, as people examine and reexamine the evidence of novel scenarios.

Still others are exploring the associations between cognitive styles and cultural contexts. Hana Shepherd (2011) reinterpreted several social psychological studies to illustrate how external elements of culture-for example, symbols, elements of physical settings, situational interactions, and networks—guide individuals' cognitive styles. In another venue, Cerulo (1998) described associations between media contexts and cognitive styles. Studying visual and verbal depictions of violence, she identified four temporal sequences that drive narrators' accounts of violence: victim, performer, contextual, and doublecasting sequences. She found that narrators' sequence selections reflect institutionalized communication conventions based on assumptions of audience morality. Moreover, she documented that certain sequences trigger automatic cognitive responses that lead readers/viewers to systematically judge the rightness or wrongness of violence with little deliberation. Cerulo noted that this pattern was not universal, and she identified substantive and contextual elements—that is, the type of violence described, moral consensus surrounding the act, social instability surrounding the act—that temper the decision-making process. [See Altheide (2002, 2006) for related work.] Organizational researchers Srivastava and Banaji (2011) found important associations between cognitive styles, self-assessments of worth, and collaboration patterns in organizations—particularly in settings that value cross-boundary collaboration. They showed that cognitive styles greatly impact how people view themselves. When people engage in deliberative cognition, they view their worth more positively than they do when engaged in automatic cognition. Further, the less inflated views of self-worth that emerge from automatic cognition make people more likely to enlist and be enlisted to collaborate with colleagues who are organizationally distant. Counter to expectation, Srivastava and Baldassarri show that collaborative choices in organizations—particularly those governed by social desirability—are often guided by automatic, less conscious thought. Finally, Daina Harvey (2010) takes discussions of automatic and deliberate cognition in a promising new direction. Harvey explores the links between the configuration of social spaces and the ways in which these configurations beckon cognitive styles. He suggests that structured spaces tend to facilitate deliberative cognition, while unstructured spaces promote automatic cognition. Harvey's development of these connections has important implications for how and, perhaps, why we use culture in the process of thought.

HOT AND COLD COGNITION

Hot and *cold cognition* refers to another dual-process model of thought. Emotions distinguish the hot–cold continuum from the automatic-deliberate

model. Hot cognition involves a heightened response to stimuli, one largely driven by emotion. In contrast, *cold cognition* refers to unemotional, painstaking thought that involves rational analysis.

Technological advances play a major role in cognitive scientists' increasing interest in emotional cognition. Using fMRI, researchers watch thoughts and emotions as they develop in the brain; they then track the areas of the brain that seem most active in information processing. In this regard, Jonathan Cohen and colleagues research the links between moral dilemmas, emotions, and cognition, studying fMRI images that track subjects' reactions to different moral dilemmas (see, e.g., Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Cohen, 2005). The experimenters typically present subjects with two moral dilemmas. In the "trolley dilemma," a runaway trolley speeds directly toward five people. To save the group, subjects must agree to hit a switch, diverting the trolley to a side track where it will kill only one person. Contrast this scenario with the "footbridge dilemma." Here too, a trolley threatens five people. But here, the quintet can be saved only if subjects agree to push an adjacent stranger off a bridge and into the trolley's path. While the stranger is killed, the body will prevent the trolley from reaching the larger group.

In presenting the two dilemmas, researchers ask: Are subjects willing to flip the switch or push a stranger, and what cognitive style informs their decisions?" fMRI images show that subjects' reactions to each scenario activate different parts of their brains. The impersonal "switch flipping" taps the dorsolateral areas of the prefrontal cortex—areas associated with cold cognitive processes (i.e., working memory, abstract reasoning, and problem solving). In contrast, the personal "pushing" taps the medial frontal cortex, an area associated with emotional processing. These pictures suggest that switch-flipping feels more rational and reasoned—and perhaps more doable—than pushing another human onto the tracks.

Similar findings appear in studies addressing fear and self-protection. When faced with images of dangerous objects, Ohman and Mineka (2001) found that individuals process the images in different ways. "Natural" dangers—for example, pictures of spiders, snakes, or crocodiles—activate the brain's emotional centers, while "modern" dangers—for example, guns or electrical outlets—activate the brain's decision-making areas. Here, as in much cognitive science, evolution seems critical to the field's understanding of neural differences. Researchers argue that fear toward natural dangers is ingrained in the human body by centuries of survival needs; thus, natural dangers elicit a physiological response. In contrast, the fear of modern dangers has developed through learning and reflection, eliciting rational considerations.

Sociologists can add much to this explanation. Different reactions to natural and modern dangers may involve evolution. But these differences may be just as powerfully explained by situating these objects in social interaction. Consider snake versus gun. When it comes to a snake, one likely sees the encounter in terms of a simple, limited dyadic exchange. The two meet, consider finite options for attack, with one the victor ... or entity who cleverly (luckily?) escapes harm. The gun, however, presents a more complicated story. Is it my gun or someone else's? Am I aiming it or is it aimed at me? How skilled is the shooter ... how willing ... how far away? Is the gun in good working order? Is it real or a good facsimile? Will the shot be heard by someone nearby? If so, how will that affect the shooter's willingness to use the gun? In essence, the gun is part of a broader interactive scenario. Actor-network theorists such as Bruno Latour (2005) would say that the gun is an equal participant in social interaction—an "actant" that can make things happen. But a full understanding of this actant's role demands cold cognition—careful, painstaking thought that considers the nuances and options presented by the interaction in which the gun is embedded.

Several social movement scholars are exploring hot and cold cognition within the interactive history of certain collective actions (see, e.g., Gamson, 1992; Goodwin, Jasper, & Polletta, 2001a; Hercus, 1999; Jasper, 1998; Parker & Hackett, 2012; Robnett, 2004; Taylor, 2000; Taylor & Rupp, 2002). These scholars delineate the path from hot cognition to action. Because certain cultural events or arrangements may initially trigger hot cognition, while successful movement organizers must create the strategies and processes that will transform feeling into action (see, e.g., Goodwin, Jasper, & Polletta, 2001b; Reger, 2004). Often, this involves redirecting attentions of movement participants' from hot, emotional triggers to cold, deliberative triggers, as emotionally hot cognitions can escalate rather than overcome social conflict (Harcourt, 2002).

Beyond social movements, those studying decision making explore the role of hot–cold cognition in evaluation and subsequent action. In this regard, some researchers find that entities triggering hot cognition are better remembered and more readily applied than those triggering cold cognition. This finding proves important to those constructing surveys and questionnaires, as cognitive styles may significantly influence subjects' evaluative responses (van de Veld & Saris, 2004). It also proves important to our understanding of people's judgments and evaluations in areas as varied as criminal behavior (Van Gelder & De Vries, 2012), social justice decisions (Kunda, 1999; Stapel, 2003), management decisions (Kennedy & Vining, 2007), organizational sense-making (Weick, 2005), advertising effectiveness (Cerulo, 1995a), symbol acceptance (Cerulo, 1995b) and mathematical calculations (Roth, 2007).

GRADED MEMBERSHIP

Concepts are building blocks of thought, and many cognitive scientists believe that they exist as prototypes. Prototypes amplify or exaggerate the critical features of categories, focusing our brains exclusively on category "ideals." When we encounter something, we use mental prototypes and perform a process called *graded membership*. Using this cognitive style, we rank or place entities with reference to others in their class. Thus, when you shop for apples, your brain rapidly compares every apple you see to an ideal prototype. The more attributes the apple-in-hand shares with the prototype in your brain, the more likely you are to include what you see in the category apple *and* the closer you will rank it to the category's core ideal.

For cognitive scientists, graded membership has obvious results for the way we evaluate everyday life. The process forcefully establishes asymmetry as one of the brain's prominent modus operandi. Best case examples of a concept are overemphasized and highly detailed; anything less becomes increasingly nondescript, released, or distanced by the brain from active consideration.

Cerulo (2006) continues the story of graded membership, illuminating its social implications. She argues that the process contributes to a socio-cultural phenomenon she calls *positive asymmetry*. Positive asymmetry is blind optimism—a tunnel-vision directed to best-case scenarios and an accompanying disregard for worst-case scenarios. Cerulo's work documents the widespread nature of positive asymmetry, tracking its influence in key events in the life cycle, the sites of work and play, and in the organizations and bureaucracies that structure social life. Using interviews, fictional accounts, survey data, media reports, journalistic commentaries, and official records, she illustrates the frequency with which individuals, groups, and communities blatantly disregard worst-case scenarios. While definitions of best and worst change over time and place, Cerulo shows that the *tendency* to prioritize the best is rather constant.

How is positive asymmetry connected to the brain? Clearly, the brain has prototypes for worst-cases—that is the perfect storm, the unspeakable murder. Thus, how can one argue that graded membership and positive asymmetry are somehow connected? Cerulo shows that most communities maintain cultural practices that background half of what is in the brain (e.g., materials dealing with worst-cases or negative concepts). These practices harness the brain's propensity toward asymmetrical thinking—the mechanic or way we think—and encode that process into a much more targeted and specialized experiential bias. Asymmetry—the tendency to emphasize only best-case examples of any concept, is transformed to positive asymmetry—the tendency to emphasize only examples of the

best-quality cases. Cerulo unpacks three sets of practices that function in this regard: *eclipsing*, *clouding*, and *recasting*. She also identifies certain structural conditions under which these practices are more or less effective. These ideas have been applied by others to the study of educational aspirations (Reynolds & Baird, 2010), environmental disasters (Auyero & Swistun, 2009b), health risks (Armstrong, 2003; Fedson & Dunhill, 2007; Senier, 2008), leadership patterns (Hollander, 2009), political power (Freudenberg & Alario, 2007), privacy (Nippert-Eng, 2010), and surveillance (Monahan, 2010). By extending cognitive science with a culture and cognition perspective, these works show us exactly how social and cultural practices can complement, alter, or elaborate neural processes.

FUTURE ISSUES

The works reviewed here forward our understanding of culture, cognition, and the mind-body-environment link. However, further progress may demand a more dramatic paradigm shift, one that revisits current assumptions about cultural acquisition and redefines enculturation as a sociophysiological phenomenon.

Toward that end, Albert Bergesen (2004b, 2012) reviewed neuroscientific studies of language acquisition among babies. This research suggests that language skills precede humans' interactive capacities, with a finite number of mental rules driving our understanding of the social world well before enculturation and socialization begin. Bergesen contends that this makes enculturation "a more Chomskyan than Meadian process" (2004b, p. 368). At the same time, we must remain mindful that individuals regularly transform these finite mental rules into an infinite number of interaction possibilities, all occurring between different people with different goals and agendas, interacting across various times, places, and situations. For Bergesen, the mission of culture and cognition scholars is to explicate this intricate process and to understand the variable ways and conditions under which finite mental possibilities expand.

Several sociologists are taking promising steps in this regard. Like Bergesen, David Peterson (2012) accepts that certain universal capacities allow individuals to grasp the categories so necessary to social existence. However, he underscores the fact that the representation of these capacities varies by culture. Peterson contends that sociologists must do more than acknowledge this variation. They must attempt to identify and explain the mechanisms and conditions associated with specific forms of cognitive variation. Peterson offers a paradigm by which to accomplish this task, forwarding four specific roles that social and cultural elements may play in the development

of mind: (i) social facilitation—does culture provides conditions for flexible expressions of categories ... if so, under what circumstances? (ii) Social divisions—by what mechanisms does culture create variable divisions and boundaries in continua of experience? (iii) Social specification—can we track and compare the culturally specific expression of native intelligence and presuppositions? (4) Social construction—how does culture develop new concepts that establish systems of references and mechanisms of transmission?

In pursuing questions of enculturation, some have tied their theories to specific neurological processes. Omar Lizardo (2007, 2012), for example, merged neuroscientific work on "mirror neurons" with sociological work on "habitus." In so doing, he provides an exciting new perspective on enculturation. Neuroscientists tell us that mirror neurons form a network located in the prefrontal motor cortex of humans and other primates. They "fire" in response to visual stimuli that require motor response from such beings. They also fire when one simply witnesses or hears others making motor responses. (For example, the same neurons fire when I clap my hands or I simply see/hear another clap their hands.) Thus, mirror neurons take practical information based on specific observations and create generalized conceptual knowledge about the way objects "work." "Instead of knowing what objects are in a decontextualized sense," writes Lizardo, "mirror neurons allow us to know what objects are good for" (2007, p. 22). Understanding mirror neurons fills critical gaps in practice theory. Recall that Bourdieu rejected imitation as the means by which we acquire practical knowledge—but he had no satisfying alternative. If neuroscientists are right, mirror neurons provide social actors with two things: "the practical capacities productive of action" and "the practical, representation, coding, and comprehension of practical action—both for the self and others" (Lizardo, 2007, pp. 13, 14). This means that Bourdieu's habitus and the practical competences that form it need not be the product of explicit instructions or imitation. Rather, competences are activated by virtue of being surrounded by others who display the same competencies (Lizardo, 2007, pp. 17, 19).

Gabriel Ignatow (2007, 2009) also used cognitive science research to productively modify Bourdieu's work on enculturation. Ignatow taps studies that, in contradiction to Bourdieu, treat the habitus' cognitive and somatic components as inseparable and in constant reciprocal interaction. To illustrate the importance of centering mind–body connections in research on thought and enculturation, Ignatow compared individual's use of and reaction to embodied metaphors verses abstract language. Building on cognitive science research addressing schematic activation, Ignatow hypothesized that culture's effects on cognition and behavior is strongest when cognitive schemas are "understood to be embodied and when discourses are seen as containing bodily information that interacts with those cognitive schema"

(2009, p. 643). Ignatow tested his ideas with data from messages posted on two Internet support group sites—one identified as religious/orthodox and one as secular/modern. Ignatow expected both groups to vary significantly in their use of discursive tools. In tune with each group's moral culture, he expected religious/orthodox group members to favor embodied metaphors and secular/modern group members to favor abstractions. He also reasoned that the use of embodied metaphors would be more effective than abstractions in generating high group solidarity, allowing for a greater sense of cohesion in the religious/orthodox site. Following extensive content analysis of over 2000 posts, Ignatow found support for his hypotheses, concluding that "culture's effects on social bonding can be identified more readily when cultural structures are conceived as embodied cognitive structures, rather than as purely mental or behavioral patterns that operate both within the individual habitus and at the level of small-group discourse" (2009, p. 687).

CONCLUSION

Sociologists of culture and cognition are posing new questions—questions that need to be asked in louder and louder voices. What are the links between mind, body, and the contexts in which they are situated? Where does thought reside ... where and how is it initiated, developed, and transmitted? Sociologists are now beginning to explore these issues with a wider analytic lens, simultaneously mapping the neural, emotional, and sensory elements of thought as well as the patterns that characterize the sociocultural contexts in which thought occurs. Exciting answers are rapidly emerging, with sociologists now decidedly a part of this important interdisciplinary crosstalk. Stay tuned.

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