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What Are Dual Process Models? Implications for Cultural Analysis in Sociology

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Abstract

In this paper we introduce the idea of the dual process framework (DPF), an interdisciplinary approach to the study of learning, memory, thinking, and action. Departing from the successful reception of Vaisey (2009), we suggest that intradisciplinary debates in sociology regarding the merits of "dual process" formulations can benefit from a better understanding of the theoretical foundations of these models in cognitive and social psychology. We argue that the key is to distinguish the general DPF from more specific applications to particular domains, which we refer to as dual process models (DPMs). We show how different DPMs can be applied to a variety of analytically distinct issues of interest to cultural sociologists beyond specific issues related to morality, such as culture in learning, culture in memory, culture in thinking, and culture in acting processes. We close by outlining the implications of our argument for relevant work in cultural sociology.

Keywords

action, cognition, culture, dual process models, learning

INTRODUCTION

The Reception of Dual Process Models in Sociology

Beginning with Vaisey's (2009) highly cited paper, theoretical and empirical considerations of cultural phenomena from a "dual process" vantage point have rapidly proliferated in U.S. sociology. These include such highly debated issues as the link (or lack thereof) between discursively articulated "values" and action (Jerolmack and Khan 2014; Miles 2015; Summers-Effler, Van Ness, and Hausmann 2015; Vaisey 2008). In this way, dual process imagery has become one of the primary conceptual tools used by sociologists, especially those who take seriously the link between cultural and cognitive processes (Cerulo 2010;

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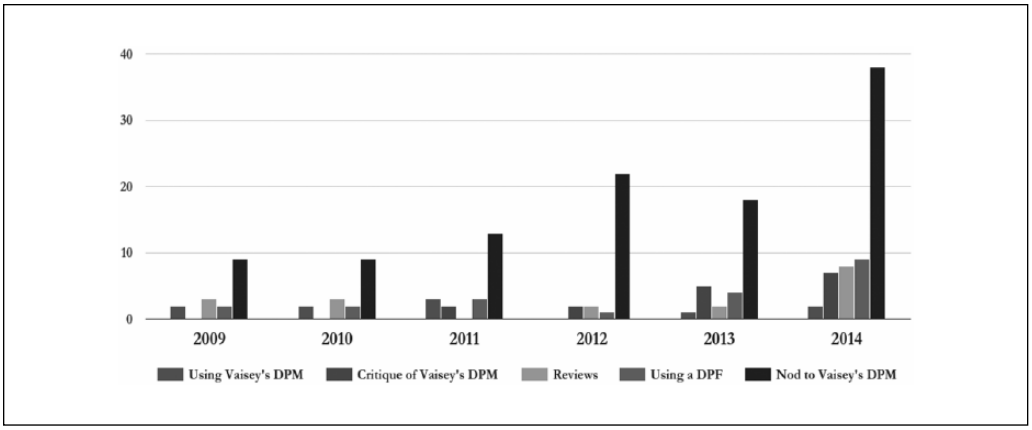

Figure 1. Citation analysis of articles citing Vaisey (2009). *N* = 174. Source: Google Scholar. Only peer-reviewed journal articles are included. DPF = dual process framework; DPM = dual process model.

DiMaggio 1997; Knorr-Cetina 2014), to motivate and theorize a now-growing list of empirical studies (e.g., Hoffmann 2014; Leschziner and Green 2013; Longest, Hitlin, and Vaisey 2013; Miles 2015; Srivastava and Banaji 2011; Vaisey and Lizardo 2010). The growing influence of the dual process imagery post-Vaisey has also begun to generate some critical backlash, as analysts debate the implications of the approach for both theory (e.g., Abramson 2012; Lizardo and Strand 2010; Patterson 2014; Swidler 2008) and method (e.g., Jerolmack and Khan 2014; Pugh 2013; Vila-Henninger 2015).

To give a sense of the reception to Vaisey (2009), we conducted a citation analysis of all articles referencing the paper from the year of publication (2009) through 2014. The results, shown in Figure 1, confirm the impression that the article has indeed been influential. In those six years, the paper received 174 citations, for an average of about 35 citations per year. As the figure shows, the number of citations increased over time; the paper received 16 citations in its first year and four times as many (64) in 2014.[1]

We also coded the extent to which each of the citing papers engaged the Vaisey article. The majority of citing articles offer only a passing acknowledgment (usually a one-sentence nod) to the general dual process idea (~62 percent).[2] This type of citation has grown the fastest, suggesting increasing popularization of the dual process notion in the sociological literature. The second largest group (~18 percent) consists of "dual process adopters," meaning that the authors either elaborate on Vaisey's particular version of the dual process idea or use a broader dual process framework (DPF). The last two groups include scholars incorporating Vaisey (2009) in general reviews of recent work in cultural sociology (~10 percent) and authors critiquing the dual process idea (~10 percent).

From this brief review, it is clear that interest in dual process imagery has grown steadily among sociologists and shows no signs of slowing. Furthermore, while some engagement with the dual process idea remains on a perfunctory level, a significant number of scholars are grappling seriously with the opportunities and challenges afforded by the notion of dual process for research at the intersection of culture and cognition.

Broadening Engagement with Dual Process Imagery

There is no question that contemporary engagement with dual process models (henceforward DPMs), including empirical applications and theoretical reassessments, has been

generally salutary for cultural analysis. Recent use of DPMs has allowed scholars to expand and re-engage substantive areas that had not been seen as amenable to cultural analysis and the postulation of cultural processes (e.g., poverty and inequality; see Frye 2012; Vaisey 2010), and it has forced cultural theorists to revisit fundamental conceptual issues (Leschziner and Green 2013; Lizardo and Strand 2010; Vaisey 2008). In spite of these positive developments, we argue that the relatively limited theoretical development of the dual process idea, and the coinciding polemical critiques within sociology, reflect a largely truncated understanding of the breadth of substantive issues for which the general dual process imagery could be useful for sociologists. This overly narrow understanding has resulted in underappreciation of the scope of the framework and the range of empirical domains for which it is applicable.

For instance, both proponents and critics of DPMs in sociology generally fail to distinguish general dual process theory in cognitive psychology—which is largely uncontroversial (e.g., Evans 2008; Smith and DeCoster 2000)—from more specific empirical proposals derived from the application of specific DPMs to substantive areas or specific phenomena (which are subject to intradisciplinary debate and contestation). Given the confusion and unproductive debate that result from this slippage, it is important to clarify the difference between general dual process theories and specific DPMs as well as to specify the difference between distinct types of DPMs in terms of both domain of application and empirical scope (Smith and DeCoster 2000). Sociological critics of the general dual process imagery must know what they are critiquing, and advocates must know what they are advocating.

Given the increasing importance of dual process theory and the conceptual confusion that attends it, we take up the task of reformulating what DPMs are and reintroducing them to a general sociology audience. To this end, we disaggregate and specify the general DPF, drawing on findings from the cognitive psychology of action and reasoning, moral psychology, and the social psychological study of attitudes and stereotypes. We do not intend to replicate previous introductions to DPMs that were crafted for an audience of psychologists (e.g., Chaiken and Trope 1999; Evans 2008; Sloman 1996; Smith and DeCoster 2000) but instead aim to present the full range of DPM choices available to cultural analysts interested in the culture-cognition link.

In the following sections, we show that in contrast to the overriding concern with DPMs of *action* in contemporary cultural sociology, there are four analytically distinct domains within which DPMs can be related to cultural processes. To that end, we elaborate four distinct phases of the enculturation cycle incorporating processes of cultural learning, encoding, and remembering, in addition to the "action" or "cultural use" phases typically engaged by Swidler (2001) and Vaisey (2008), among others. We believe that all four of these phases, and the associated processes, may be fruitfully conceptualized from the perspective of the DPF. Furthermore, we argue that these conceptualizations must be kept analytically distinct to forestall conceptual confusion and unwarranted extrapolation and to facilitate application of the theory to empirical research.

DUAL COGNITIVE PROCESSES REVISITED

Dual Process Models versus the Dual Process Framework

We begin by outlining some general considerations of dual process imagery in cognitive social science. Our analysis reveals that both critics and advocates of DPMs in sociology may have underestimated the generality, descriptive power, and analytic potential of the general dual process perspective for addressing pertinent problems in contemporary cultural theory. We begin by making a distinction between what we refer to as the

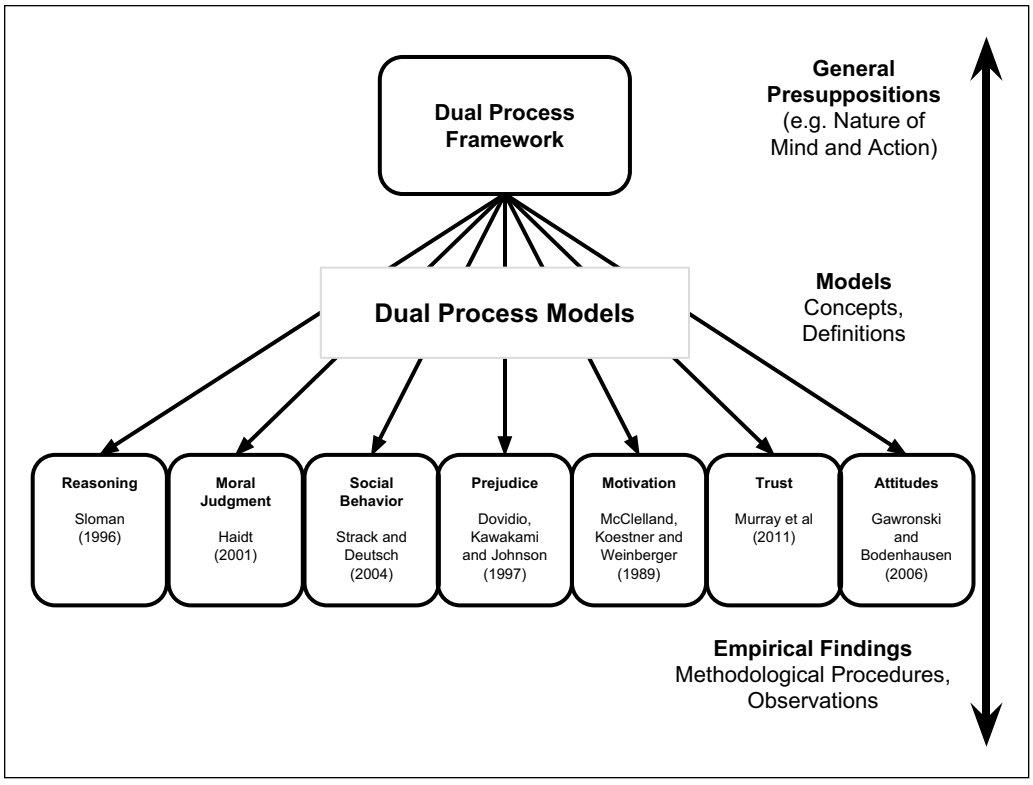

Figure 2. Alexander's ([1982] 2014:3) post-positivist epistemic continuum applied to the relation between the dual process framework (DPF), specific dual process models (DPMs), and empirical findings in cognitive and social psychology.

more general DPF and more specific instances of this framework to shed light on specific phenomena (e.g., attitudes, reasoning, moral judgment) in a given domain (DPM) (see Figure 2).

The DPF has become well established in social, cognitive, and personality psychology (e.g., Brewer 1988; Gawronski and Bodenhausen 2006; Haidt 2001; Sloman 1996; Strack and Deutsch 2004; for reviews, see Evans 2003, 2008; and Smith and DeCoster 2000; Kahneman 2011 provides an accessible introduction). In this respect, the general DPF distinguishing between Type I and Type II cognition has become largely uncontroversial and accepted by the majority of psychologists and cognitive scientists (Shepherd 2011:127).[3] Most of the debate today is not about the existence of multiple cognitive modes or processes but about their relative degree of independence or interaction (Evans 2008; Cunningham and Zelazo 2007; Mische 2010; Van Bavel, Xiao, and Cunningham 2012).

For this reason, the general DPF must be kept distinct from substantive claims pertaining to any one particular DPM as applied to a given set of lower-level phenomena (e.g., trust, reasoning, stereotypes, attitudes, morality), because these last may be subject to controversy, revision, and updating without this impinging on the overall validity of the general DPF. This is especially important for cultural analysts post-Vaisey. Analysts should acknowledge isolated applications and critiques of particular DPMs (e.g., the imagery embedded in Haidt's DPM of moral judgment from which Vaisey [2009] draws) as distinct from critiques of the entire DPF (see, e.g., Mische 2010; Swidler 2008).

Table 1. Dual Process Models of Cultural Learning, Storing, Thinking, and Acting.

Domain	Enculturation Phase	Type I	Type II
1. Learning	Acquisition of culture	Practical/ Embodied/ Implicit/ Slow learning	Conceptual/ Symbolic/ Explicit/ Fast learning
2. Remembering	Storage of culture	"Know how"/ Nondeclarative/ Distributed Representation	"Know that"/ Declarative/ Symbolic Representation/
3. Thinking	Processing of culture	"See that"/ Rapid and effortless/ Associative-Based/ Parallel processing	"Reason why"/ Slow and effortful/ Rule-based/ Sequential processing
4. Acting	Use of culture	Impulsive/ Automatic	Reflective/ Controlled

As an example of this problem, the incomplete reception of the DPF in cultural analysis risks reducing all DPMs to a distinction between "cognition" and "emotion" (e.g., Pugh 2013), which is an erroneous contrast from the standpoint of cognitive science (Phelps 2006) and increasingly so in sociology (Cerulo 2010:119–22; Ignatow 2009).[4] In contrast to this simplification, numerous analytic models, ranging widely in specificity, use a DPF. For instance, Smith and DeCoster (2000:124) distinguish between at least nine distinct domain-specific DPMs within the larger DPF umbrella, and Chaiken and Trope's (1999) now-canonical edited volume contains chapter-long entries on at least 12 distinct DPMs. In terms of post-positivist understandings of the dynamic of theory construction and theory change in science (e.g., Alexander 1982, 2014)—outlined in Figure 2—we may think of the general DPF as closer to the realm of general presuppositions, whereas the different DPMs belong to the realm of models, concepts, and definitions, which approach the empirical pole when applied in particular research endeavors (e.g., experimental protocols, process-dissociation techniques, survey design, interpretation of ethnographic observations, and interview data).

The General Dual Process Framework

The general DPF, in various manifestations, emerges throughout the history of social scientific inquiry, including sociology and economics, as a solution to the debate regarding whether basic cognitive processes involve the explicit logical manipulation of symbols, or implicit, parallel, and distributed pattern construction and recognition.[5] The answer, according to proponents of the DPF, is that cognition can be both sequential and parallel, symbolic and distributed. We refer to these two types of cognition in the DPF as Type I and Type II, following the now-standard convention (Evans 2008; see Table 1). Often, when cultural analysts in sociology make a distinction such as "implicit and explicit," "conscious and unconscious," or even "fast and slow," they are helping themselves to a key premise of the DPF.

Although there is a consensus regarding the dual nature of cognition (Kahneman 2011), specifying the composition, distinction, and interaction of the two types of cognitive process is an ongoing project (Cunningham and Zelazo 2007; Evans and Stanovich 2013), resulting in a rapidly growing number of domain-specific DPMs. What all DPMs share, however, is the presupposition that Type I cognition is characterized by slow learning, associative structure, and rapid, automatic, and effortless deployment in thinking and action. Type II

cognition, in contrast, is characterized by fast learning, propositional structure, and slow, deliberate, and effortful deployment. More important, these two processes can be dissociated (both in the laboratory and in ecologically natural settings), producing contradictory outputs for the same pragmatic task (Gawronski and Bodenhausen 2006; Sloman 1996; Smith and DeCoster 2000).

At the most general level, dissociation of the two processes provides the most convincing evidence they are distinct.[6] Such experimental strategies exploit that fact that Type II is both slow to deploy and relatively limited in capacity (Hagger et al. 2010). In experiments that use speed, such as implicit bias tests (e.g., Greenwald et al. 2009), priming studies (e.g., Katz and Hass 1988), or stereotype threat studies (e.g., Steele and Aronson 1995), participants are exposed to stimuli that activate Type I processes which are too fast to be noticed or bypassed by Type II processes. Experiments using effort to dissociate the processes often instruct some participants to complete a task requiring controlled and deliberate reasoning before taking a subsequent test. In these experiments, resources upon which Type II processes depend are usually depleted and thus temporarily hampered for participants asked to complete the extra tasks (e.g., Hagger et al. 2010; Yam, Chen, and Reynolds 2014).[7] The experimental evidence suggests that these processes are distinct yet may operate in tandem and are therefore recruited at all phases in which people learn, store, and use culture for thinking and action.

The Dual Process Framework and the Enculturation Process

In outlining what we mean by the enculturation process, we must note that this process is not confined to a single delimited stage; rather, essentially all stages of the enculturation process, from acquisition, to storage, to thinking and action, can be theorized from a DPF perspective. Here we skirt the more fine-grained, domain- or task-specific classifications of DPMs in cognitive psychology (e.g., Chaiken and Trope 1999). Instead, we propose four analytically distinct DPMs at a higher level of generality, which we believe is more useful for cultural analysis in sociology. A DPF conception of the enculturation process links distinct pathways and mechanisms of cultural exposure and transmission to correlatively distinct ways in which culture becomes "stored" in long-term memory (Smith and DeCoster 2000), cognitively processed, and ultimately linked to action.

Following cognitively motivated theories of cultural meaning, we conceive of enculturation as a process of internalization of cultural, experiential, and material patterns encountered in the external world via a developmental learning process with resultant consequences for cognition and action (D'Andrade 1981; Strauss and Quinn 1997). We conceive of internalization, in its turn, as the modification (e.g., strengthening of links) of neural pathways (Bloch 1991), which entails the encoding of cultural knowledge in distinct, long-term memory systems (Whitehouse 2004). A DPF conception of the enculturation process connects the distinct ways culture is internalized by people to correlatively distinct ways cultural representations are accessed and thus link into action (Strack and Deutsch 2004). DPMs in cognitive and social psychology may thus also be thought of as "dual state" models, because they attempt to theorize systemic diversity of both process (cultural access and use) and state (cultural encoding) variables (Smith and DeCoster 2000).

In this last respect, it is important to note that for every cultural "element" at the personal level, there is a "pragmatic task" that people use that cultural element to accomplish (Patterson 2014). This links theorized diversity in culture's encoded format to diversity in its use. This is an insight shared by the American pragmatists (e.g., Dewey, James, Peirce), social psychologists influenced by the Gestalt school (e.g., Kohler, Lewin), and

contemporary social and personality psychologists (e.g., Ferguson and Bargh 2004). For example, attitudes are knowledge structures used for evaluation purposes, and evaluations may, in turn, be used for a variety of goal-related actions at both the individual and institutional levels (Lamont 2012). In the same way, categories are used for purposes of classification, with classification influencing how we respond behaviorally and affectively to the objects so classified (Douglas 1966) and linking to institutional structures for sorting persons, objects, and situations (Douglas 1986). Finally, values are used for goal setting and thus action motivation in both the short and medium term (Eccles and Wigfield 2002). The motivation of action by values, in turn, helps account for the relatively consistent behavioral differences between individuals within the same social group (Miles 2015), across groups at a given time, and between members of the same social group over time (Inglehart 2006; Schwartz 2006).

LEARNING, REMEMBERING, THINKING, AND ACTING

DPMs have been developed to specify distinct pathways through which culture is acquired in "complementary learning systems" models (e.g., "fast" via a low number of exposures or "slow" via repeated exposures; McClelland, McNaughton, and O'Reilly 1995). In the same way, we find a family of DPMs concerned with theorizing and specifying the distinct formats or states in which culture so acquired is stored. We can thus differentiate culture as declarative, symbolic "rules," from culture as nondeclarative, subsymbolic associations between conceptual primitives (Sloman 1996). We also find DPMs that are concerned with theorizing how distinct cognitive processes operate on internalized culture depending on how encoded cultural information has been stored. We may thus differentiate between cultural resources that allow persons to effortlessly "see that" from resources that permit people to "reason why" (Margolis 1987). Finally, DPMs concerned with the culture/action linkage point to the fact that culture may link to practical "action" in two ways: either via a reflective process in which action is monitored and controlled through a deliberative channel, or via an "impulsive" process in which action occurs independently of an agent's will and intention (Strack and Deutsch 2004).

In the next four sections, we elaborate on the implications of the DPF for studying processes of cultural acquisition, storage, processing, and action. Because cultural sociologists tend to privilege Type II cognition (Jerolmack and Khan 2014; Pugh 2013; Vaisey 2009) and generally bring in Type I cognition only residually, if at all, many important cultural elements, processes, and consequences remain to be dealt with empirically (Bloch 1998; Shore 1996). Rather than being considered a critique of the limitations of our collective methodological tools, however, these sections should be read as a guide for linking the diverse data and methods within sociology to sound claims about the role of culture in the sort of interactional, institutional, and collective processes of interest to sociologists. More important, cultural analysts should note the vast untraversed terrain of cultural inquiry opened up by the DPF, ripe for sociological investigation.

Culture and Learning

Humans are born cognitively underdetermined (Berger and Luckmann 1966:65–6; Geertz 1973:68), insofar as our prenatal neurological hardwiring alone would leave us unable to navigate the world successfully. However, humans surpass all other primates in the extent to which we learn from each other and our environments (Parker and McKinney 1999; Tomasello 1999). It is now a consensus position in cognitive social science that cultural

development constitutes an integral part of cognitive development (Shore 1996). This topic has been central for sociologists since Durkheim's ([1915] 2008) attempt to propose a theory of the social origins of the categories of understanding and Parsons's "solution" to the utilitarian dilemma by postulating a cultural learning process productive of shared values (cognitive "internalization"; see Parsons 1964). With certain (mostly implicit) exceptions, sociological theories privilege a *single learning process*: either explicit (e.g., Parsons 1951) or implicit (Bourdieu 1990). Here we propose that cultural learning can be conceptualized from a dual process perspective.

To begin, it is important to consider briefly what learning is not. In short, "any view that construes learning as a process of pouring of information into a passive, 'floppy disk' brain, where it is then absorbed and stored in memory, is a totally outmoded and erroneous view" (Laughlin, McManus, and D'Aquili 1992:66; cited in Shore 1996:7).[8] Cultural learning does not consist of passive and homogeneous reception of bits of information. People not only respond differently to stimuli but also take in information in analytically and empirically distinct ways. As this implies, the task of the cultural analyst as it relates to cultural acquisition is in no way straightforward (Bloch 1998). In what follows, we review recent insights from cognitive social science with a view of highlighting their relevance for contemporary theoretical debates as to how people become "encultured."

So, how do we learn? The more detailed answer is that how we learn depends on what we are learning and what we are doing while we are learning. There exist two broad types of cultural learning, and these (not surprisingly) align with the Type I and Type II distinction typical of DPF-inspired models. The first has been called *explicit learning* (e.g., Hendricks, Conway, and Kellogg 2013) and generally corresponds to a Type II process as presented in Table 1. Explicit learning is generally considered to be effortful, is able to handle only delimited ("chunked") cultural elements, and requires an active, attentive learner. This type of learning is also referred to as "rule-based" or "propositional learning," given its dependence on the reflexive consideration of explicitly stated beliefs or statements on the part of the learner during the process (Gawronski and Bodenhausen 2006; Smith and DeCoster 2000).

The second type of learning—*implicit learning* (Reber 1993)—corresponds to a Type I process that is less effortful and can occur without the learner's active attention. In contrast to explicit learning, implicit learning may generate associations between traits and concepts based on simple temporal and spatial contiguity in experience, which is why it is also referred to as "associative learning" (Gawronski and Bodenhausen 2006). In this respect, it is important to keep distinct learning processes that operate via the formation of new associations gradually built and strengthened by repeated experiences versus learning via rules that can be explicitly encoded into memory after a single exposure experience. Whereas the former are not necessarily shared and do not require symbolic encoding, the latter must be explicitly represented in public symbols (Smith and DeCoster 2000:111).

Researchers are divided over whether learners must be intentionally attentive during the acquisition of cultural practices (Hendricks et al. 2013; for a detailed discussion, see Moors and De Houwer 2006), but research on automaticity in psychology (Bargh and Chartrand 1999) suggests that the implicit learning of associations can happen largely through low-resource, attention-independent, automatic processes. More important, this research suggests that a good chunk of cultural acquisition happens through these implicit pathways (Bloch 1991; Shore 1996). This supports the contention, foundational to practice theory, that we may "know more than we can tell" (Polanyi [1966] 2009:4).

Skill acquisition (see, e.g., Wacquant 2004) is a prototypical example of a Type I enculturation process. It figures prominently in classic (e.g., Sudnow 1978) and more recent (e.g., Wacquant 2004) "apprenticeship ethnographies," in which the sociological observer attempts

to become encultured into a practice or lifeworld via a Type I process. As the anthropologist of practice Gísli Pálsson (1994:901) notes, both fishing and doing ethnography require one "not mechanistically to internalize a stock of knowledge but to be actively engaged with an environment." In a similar vein, Bloch (1991:188) argues that, as it relates to complex tasks, becoming an expert

> involves the construction of a cognitive apparatus [i.e., schema] dedicated to cope with this sort of task. The establishment of that apparatus is slow, and while it is in construction there is significant improvement; however once it has been set up no further improvement becomes possible. A chunk or apparatus concerned with a familiar activity has thus come into existence in the brain as a result of repeated practice.

Type I learning processes are also behind acquisition of the implicit associations that have become the bread and butter of social and cognitive psychology for the past two decades (Greenwald and Banaji 1995; for discussion of implications for cultural sociology, see Shepherd 2011). In the same way, learning implicit categorization criteria from a large number of exposures to exemplars, which allows people to classify via inarticulable "family resemblances" rather than explicit rules, happens through the same (Type I) process (McClelland et al. 1995).

A growing body of evidence indicates that the processes underlying the two types of learning are distinct, are dissociable, and are put to use across situations in variable ways that may complement or interfere with one another (Cohen and Squire 1980; Sun, Slusarz, and Terry 2005). For example, skill acquisition, discussed earlier, is largely influenced by what an individual is doing while learning, information obtained from available feedback, and environmental conditions during the learning process (Fu and Anderson 2008; Sun, Slusarz, and Terry 2005). Taken together, this research suggests that as the complexity of the cultural learning task increases, the more Type I processes will be implicated (Lee 1995). In fact, if learners of a complex motor skill attempt to consciously focus on their movements, or even verbalize rules for task completion, this can hinder acquisition of the skill (Chauvel et al. 2013; Wacquant 2004; Wulf, McNevin, and Shea 2001). As a result, the (natural, built, and social) environment automatically engenders Type I cultural acquisition, which is largely outside conscious reflection (Bourdieu 1990).

Although we consider it useful to present the DPM of cultural learning as analytically distinct from the other models presented, it is in the context where a knowledge or a skill is to be changed (e.g., retooling, or "unlearning to learn") that this DPM bleeds across distinctions. For instance, Fu and Anderson (2008) find that, after a skill is learned, the ability to adapt the skill when conditions change depends on the memory system involved (see next section). People learn to adjust previously acquired skills slowly and are prone to error if Type II processes are active during the adjustment learning period. If Type I processes are primary, however, people learn to adjust a skill quickly as long as they have feedback about skill performance. This highlights that Type I culture, compared with Type II, takes longer to acquire through repeated practices, is more efficient when the task involves learning complex cultural elements (Bloch 1991), automatically incorporates more information from the environment, and is more difficult to change once acquired (Lizardo and Strand 2010).

Culture and Memory

DPMs developed for purposes of dealing with issues of "cultural storage" are best thought of as distinct memory states, rather than as models of the cognitive processes that operate on

those states (see next section).[9] According to this family of DPMs, memory is divided into two main types, commonly referred to as declarative and nondeclarative memory. Declarative memory (Type II) consists of consciously accessible memories of facts, symbols, and events; nondeclarative memory (Type I) consists of relatively less accessible procedural knowledge, habits, and dispositions. The two kinds of memory are sometimes distinguished as "knowing that" and "knowing how" (Ryle 2002) or "explicit" and "implicit" memory (Schacter 1987). Applied to cultural sociology, the DPM of memory rejects the claim that culture can be studied singly as explicit knowledge (declarative memory) and directs researchers to also study culture in its alternative, nondeclarative forms.

Declarative (Type II) memory is divided into three types: *episodic memory*, or the details and content of specific, time-bound events (Tulving 1983); *semantic memory*, which includes impersonal, propositional facts and conventional meanings of words (Squire 1992); and *autobiographical memory* (Brewer 1986), which uses both episodic and semantic memory to generate a personal life narrative (Conway and Pleydell-Pearce 2000) and incorporates temporal order within and between personal episodes (Glenberg 1997). We can say that declarative memory is "accessible," because one can think about and make explicit facts, episodes, and personal narratives; we can also say it is "representational," because it offers ways to model the external world. When social scientists record the words people say in interview settings, they are recording some form of declarative memory. This might be semantic memory in the form of facts of a personal ("I have seven siblings") or evaluative ("Having two married parents is good for children") nature, episodic memory in the form of first-hand accounts ("It was cold, dark, and dusty"), or autobiographical memory in the form of personal narratives ("The warehouse debacle happened just after my seventh sibling was born").

Nondeclarative (Type I) memory includes procedural memory (Cohen and Bacdayan 1994), or stored traces of skills and habits, as well as dispositions arising from things like priming, classic conditioning, and associative learning (Tulving and Schacter 1990). We can say that nondeclarative memory is "inaccessible" because it is impossible to directly recall it in a discursive way. For example, a person may talk about how to ride a bike, but the actual skill cannot be retrieved and transmitted like a declarative memory (Polanyi 1958). Similarly, a person may notice that she has a particular aversion to people of color, but knowledge of the aversion is limited to that. She may confabulate theories about the aversion, but the aversion itself is nonrepresentational and thus "implicit" (Greenwald et al 2009).[10] More important, a person may report an explicit attitude or evaluation (e.g., positive affect toward Hispanics) that is the opposite of her implicit evaluation (e.g., associating Hispanics with criminality), and she may have little knowledge of this discordance (Wilson, Lindsey, and Schooler 2000).

The two types of memory are distinct, but they work in parallel, as many experiences implicate both declarative and nondeclarative memory. A child bitten by a dog may acquire declarative knowledge (the fact of the dog bite and the episodic knowledge of it) and possibly also nondeclarative knowledge in the form of cynophobia (Squire 2004). Similarly, a skilled performer may have the nondeclarative procedural knowledge to perform a task as well as declarative vocabulary to explain what she is doing (see Sudnow 1978). However, such a coupling is not necessary—it is common to find skilled experts who lack the vocabulary to effectively instruct others (see Wacquant 2004).

Practically speaking, this dual understanding of memory requires researchers to specify which form they are accessing through their data (Bloch 1998). Catch-all definitions of personal culture that indiscriminately mix nondeclarative and declarative memory muddle explanations of cognition and action (Whitehouse 2004). Personal culture consists of both nonrepresentational skills, habits and associations, and (more or less) representational

episodic and semantic information. Thus, rather than looking at "culture" as a single set of elements or collapsing "culture" into a single dimension (e.g., values, beliefs, or habits), particular DPMs of cultural storage identify the precise formats people use for the pragmatic tasks of thinking and action in problem-solving contexts (Gross 2009). This reconsideration may pose severe challenges to some existing theories of culture and action (especially those that directly link semantic knowledge to habits and associations), but the promised payoff is greater clarity in understanding what people are doing with what type of culture and where.[11]

Culture and Thinking

The third domain of DPMs we review can be broadly conceptualized as oriented toward questions of "thinking," or the "processing" of culture once learned and stored. The key concern here is the relationship between parallel and sequential forms of thinking (Bloch 1991; Smith and DeCoster 2000; Strauss and Quinn 1997). In short, this family of DPMs deals with the question: How do we "think with" our cultural knowledge? This question is generally addressed by juxtaposing associative thinking with rule-based thinking. Or, as a complement to "knowing how" and "knowing that" in the previous DPM of storage, the DPM of culture in thinking can be divided into "seeing that"[12] and "reasoning why" (Margolis 1987; see also Martin 2010:233*ff*).

We suggest that although Vaisey (2009) advocates a DPM of culture in *action*, the DPM that cultural sociologists generally rely on when they refer to "automatic cognition" and "deliberate cognition" (e.g., Leschziner and Green 2013; Vaisey 2008; cf. Haidt 2001, 2005) is, in fact, not a DPM of how and why actors do things but instead a DPM of how and why actors deploy a given cognitive process in the way they do.[13] As such, we conceptualize this family of DPMs—the one most recognized within sociology—as a DPM of culture in thinking. We propose that we can gain analytic purchase by distinguishing between processes of thinking and doing; to that end, we move away from the generic focus on automatic and deliberate cognition (e.g., Leschziner and Green 2013). Instead, we think of this DPM in terms of *associative information processing* (Type I culture in thinking) and *rule-based information processing* (Type II culture in thinking). The association–rule distinction in human cognition naturally follows from psychological and neuropsychological research on learning processes and memory states, as touched on in the previous two sections. Where this DPM is unique, however, is its focus on processing—that is, its concern with how, when, and why actors draw on cultural knowledge already acquired through conceptual or practical learning stored as declarative or nondeclarative representations in the respective memory systems.

Type I culture in thinking refers to "the form of pattern-completion or similarity-based retrieval from the [practical] slow-learning [schematic] memory system, cued by salient features of the input" (Smith and DeCoster 2000:111). It implies the "spreading [of] activation" among cognitive structures that "bind" to one another via repeated patterns of coactivation in the past (Strack and Deutsch 2004). Put another way, associative thinking is the dominant "processing mode" (Smith and DeCoster 2000:110) for using information learned through subconscious observational or bodily repetition (i.e., implicit learning) and stored in a nondeclarative representation not immediately retrievable through deliberate means (although this link is an empirical matter). Type I culture in thinking thus involves automatic pattern recognizing, pattern filling, and pattern updating and is a top-down process insofar as it involves "assimilat[ing] data to existing prototypes" (Martin 2010:233).

Rule-based information processing, by way of contrast, is the dominant form of Type II culture in thinking. This involves a reliance on "symbolically represented rules that are

structured by language and logic" and are assigned truth-values (Smith and DeCoster 2000:111). Type II culture in thinking thus comes closer to the Weberian ideal type of cultural organization as a form of "logical logic" (Swidler 2001:206). Due to its encoding in (relatively) context-free symbols, Type II culture can be used for "offline" processes of reasoning, planning, imagining, anticipating, remembering, justifying, and narrating outside the action contexts under which it was initially acquired. In this sense, Type II culture in thinking—or bottom-up processing (Martin 2010:233)—is the paradigmatic form of cognition of interest to cultural sociologists (often to the exclusion of Type I). However, as one of the primary presuppositions of the DPF, Type II thinking is both slow (in terms of timescale) and limited (in terms of capacity) (Martin 2010).

Type II thinking is slower because it relies on *serial* processing—that is, manipulating or concatenating only a few discrete chunks of information at a time. Once, this serial manipulation was believed capable of processing seven pieces of information, plus or minus two (Miller 1956), but now this number is believed to be closer to four, plus or minus one (Dietrich 2004; Knorr-Cetina 2014). As this type of cultural information processing is not necessarily activated by the current action situation—it usually occurs "offline"—it requires the suppression of both stimuli from the current context and the automatic cognitive responses (i.e., Type I culture in thinking or even Type I culture in action, as detailed below) to environmental input (Glenberg 1997).[14] Therefore, such Type II thinking tasks as planning a shopping list for tomorrow or remembering yesterday's news will deplete the limited resource available (Baumeister et al. 1998; Hagger et al. 2010). This has the effect of impoverishing subsequent Type II information processing.[15] Taken together, this leads us to a conclusion already widely agreed upon among sociologists: Parsonian internalization of entire cultural systems of explicit norms and values, which are then consciously understood, are deliberately followed, and require effort to conform to, is an empirically unattainable end state (Martin 2010; Silver 2011).

Despite the limitations of Type II cultural processing outlined above, rule-based symbolic thinking is the *sine qua non* of cultural sociological research and theorizing, insofar as it is a useful heuristic (and, in the case of formal rules such as laws, an empirical reality) for understanding how actors deliberate, come to decisions, make sense of everyday life, and, more generally, "reason why" (Turner 2007). As such, Type II culture in thinking is not new to cultural sociology, but a sole focus on it has unduly restricted theoretical development in the field to deliberate reasoning (Type II) to the exclusion of intuition (Type I). Nonetheless, researchers in sociology—evidenced in much of the work cited above—tend to presume that the line between deliberate and intuitive reasoning, or the processing of explicit and implicit rules, is fluid (Leschziner and Green 2013). This leads to the problematic inference that such constraining rules are taken for granted until self-reflection, or a problem situation, brings them to the surface. The DPM of culture in thinking suggests that the sort of attention-focusing and sense-making that deploy implicit associations, and those that use explicit rules, are in fact distinct (Stoltz and Taylor 2015).

As noted above, Vaisey's argument has largely been interpreted as a DPM of culture in action. However, as suggested at the outset, we argue that the concepts of deliberate cognition and automatic cognition—which Vaisey (2009:1675) links to "'discursive' and 'practical' modes of culture and cognition," respectively—best approximate how actors *process* cultural knowledge rather than *use* cultural knowledge (although to the extent to which researchers see "thinking" as a form of "use," this distinction may be semantic). To be sure, Vaisey addresses a number of outcomes (indicators of action) whose variation is perhaps better accounted for through one-shot forced-choice answers to survey responses (indicators of automatic cognitive processing) as opposed to discursive answers to open-ended interviews (indicators of deliberative cognitive processing).

However, we contend that this approach conflates (offline) reported outcomes (e.g., consuming alcohol or drugs) with (online) action (the social process by which these materials come to be consumed). In this respect, we suggest that the distinction between outcome and action is consequential for theory and research. By conflating outcome and action and, subsequently, thinking with action, we risk missing what is cognitively distinct about each. For instance, perhaps justifying or motivating the use of alcohol or drugs in Vaisey's sample is unique from how respondents in the sample acquire and consume these substances. In this respect, and following the spirit of Vaisey's (2009) approach, we believe the question of whether a given form of culture in thinking (e.g., Type I or Type II) is connected to action-based outcomes should always be an empirical and not an analytic question. After all, there are programs of research in cognitive social science that, *contra*Vaisey, do proclaim the existence of strong correlations between Type II culture in thinking (e.g., reasoned action) and behavioral outcomes (e.g., Fishbein and Ajzen 2011).

Culture and Action

The final DPM is where the action is—literally. Although one could argue that thinking or judgment is a type of action (Ryle 2002), we find that analytically distinguishing thinking (as described above) from what people actually *do* in situations leads to the realization that cultural analysts very often study the former at the expense of the latter.[16] To put it another way, aside from some ethnographers (e.g., Khan 2011; Pagis 2010; Summers-Effler 2010; Wacquant 2004), the bulk of current work in cultural sociology focuses on what people say (or what they say they do) rather than what they actually do (Jerolmack and Khan 2014).

While the theory and research relating DPMs to action are not yet settled, the notion that DPMs can be extended to theories of action is not controversial (Strack and Deutsch 2004). Analytically separating the thinking from action DPMs is important because cultural analysts very often rely on data that get at (usually indirectly) culture in thinking and then attempt (with mixed success) to theoretically extend arguments to culture in action; this is an analytic move—the data themselves are not data of action (e.g., Swidler 2001; Vaisey 2008, 2009). Thus, despite Lamont and Swidler's (2014:160) claim that a "skilled interviewer could evoke a variety of interactional settings, social contexts, and institutional situations and can probe their meanings in ways ethnography can rarely do," one must recognize that this evocation is still simulated and imagined and is not actual action taking place in these settings, contexts, and situations (Eliasoph and Lichterman 2003). No degree of skill or prior experience can change the fact that in an interview, data are inherently constrained to thinking about imagined or recollected situations.

A key impediment to further progress on these issues is analytic and comes from the presumption that if a given line of activity is not reasoned or preceded by thought or a judgment, it is *ipso facto* not "action" (Campbell 2009). If this is true, then the discussion of DPMs for cultural sociologists could be restricted to the culture in thinking work dealt with in the previous section, and that is precisely how most people engage with Vaisey (2009). However, this Parsonian bias is both theoretically fallacious (because it tries to rule out what is or is not action via armchair gerrymandering) and empirically misleading. Work in the psychology of action has uncovered a variety of systematic types of action that share all of the Parsonian goodies, such as goal directedness, rational choice of means, and so on, that are set off without having to be preceded by elaborate intentions, judgments, or overt decisions based on reflective reasoning processes (Strack and Deutsch 2004). In particular, we argue (not surprisingly) that the field has converged around two ideal-typical views of the mechanisms that lead to coherent action in the world, and these map onto the Type I and Type II

distinctions characteristic of DPMs in other domains. We will refer to these ideal-typical views of action as Type I and Type II culture in action processes.

Type II processes implicate culture in action via intentional, controlled, and effortful mechanisms premised on planning and goal-setting prior to action. This ideal type aligns with Parsonian models wherein actors are reflexively aware of reasoning in the process of execution and the specific intentions of action (Archer 2010; Campbell 2009); these models are also consistent with "bounded" rational action approaches popular among sociologists (e.g., Hedström 2005). Alternatively, Type I processes involve culture in action via the automatic eliciting of action schemata durably (through repeated past experiences in Type I cultural learning processes) associated with the perception of affordances in a situation (Bourdieu 1990). This culture in action process is generally unreflective (although it could be brought to conscious awareness) and relatively effortless.

Note that this distinction is orthogonal to the goal-directedness ("purposive") dimension of action. In contrast to the Parsonian bias, in which only Type II culture in action processes are seen as "voluntaristic" and "goal directed" (Whitford 2002), the evidence suggests that both Type I and Type II culture in action may be evoked as part of a means-ends problem-solving process, as suggested by convergent evidence noted in the Culture in Thinking section. Because people learn, store, and use culture through either of these two pathways (as we describe above), action produced via the associative link of situational affordances and available action schemata is as "cultural" as action driven by the formation of "implementation intentions" that draws on the values (shared conceptions of the desirable) and is subject to the norms (shared rules prescribing or proscribing means to reach those goals) characteristic of a given institutional or social setting (Patterson 2014).

Accordingly, it is the degree of effort, controllability, automaticity, and awareness involved in action initiation and execution that becomes a main analytic (and, from the actor's perspective, phenomenological) differentiating factor between Type I and Type II culture in action processes (Bargh and Chartrand 1999). For instance, Silver (2011) argues that some actions, fitting the prototype of the classic Parsonian schema, require purposeful (and presumably "reflexive") effort, where one has to make oneself "perform." He also notes that a different class of actions (which fall under the Type I culture in action process) are actually elicited by the qualitative affordances ("moodiness") of the situation and thus do not require (nor are they experienced) as effortful. These actions may also, incidentally, constitute the bulk of the empirically observable actions that individuals perform in everyday life, as habit theorists have known for a long time (for the empirical evidence, see Wood and Neal 2007).

Despite variation in the degree of effort required to act, both Type I and Type II culture in action processes can be precipitated by intention. One can willingly choose to enact or to put oneself in a situation that elicits Type I culture in action, just as one can choose to step back from a situation and use Type II culture to formulate a plan of action. However, in particularly problematic situations, an actor may unintentionally be constrained to follow a line of action precipitated by a Type I process, despite having formed a previous intention to act through a deliberate and reflexive Type II process. This would manifest when an actor attempts to engage action in particular ways but, because of embodied habits, unintentionally enacts other forms of action (Wood and Neal 2007).

Type II culture in action is not only the most effortful, but it is also comparatively slow, subject to the working memory bottleneck (Martin 2010), and thus more difficult to implement successfully in practical contexts (Campbell 2009). Type II processes require more deliberate attention for enacting the specific scripts of action and, as such, are more vulnerable to subversion by exigencies and contingencies of the situation. Type II culture in action prototypically takes the form of consciously guiding oneself through various steps to reach

an outcome (Parsons 1935). This type of culture in action is subject to *akrasia* (weakness of the will), adaptive preferences, belief distortions, and other "subversions of rationality" (Elster 1984). The latter is a theoretically myopic use of the word *rational*, as Type I culture in action processes may partake of their own form of (in some contexts superior) "practical reason" (Bourdieu 1990).

Because action-schemata associated with Type I culture in action are directly activated by affordances in a situation, these processes generally occur effortlessly and are more likely to be resistant to situational contingencies, distractions, or competing influences outside an actor's control than are Type II action processes. Because of this, there are important asymmetries in the operation of Type I and Type II culture in action processes. Essentially, action-schemata elicited via Type I processes will always be "ready to hand" for a given actor in a given context regardless of intention to act. The only requirements are that the agent perceive the affordances and that an action schema appropriate to such an affordance (developed via either Type I or Type II cultural learning processes) is available in long-term memory. Of course, if a given course of action is elicited automatically via a Type I process, actors may draw on Type II cultural resources (if made available via a learning process) to either modify, redirect, or stop this ongoing action process, presuming that the motivation, resources, and capacity are present.

Research on culture in action DPMs suggests that whether Type I and Type II culture in action processes operate in concert, independently, or at cross-purposes is an empirical, not an analytic, issue. Here we remain as theoretically agnostic as possible, noting that the extant evidence points to all three empirical possibilities, depending on situational, interpersonal, intrapersonal, and even institutional features. For instance, in some situations, despite the effort to mobilize culture in action via Type II processes, one may unintentionally enact, once again no less "cultural," Type I habits, dispositions, or impulses. These action-control conflicts are not (as framed in the psychoanalytic tradition; e.g., Freud [1927] 2010) between "culture" and "not culture" (e.g., biology) but between two analytically different types of culture at the personal level.

It is thus important for cultural analysts to differentiate between these two culture in action processes to better specify their interrelationship. This should be done with an eye toward illuminating how situational/environmental conditions can encourage action through the use of one modality or the other. In the same way, and in contrast to "linked systems" formulations that propose a one-to-one correspondence between learning, storage, thinking, and action processes (e.g., such that Type I thinking processes always generate Type I action processes; for a related critique, see Van Bavel et al. 2012), we propose that both thinking and acting do not always align with respect to the use of Type I and Type II culture and, in fact, they can become disassociated or combined in empirically distinct ways.

DISCUSSION AND CONCLUSIONS

In this paper, we clarified the key components of specific models emerging from a common DPF. This approach to cognition is now largely uncontroversial across a variety of disciplines, from social and cognitive psychology to neuroscience and anthropology and, increasingly, sociology (see Figure 1). We suggested that debates among sociologists regarding the merits of DPMs can benefit from a more nuanced understanding of what exactly DPMs are. We also noted that the DPF—our term for a broad theoretical perspective that is now widely accepted across the social and behavioral sciences—needs to be distinguished from more specific applications of the framework to particular domains, which we referred to as DPMs. In this sense, DPMs are located at a lower level on Alexander's ([1982] 2014) epistemic

continuum (see Figure 2). Specifically, we suggest that different DPMs are applicable to analytically and empirically distinct cognitive processes and pragmatic tasks. We also identified how four key phases of the enculturation process can be characterized from a DPF perspective: In each case, separate Type I and Type II modalities (see Table 1) of these processes are present in given settings. We specify these four domains as encompassing learning, storing, processing/thinking, and acting. We now turn to the implications of this discussion for relevant work in cultural sociology.

In terms of how DPMs apply to learning, we began with the supposition that cultural learning is indispensable to cognitive development. Unlike most sociological accounts, however, we are explicit that there is no *single* learning process. We delineate two broad types of learning, Type I and Type II. The former refers to an implicit process whereby learning is less effortful, occurs more or less automatically, but is slow and requires multiple repetitions. Type II learning refers to a process that involves the conscious exertion of effort and is deployed in delimited instances marked by specific, temporally bounded learning goals. For most people, the early stages of mastering one of Chopin's études for piano require deliberate and painstakingly effortful learning of the Type II variety, whereas a pianist's lengthy journey from novice to technical master involves the slow, gradual accretion of embodied skills and rapid-fire associations through repeated practice, that is, Type I learning (see Sudnow 1978).

The next domain of the DPM we proposed is that of memory, which, we emphasize, is more of a state than a process. Memory comes in two varieties, declarative and nondeclarative, which again map onto our Type I and Type II distinction. Declarative memory involves the mental storage of episodic, semantic, or autobiographical information, whereas nondeclarative memory stores discursively inaccessible "know-how" regarding procedures and associative dispositions. We can distinguish here between "knowing that" Jefferson City is the capital of Missouri and "knowing how" to look up state capitals with a search engine. The latter, nondeclarative form of memory also stores implicit attitudinal or evaluative associations, such as unarticulated assumptions regarding gender, racial, ethnic, or other identity categories (Shepherd 2011). We advocate that cultural researchers specify the cultural learning and storage types they are examining rather than assume that the enculturation process is monolithic and undifferentiated. Differentiating the two types of culture storage will afford future studies greater clarity about what culture is actually doing and how and where it is done.

We argued that an important third domain is thinking, or the processing of stored cultural information. Type I corresponds to associative, automatic processing, whereas Type II involves slower, deliberate, rule-based reasoning. Type I processing involves tasks such as pattern completion or similarity-based retrieval of stored cultural knowledge that has been acquired and stored through gradual Type I enculturation or *enskilment* (Pálsson 1994). Type II processing involves the retrieval of encoded symbols for practical tasks, such as reasoning, planning, justifying, and designing (Leschziner and Green 2013). This latter type of cognitive processing is slower than "rapid-fire" associative processing, because it involves manipulation of discrete parcels of information. Our cognitive ability to do such tasks is limited to dealing with approximately four chunks at a time (give or take one). Knowledge about rule-based Type II processing is useful for cultural analysis in that it helps researchers pinpoint how actors deliberate and make decisions in everyday situations. However, recent sociological research that references DPMs of cognition tends to assume that the distinction between Type I and Type II processing is fluid (e.g., Leschziner and Green 2013). We wish to emphasize the distinctness of the two types, however, as research in cognitive and social psychology has emphasized (Smith and DeCoster 2000).

The final domain we described is that of action, which we analytically disassociate from thinking or processing. We find that, with some exceptions, much contemporary analysis of culture in action is, more accurately, analysis of culture in *thinking*. We noted that it is important to put more emphasis on the actual *doing* involved in culturally inflected action while respecting the analytic autonomy of the other DPMs and their relevance for cultural analysis. In the DPM of culture in action, Type I action involves relatively effortless, habitual activities requiring little conscious attention and done in generally efficient ways. Almost any routine or familiar task will suffice as an example. Type II action entails intentional efforts to realize specific intentions or goals, themselves often resulting from Type II rule-based processing. Of course, many actions broadly conceived that require a great deal of effort—such as forcing oneself to get ready to leave the house on a rainy morning—involve a number of smaller, effortlessly executed routine tasks (for an application of this distinction to role enactment processes, see Danna Lynch 2007). Additionally, actions that are deliberately executed at one temporal point may become routine and automatic at later junctures. Nevertheless, it behooves analysts to differentiate these separate types of action when developing cultural theory or making sense of empirical materials (e.g., observations "on" action).

More broadly, we argue that it is time to move beyond general debates about the overall validity or appropriateness of applying DPMs to social phenomena. A scientific consensus has been reached regarding this broad framework in the cognitive and social sciences (and has been implicitly used in sociological explanation since the advent of the "classics"), so it is more productive to debate the merits of applying particular DPMs to specific analytic and empirical realms (e.g., reasoning, morality, action) and to specify the role of social processes and mechanisms in discussions regarding the precise relationships among particular domains of the various DPMs (Shepherd 2011). Whether cultural analysts conceive of culture as internalized values (Parsons 1935), socially derived categories (Durkheim [1915] 2008), semiotic codes (Alexander 2003), or repertoires of skills and strategies that funnel and facilitate action (Swidler 2001), extant research regarding cultural elements and processes can be further extended and clarified by incorporating insights from specific DPMs. By using the appropriate DPMs, the relationship between particular methodological strategies and the empirical results they yield can be better specified.

NOTES

The idea for this paper emerged in a fruitful discussion in a graduate seminar on "Culture, Cognition, and Society" led by the first author in the spring of 2015 and in which all other authors were participants. Our names appear in alphabetical order to reflect the fact that this paper has been a collective endeavor through and through, from conception, to writing, to editing each other's words, although it did not take long for one of the authors to note the fact that, conveniently enough, this arbitrary convention still left the first author slot to be occupied by the more (institutionally) senior member of the group. In spite of that, this paper would never have come to fruition if not for Dustin Stoltz's vision, perseverance, and hard work (especially when it came to assembling the citation data) and as such he deserves special thanks. Dustin was the first one to "see" a paper where the first author just saw a set of smart points usable to impress students in a seminar context. Dustin herded all of the cats and made the seemingly quixotic attempt to write a seven-authored theory piece seem like a breeze. Of course, the intellectual input of all authors ultimately made the paper more than the sum of its separate parts, although we will spare you tired emergence analogies.

1. A Google scholar search of all articles published in *American Journal of Sociology* in their 114th volume shows that Vaisey (2009) was the second highest cited article published in the journal that year, behind only Breen, Luijkx, Müller, and Pollak (2009).
2. This category roughly corresponds to Sallaz and Zavisca's (2007:26) notion of a "limited citation."
3. Some "single process" formulations do still exist, but these are largely peripheral (see Burwell and Furtak 2008; Maquestiaux et al. 2010; Slotnick and Dodson 2005).

4. Haidt (2001:818), for instance, explicitly states, "It must be stressed that the contrast of intuition and reasoning is not the contrast of emotion and cognition. Intuition, reasoning, and the appraisals contained in emotions . . . are all forms of cognition." Despite being clear on this point, he later notes that "in fact, since writing 'The Emotional Dog,' I have taken upon myself a personal crusade of correcting people when they contrast 'affect' and 'cognition'" (Haidt 2004:286).
5. For instance, Vaisey (2009) references the contemporary sociological work of Anthony Giddens and Pierre Bourdieu, and Vaisey (2008) also links the dual-process framework to the habit theory of Aristotle.
6. Convergent neurophysiological evidence also supports this contention (Cunningham and Zelazo 2007).
7. For fruitful empirical applications of both of these approaches in cultural analysis, see Miles (2015) and Srivastava and Banaji (2011).
8. Although this clearly rules out naive rational choice models, many areas of sociology are guilty of deploying this faulty view of learning.
9. For a related content-process distinction, see Shepherd (2011:124).
10. Declarative memory (Type II) and nondeclarative memory (Type I) roughly correspond with Type II and Type I learning processes described above, respectively, but there is an important exception. Nondeclarative memories typically develop gradually over time through a slow-binding (Type I) learning process, but they can also develop rapidly through "one-shot" or "flashbulb" learning (Conway 1995). This is the case for traumatic or intensely affective experiences, which can create durable associations that shape future cognitions and behavior (Whitehouse 2004). Such memories are not necessarily more accurate but rather engender more confidence in actors regarding their accuracy (Talarico and Rubin 2003).
11. Regarding methodology, DPMs of memory attune researchers to the fact that particular methods are limited in the degree to which they can access or draw out one form of culture or another (as noted by both Vaisey [2009]—a sociologist—and Bloch [1998]—an anthropologist—in a different context).
12. This is not to suggest that Type I thinking is entirely visual. Not only does it incorporate all sensory modalities, but it generally does so in tandem, through a logic of Hebbian learning whereby all modalities practically relevant to identifying objects and possible actions are activated together (see also Barsalou 1999).
13. This is related to Gawronski and Bodenhausen's (2011:73) distinction between "operating principles" (thinking) and "operating conditions" (doing). Operating principles refer to "definitions of *what* a particular process is doing (e.g., activation, valuation)"; operating conditions, however, "represent empirical claims about *when* the process is operating" (p. 73, emphasis in original). In the case of a cognitive process such as valuation, for instance, cultural sociologists have, by and large, focused on questions of how (e.g., rapidly or slowly) actors assign value to a given entity and less on questions of when—that is, in what particular impulse- or reflection-oriented action environments—they assign value to the entity in the first place.
14. Taken to excess, this form of thinking would be "dangerous," because, for instance, "properties [of the environment] that should be controlling action (such as walking) are ignored" (Glenberg 1997:10).
15. A growing body of empirical work in social psychology explores the exact limitations of Type II processes and how, once depleted, this resource can be replenished (for a meta-analysis, see Hagger et al. 2010).
16. This development is largely a consequence of interviews being conflated with ethnographies and ethnographers' tendency to use interview methods that give primacy to discourse in naturalistic settings over interaction. To theorize culture in action, ethnographers should take their cue from Goffman (1989) and privilege what people do over what they say, so that "perspectives *on* action are not confused for perspectives *in* action" (Snow and Anderson 1987). Discourse is valuable for an ethnographer in so far as it is triangulated with other sources of data (see Snow and Anderson 1987:1343).

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