Evolutionary Psychology

www.epjournal.net – 2009. 7(2): 208-233

Original Article

# Evolution, Psychology, and a Conflict Theory of Culture

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**Abstract:** This article develops an evolutionary theory of conflict over the construction of culture that is informed by current knowledge of psychological mechanisms. Psychological mechanisms important for the production of culture include (1) general intelligence (including the ability to engender hypothetical scenarios and means-end reasoning necessary for constructing tools and other exemplars of technology); (2) explicit processing mechanisms (e.g., symbolic representations of the world). Explicit processing allows humans to regulate modular mechanisms in accordance with culturally constructed norms and culturally constructed cost/benefit payoff schedules. It also enables active attempts to construct culture in accordance with explicit perceptions of possible costs and benefits. Because people have different construals of the costs and benefits of particular forms of culture, there is conflict over the construction of culture. Social controls and ideologies are introduced as general cultural categories that are enabled by explicit processing and which are able to regulate and motivate behavior within particular historical contexts, at times in ways that conflict with evolved predispositions. Ideologies are often intimately intertwined with various social controls but are logically and psychologically independent from social controls. Ideologies typically rationalize extant social controls but they also benefit from the power of social controls to enforce ideological conformity in schools or in religious institutions. Because of the control of explicit processing over behavior, this theory predicts that conflicts over culture will often be intense. Discussion deals with the implications of this model for group selection, cultural transmission, gene-culture co-evolution, and the various types of conflicts of interest apparent in conflicts over the construction of culture.

**Keywords:** evolution, culture, explicit processing, ideology, social controls.

## Introduction

A major goal of this article is to argue for a conflict theory of some aspects of human culture. Theories of culture have focused on showing the conditions under which certain norms could have evolved (e.g., a reciprocity norm, Boyd and Richerson, 1988, or a norm of altruistic punishment, Boyd, Gintis, Bowles, and Richerson, 2003). Or they have stressed that random processes of imitation can give rise to some patterns of culture (Bentley, Hahn, and Shennan, 2004; Bentley, Lipo, Herzog, and Hahn, 2007; Shennan, 2006).

Here the focus is on within-generation conflicts of interest over the construction of culture as it relates to the control of human behavior in economically advanced societies. This perspective does not require any additional evolvability theory beyond previous work — in particular, Boyd and Richerson's (1992) article showing that with punishment anything can evolve. The emphasis on conflict within societies is certainly in keeping with general evolutionary considerations, since, in the absence of genetic identity, all organisms have conflicts of interest. Therefore, it is not surprising that people may have conflicts of interest over the construction of culture. More importantly for the present article is that humans have *perceived* conflicts of interest over the construction of culture made possible by explicit processing. It is then important to determine whether and to what extent the outcome of cultural conflict may affect biological fitness. This perspective also leads to a complex view of the relationship between human interests as proposed by evolutionary theory versus perceived interests that result from explicit processing.

A conflict theory of culture also fits well with influential non-evolutionary theories of culture such as Marxism. Marxism posits that economically dominant classes construct culture to serve their interests. A conflict theory of culture also accords with common observation of intense conflict over cultural issues (e.g., conflicts within legislative bodies over the teaching of evolution or prayer in public schools; conflicts over regulation of the content of media messages on aggression and sexuality). The idea of *Kulturkampf* is a well-established and much-studied phenomenon in historical societies (e.g., Ross, 2000).

The present approach is compatible with definitions of culture proposed by evolutionists. Culture refers to "information capable of affecting individuals' behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission" (Richerson and Boyd, 2005, p. 8). Sperber and Hirschfeld's (2004) definition of culture is similar, but they also emphasize that the information characteristic of culture is of general relevance to group members and that it is represented in people's minds and expressed in their behaviors and interactions. The present article expands on the mechanism for the production of culture, with the result that there is a greater understanding of the types of information that may be transmitted to others and a greater understanding of how this information may affect behavior — in particular the control function that cultural information may exert over human behavior.

Because of their interest in cultural transmission, evolutionary models of culture have tended to emphasize social learning (e.g., Richerson and Boyd, 2005) and paid less attention to mechanisms underlying the production of culture. Richerson and Boyd (2005) discuss operant conditioning as a mechanism for producing culture, followed by social learning for cultural transmission. Tooby and Cosmides (1992) propose that the mechanisms underlying the production of culture are modular, domain-specific

psychological adaptations interacting with local variation. Sperber and Hirschfeld (1999, 2004) expand on this perspective by showing that cultural variation can arise when artificial culture-specific input meets the domain-specific input requirements of the modules. Thus, the biological kinds module may be expanded beyond personally experienced animals to extinct animals like dinosaurs or imaginary creatures like dragons; moreover, the image of particular animals (e.g., the wolf as a dangerous predator) may be elaborated as a result of social communication.

This article expands on these mechanisms of cultural production. It is proposed that the psychological tools required to understand cultural conflict and its role in the control of behavior in economically advanced societies are general intelligence and, in particular, explicit processing. Explicit processing underlies humans' ability to regulate evolved modular mechanisms related, for example, to aggression, ethnocentrism, and sexuality in accordance with culturally constructed norms and culturally constructed cost/benefit payoff schedules. Moreover, explicit processing enables explicit construals of the costs and benefits associated with different cultural alternatives, and thus motivates behavior that attempts to influence culture. The result is a theory of culture in which humans are creative, intentional originators of culture that serves their perceived interests.

Explicit processing therefore gives rise to the possibility of characteristically human social controls (e.g., bureaucracies, legal systems) and ideologies (religious beliefs, political ideology) that are able to regulate behavior within a particular historical context, at times in ways that conflict with predispositions resulting from human evolved psychology. Discussion deals with the implications of this model for group selection, cultural transmission, and the various types of conflicts of interest apparent in conflicts over the construction of culture.

## Psychology and the generation of culture: General intelligence and explicit processing

### *General intelligence*

Human culture far exceeds anything found among animals. Cultural artifacts include a very wide range of technological innovations that cannot possibly be explained by mechanisms that are well known to exist among animals, such as operant and classical conditioning. Moreover, the cultural conflict theory developed below requires that humans at times make plans to influence culture (e.g., advertizing commercial products or promoting political candidates); humans also develop explicit theories of the possible costs and benefits of particular cultural forms and often act accordingly.

Evolutionary theories of culture have considered the possibility that domain general mechanisms of general intelligence are important for the generation of culture (Chiappe and MacDonald, 2005; Geary, 2005; MacDonald, 1991; Richerson and Boyd, 2000; Stanovich, 2004). This section fleshes out this proposal by briefly reviewing particular mechanisms of human intelligence revealed by current research and how they are involved in the production of culture.

Research on general intelligence shows that individual differences in intelligence predict the ability to attain goals in situations of minimal prior knowledge (Chiappe and MacDonald, 2005). For example, fluid intelligence is defined as "reasoning abilities [consisting] of strategies, heuristics, and automatized systems that must be used in dealing with 'novel' problems, educing relations, and solving inductive, deductive, and conjunctive

reasoning tasks" (Horn and Hofer, 1992, p. 88). Intelligence therefore taps conscious, explicit problem solving in situations in which past recurrences would be unhelpful, except perhaps by analogy or by induction, to the new situation.

One role of the executive functions associated with intelligence in solving novel problems is to manage goals. This involves constructing, executing, and maintaining a mental plan of action during the solution of a novel problem (Carpenter et al., 1990). For example, the Tower of Hanoi problem (in which participants must develop a plan for stacking rings in a particular configuration) requires that one to be able to activate multiple sub-goals and to keep track of the satisfaction of each of the sub-goals (Carpenter, Just, and Shell. 1990, p. 413).

Means-end reasoning and visualizing goals are critical to the production of cultural artifacts in the real world. For example, a hunter faced with conditions where meat or fish is only available seasonally may imagine ways of storing and preserving food for those times of the year when the resource is not available. This implies that the hunter would have to engage in mental time travel by being able to imagine that hunger will recur in the future and that it can be influenced by one's behavior in the present. The Bischof-Köhler hypothesis proposes that only humans can engage in mental time travel into the future because other species lack the ability to anticipate future need states (Bischof, 1980; Köhler, 1927; Suddendorf and Corballis, 1997). According to this hypothesis, animals may act to pursue current felt needs, but they do not act to anticipate predictable future needs such as assuaging hunger. For example, Cebus monkeys did not attempt to save or preserve food even though it was entirely predictable that they would be hungry the following day (see Roberts, 2002). Nevertheless, it should be noted that Osvath (2009) has described a chimpanzee who stockpiled stones to throw at zoo visitors in anticipation of an agitated mood state that accompanied the throwing activity.

Engaging in this sort of mental time travel requires executive function ability. The hunter would have to suppress the current desire to consume or waste the food and would have to imagine ways of preserving the food in a less appetizing form for later use. This implies executive functions, including response inhibition (i.e., suppressing the urge to eat the food immediately), response preparation (imagining a viable technique to preserve the food), and the ability to integrate action across time in order to attain the goal of food preservation (Wynn and Coolidge, 2003, p. 4). It also implies robust executive processes of working memory — that is, the ability to keep information from various sources (including information from modular mechanisms such as spatial representations [Chiappe and MacDonald, 2005; Geary, 1995, 2005]) active in one's mind and to combine it in order to solve a problem.

Another ability critical to the production of human culture is analogical reasoning. Analogical reasoning, which is correlated with general intelligence, draws parallels between novel problems and similar problems that have been solved in the past by transferring knowledge across conceptual domains (e. g., Chiappe and MacDonald, 2005). Analogical reasoning decontextualizes problems by stripping away irrelevant surface features of problems to focus on commonalities and abstract rules. Analogies require that the concepts and their properties be maintained in active state (implying executive processes of working memory) during the search for abstract similarities between the domains. At the same time, potentially distracting features of the two domains must be controlled (Gentner and Holyoak, 1997). This process may result in new cultural categories

as, for example, when the abstract concept of a wave is expanded from water waves to sound waves to light waves (Holyoak and Thagard, 1995). These new categories are often more abstract than the source and target concepts originally involved (Glucksberg, 2001).

The implications for a theory of culture are clear. People are able to imagine alternative scenarios and are able to devise creative, novel solutions to attaining or avoiding these scenarios, and they are able to use analogical reasoning to do so. This process creates new cultural categories as well as new artifacts designed to achieve these solutions.

*Explicit processing*

The research on general intelligence discussed above fits into a larger framework, that of explicit processing. Two types of processing, implicit and explicit, may be contrasted on a number of dimensions (e.g., Geary, 2005; Karmiloff-Smith, 1992; Lieberman, 2007; Satpute and Lieberman, 2006; Stanovich, 1999, 2004; See Table 1). Implicit processing is automatic, effortless, relatively fast, and involves parallel processing of large amounts of information.

**Table 1.** Characteristics of Implicit and Explicit Cognitive Systems

| Implicit System | Explicit System |
|---|---|
| Not reflectively conscious | Conscious |
| Automatic | Controllable |
| Fast | Relatively slow |
| Evolved early | Evolved late |
| Parallel processing | Sequential processing |
| High capacity | Limited by attentional and working memory resources. |
| Effortless | Effortful |
| Evolutionary adaptation or acquired by practice | Acquisition by culture and formal Tuition |

Implicit processing is typical of modules as originally conceptualized by evolutionary psychologists (Stanovich, 2004). That is, modules are functionally specialized mechanisms that respond automatically to domain-relevant information. When the environment presents long-standing problems and recurrent cues relevant to solving them, the best solution is to evolve modules specialized to handle specific inputs and generate particular solutions (Geary, 2005; Geary and Huffman, 2002; Tooby and Cosmides, 1992). For example, the visual system of monkeys and humans contains numerous areas specialized for responding to different aspects of environmental stimulation (e.g., cells sensitive to horizontal lines or to motion, respectively) (Zeki, 1993). Evolutionary psychologists have proposed a large number of modules, including modules for social exchange (Cosmides, 1989), theory of mind (Baron-Cohen, 1995), fear (Bowlby, 1969; Gray, 1987), folk physics (Povinelli, 2000), and grammar acquisition (Pinker, 1994).

Explicit processing is the opposite of implicit processing: conscious, controllable, effortful, relatively slow, and involves serial processing of relatively small amounts of information. Explicit processing is involved in the operation of the mechanisms of general intelligence described above; that is, it is involved in mental time travel, the creation of hypothetical scenarios, and in planning for future contingencies. Explicit processing is capable of utilizing linguistic input in order to produce explicit representations of context, including hypothetical representations of the possible consequences of actions.

The control processes associated with explicit processing are a relatively recent evolutionary innovation and may be uniquely human (Penn, Holyoak, and Povenelli, 2008). Explicit processing is centered in the prefrontal cortex which is at the apex of a hierarchy of processes that enables top-down control of behavior. The trend in primate evolution has been to deemphasize parallel processing typical of modules, "with widely converging and diverging connections between individual neurons," in favor of a serial, hierarchical design of top-down control of behavior that attempts to match behavior to intentions (Striedter, 2005, p. 340).

A critical point for an evolutionary theory of culture is that explicit processing is able to regulate and control, at least to some extent (depending at least partly on individual differences related to the personality trait of Effortful Control/Conscientiousness), the implicit processing characteristic of evolved modules (MacDonald, 2008). A similar phenomenon can be seen in the area of intelligence research. Humans can control automatic, heuristic processing and make decisions that depend on explicit processing. Controlling heuristic processing requires effortful, controlled problem solving and makes demands on attention and working memory resources. Stanovich (1999) provides evidence that people with higher general intelligence are better able to selectively control heuristic, automatic, socially contextualized processing. For example, people with higher general intelligence are more likely to give the logically correct response on abstract versions of the Wason Selection Task.[1] While the great majority of people respond correctly if the problem is phrased as a social exchange problem (Cosmides, 1989), correct responses on abstract versions of the task are correlated with higher IQ (Stanovich and West, 2000). Correct responses require controlling automatic but illogical responses based on surface linguistic similarities (Stanovich, 1999).

Similarly, drawing logical inferences from a syllogism with false premises requires creating counterfactual mental models and inhibiting a natural tendency for concrete thinking. That is, people tend to contextualize problems with as much prior knowledge as is easily accessible, even when problems are formal and the only solution is a content-free rule. The mental models involved in explicit problem solving include explicitly represented information involving language or images (Johnson-Laird, 1983).

[1] In abstract versions of the Wason Selection Task, subjects are asked how to falsify an "if p, then q" statement. For example, subjects are shown a set of four cards placed on a table each of which has a number on one side and a colored patch on the other side. The visible faces of the cards show 3, 8, red and brown. The subject is then asked which cards should be turned over in order to test the truth of the proposition that if a card shows an even number on one face, it has red on the other.

This type of logical reasoning is a critical component of the cultural production of mathematical and scientific knowledge aimed at finding abstract general laws as opposed to the socially bound, concrete, context-bound specificity of much everyday reasoning.

Explicit control of implicit processing goes far beyond the sorts of problems encountered in intelligence research to the control of internal feeling states and behavior based on explicit representations of cultural contingencies, including social norms (MacDonald, 2008). The basic logic is as follows: Evolutionary regularities result in affective states as a cue to action (Wilson, 1975). For example, evolutionary theories of fear propose that recurrent cues to danger (intense stimulation such as loud noises, evolutionary dangers such as snakes and heights, and social stimuli such as strangers or being left alone during infancy) are natural cues producing the affective state of fear (Bowlby, 1969; Gray, 1987). These affective states are emotional reflexes—the result of implicit processing utilizing thalamic pathways directly to the amygdala (LeDoux, 2000).

However, these emotional reflexes are subject to effortful control via explicit processing. The inputs to these explicit processing mechanisms include a very wide range of non-recurrent information—that is, information resulting not from evolutionary regularities (as in the prototypical modular mechanisms described by evolutionary psychologists) but from explicit appraisals of costs and benefits. These explicit appraisals are based on representations of context and they are sensitive to rapidly changing and unique cultural contexts rather than contexts that were recurrent over evolutionary time.

As indicated above, general intelligence is associated with the ability to control automatic, heuristic processing, and this ability requires decoupling from experience and forming mental models of hypothetical situations (Geary, 2005). In the effortful control of socioaffective behavior, the mental models typically involve explicit representations of the costs and benefits of behavior, and the prototypical conflict is between the phenomenal output of socioaffective implicit processing (e.g., negative feelings toward racial outgroups) and symbolic representations of the world (e.g., awareness of norms of appropriate attitudes toward racial outgroups). The latter are open-ended—constantly changing as a result of scientific advances, changes in laws and customs, and changes in beliefs and attitudes.

This implies that explicitly represented, linguistically formatted cultural representations may operate to control behavior. Consider an example of psychological conflict (see Morsella, 2005), such as a desire for food and a concurrent fear of predation because the food is located in an area frequented by predators. For most animals, such conflict is resolved simply by the summed strength of the competing implicitly processed action tendencies (hunger versus fear). This is a standard ethological account (e.g., Goetz and Walters, 1997; Lorenz, 1981; Tinbergen, 1951), and is consistent with Jeffrey Gray's (see Gray and McNaughton, 1996) comparator model in which signals from approach and avoidance systems are compared for their relative strength.

For humans, the outcome of such conflicts may also be influenced by explicit appraisals of the context: Is it possible to control or eradicate the predators using a technological innovation? Is eating the food taboo because of religious beliefs? Are there laws against harvesting the food so that taking the food would incur a risk of fines or a prison sentence? Conflict occurs not only because of conflicting signals from modules; there may also be conflicts between the output of modules and symbolic representations of the context.

While evolved modules are adaptations to environmental recurrences over evolutionary time, these symbolic representations are not responses to recurrent environmental features over evolutionary time, nor are they typically constrained by natural selection. For example, the symbolic representations that imbue the food with religious significance or that affect its legal status are not adaptations resulting from environmental regularities over evolutionary time—the formal requirement for adaptations adopted by evolutionary psychologists (e.g., Tooby and Cosmides, 1992).

These explicit assessments of costs and benefits need not be true and they need not be adaptive. For example, in the food example, explicitly held religious beliefs may be a reason for performing a certain behavior without the belief being true. Religious beliefs may be manifestly maladaptive, as Richard Alexander (1979) noted in commenting on the Shakers, a group that believed in strict celibacy. Or religious beliefs may be evolutionarily adaptive, as indicated, for example, by the finding that Mormons tend to have high fertility (Mosher, Williams, and Johnson, 1992).

The following briefly considers the interplay between implicit processing and explicit appraisals of cultural context in the areas of aggression and ethnocentrism (see MacDonald [2008] for details).

1. Aggression. Affective states resulting from evolutionary regularities place people in a prepotently aggressive state. Thus, Buss's (2005) evolutionary theory of aggression proposes that evolutionary regularities in the context of mating result in affective cues of sexual jealousy and anger at romantic rivals that are prepotent cues for aggression. However, whether or not aggression actually occurs may also be influenced by explicit evaluation of the wider cultural context, including explicit evaluation of the possible costs and benefits of the aggressive act (e.g., penalties at law, likelihood of detection and arrest given the state of forensic technology, security cameras, etc.)

People with sufficient levels of effortful control are able to effectively control their aggression in a manner that is thoughtful and reflective rather than impulsive. Thus Raine et al. (1998) found that impulsive murderers had relatively weak prefrontal control over subcortical regions linked to aggression. In contrast, predatory murderers whose crimes involved planning and deliberation had prefrontal functioning that was more equivalent to normal subjects, while also having high levels of subcortical activity linked to aggression. Results "support the hypothesis that emotional, unplanned impulsive murderers are less able to regulate and control aggressive impulses generated from subcortical structures due to deficient prefrontal regulation" (p. 319). Other data show that non-impulsive criminals take into account a variety of symbolically generated costs and benefits when making decisions on whether to commit criminal acts (see MacDonald, 2008).

These explicitly calculated costs and benefits are not recurrent over evolutionary time but are the result of explicit appraisals of current cultural contexts and producing mental models of possible consequences of behavior. Thus a criminal would be well advised to understand the various technological innovations that make detection easier, such as DNA fingerprinting. The cultural environment related to criminal detection and punishment is constantly changing and can only be appraised using mechanisms of explicit processing.

2. Ethnocentrism. People tend to have implicit negative attitudes toward people of other races and ethnic groups—attitudes that may result from evolutionary adaptations (e.g., social identity mechanisms; see MacDonald, 2008) or from learned associations such as social learning or spreading activation—the standard view of social psychology (e.g., Blair, 2001; Monteith and Voils, 2001). In either case, explicitly represented goals are able to control implicit negative attitudes toward racial outgroups originating in the amygdala (Wheeler and Fiske, 2005). For example, Cunningham et al. (2004) found that White subjects had a stronger subcortical (amygdalar) response to photos of Blacks than Whites if the photos were displayed for a very short period of time (30 msec) insufficient to be represented explicitly in the prefrontal area. But when the photos were displayed for a period (525 msec) sufficiently long to be explicitly represented in the prefrontal area, this difference in reaction to Black and White faces decreased, and the prefrontal region was activated. Results indicate "that controlled [i.e., explicit] processing can moderate, and even override, activity that would otherwise result from automatic processing" (Cunningham et al., 2004, p. 811).

Explicit cultural norms related to ethnocentrism and awareness of the costs involved in violating those norms are important input to prefrontal control mechanisms that operate via explicit processing. For example, White subjects who are told they are violating cultural norms of racial egalitarianism inhibit ongoing behavior in an attempt to bring responses more in line with cultural and personal norms (Monteith, Ashburn-Nardo, Voils and Czopp, 2002). That is, explicit information about subjects' automatic stereotyping that is incongruent with their expressed attitudes leads to longer response times as subjects attempt to bring responses in line with their explicitly expressed attitudes. Explicit control of implicit processing related to ethnocentrism is cognitively costly for subjects with strong implicit biases toward outgroups (Richeson and Shelton, 2003; Richeson, Trawalter, and Shelton, 2005). Moreover, cognitive distractions increase the implicit pro-White bias of White subjects (e.g., Devine, Plant, Amodio, Harmon-Jones, and Vance , 2002). In general, these results indicate that people with strong implicit biases rely on controlled processing resources to manage negative thoughts and stereotypes of the outgroup, but doing so depletes cognitive resources.

In conclusion, this discussion gives some indication of a rather complex psychology of culture involving analogical reasoning, means-end reasoning, the creation of mental models, and conflicts between implicit and explicit processing.

The perspective sketched here is compatible with evolutionary models of culture that see culture as an independent force in evolution (e.g., Richerson and Boyd, 2005). A major implication is indeterminacy. Rather than determined by universal psychological mechanisms interacting with ecological contingencies (Tooby and Cosmides, 1992), the explicit processing involved in human intelligence and in the regulation of evolved modular predispositions is creative and improvisational. Analogical reasoning and mental models of hypothetical future events are creative products of explicit processing, and they often result in novel artifacts capable of solving the ancient problems of survival and reproduction in novel ways. Or they may be used to write a sonnet or a symphony. These mechanisms also serve as the underpinnings of the artistic imagination capable of creating imaginary people,

relationships, events, and even impossible worlds. Finally, explicit processing enables active attempts to construct culture in accordance with explicit perceptions of possible costs and benefits—the topic of the next section.

## From psychology to history: Social controls and ideologies

Richerson and Boyd (2005, p. 95) point out that historical events are "embedded in a complex, historically conditioned frame, and all causes of events are local to that frame." This is quite correct. Nevertheless, equipped with an understanding of the psychology of explicit processing, it is possible to pinpoint two deeply interwoven but independent processes that are of general importance for developing a conflict theory of culture: ideology and social controls.

### *Social controls*

Social controls are restrictions imposed on people as a consequence of their membership within a particular society or group (MacDonald, 1983, 1990, 1994, 1995). In the literature on models of the evolution of culture, social controls are norms that involve punishment for transgressions (e.g., Boyd and Richerson, 1992; Henrich and Henrich, 2007). At the theoretical level, the theory of social controls depends on a classic article by Boyd and Richerson (1992) showing that with punishment anything can evolve. That is, punishment can maintain any set of social norms, including individually costly behavior that does not benefit either any individual or the group as a whole. This points up the fact that social norms need not be adaptive (Alexander, 1979). Durham (1991) discusses how the coercive imposition of cultural memes may result in the persistence of maladaptive cultural variants.

Importantly, social controls may prevent individuals from engaging in behavior they would otherwise engage in — particularly behavior that would result from evolved psychological mechanisms in the absence of social controls. In the examples elaborated below, monogamy by wealthy, powerful males and altruistic, self-sacrificing behavior within groups are analyzed partly as the result of social controls.

As in the case of ideology (see below), it is important to distinguish the concept of social controls as used here from idiosyncratic controls that result from the behavior of individuals without any social sanction. The difference is between, say, social controls and ideology that enforce and rationalize the institution of slavery versus a private citizen holding another person captive against his will and exploiting him. The former is part of the larger social context and may be enforced by powerful legal and military institutions, and supported by the media, academia, and popular opinion. The latter is idiosyncratic, although, if an important person was the victim of such an idiosyncratic event, it could certainly have historical consequences.

It is assumed here that animals are largely incapable of explicit processing (Penn, Holyoak, and Povinelli, 2008); in particular, they are incapable of linguistic and symbolic representations that are capable of guiding and motivating behavior (MacDonald, 2008). This does not imply that other organisms are incapable of evolving mechanisms that, for example, are capable of efficiently regulating behavior in a group and, for example, producing egalitarian outcomes. A prototype is the suppression of meiotic drive (see Frank, 2003). However, meiotic drive operates in a quite different manner than social controls

operating in human society.

The thesis here is that social controls and explicit ideologies that rationalize them are intertwined but independent processes in human societies. As conceptualized here, both of these processes require explicit processing — a perspective implying that the social controls and ideologies discussed here are uniquely human.

One possibility for conceptualizing social controls derives from modeling of altruistic punishment as a mechanism for maintaining cooperation in groups. For example, Boyd, Gintis, Bowles, and Richerson (2003; see also Henrich and Boyd, 2001) showed that cooperation can be sustained in large groups via altruistic punishment (i.e., punishment that incurs a cost for both the punisher and the one punished) in situations where defectors are rare and punishers common. These are models of idiosyncratic control because the model assumes that an individual punishes and incurs a cost for doing so that is not shared by other group members.

If explicit processing is added to the equation, things change considerably. Recent models of cooperation show that altruistic cooperation can be maintained if people have access to explicit information on others' histories of interaction in cooperative situations (e.g., Henrich and Henrich, 2007; Milinski, Semmann, and Krambeck, 2003; Mohtashemi and Mui, 2003; Semmann, Krambeck, and Milinski, 2005; Smith, 2005). For example, Semmann, Krambeck, and Milinski (2005) showed that participants were more likely to reward people with whom they had no direct experience if these people had developed a good reputation based on their previous behavior in a public goods experiment. In this experiment, people's reputation was made available by displaying a written record of their behavior on a computer screen. Other sources of explicit information on the reputation of individuals include verbal communication and written records. As Mohtashemi and Mui (2003; see also DeBacker and Gurven, 2006; Henrich and Henrich, 2007; Panchanathan and Boyd, 2003; Smith, 2003) note, information on others' reputations constitutes a collective memory of the past history of individuals made possible by language — that is, explicit representations of the past history of individuals in cooperative situations. In fact, explicit agreements to cooperate made prior to the prisoner's dilemma game result in increases in cooperation and decreases in competition during the game (DeBacker and Gurven, 2006; Orbell, van de Kragt, and Dawes, 1988; see also Smith, 2003).

Reputation is a social, not an idiosyncratic, phenomenon. That is, reputation consists of explicit representations of the past history of others that are held by a significant group of people. The costs of transmitting reputation are minimal, but reputation raises the cost of defection because it makes it unlikely that a defector will receive indirect reciprocity in the future (Semmann, Krambeck, and Milinski, 2005). In effect, the non-cooperator is ostracized in future interactions, not only with the people with whom he has had direct dealings, but also with those among whom his reputation as a non-cooperator has become known.

Reputation is also likely to lower the cost of punishing because the behavior of defectors can be quickly and widely known at minimal cost, thereby facilitating measures that spread the costs of punishment among the cooperators. "Posse"–type coalitions of punishers are able to inflict punishment on defectors while sharing the costs. Indeed, the ethnographic record shows that people readily band together to prevent despotic domination and free-riding. Human hunter-gatherer groups exhibit an "egalitarian ethic" in which people band together to circumscribe the power of leaders and punish free-riders

(Boehm, 1997, 1999; see also Smith, 2003). Low-cost forms of social control, such as gossip and withholding social benefits, are usually sufficient to control would-be dominators, but more costly measures, such as ostracism and execution, are recorded in the ethnographic literature.

Similarly, social controls operating within historically important groups are able to punish free-riders and enforce high levels of within-group charity (MacDonald, 1994; D. S. Wilson, 2002). For example, among Calvinists in 16th-century Geneva, those who violated religious norms were subjected to an escalating set of penalties ranging from private "brotherly admonitions" from the pastor, to public forms of shaming, and finally to excommunication which would mean expulsion from the city (D. S. Wilson, 2002).

In modern states, the police and the judicial system are empowered to punish non-cooperators. The costs for these enforcement institutions are not borne by individual punishers but are widely shared as a result of tax collection systems that are enabled by explicit processing. That is, the system depends on prospective defectors making explicit calculations of the possible costs (e.g., likelihood of a prison sentence) and benefits (e.g., likelihood of financial gain) to their actions in a situation with a host of features that were not recurrent over evolutionary time (e.g., electronic surveillance methods, legal mechanisms to enforce payment of taxes, etc.) (MacDonald, 2008).

The social controls that actually come to prevail in a particular society are often the result of conflicts of interest whose outcome is underdetermined by evolutionary theory. Basic evolutionary theory implies that, in the absence of genetic identity, there are conflicts of interest among individuals. In particular, there are conflicts of interest over social controls — which behaviors are controlled, who benefits from the controls (e.g., different controls may benefit wealthy, powerful males, lower status males, or the group as a whole), and whose individually adaptive behavior is constrained by the controls.

Particularly interesting from an evolutionary perspective are social controls that establish and maintain egalitarian versus anti-egalitarian economic or mating patterns. Consider, for example, sexual behavior among males (MacDonald, 1983, 1990, 1995). Evolutionary theory is highly compatible with the proposition that males within a society have conflicts of interest regarding the regulation of reproduction. In general, wealthy, powerful males benefit from unfettered access to large numbers of females because they can support multiple mates and provide adequately for their children. However, their doing so opposes the interests of non-wealthy males, since intensive polygyny by wealthy males makes fecund females a scarce resource for which they are ill-equipped to compete. These non-wealthy males would benefit from establishing a more egalitarian mating system. Monogamy qualifies as a relatively egalitarian mating system since wealthy males are prevented from maximizing their reproductive success by having concubines.

An interest on the part of non-wealthy males in establishing an egalitarian mating system is therefore highly consistent with the principle of self-interest and the other central tendencies of human behavior predicted by evolutionary theory. Evolutionary theory is compatible with the idea that humans will not only attempt to maximize their own reproductive success but also with attempts to minimize the negative differential between their own success and that of others. One way of accomplishing this latter goal is to cooperate with others in an attempt to impose egalitarian social controls on the variance in male reproductive success. Such a strategy of cooperation in an egalitarian group is expected to be the first choice of a relatively low ranking male, and in fact low-ranking

males are far more likely than wealthy males to have been supporters of economically egalitarian (socialist) revolutions in the, 20th century (e. g., the Soviet Union, China, and Cuba).

Evolutionary theory (in combination with any known ecological variables or any set of universal, evolved psychological mechanisms) fails to predict the outcome of this conflict. The general finding that wealthy males in stratified societies tend to be intensively polygynous is not surprising given the evolutionary theory of sex and the fact that despotism with intensive polygyny may be viewed as an individually optimal male reproductive strategy (Dickemann, 1979). This finding must, however, be viewed as a *probabilistic* rather than a determinate result.

From an evolutionary perspective, it is not the least surprising that conflicts of interest regarding the regulation of mating or economic activity occur in human societies. Social controls supporting mating or economic systems can vary along a continuum ranging from egalitarian to anti-egalitarian, and these different types of social controls are in the interests of different individual members of human societies. The successful imposition of social controls on others is always a possibility, but there is no reason to suppose that it is a necessity: If the Czar had won the war of the Bolshevik Revolution, no evolutionary or ecological laws would have been broken, and there would be no violation of any of the principles of evolutionary psychology. Historical events are indeed locally embedded (Richerson and Boyd, 2005) and influenced by events such as which army has better weaponry and tactics.

However, the success of the revolution resulted in a very different type of society, with very different types of social control than would have occurred had the Czar won. Moreover, the success of the revolution affected the biological fitness of particular groups. The Soviet government killed over 20 million of its own citizens, the vast majority in the first 25 years of its existence (Courtois, 1999). The previously dominant elites, bureaucracies, and commercial classes were purged, exiled, executed or imprisoned. If they remained in the USSR, they and their children suffered discrimination in employment and admission to universities and government service (Slezkine, 2004). It was a 'state against its people' (Werth 1999), mounting campaigns of collective punishment (usually involving deportation or forced starvation) against a great many ethnic groups, including Great Russian peasants, Ukrainians, Cossacks, Chechens, Crimean Tatars, Volga Germans, Moldavians, Kalmyks, Karachai, Balkars, Ingush, Greeks, Bulgars, Crimean Armenians, Meskhetian Turks, Kurds, and Khemshins as groups (Courtois, p. 1999, p. 10; Werth, 1999, p. 219ff).

Similarly, the social imposition of monogamy doubtless affected the relative fitness of males within the society because the fertility of elite males was confined to monogamous marriage with little possibility of divorce (MacDonald, 1995). At the extreme, social controls can institute a reproductive regime that dampens all sources of differences in reproductive success. An example is China’s one-child policy: Despite difficulties in enforcement, the policy has succeeded in its policy aim of reducing population. Fertility has been reduced to around 1.5 children per woman, far below replacement level (Baochang, Feng, Zhigang, and Erli, 2007). This implies that the social controls preventing people from choosing their own fertility largely succeeded in dampening differences in reproductive success and achieving the societal (group) goal of below-replacement fertility.

*Ideology*

The term 'ideology' requires some comment. The psychological research on explicit processing discussed above suggests defining ideologies as explicit belief systems that may motivate behavior in a top-down manner. That is, explicit construals of the world — for example, explicit construals of costs and benefits mediated in turn by human language and the ability of humans to create explicit representations of events — may motivate behavior. However, in order to be interesting and important for thinking about cultural conflict in historical societies, the belief system must characterize a historically significant group. The attempt here is to pinpoint the concept of a coherent set of beliefs that characterizes a significant group of people and motivates their behavior as described above — that is, top-down control of behavior via explicit processing.

Such a concept of ideology is differentiated from idiosyncratic beliefs. Idiosyncratic beliefs are certainly important from the standpoint of psychological functioning of individuals. However, in general, apart from the idiosyncrasies of particular powerful people (e.g., an idiosyncratic superstitious belief by a military leader that results in victory or defeat in an important battle), they are not an important component of historical phenomena. Ideologies are important because they characterize significant groups. They often define the group to its members, regulate relationships among group members and with non-group members, provide rationalizations for social controls, and explain the way things are and how they came to be (and, in some cases, even describe the way things will be after death).

This definition is essentially the same as that of Samuel P. Huntington (1957, p. 454): "By ideology I mean a system of ideas concerned with the distribution of political and social values and acquiesced in by a significant social group."

This concept of ideology is compatible with several other mainstream conceptions of ideology in political science. As Gerring (1997) notes, ideology has been defined in many ways and has been used for many political and academic purposes over the centuries. At their core, all reasonable definitions conceive ideology as a coherent set of beliefs (Gerring, 1997; Knight, 2006). However, as Gerring (1997, p. 983) points out, it is not reasonable to try to construct a single, all-purpose definition of ideology. For example, Gerring, a political scientist, restricts ideology to the political realm and differentiates ideology from the concepts of worldview, belief-system, cultural system, or value-system. Such a restriction is not important for our purposes.

Ideologies emphasize the idea that factors internal to the individual, such as an individual's personal beliefs and attitudes, often rationalize behavior and provide a proximate mechanism of motivation. The basis for this claim is the above analysis of explicit processing. That is, explicitly held beliefs are able to exert a control function over behavior and over evolved predispositions, and they are able to exert this control function independently of external processes of social control (e.g., punishment). For example, a person may refrain from engaging in a particular behavior to which he is predisposed as a result of evolved modules (e.g., various forms of aggression [Buss, 2005]), and he may do so because of he believes that he would be sent to prison, or because of he believes that he will be punished for it in an afterlife, or because he believes that it violates an important moral principle or God's law. The success of Calvinism in 16$^{th}$-century Geneva depended not only on the threat of externally applied sanctions, but also on the persuasiveness of the

explicit beliefs that constituted religious ideology (D. S. Wilson, 2002): Calvinists believed that the strictures of their religion emanated from God and that to disobey them would result in severe punishment in the afterlife. Without an internally motivated set of beliefs that resulted in self-control for the great majority of the inhabitants of Geneva, the task of controlling a city of that size according to Calvinist principles would have been impossible.

Evolutionary analyses of personal beliefs often propose that individuals tend to believe what is in their perceived self-interest (e.g., Wilson, 1978). For example, moral reasoning tends to reflect self-interest (Krebs, 2005; Krebs, Denton and Higgins, 1988; MacDonald, 1988). People tend to bias their moral judgments to favor self, relatives, and close friends; and they often engage in rationalization and self-deception in order to present their reasons in ways that present themselves in a positive light to significant others or to appeal to disinterested observers.

Nevertheless, beliefs and attitudes are products of explicit processing, so that there is no reason to expect a one-to-one correspondence between beliefs and self-interest (MacDonald, 2008). To the extent that beliefs are influenced by modular adaptations that reflect recurrences in the EEA, they may be maladaptive in the radically changed environments of the modern world. For example, there is evidence for modular mechanisms that influence male perceptions of female attractiveness resulting from natural selection for a correlation between fertility and attractiveness (Singh, 1993). These modular mechanisms may result in maladaptive negative appraisals of some women because they fail to reflect changes in fertility technology. Moreover, explicit processing is resource-limited and fallible, so that explicitly held beliefs about anticipated consequences of one's actions may be inaccurate. One may have inaccurate beliefs about the costs or benefits of behavior because of inaccurate or incomplete information about rapidly changing and complex modern environments.

While individually held beliefs may well be maladaptive, there are special additional reasons that may result in the maladaptiveness of ideologies for at least some of the people who believe them. Together, these reasons indicate that ideologies are logically and psychologically separate from social controls. Like social controls, ideologies are likely to be relatively insensitive to individual self-interest. Ideologies often characterize virtually an entire society (e.g., communism as an official ideology in the USSR; the supra-ethnic, supra-regional status of Christianity in medieval Europe [Lynch, 1992, p. 71; Tellenbach, 1993, p. 58], or Islam as the official religion in some contemporary societies). Ideologies may also characterize the vast majority of people who belong to voluntary subgroups within a society (e.g., a Protestant religious denomination in the United States). In at least some cases, authorities (e.g., in a state such as the Soviet Union) are able to promulgate an ideology because of their control over education and the media, and they may be able to punish dissenters because of their control over the police and the judicial system. As a result, individuals who do not benefit from adopting the ideology will be socialized to do so or punished if they fail to publicly support the ideology. As discussed further below, ideologies are often intimately intertwined with various social controls — rationalizing the controls but also benefitting from the power of social controls to enforce ideological conformity in the schools or in religious institutions.

Like social controls, the imposition of ideology is the result of conflict within societies. As in the case of social controls and also because ideologies are so often intricately bound up with social controls, evolutionary theory is unable to predict which

ideology will prevail in a particular society. Ideologies may be egalitarian or anti-egalitarian. They may promote the deregulation of human behavior or they may rationalize strong social controls on behavior. As in the case of social controls, if the Czar had won the war of the Bolshevik Revolution, no evolutionary or ecological laws would have been broken, and there would be no violation of anything we know about evolutionary psychology. However, the success of the revolution resulted in a very different type of society, with a very different official ideology than would have occurred had the Czar won.

Indeed, as noted in Resolution 1481 of the Council of Europe (Council of Europe, 2006), mass murder was a well-articulated aspect of the ideology of communism:

> The crimes [of communism] were justified in the name of the class struggle theory and the principle of dictatorship of the proletariat. The interpretation of both principles legitimised the "elimination" of people who were considered harmful to the construction of a new society and, as such, enemies of the totalitarian communist regimes. A vast number of victims in every country concerned were its own nationals. It was the case particularly of the peoples of the former USSR who by far outnumbered other peoples in terms of the number of victims.

The indeterminacy of the outcome of the internal political processes resulting in ideology should be emphasized. Ideologies can be influenced by historical events such as the outcome of battles, or the religious conversion or death of a leader which are themselves underdetermined with respect to evolutionary/ecological theory. For example, the outcome of the Battle of Tours in 732 and the Battle of Vienna in 1683 halted the advances of Islam into Europe and therefore had major effects on the religious ideology (as well as the genetic profile) of the area. Similarly, Donahue (1979) showed that marital property law in England and France in the 13$^{th}$ century was influenced by the success of the Norman invasion. Both countries had similar agricultural economies and a similar feudal social structure, as well as a similar ethnic composition and ecclesiastical influence. However, because of the success of the Norman invasion in the 11$^{th}$ century, there were differences in the power of centralized political control between the two areas, with the king being much more powerful in England than in France; there was also a correspondingly greater power of aristocratic families in France as well as a generally greater importance of extended kinship groups in the latter area.

Notice the rich interplay between evolutionarily expected tendencies and historical circumstance here. Kinship is expected to be of great importance in an evolutionary account of human affairs because of its role in lowering thresholds of cooperation and altruism within the group. This power of the extended family, however, conflicts with the power of centralized authorities, and in this case the outcome of this conflict over the construction of property law was influenced by the outcome of a particular battle. The point here is that the relatively stronger central authority in England cannot be meaningfully related to what we think of as ecological variables. However, *given that certain events occurred*, then the disintegration of extended kinship and the establishment of a new form of property law are expectable.

*Social controls and ideology are mutually reinforcing*

Social controls are typically embedded in ideology. For example, after the

Bolshevik Revolution, the ideology of Marxism rationalized the strong social controls on individual behavior that came to characterize the Soviet state; and the strong social controls of the state buttressed the official communist ideology by, for example, dictating that communist ideology be taught in schools and disseminated by the media, punishing individuals who publically dissented from the ideology, and by eliminating competing institutions, such as the Russian Orthodox Church, with incompatible or anti-communist ideologies. The same could be said for National Socialism in Germany from 1933–1945.

In liberal democracies there are social controls supporting the ideology of the market economy, and the ideology of the market economy legitimizes laws protecting private property. School curricula are often the focus of impassioned public debate among advocates for ideologies of, for example, creationism, evolution, ethnic and religious holidays, and multiculturalism. To the extent that they are successful, advocates for these ideologies utilize the power of the state to impose their ideologies in the public socialization process for children. Similarly, people who control media are able to influence ideologies that infuse media content (e.g., the portrayal of sex roles in children's cartoons), and dissenters are able to attempt to influence media content by organizing boycotts or establishing their own media outlets.

The existence of ideological dissenters in at least some cases indicates that social controls and ideologies are logically and psychologically distinct. That is, people can dissent from ideologies even when these ideologies are enforced by social controls. For example, someone who believes in the theory of evolution and wishes that it be taught in schools might maintain his or her beliefs even in the face of the prospect of punishment. An opponent of communist ideology in the USSR in the 1930s might maintain his or her views even in the face of dire consequences should those beliefs become known. Such oppositional ideologies are common in historical societies, and at times they give rise to social movements that attempt to topple official, state-coerced ideologies, possibly yielding new forms of social control more in harmony with the oppositional ideology.

Because sexual behavior is influenced by a variety of evolved predispositions and is intimately bound up with biological fitness, it is of particular interest to describe how social controls and ideology have been able to regulate sexual behavior in historical societies. Mutually reinforcing social controls and ideology may be seen in the maintenance of socially imposed monogamy in Europe from the medieval period down to the present. There is evidence for the importance of the following social controls (MacDonald, 1995): prohibitions on divorce, prohibitions on endogamy, penalties for illegitimacy, and controls on concubinage by elite males. Controls were enforced with a variety of mechanisms, including ecclesiastical courts, secular courts, and various interest groups (e.g., attorneys expanding tort law to include victims of divorce, authorities enforcing bastardy laws because of fears of effects on the poor rates, women bent on controlling the behavior of their husbands, popular movements aimed at the sexual behavior of elite males). These social controls were reinforced with the following ideologies: celibacy as a morally superior lifestyle; the sinfulness of extra-marital sex of any kind; the sinfulness of sexual pleasure, even within marriage; the severe punishment that awaited violators of these sexual mores in an afterlife.

## Discussion

*The transmission of culture*

Evolutionary models of culture have been primarily concerned with cultural transmission (e.g., Richerson and Boyd, 2005), with the result that theorists have focused on social learning as the prime psychological mechanism involved in the transmission of culture. The present treatment does not dispute the importance of social learning. However, the discussion of social controls and ideology also implicates another mechanism for the transmission of culture: Once there is in place a set of social controls and a mutually reinforcing ideology that rationalizes those social controls, the stage is set for a considerable degree of inertia in the transmission of culture. This is partly because there will be substantial homogeneity in the attitudes and beliefs of parents as socializing agents. Moreover, parents who accept the ideology will receive powerful support because, due to social controls, the ideology may dominate the educational system and the media available to children. Even if parents are successful in transmitting heterodox ideologies during childhood, the child will eventually be subjected to orthodox ideology in the educational system and in the media. The social controls supporting the ideology may also include punishments imposed on people and groups, including parents who attempt to transmit incompatible ideologies.

Such mechanisms of cultural transmission have been common throughout history, ranging from the domination of education by religious authority for centuries Europe to the transmission of communism in the USSR. Dissenters attempting to promulgate their own ideology have often been treated harshly, as in the Spanish Inquisition and the gulags of the Soviet Union.

*Group selection*

The stress placed here on social controls and ideologies may be seen as examples of group-level processes capable of giving rise to natural selection between groups. In a famous passage, Darwin shows that he was well aware of the power of groups capable of high levels of within-group morality:

> It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children of the same tribe, yet an increase in the number of well-endowed men and advancement in the standard of morality will certainly give an immense advantage to one tribe over another. A tribe including many members who, possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, who were always ready to aid one another, and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection. At all times throughout the world, tribes have supplanted other tribes; and as morality is one important element of their success, the standard of morality and the number of well-endowed men will thus everywhere tend to rise and increase (Charles Darwin [1890, 132], *The Descent of Man and Selection in Relation to Sex*)

Theorists have shown that cultural differences between groups can give rise to group selection (Sober and Wilson, 1998; Boyd and Richerson, 2002). The point here is that the processes that are critical for group selection among humans are those discussed in

this article: Social controls and supporting ideologies are able to enforce discipline within groups, punish defectors, encourage patriotism and obedience to group aims, produce significant levels of altruism, and regulate variation in reproductive success (MacDonald, 1994). For example, because of increased internal solidarity and cohesiveness, groups characterized by social imposed monogamy or socially imposed altruism may well have increased reproductive success compared to groups in which individuals (and especially wealthy, powerful individuals) are free to pursue individually optimal reproductive strategies. Thus Richard Alexander's (1979) theory of socially imposed monogamy implies that monogamy is adaptive in between-group competition because it results in greater group solidarity and ensures the allegiance of lower-ranking males.

*Gene-culture co-evolution*

Theories of gene-culture co-evolution stress the idea that cultural shifts set the stage for genetic changes (Durham, 1991; Henrich and Henrich, 2007; Soltis, Boyd, and Richerson, 1995). There is good evidence for gene-culture co-evolution of genes for lactose tolerance and fighting infectious diseases and parasites (Durham, 1991). There is also suggestive evidence for selection for genes influencing personality (e.g., delay of gratification) and cognitive abilities as a consequence of the invention of agriculture (Cochran and Harpending, 2009). Relevant to the present article, the relatively powerful social controls resulting when agricultural societies supplanted hunter gatherer societies may have resulted in selection for genes influencing conformity. Harpending and Cochran (2002) interpret available data as suggesting natural selection for the 7R allelle of the D4 dopamine receptor gene that is associated with novelty seeking, impulsivity, and attention deficit hyperactivity disorder. However, this allele is absent in China, although alleles derived from the 7R allele are common. Cochran and Harpending (2009, p. 112) suggest that this pattern may be due to high levels of social controls weeding out non-conforming individuals. "The Japanese say that the nail that sticks out is hammered down, but in China it may have been pulled out and thrown away."

*Conflicts over the construction of culture*

A major theme of this article has been that understanding the psychological mechanisms underlying culture leads to a rich theory of conflicts over the construction of culture. If culture is as important as some evolutionary theorists claim (e.g., Richerson and Boyd, 2005), then it is not surprising that there are conflicts over the construction of culture.

Explicit processing, including means-end reasoning, enables conscious, intentional attempts at cultural influence. An advertizing campaign designed to influence consumers to purchase a product is a paradigm. In the contemporary world, such campaigns involve means-end reasoning, explicit mental models, and explicit evaluations of probable outcomes on the basis of scientific studies to determine which messages are most effective with which audiences. They may be designed to appeal to well-known psychological biasing mechanisms that influence social learning, such as endorsement by prestigious people or associating the product with the satisfaction of sexual desires.

The incorporation of explicit processing into an analysis of culture opens up a very large and indeterminate universe of possible costs and benefits. On one hand, humans are equipped with mechanisms able to control evolved prepotencies (although there are individual differences in the ability to control evolved predispositions). On the other hand,

people are exposed to an often bewildering array of cultural messages that affect their explicit appraisals of costs and benefits and even their implicit appraisals of costs and benefits in situations where learning has become automatic with practice. These appraisals may be influenced by a wide range of competing interests. For example, media images, especially those aimed at explicit, conscious processing, have important effects on behavior even though people are often unaware that their behavior is influenced by the images (T. D. Wilson, 2002). These images are often engineered by advertisers who are consciously attempting to influence the recipients of the messages in ways that conform to the advertiser's interests, not the recipient's interests.

There are conflicts of interest between producers and consumers of culture as well as among producers of culture. Advertisers may attempt to persuade consumers to purchase inferior products, products they don't need, or products that have negative effects on the consumer; or they may attempt to get consumers to pay to more than necessary for products. Consumers may lobby legislative bodies to enact laws that regulate products available to consumers. Advertisers compete with each other in order to create more effective cultural messages. Examples of these processes go well beyond advertizing — as, for example, in competing political or public relations campaigns.

Conflicts of interest over the construction of culture span the entire range of human conflicts of interest. In accordance with Marxist ideas, there may be conflicts of interest between social classes, with propertied people having different interests than people with little or no property. There may also be conflicts of interest between large interest groups, as between the Church and the emerging European aristocracy over the control of marriage during the Middle Ages (see MacDonald, 1995), or between interest groups in liberal democracies (e.g., opponents and proponents of teaching evolution in schools).

There may also be conflicts of interest between ethnic groups over the construction of culture. At times, ethnic groups have attempted to impose their culture on another group. For example, Bulgaria prohibited the Turkish language and forced ethnic Turks to Bulgarize their names; there have also been several examples of forced conversion throughout the history of Christianity (Bookman, 1997). Interest group dynamics in pluralistic societies may also involve ethnic differences in the construction of culture (MacDonald, 1998). For example, different ethnic groups may perceive the debate about the nature and nurture of intelligence or issues related to racial differences in various psychological traits as affecting their ethnic interests and therefore be motivated to influence academic research and media discussion of these issues.

In conclusion, an appreciation of the importance of explicit processing provides a rich view of culture as a force in evolution, particularly for organized groups and for state-level societies able to exert significant degrees of social control. Explicit processing is a double-edged sword. It allows for intensive cooperation in human societies, enabling levels of organization and control of group members that are impossible for animals, and often resulting in formidable, highly competitive groups. However, these same groups may use their superior organization to oppress, exploit, or destroy other human groups. Explicit processing also allows for erecting oppressive group structures that are able to mute or even obliterate the interests of individuals within the group; such groups may well impose controls that result in widespread disparities between our evolved predispositions and the reality of life within the group — a prescription for widespread unhappiness. An important point of this article is that such outcomes are not inevitable.

**Received 29 January 2009; First revision submitted 13 April 2009; Second revision submitted 30 April 2009; Accepted 04 May 2009**

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