

Paths Towards a Naturalistic Approach of Culture

Fabrice Clément* & Laurence Kaufmann•

Culture: (a) the integrated pattern of human knowledge, belief, and behavior that depends upon man's capacity for learning and transmitting knowledge to succeeding generations; (b) the customary beliefs, social forms, and material traits of a racial, religious, or social group

Merriam-Webster's Collegiate Dictionary

INTRODUCTION¹

For a long time, social and cognitive scientists followed their own course, not really wondering what their academic neighbors were working on. The origin of this mutual indifference has been well laid out by Dilthey's distinction between the *Naturwissenschaften* (natural sciences) built upon the discoveries of explanatory physical mechanisms, and the *Geisteswissenschaften* (cultural sciences) driven by the hermeneutic comprehension of sociohistorical phenomena (Dilthey, 1883; Havelange, 1998). This division of scientific labor is still apparent within the disciplinary organization of the academic world, with every sub-discipline struggling to reach one of the essential aims of science: the cumulative growth of knowledge. Incompatible paradigms thus tend to develop in parallel their own theories and evidence, judging other approaches or related fields as being *a priori* irrelevant. Most of the time, this theoretical and methodological incompatibility results from conflicting anthropological views, which tend to go from one extreme to the other: the human mind is either seen as a "blank slate", molded by the boundless force of contingent historical cultural systems in which it is immersed, or, on the contrary, as a set of universal, prewired abilities that allows it to make sense of its environment, mostly all by itself (Pinker, 2002).

Recently, new insights into this everlasting opposition have been given by some neurobiologists, philosophers and psychologists. To them, pitting nature against culture as two opposite forces between which human species are tossed back and forth, escaping from biology to be better enslaved by culture and conversely, is pointless (Dennett, 2003; Lenclud, 2003; Valsiner, this issue). To them, nature and culture are not necessarily inversely proportional; on the contrary, the human mind is believed to be "prewired" for the cultural learning and knowledge acquisition that will eventually allow it to escape from a strict genetic determinism (Tomasello & Rakoczy, this issue; Wilson, 2005).

* University of Geneva

• University of Lausanne

¹ The elaboration of this book has benefited from the support of the Swiss National Science Foundation (SNSF)

In spite of some profound divergences, all the contributions gathered in this issue of *Intellectica* share the idea that the study of culture cannot ignore the fact that nature plays an important role in the development of culture. Of course, the different papers expect various degrees of harmonization between the laws, theories and methods of the natural sciences and those of the social sciences. For some, naturalism is essentially the methodological reminder of the importance, for social scientists, to adopt an observational, ethological-like stance, which is appropriate to the public, objective, and external ontology of the objects of their inquiry. For others, naturalism is an exclusive ontological commitment to the reduction of immaterial phenomena not only to natural but also to physical facts, which are ultimately determined by the causal laws of matter. But all contributors, whether sociologists, philosophers, anthropologists, or psychologists, tend to accept that naturalism raises issues that can be relevant, in one way or another, to the social sciences. Admittedly, accepting a dialogue with naturalism is not sufficient to dissolve the long-lasting epistemological and ontological gap between the hard and soft sciences, and between nature and culture. But it at least permits us to rethink seriously the mediations, either individual or collective, which are susceptible to bridging the gap between the external, causal connections proper to the world of things and the internal, intentional relations proper to the universe of meanings.

Interestingly, an important part of these bridge-making mediations can be gathered under the overall term of *cognition* whose actual sense looks more and more “social scientist-compatible”. In cognitive science, indeed, the study of cognition is no longer monopolized by the functionalist model of artificial intelligence (Lassègue & Visetti, 2002). For a long time, indeed, mainstream cognitive science has entertained an artificial model of a “culture-proof” cognition, driven by mechanisms impervious to cultural framing or supra-individual categorization. Most cognitive scientists were focused on individual low-level information processing or/and high-level psychological representations. Invariant cognitive commonalities were held causally responsible for the dissemination of certain “informational” representations that, once largely spread throughout a given population, were said to deserve the status of cultural representations. More recently, this kind of approach has been called into question by numerous cognitivists drawing inspiration from developmental psychology, Gestalt psychology, and social psychology as well as from anthropology, cognitive sociology, and ethology. Many cognitivists are indeed rediscovering, notably through comparative experimental research such as Nisbett’s one (Nisbett, 2003; Nisbett & Masuda, this issue), that basic cognitive processes might be culture-dependent. They are also calling into question the assumption of the human Cartesian mind, which prevailed in artificial intelligence as well as in developmental psychology. In fact, rather than seeing the neonate as engaged in protoscientific activities (e.g., seeking, testing, hypothesizing, remembering) and constructing his or her theory of others from a “spectatorial” point of view, recent findings portray cognition from the phenomenological, insider’s point of view (Hutto, 2004; Gallagher, 2006). Instead of referring to the processing of remote, estranged objects of observation and prediction, cognition tends to be defined as an embodied practice of attunement to socially significant others. Even in the neurosciences, social cognition, that is, the recognition and prediction of others’ behaviors, is said to be more a matter of infraconscious anticipation and situated action parsing than a matter of computation of information (Frith & Wolpert, 2004). This view of cognition

as embodied practice paves the way for a reconceptualization of social cognition as being non-mentalistic and of natural instinct as being fundamentally social.

Insofar as recent approaches to *cognition* encompass all the processes, such as categorization, memory, and attention, through which society and/or shared culture enter the mind, it has become difficult for the social sciences to maintain their indifference to, if not their contempt for, cognition studies. It is all the more difficult as the focus on the cognitive procedures that allow social agents to build and maintain a sense of surrounding physical or cultural structures does not necessarily imply the *reduction* of cultural facts to mental or “cerebral” facts. The study of the cognitive equipment that enables agents to sustain social and cultural facts pleads in itself neither for epistemological reductionism (e.g., the methods of justification and explanation proper to the natural sciences have absolute priority over those of the social sciences) nor for ontological reductionism (e.g., the only things that really exist are the most primitive constituents in the universe, namely physical particles and forces). The study of cognition consists in making explicit the assumptions about cognitive processes that underlie the prevailing approaches in social science, whether it be the model of strategic, conscious actor specific to methodological individualism and games theory, the model of unconscious “patient” proper to structuralism and holism, or the model of pragmatic agents proper to symbolic interactionism. Interestingly, these controversial assumptions, while metatheoretical to social scientists, are keenly empirical from the standpoint of cognitive psychology, which could assess their consistency with the results of empirical research on cognition (di Maggio, 1997).

In fact, the reassessments of the traditional “top-down”, “culture-shapes-mind” approach and of the “bottom-up”, “mind-shapes-culture” approach of cognition and culture lead to the same question: how are we to describe the complex interrelations between mental and cultural processes? This question, which is at the center of this volume of *Intellectica*, has been handled quite differently according to the disciplines, paradigms and cultural backgrounds of the contributors. Although a distinction between “bottom-up” versus “top-down” tendencies still underlies the different stances in presence, it does so in a much more subtle way than in the past. Most authors are drawn to the idea of “naturalism”, at least in the weak sense of the term; that is, the will to use the concepts and methods that are compatible with, but not necessarily reducible to, those of the natural sciences. Every contribution can be thus seen as a different way to connect biological, psychological, social and cultural dimensions within an ontologically coherent framework. That is why, in this introduction, our objective is to weave the different contributions together into a broad outline of some of the possible connections between cultural and cognitive processes. Of course, such a large-scale cartography does not claim to do justice to the complexity and density of the different papers. Neither does it claim to cover all the attempts to explore the link between cognition and culture; actually, most of the contributions are underpinned by a more or less explicit Neo-Darwinian conception of evolution, notably put forward by evolutionary psychologists and cognitive anthropologists, in which natural selection and adaptedness play a key role (on the different theories of evolution, see Mayr, 2002; Guillo, 2007). Important criticisms, for instance by Gould & Lewontin (1979), have been raised against this conception, suggesting that there are other motors of evolutionary change besides selection and reproductive success. By

calling into question the assumed neo-darwinian links between the concepts of fitness, adaptation and natural selection, these less prevalent conceptions of evolution could certainly shed a different light on the relationships between cognition and culture. It just goes to show that this volume does not pretend to be exhaustive but only gives a glimpse at the possible paths for naturalizing culture.

CULTURE AS EMERGING FROM EVOLVED PSYCHOLOGIES

Naturalism can be defined as a theoretical approach whose objective is to only recruit in its explanations the concepts and principles that are compatible with those of the natural sciences (Proust, 1998). But beyond this overall ambition, naturalist approaches vary significantly in their apprehension of the ontology of socio-cultural entities.

A *reductionist* stance was favored, until recently, by most naturalist ventures into the social sciences; its tendency is to adopt an ontological naturalism that refuses to recognize as ontologically acceptable the presumably disembodied, abstract, if not ghostly, status of socio-cultural entities. *Ontological reductionism* assumes that the only things that really exist are basic natural elements. In its radical version, the assumption that the world is of a piece leads to physicalism and thereby to a kind of ontological reductionism: the most primitive constituents in the universe, namely physical particles and forces, determine all the properties of things, social phenomena included. Such reductionism assumes material identity between the empirical referents of neurological and mental states, or mental and social phenomena, and hence their strict correspondence in the world independently of any observer's perspective (Collin, 1997, p. 230-232). In the same way that the extension of the concept of water is said to be empirically replaceable with its molecular formula H₂O, the extension of mental states, whether conscious or not, is said to be replaceable with their neurological substrate at each stage of their development (Searle, 1983). Ontological reductionism generally comes with *epistemological reductionism*: it is based on the principle that all phenomena can and must be explained in terms of natural causes and laws or biological processes of perception and action. Strong epistemological reductionism gives absolute priority to the methods of justification and explanation proper to the natural sciences, that is, the appeal to causes, and postulates that a suitable analysis of a given concept must be amenable to facts susceptible to empirical inquiry.

In most of their reductionist versions, ontological and epistemological naturalism are hence physicalist *and* mentalist: they admit the existence of mental representations that future bridge laws will hopefully be able to relate, one fine day, to their neural substrate. From a materialistic point of view, as Dan Sperber put it, there are only "mental representations, which are born, live, and die within individuals skulls, and public representations which are plain material phenomena – sound waves, light patterns, etc; – in the environment of individuals" (Sperber, 1990, p. 28). From this perspective, the study of culture comes down to the understanding of the way specific psychological mechanisms favor the diffusion of representations within a given population – the so-

called “epidemiology of representations” (Sperber, 1996; Boyer, 2001; Atran, 2002)².

One of the latest manifestations of this resolutely reductionist perspective is evolutionary psychology. The premises are straightforward: the forces of evolution, and in particular the process of selection, are not exerted only on our bodies. As Jesse Bering (2006, p. 142) put it, “minds bear the thumbprint of evolution as well.” The mind of a given organism, just like its physiology, is genetically adapted to its ancestral environment. Since domain-specific information processing is believed to be more adaptive than general, all-purpose information processing, evolved minds are defined as a collection of specialized mechanisms (Cosmides & Tooby, 1994). All these basic mechanisms would have thus been “designed” by natural selection to solve the specific problems raised by the regularities of the physical, chemical, ecological, informational, and social environments encountered by the ancestors of a species during the course of its evolution (Tooby & Cosmides, 1990).

Since genetic evolution is extremely slow, it has not kept pace with the social and environmental changes that have characterized the story of humanity. The basic design features of the human mind have evolved in adapting to a life in which prehistoric hunter-gatherers related to one another face-to-face within small-scale cooperative bands (Dunbar et al., 1999). Therefore, the “solutions” that human psychology has evolved to survive in the past might be ill-adapted to the complex conditions of contemporary society (Pinker, 1997; Wilson, 2006). Within this framework, culture refers less to the social transmission of information than to what Tooby & Cosmides (1992) call “evoked culture”: “Evoked culture” emerges from the encounter of the universal, cognitive equipment, which enabled human beings to adapt to their ancestral environment, with the local, complex conditions of the actual environment they are immersed in. In other words, culture is said to refer, at least partly, to the behavioral and ideational similarities within groups – similarities that result from the convergence of the responses of panhuman psychological mechanisms to the same local context (Fessler 2006). The approach proper to evolutionary psychology is therefore an individualistic approach: collective phenomena are the more or less permanent results of the cognitive processes taking place at the individual level. Human culture is considered to be “the aggregate output of evolved psychologies operating in concert with regular variance in socio-ecologies” (Bering & Schakelford, 2007). However, starting from evolved psychologies does not mean that culture is deprived of a genuine weight on the shaping of the mind. In fact, for Richerson and Boyd (2004), cultural adaptation can become a biological adaptation thanks to a “gene-culture coevolution”, an evolutionary modification in one species inducing an evolutionary change in another. For instance, the complex cultural adaptation of dairying traditions constituted a new culturally evolved environment that increased the relative fitness of the gene that enables whole-milk consumption by adults. As that gene spread, it in turn may have changed the environment by shaping cultural food practices that favor more whole-milk consumption (e.g.,

² However, Sperber and Hirschfeld (2004, p. 45) recently specified their position: “We agree with standard social science that culture is not human psychology writ large and that it would make little sense to seek a psychological reductionist explanation of culture”. Their position is therefore better described as a *methodological reductionism* than an ontological one.

ice-cream, cheese) (Richerson & Boyd, 2004, p. 192). Other studies show that the domestication or “enculturation” of dogs, which might have started, depending on the account, around either 135,000 or 14,000 years ago, induced a genetic adaptation to human environment. Given the survival advantages of human companionship, dogs became predisposed to learn communicative signals, to obey rules and to constrain fear and aggressiveness (Soproni, 2001).

As interesting as this approach might be, it raises serious issues even for a naturalistic point of view. These issues can be separated into two broad categories. On one side, the reductionist, evolutionary view tends to neglect an essential part of culture, namely *communicated* representations. As Tomasello and Rakoczy put it (this issue, p. 27), “languages, symbolic mathematics and complex social institutions are not individual inventions arising out of humans’ extraordinary individual brainpower”. On the other side, strong reductionist positions like evolutionary psychology tend to consider each individual as an isolated, autonomous “mental world” with sporadic contacts with the “outside”, that is, the cultural environment. Of course, this position has already been criticized in the past but contemporary researchers are adding new empirical and theoretical elements against this “monadologist” perspective.

CULTURE AS EMERGING FROM COMPLEX COMMUNICATIVE AND COGNITIVE PROCESSES

Even if we take for granted, for the sake of the argument, that mental representations belong to the physical realm and that the structure of evolved brains are similar enough to produce universal responses to certain kinds of environmental stimuli, this would only attach significance to a limited number of cultural phenomena (“evoked culture”). Even from a biological perspective, culture involves information that is transmitted through nongenetic means among group members (Boesch & Tomasello, 1998). As Fessler put it (2006), our ability to survive as a species is primarily due to our capacity to acquire, share, elaborate, and employ socially transmitted information. Now, from the angle of the learning and communicating processes by which agents start at birth to assemble and reshape transmitted meanings, culture is no longer, as Robertson (1996) wittily put it, “a geriatric phenomenon”: far from being the prerogative of the resolved mind of experienced, mainly male, adults, culture is also graspable in the tentative imaginings of youths, who work at identifying what information is conveyed “for” them to be selectively acquired.

TOMASELLO AND RAKOCZY’s opening paper starts from this very observation. Without the informative input of others, it is very likely that humans would not differ very much from other great apes. What primarily characterizes *homo sapiens* is, therefore, the capacity to create and share cultural activities and products. A major issue is thus to identify which of the child’s cognitive capacities are necessary to take advantage of the surrounding culture. Tomasello and Rakoczy summarize the main achievements that enable children to become cultural animals. Firstly, an important psychological revolution occurs at approximately 9-12 months of age: relationships become triadic since they involve (1) the infant, (2) the adult, and (3) the objects/events in the world. Infants begin to look where adults are looking (“gaze following”), keep a close watch on adults’ emotional expressions to evaluate an unknown stimulus (“social referencing”), and act on objects in the same way adults are acting on them (“imitative learning”). Later, the ability to focus attention on particular

objects becomes particularly important for the acquisition of linguistic symbols. Thanks to this joint attention, indeed, sounds become vehicles for meanings because they “count as” something else for all the participants in a common activity. Technically, it means that mutual comprehension is possible only if the interlocutors refer to the same “intentional” object: their thought must be “about” the same object. Finally, at about 4-5 years of age, children discover that other agents can entertain mental representations about the world that differ from their own. The comprehension of the “distance” between what is in the mind and what is in the world is the key to more abstract parts of culture. Actually, humans can share intentional objects that have no perceptual counterparts and think of worlds which exist only in the imagination but can be vivid enough to be seen as real.

Tomasello’s and Rakoczy’s paper constitutes a state of art description of the cognitive abilities humans mobilize to acquire the cultural representations of their society. From a naturalistic point of view, however, this developmental perspective does not yet explain how representations disseminate and stabilize themselves in a population. That is precisely the aim of *memetics*, which attempts to adopt an evolutionary perspective on culture without reducing it to psychology. As Dominique GUILLO points out, memeticists refuse to assimilate culture to the mental furnishing of the psychological realm; on the contrary, they assume that cultural representations have an ontology of their own. Drawing inspiration from the preliminary remarks of the biologist Richard Dawkins (1976), memeticists think of cultural entities on the model of genes (Dennett, 1990; Blackmore, 1999). Like genes, memes are replicators, i.e. units of information producing exact copies of themselves through a process of cultural transmission that uses the material resources provided by their environment. Subject to the same process of replication, variation and selection as genes, the content of the memes evolves, as does their respective frequency in populations. The evolution of memes is decoupled from the evolution of the organisms and the genes that sustain them, and hence constitutes an autonomous level of selection. Like selfish genes, they furiously compete for the occupation of niches, in this case our minds. From a memetic perspective, therefore, culture is not something ideational or abstract; it is “a concrete collection of units of information that exist in the heads of different members of a given society or social group, and which have no genetic basis” (Guillo, p. 53).

Memetics is an original, exciting model but it is problematic in several respects. As Guillo illustrates in great detail, memeticists fail to fulfill an elementary naturalist commitment: that of specifying the nature of memes. In fact, memes are neither behaviors, nor artefacts, nor beliefs or neural networks because those are only individual phenotypes, or “phenotypes”, that is, the expressions of memes (Auger, 2000). A meme designates the set of abstract informational properties that underlies its various manifestations or occurrences. In other words, memes are “semantic” units whose causal powers remain mysterious. Moreover, the copy-like mode of cultural transmission that allegedly allows memes to “jump” from one head to another is based on a conception of imitation that has been strongly criticized by anthropologists and psychologists. Imitation is a transmission process that involves an intense, and largely unconscious, cognitive activity from the receiver so that no contents can be passed on without changes (Sperber & Wilson, 1996; Sperber, 2000). Developmental psychologists have recently demonstrated that children do far

more than passively copy perceived behaviors; they interpret actions and attribute goals in such a way that their imitation can substantially differ from the initial behavior they have observed (Gergely & al., 2002; Gergely & Csibra, 2003; Meltzoff, 1995).

As a result, not only does memetics leave the ontology of memes vague and unsolved but it postulates a transparent, direct mode of transmission that is highly questionable. Although memetics can be useful and open new areas of questioning culture, its scientific imports from biology remain, from a naturalist point of view, largely metaphorical. Given this flaw, it seems more reasonable to study empirically how different elements of cultural systems are transmitted. In particular, an important issue is to study how concretely children assimilate the cultural representations, and even the less concrete entities, which are disseminated by the more experienced members of their group. This is precisely the task that HARRIS, ABARBANELL, PASQUINI AND DUKE undertake in their paper. During the last few years, Paul Harris has revisited a conception largely shared by developmental psychologists by insisting on the fact that children learn about reality not only through first hand observation of concrete, tangible materials, but also from others' testimony about events or entities that they cannot observe for themselves (Harris, 2002; Koenig & Harris, 2005; Harris & Koenig, 2006; Clément and al., 2003). In their contribution, Harris et al. report that even young children (4-5 years old) manage to distinguish different kinds of testimony-based, cultural representations. They are able to discriminate the ontological status of three kinds of invisible entities that can be contemplated only via the imagination: "scientific beings", that is, normally invisible entities or substances established by experimentation or inference (e.g. germs and oxygen), "endorsed beings" whose existence is endorsed by most adults when they speak to young children (e.g. God and Santa Claus) and "equivocal beings" whose existence is not routinely endorsed in discourse with children (e.g. monsters and ghosts). Despite considering scientific and endorsed entities as more "real" than equivocal beings, children show themselves to be more confident with their ontological judgment on scientific entities than endorsed beings. How do children make such subtle distinctions?

Two main options seem possible. The first option is based on the patterns of testimony: children might hear adults around them voicing skepticism about the existence of special beings, which is not the case for scientific entities, which are rarely open to doubt. The second option is that children might be attentive to the causal properties of the different entities they are told about and might conclude, from their own experience, knowledge and inferences, that special beings have extraordinary causal powers. To discriminate between those two options, Harris et al. planned to study the transmission of cultural representations in traditional communities, where beliefs in special beings routinely suffuse everyday life but are rarely the subject of either overt statements of doubt or explicit avowal of faith. A preliminary study among children of the Tseltal-speaking Mayan community of Tenejapa (Mexico) shows a pattern of results very similar to the pattern obtained in North-America: children claim that endorsed beings exist, but with less confidence than for real entities, and they express more confidence in the existence of scientific entities than in that of endorsed beings. Those cross-cultural results might indicate that children in all cultures have a fairly strong ontological intuition that anomalous or supernatural beings are different from, and less credible than, ordinary or

scientific beings. The assimilation of culture might thus be filtered by different ontological assumptions in such a way that consensual testimony on well-endorsed entities would not be sufficient to make children blindly believe in them. For Harris et al., it remains to be seen, however, whether the results from Tenejapa children were due to their natural clear-headedness or to their exposure, through modern informational sources such as radio or television, to contradictory large-scale information about locally endorsed entities. If this second hypothesis is true, children who grow up in isolated communities should find the beliefs of their community wholly convincing and inescapable.

The approaches briefly summarized above have the advantage of giving a better account of how collective cultural products that preexist individuals' existence are psychologically "accommodated". A common assumption, however, underlies the account of culture as communicative system of knowledge transfer: this is that mind and culture are mutually "external", like two separate entities that coexist without merging together. To become mental representations, cultural representations have, so to speak, "to get across" the individual epistemic frontier. This ontological duality is called into question by the contributors who insist on the practical way that culture bearers incorporate cultural forms and contents.

CULTURE AS PRACTICES EMBEDDED IN A FORM OF LIFE

The naturalist paradigm, even when it is applied to the human world, is obviously influenced by the way in which "naturalists" try to make sense of the behavior of non-human species. From an evolutionary point of view, animals tend to be seen as sophisticated computational machines whose reactions to the environment have been adjusted by eons of selection. In this context, communication processes fit into a utilitarian scheme: exchanged signals are used by animals to obtain a certain advantage over competition.

Véronique SERVAIS's contribution sheds a critical light on this paradigm. As a cognitive ethologist well aware of the risk of anthropomorphism, she is careful not to apply to animals' exchange signals the conceptual tools drawn from the human sciences. Because of this ill-considered conceptual import, indeed, researchers in animal cognition have imposed the model of information transmission upon animal communication. This theoretical twist, once integrated into an evolutionary Machiavellian paradigm, had serious consequences: communication was seen as a means of manipulating others. Since the signaler can conceal its "true" motivation or intention, the receiver has to develop counterstrategies to avoid being exploited. The study of animal communication has thus taken the form of a cost-benefit analysis that assumes complex and intentional decisional processes in communicators' minds. To Servais, this conception is misleading because it is based on a partial model of animal communication; in fact, this latter is less a matter of information transmission than a means of establishing relationships. "By focusing only on the informational side, the transmission model of communication precluded overtures towards the relational dimensions of communication – and a relational point of view" (Servais, this volume, p. 92). Birdsongs, for example, can be described as action by which the signaler negotiates its territory boundaries, signaling its readiness to interact aggressively, or indecisiveness. As Horn (1997) put it, "the song it sings replaces physical interaction". Not only are animals like birds able to detect the relationships in which they are engaged with their conspecifics, but they can also "decide" to express or retain a call depending

on the context. The signals regulating relationships are not simply bound to a series of causal reactions: “the communication process is seen as the “decision” of a brain to send or retain a signal, according to the rational assessment of the social situation” (Servais, this volume, p. 94). This still-mysterious decision process is therefore based on (1) the nature of the social relationship that it “seen” or perceived by the animals, leading to different expectancies and frustrations; and (2) the types of emotion that correspond to the different relations in which the animals are engaged. From this perspective, communication is less a transfer of information than a way by which some relational regularity is brought into social life.

If the mind is already so closely intertwined with the situation it has to cope with in the animal realm, one can expect that such intertwining will be further reinforced in the cultural situations proper to mankind. This is precisely what Louis QUÉRÉ shows in his well-crafted discussion of the concept of trust. Cognitive scientists tend to consider trust within an “externalist” paradigm: in developmental studies, for example, children’s decisions to integrate communicated representations into their “stock” of beliefs rest on the trust they invest in the source of testimony (Clément & al., 2004; Koenig & Harris, 2005). A similar twist is given in the attempts to “naturalize” trust in game theory and research in neuroscience: here, trust is described as an ephemeral event-like state-change operation, whose biochemical traces in the brain or the body can be measured by empirical techniques. For Quéré, although the natural origin, either ontogenetic or phylogenetic, of cultural, normative phenomenon such as trust might be accounted for by a “soft naturalism”, culture is not reducible to natural, material facts. This naturalistic reduction, by assuming that trust is a material process, makes two category mistakes. On one hand, it forgets that trust is not a mental, internal episode of decision-making, observable as such; it is a *long-term process* whose temporal thickness belongs to the category of dispositions, not events. On the other hand, trust has a *normative* dimension that a physical description in terms of mechanisms cannot account for; in fact, it is within a normative shared context that the truster can expect, and has the right to claim, that the trustee will respect his or her commitment. Thus underpinned by mutual expectations, commitments and obligations, the reality of trust can only be caught through the filter of intentional language and cultural form of life, “which permeates our experience, perception and understanding” (Quéré, this volume). Ultimately, trust depends less on the trustworthiness of others than on the reliability of the normal course of action that cultural norms, incorporated in and enacted by common categorizations and assumptions, make possible (Quéré & Ogien, 2006).

In Quéré’s view, the cultural, normative shaping of a phenomenon like trust cannot be reduced to any material substrate since it is constitutive of the phenomenological and linguistic *experience* of agents. Trust is an integral part of a practical, embodied “seeing as” that enables competent members to recognize a relationship or a feeling as an occurrence of trust. In this framework culture, far from being an abstract set of representations or a theoretical mode of understanding, is embodied in public practices and background expectancies. In other words, cultural phenomena are external to the individuals but internal to a community of practice and language: it is primarily a *form* of life, known, experienced and felt “from within”.

While interestingly avoiding the theoretical hypertrophy of strategic decision-making, this “proximal”, practical, and embodied conception of cul-

ture remains challenging for even a moderate naturalist approach,. First, it requires norms to be integrated, in one way or another, into the natural world (for an attempt, see Kaufmann & Clément, this volume). Second, how human bodies become the main substrate of a culture-bound form of life has still to be laid out. Jordan ZLATEV's contribution can be seen as an attempt to take up this very challenge. In a naturalist move that ties up neuro-physiology with language, Zlatev uses the recent discovery of mirror neurons to explain how people are capable of attributing common meanings to arbitrary sounds. From an ontogenetic point of view, children must be able to figure out what is referred to by the emitted sounds. Grasping what the words are about is made possible by the existence of pre-linguistic concepts that "carve" the reality in a similar way for language teachers and learners. According to Zlatev, this commonality is based on the functioning of the brain itself: mirrors neurons fire both when someone performs an action and when they observe the same action performed by someone else. This neuronal "resonance", enacted in the "mimetic schemas" that Zlatev speaks of (e.g. eating, crying, running, etc.), might be the foundation for a basic, fundamental intersubjectivity that guarantees a common world of reference to human beings. In this view, culture is initially proximal: it is built upon a proto-cultural mechanism that weaves individuals and meanings together.

One of the main issues, then, is to determine how proximal culture can be, that is, to what extent the different forms of life forge the cognitive apprehension of the world. While insisting on initial, proto-cultural commonalities, Zlatev does remark that mimetics schemas may be more or less culture-specific (e.g. kissing). Do the various ways in which different cultures occupy and make sense of the environment mark the cognitive competences or performances of their members? This question haunts Richard Nisbett's recent research, the results of which have shaken the universalist premises that prevail in cognitive science. For a long time, Nisbett himself assumed that inductive and deductive inference, attention, memory, categorization, and causal analysis were the same for everyone in every culture. That was until one of his doctoral students, who was native of China, pointed out in a discussion that there was a major, inevitable difference between their ways of processing information: the professor was thinking along a line, the student on a circle (Nisbett, 2003). Puzzled, Nisbett designed numerous ingenious experiments to test the degree of influence of culture on basic cognitive processes. The results, summarized in NISBETT AND MASUDA's contribution, are stunning. The ways in which East Asian and Americans perceive the world diverge in some very important respects. Because of these cultural "lenses", even a simple scene of fish swimming in an aquarium is perceived differently: whereas Westerners are inclined to focus on the substantial, intrinsic properties of the fish themselves (e.g., colour, shape, etc.), East Asians tend to pay attention to the field and to the relations between the fish and the field. Such differences are also present in logical abilities, with East Asians being more comfortable with apparent contradiction (dialectics) than Americans (logic). Even the way things are categorized varies across eastern and western culture: while East Asians classify objects and events on the basis of relationships and family resemblance, Americans recruit rule-based category membership. Once put together, the results of this *Geography of Thought* (Nisbett, 2003) show that cognition is much more pervaded by culture than most cognitive scientists thought it to be. Cultural expectations and categorizations, which foster the "attentional bias"

that Nisbett and Masuda's work suggests, frame and shape cognitive processes in a largely non-conscious way.

Coming from such an important player in the cognitive field, Nisbett's findings are disturbing for everyone who had assumed a certain commonality between human minds, that was ensured by their common evolutionary history. Given the importance of culture in the shaping of human perception and reasoning, even naturalists can wonder to what extent shared biologies lead to common cognitive processes. Rita ASTUTI's paper dwells on precisely this issue. Her approach is part of a recent effort made by some anthropologists to "import" methodological tools from psychology to their own fieldwork (Bloch, 2005; Astuti & al., 2004; Fessler, 2004). Astuti's case study is extremely relevant because the population she studied, the Vezo from Madagascar, is well known in the anthropological literature for being impervious to the ontological distinction between facts of biology and facts of sociality (Ingold, 1991). For example, they do not make comments on the resemblance between babies and their birth parents. On the contrary, the Vezo seem to attribute resemblance between those who are related through social intercourse, and not through conception and birth. This conception is especially disturbing for those who hypothesize a universal folkbiology system that includes the "invariable presumption that the various members of each generic species share a unique underlying nature, or biological essence" (Atran, 1999, p. 317). The idea behind Astuti's experiments is therefore to see how the Vezo "stick" to the knowledge they have elaborated through cultural learning when confronted with experimental procedures that test their intuitions about biological entities. The test chosen is the "adoption task", which was initially designed to explore children's understanding of the role played by nurture and procreation in the transmission of properties from parents to offspring (Solomon & al., 1996). Subjects, who are told a simple story about a baby born to one set of parents and raised by another, must judge whether the adopted child will resemble the birth parent in terms of bodily properties (e.g., having blond as opposed to dark hair) or in terms of mental properties such as beliefs (e.g., believing that skunks can see in the dark as opposed to believing that skunks cannot see in the dark). If the cultural system of the Vezo permeates and modifies their biological intuitions, they should respond that the adopted child will resemble the adoptive parents in terms of all or almost all traits. But this is not what the results indicate. On the contrary, Vezo adults do differentiate between causal mechanisms that concern generating children, and those that concern with nurturing them. Therefore, Vezo are far from being cognitively submitted to the explicit, public representations of their culture. The Vezo's explicit allegation about the prevalence of facts of sociality over facts of biology in the domain of child rearing does not mean that they do not process the difference between what is biologically and what is socially inherited. Rather, they exhibit a cultural value that is socially relevant in a collectivity in which children are molded by a much larger network of relations than the ones demarcated by their birth parents.

This fascinating study illustrates the complexity of the fabric that weaves cultural forms, cultural contents and cognitive processes together. Different degrees and modes of interaction between culture and cognition seem possible. From a "distal" standpoint, indeed, culture essentially refers to the public representations, more or less explicitly communicated, that the members of a given community have in common. To take up a classical term in psychology,

culture is thought of as a “knowing *that*”, a series of explicit representations that are kept away from everyday knowledge and experience. The problem is that such cognitive distance between cultural representations and everyday life is hardly compatible with the ontological commitment and immoderate self-implication that culture can trigger. By contrast, from a “proximal” standpoint, culture refers to the modes or habits of thinking that “in-form” cognitive processes; and is thought of, as such, as a “knowing *how*”. In this case, the problem is that when taken to extremes, this “in-forming”, proximal conception of culture, risks enclosing the different cultures, and their members, in separated and impervious worlds. As always, the challenge is thus to find a middle-way by understanding how those two dimensions of culture, proximal and distal, practical and representational, can hold together.

SOCIAL FORMS, CULTURAL REPRESENTATIONS AND ENCULTURED

PSYCHOLOGY

One important issue of this volume remains to be mentioned. If we want to keep up with the naturalistic agenda it is important to hypothesize what the natural origin of complex cultural phenomena could be. A promising line of argument is that the missing link between natural facts and cultural system might be an important feature of human evolution, namely *sociality*.

Recently, it has been admitted that solving the problems induced by social living was one of the most important constraints on the evolution of the human mind (Humphrey, 1976; Dunbar, 2001; 2003). One could therefore hypothesize that it is through sociality that the gap between high-level, abstract cultural institutions and more fundamental ways of living together can be bridged. Lawrence HIRSCHFELD’s interesting paper on folk sociology builds up the first layer of this continuum. For him, all social animals face the enduring problem of coordinating their behavior with that of the members of their own group, as well as with the members of other social groups. Primates notably owe the emergence of higher-order cognitive capacities to the increasingly complex forms of groups they are living in; whether human and non-humans, they belong to many social groupings based on territory, intra-group status, sex, kinship and coalitions. Any of these memberships provides a useful basis for predicting and interpreting the behavior of others. Thanks to membership cues, social beings might indeed avoid the cost of unpredictable interactions with strangers and ensure relatively low-cost coordination with relevant nearby conspecifics. To Hirschfeld, social predictions based upon affiliations and memberships “are sufficiently specific and complex to suggest the possibility of a special-purpose modular competence in naïve or folk sociology” (Hirschfeld, this volume, p. 194). This domain-specific competence, which he calls *naive sociology*, refers to a set of modules which enables us to reason in terms of groups and social categories like race, gender, kinship or social occupations. The inputs of these modules are constituted by whatever provides evidence for group membership, for instance individual bodily appearance, behavior, language and so on. To Hirschfeld, cultural categorization might be primarily a high-level elaboration of these membership cues, such as cultural gender dimorphism superimposed on natural sexual dimorphism. Of course, cultural derivations from basic-level membership assessment can become very problematic when they lead to the segmentation of the human world into discrete racial, ethnic or gender populations (Hirschfeld, 1996). It is all the more

problematic that their “anchoring” in a social modular competence makes them particularly resistant to change. Such resistance to change shows how cognitive primitives, largely shared by humans and other primates, contribute to shaping culture.

Bernard CONEIN also insists on the importance, for the social sciences, of studying the mode of constitution of social groups as well as the proto-social mechanisms that allow evolved animals, whether human or not, to recognize, comprehend and monitor social relationships. His contribution highlights an important dichotomy between two currents of research on social cognition. In developmental psychology and philosophy, social groups are mostly seen as the results of individuals’ mutual actions and reactions. In this perspective, groups are a matter of mental coordination and “group actions are accomplished by the careful alignment to the attentional states of others” (Conein, this volume, p. 213). In behavioral ecology and ethology, by contrast, social groups are related to membership, dominance and affiliative behaviors. Within this framework, groups refer to the enduring relational structures that put evolutionary pressure on primate cognition, thereby leading to the selection of specific modules devoted to relations processing. For Conein, however, these two perspectives are not mutually exclusive because the existence of groups induces and requires two kinds of skills. Group members must possess cognitive skills that enable them to assess and monitor relationships. This task is performed by domain-specific devices that could be brought together under the aegis of what Hirschfeld calls naive sociology. But to Conein, individuals must also perform all kinds of activities that are devoted to establishing and maintaining strong ties among partners. In other words, social beings have to regulate their mutual actions by taking into account and predicting whenever possible the behavior of particular individuals. That is where the pivotal role of the cognitive abilities necessary for gaze following, intention detection, and joint attention come into the picture: they are at the heart of the “social sense” that Conein (2005) speaks of.

The idea that an essential part of social activities consists in detecting and interpreting (largely non-consciously) social regularities is also the leading line of the argument of KAUFMANN and CLEMENT. This paper’s ambition is to organize the different levels of complexity of cultural phenomena into a naturalistic architecture that is as coherent as possible. The basic building blocks of this architecture are said to be social forms, i.e. primitive actions (fighting, sharing, exchanging, consoling, reconciling) as well as basic relational “formats” (cooperation, domination, competition). The main hypothesis is that social forms, given their public, natural and universal properties, are good candidates for bridging the ontological gap between nature and culture. Culture can, indeed, be seen as “high-level semantic elaboration and redescription of elementary social facts” (Kaufmann & Clément, this volume p. 226). One of the main cognitive mechanisms necessary for creating and grasping this high-level cultural elaboration is analogy-making. Analogies allow human minds to «draw» cultural forms from the world of nature, either physical or social, and contribute therefore to the elaboration of a sphere of collective experience that is both cultural and intuitive. Since cultural analogies, Kaufmann & Clément contend, derive from the preexistent natural and social saliences, they tend to reinforce and perpetuate the socio-cultural order. In fact, analogical mapping can be a very effective ideological device that masks the arbitrary origin of social hierarchy and inequality behind an alleged law of nature. But

analogy making can also be used as a weapon in a process of “de-naturalization” of the worldview by making an alternative model of society look as, if not more, intuitive as the dominant cultural order. In this framework, social forms and cultural constructs appear much closer to nature than in other approaches, for instance those which portray culture as counterintuitive representations or as an imaginative leap. For cultural variation does not depend only on symbolic, arbitrary, and “distal” creations; it also depends in part on the uneven degree of attention granted to the social *and* natural affordances that carve social life. Selective attention to some social primitives at the expense of others is said to be one of the marks of culture. From the standpoint of cultural participant, at least, culture comes mostly in the form of attentional paths, which restrain implicitly the individuals’ scope of possible action, perception and representation.

The definition of culture as differential attention to social saliences blurs the distinction between the “proximal” sense of culture-as-form and the “distal” sense of culture-as-content. In fact, culture manifests itself both in the cognitive and emotional *filter* that enables the mind to count certain phenomena as worthy of attention and in the *representations* that stand out against a background that goes largely unnoticed. But how do individuals handle these complex cultural layers? This is precisely the issue that Jaan VALSINER raises. To him, it is essential to highlight one evolutionary fact: human creativity and flexibility. His idea is to invert the classical evolutionary perspective: instead of characterizing evolution as the selection of fixed patterns of problem resolution (algorithms), he insists on the constant creativity that adaptation to the environment imposes on humans. For him, it is the continual and non-systematic variation of the *homo sapiens* ecological niche that triggered the evolution of cognition and culture. Human cognition had to adapt to the “forward-oriented pre-adaptation efforts of the organism to live within not-yet-known conditions” (Valsiner, this volume, p. 259). Human psychology is therefore characterized by flexibility and imagination, which are necessary for making predictions in a basically unforeseeable world where meanings have to be constantly elaborated. These imaginative capacities, coupled with the need to control the environment, favored the emergence of culture, which can be defined as a “set of socially created action, feeling and thinking tools” (Valsiner, this volume, p. 258). Once stabilized in a population, these tools become part of the environment and trigger new cognitive adaptations. Culture thus involves multi-layer processes “by nature”: culture bearers are engaged in the complex self-organization of a given “cultural-psychological system” that implements a hierarchy of “cultural organizers” in intra-personal, mental domains as well as inter-personal domains. For Valsiner, as long as organizational order is maintained, culture tends to function in a proximal way. But when this order is shaken, for instance when an encyclopedia is introduced to an Orthodox Jewish family, the person enters a state of doubt and can explicitly recruit other cultural resources in order to make sense of the new situation. This “psychological distancing” from the immediate social context fosters meaning-making efforts and personal reflection. Hence, when viewed from this angle, the interplay between distal and proximal dimensions of culture is not the matter of the observer but of the agent: it is a phenomenological experience that is rooted in the depths of our biographical trajectories.

Given the importance of the capacities that enable human beings to adjust to the orderliness of the socio-cultural world, but also and above all to its

indeterminacy, the mainstream social scientist's view of culture bearers as literally "mindless" can no longer hold. Research programs focusing on the capacities necessary for social and/or cultural animals to cope with their material and symbolic environment are needed; the fine-grained, empirical description of the cognitive workings of society and culture can indeed help to explain the ongoing cognitive, social and cultural adeptness of humankind. It can also help to explain the propensity of human beings to describe themselves as beyond the reach of nature. That is this distinctive propensity that makes this interdisciplinary issue of *Intellectica* both necessary and risky.

REFERENCES

- Astuti, R., Solomon, G. E. A., & Carey, S. (2004). *Constraints on Conceptual Development: A Case Study of the Acquisition of Folk Biological and Folk* (Monographs of the Society for Research in Child Development). London: Blackwell.
- Atran, S. (1999). Folkbiology. *The MIT Encyclopedia of the Cognitive Sciences*, Cambridge (MA): MIT Press, pp. 316-317.
- Atran, S. (2002). *In Gods We Trust: The Evolutionary Landscape of Religion*. Oxford: Oxford University Press.
- Bering, J.M. (2006). The Cognitive Psychology of Belief in the Supernatural. *American Scientist*, 94, pp. 142-149.
- Bering, J.M. & Schakelford, T. (2007). *Mental Representation and Natural Selection: The Special Case of Human Social Evolution*. Non-published mns.
- Blackmore, S.J. (1999) *The Meme Machine*. Oxford: Oxford University Press.
- Bloch, M. (2005). *Essays on Cultural Transmission* (LSE Monographs on Social Anthropology). Oxford: Berg.
- Boyer, P. (1994). *The Naturalness of Religious Ideas. A cognitive Theory of Religion*. Berkeley: University of California Press.
- Boyer, P. (2001), *Religion Explained: The Evolutionary Origins of Religious Thought*. New York: Basic Books.
- Churchland, P.S. (1986) *Neurophilosophy*. Cambridge: Mass. MIT press.
- Clément, F., Koenig, M., & Harris, P.L. (2004). The Ontogenesis of Trust in Testimony. *Mind and Language*, 19, pp. 360-379.
- Conein, B. (2005). *Les sens sociaux*. Paris: Economica.
- Collin, F. (1997). *Social Reality*. London /New York: Routledge.
- Cosmides, L. & Tooby, J. (2004). Origins of Domain Specificity: The Evolution of Functional Organization. In L.A. Hirschfeld & S.A. Gelman (ed.), *Mapping the Mind. Domain Specificity in Cognition and Culture*. Cambridge: Cambridge University Press, pp. 85-116.
- Dawkins, R. (1982). *The Selfish Gene*. Oxford: Oxford University Press 1^{ère} éd. 1976.
- Dennett, D. (1990). Memes and the Exploitation of Imagination. *J Aesthetics Art Criticism* 48, pp. 127-135.
- Dilthey, W. (1999). *Critique de la raison historique : introduction aux sciences de l'esprit et autres textes*. Paris: Les Ed. du Cerf, 1^{ère} éd. 1883.
- DiMaggio, P. (1997) Culture and Cognition. *Annual Review of Sociology* 23, pp. 263-287
- Dunbar, R., Knight, C. & Power, C. (1999). An Evolutionary Approach to Human Culture. In R.Dunbar et al. (ed), *The Evolution of Culture. An Interdisciplinary View*. New Jersey: Rutgers University Press, pp. 1-11
- Dunbar, R.I. (2001). Brains on Two Legs: Group Size and the Evolution of Intelligence. In F. de Waal (éd.), *Tree of Origin. What Primate Behavior Can Tell Us about Human Social Evolution*. Harvard University Press, Cambridge, Massachusetts, and London, England, pp. 173-191.
- Dunbar, R.I. (2003). The Social Brain: Mind, Language and Society in Evolutionary Perspective. *Annu. Rev. Anthropol.*, n° 32, pp.163-81.

- Fessler, D., M. T. (2004). Shame in Two Cultures: Implications for Evolutionary Approaches. *Journal of Cognition and Culture*, 4(2), pp. 207-262.
- Fessler, D. M. T. (2006). Steps Toward an Evolutionary Psychology of a Culture-dependent Species. In P. Carruthers, S. Laurence & S. Stich. (ed.), *The Innate Mind: Volume 2: Culture and Cognition* (Evolution and Cognition Series). Oxford: University Press.
- Frith, C. & Wolpert, D. (2004). *The Neuroscience of Social Interaction*. Oxford: Oxford University Press.
- Gallagher, S. (2006) Logical and Phenomenological Arguments Against Simulation Theory. In D. Hutto and M. Ratcliffe (eds.), *Minding our Practice: Folk Psychology Re-assessed*. Springer Publishers.
- Gergely G., Bekkering H., Király I. (2002). Rational Imitation in Preverbal Infants. *Nature*, vol. 415, p. 755.
- Gergely, G., & Csibra, G. (2003). Teleological Reasoning in Infancy: The Naive Theory of Rational Action. *Trends in Cognitive Sciences*, 7(7), pp. 287-292.
- Gopnik, A., Capps, L. and Meltzoff A.N. (2000). Early ToM: What the Theory can Tell us About Autism. In S. Baron-Cohen, H. Tager-Flusberg and D.J. Cohen (ed.), *Understanding Other Minds. Perspectives from Developmental Cognitive Neuroscience*. Second Ed., Oxford: Oxford University Press, pp. 50-72.
- Gould, S. J., & Lewontin, R. C. (1979). The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme. Proceedings of the Royal Society of London. Series B, *Biological Sciences*, vol. 205, n°. 1161, pp. 581-598.
- Guillo, D. (2007). *Qu'est-ce que l'évolution ? : Le vivant selon Darwin et le néodarwinisme*. Paris : Ellipses.
- Hare, B., Brown, M., Williamson, C., Tomasello M. (2002). The Domestication of Social Cognition in Dogs. *Science* 22, Vol. 298. n°. 5598, pp. 1634-1636
- Harris, P. L. & Koenig, M. (2006). Trust in Testimony: How Children Learn About Science and Religion. *Child Development*, 77, pp. 505-524.
- Harris, P. L. (2002). What do Children Learn from Testimony?. In P. Carruthers, M. Siegal & S. Stich (Eds.), *Cognitive Bases of Science*. Cambridge: Cambridge University Press.
- Havelange, V. (1998). Le social en débat : cognition ou interpretation. In V. Havelange (dir.), *Intellectica*, n° 26-27, 1-2, pp. 9-55.
- Hirschfeld, L. (1996). *Race in the Making: Cognition, Culture, and the Child's Construction of Human Kinds*. Cambridge MA/ London-England. MIT Press.
- Humphrey, N. K. (1976). The Social Function of Intellect. In P. Bateson and R. A. Hinde (éd.), *Growing Points in Ethology*. Cambridge: Cambridge University Press.
- Hutto, D. (2004) The Limits of Spectatorial Folk Psychology. *Mind & Language*, vol. 19, n° 5, pp. 548-573.
- Koenig, M. & Harris, P. L. (2005). The Role of Social Cognition in Early Trust. *Trends in Cognitive Sciences*, 9, pp. 457-459.
- Lassègue, J. & Visetti, J-M. (2002). Que reste-t-il de la représentation ?. *Intellectica*, 2, n°35, pp. 7-25
- Mayr, E. (2002). *What Evolution Is*. New York: Basic Books.
- Meltzoff, A. N. (1995). Understanding the Intentions of Others: Re-enactment of Intended Acts by 18-month-old children. *Developmental Psychology*, 31, pp.838-850.
- Nisbett, R. E. (2003). *The Geography of Thought: How Asians and Westerners Think Differently ... and Why*. New York: The Free Press.
- Pinker, S. (1997). *How the Mind Works*. New York: W. W. Norton & Company.
- Proust, J. (1998). Naturalisation. In O. Houdé, D. Kayser, O. Koenig, J. Proust, F. Rastier (eds), *Vocabulaire des Sciences Cognitives*. Paris: PUF.
- Quéré, L et A. Ogien (dir.) (2006). *Les moments de la confiance. Connaissance, affects et engagements*. Paris : Economica, Coll. "Etudes sociologiques", 232p.
- Richerson, P. J. & Boyd, R. (2004). *Not By Genes Alone: How Culture Transformed Human Evolution*. Chicago: University Of Chicago Press.

- Robertson, A.F. (1996). The Development of Meaning: Ontogeny and Culture. *The Journal of the Royal Anthropological Institute*, Vol. 2, n°. 4, pp.591-610.
- Searle, J. (1983). *Intentionality. An Essay in the Philosophy of Mind*. Cambridge: Cambridge University Press.
- Sperber, D. (1990). The Epidemiology of Beliefs. In C. Fraser & G. Gaskell (eds), *The Social Psychological Study of Widespread Beliefs*. Oxford: Clarendon Press, pp. 25-44.
- Sperber, D. (1996), *Explaining Culture: A Naturalistic Approach*, London. Blackwell Publishers.
- Sperber, D. (2000). An Objection to the Memetic Approach to Culture. In R. Auger (ed.), *Darwinizing Culture: The Status of Memetics as a Science*. Oxford: Oxford University Press, pp. 163-17.
- Soproni, K., Miklósi, A., Csányi, V. and Topál, J. (2001). Comprehension of Human Communicative Signs in Pet Dogs. *Journal of Comparative Psychology*, Vol. 115, No. 2, pp. 122-126.
- Sperber, D. & Hirschfeld, L., A. (2004). The Cognitive Foundations of Cultural Stability and Diversity. *Trends in Cognitive Sciences*, 8(1), pp. 40-46.
- Tooby, J. & Cosmides, L.(1990). The Past Explains the Present. Emotional Adaptations and the Structure of Ancestral Environments. *Ethology and Sociobiology*, 11, pp. 375-424.
- Tooby, J. and Cosmides, L. (1992). The Psychological Foundations of Culture. In J. H. Barkow, L. Cosmides and J. Tooby (eds.), *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. Oxford: Oxford University Press.
- Wilson, D.S. (2005). Evolutionary Social Constructivism. In Gottschall, J. & Wilson, D. S. (ed.), *The Literary Animal: Evolution and the Nature of Narrative*. Evanston, Ill: Northwestern University Press.