

## Folksociology and the Cognitive Foundations of Culture

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**RESUME :** *Folksociology* et les fondements cognitifs de la culture. Une caractéristique de la vie sociale humaine est sa variabilité au cours de l'histoire et entre les cultures. Il y a cependant une constante, qui réside dans l'importance du sentiment d'appartenance au groupe, dans le raisonnement à propos du comportement des autres. Le fait que des modes de raisonnement soient acquis en fonction du groupe auquel on appartient a typiquement été considéré comme problématique pour les théories de l'apprentissage selon lesquelles ce sont les mêmes processus cognitifs qui sont utilisés dans le raisonnement quels que soient les domaines, indépendamment du contenu. Nous avançons ici que l'accent mis sur la l'idée d'un apprentissage général et sur la variabilité culturelle obscurcit le fait que les processus spécifiques à un domaine jouent un rôle crucial dans la solidification et le maintien de la vie sociale humaine *et* dans sa variabilité culturelle. On explore cette hypothèse en examinant les éléments en faveur d'une compétence modulaire évoluée pour la 'folksociology' gouvernant le développement du raisonnement de groupe ; compétence cruciale pour comprendre à la fois l'invariabilité trans-culturelle et la variabilité culturelle. Tous les animaux sociaux doivent nécessairement coordonner leur comportement avec les membres de leur propre groupe social et les membres d'autres groupes sociaux. Pour ce faire, ils ont probablement des compétences cognitives particulières correspondant aux catégories conspécifiques, en tant que membres de catégories ou de groupes sociaux divers. Le cas humain est cependant particulier. La socialité humaine, et en particulier les catégories et les groupes humains, sont culturellement et historiquement constitués ; ainsi les compétences sociales sont acquises dans des environnements culturels différents. Une capacité cognitive, dont les entrées déclenchant et les sorties sont globalement figées (comme pour la plupart des espèces sociales non humaines) ne serait ainsi pas pertinente pour rendre compte des systèmes variables de la catégorisation sociale humaine.

**MOTS-CLE :** Socialité, Evolution, Cognition

**ABSTRACT:** A hallmark of human social life is its variability across cultures and history. One constant, however, is the importance of group membership in reasoning about the behavior of others. The acquisition of group-based reasoning has typically been viewed as a problem in social learning, in which the same cognitive processes are used that support reasoning across any number of domains regardless of content. Here I argue that emphasis on domain-general learning and cultural variability obscures the crucial role that domain-specific processes play in securing and sustaining human social life *and* its cultural variability. The hypothesis is explored by reviewing evidence in favor of an evolved modular competence for folksociology that governs the development of group-based reasoning and is crucial to understanding both pancultural constancy and cultural variability.

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All social animals face the challenge of coordinating behavior with members of their own and other social groups. To meet this challenge, they are likely to have dedicated cognitive abilities to categories conspecifics as members of different social categories or groups. The human case however is special. Human sociality, and in particular human categories and groups, are culturally and historically constituted; accordingly social competencies are acquired in variable cultural environments. A cognitive ability, whose triggering inputs and outputs are largely fixed – like those of many nonhuman social species – would thus be unable to account for the variable systems of human social categorization

One possible explanation of this fundamental disjuncture between the psychological bases for nonhuman human social systems and human cultural systems, is that the latter are supported by competencies that are purely socio-cultural products and “internalized” by individuals via general learning abilities. Indeed, anthropologists, with their characteristic psychophobia, when speculating on culture’s cognitive foundation, have viewed the human mind as a “blank slate,” or, less metaphorically, as a learning system without limits or biases, equally open to any kind of cultural content (see Sperber, 1985; Hirschfeld, 2002). Over the past two decades, however, progressively more cognitive scientists have come to reject this view, proposing that the acquisition of knowledge and competencies is a process guided by innate learning dispositions that allow the child to approach different domains with schemas that are, at least in part, domain-specific (Fodor, 1983; Hirschfeld & Gelman, 1994; Sperber, Premack & Premack, 1995). The bulk of supporting empirical research is on cognitive competencies that vary little or none across cultures (e.g., Theory of Mind [Avis & Harris, 1991], naïve physics [Dehaene, and al., 2006], and to a large extent folkbiology [Diamond, 1966; Atran, 1990; This focus aside, Dan Sperber (Sperber, 1996; Sperber & Hirschfeld, 2004) has argued that this domain-specific view of cognitive organization is more than compatible with cultural variation; it goes a long way toward explaining it. On this view, many cultural phenomena result from the dynamic interaction between innate, domain-specific competencies and environmental information. Here I show how this approach can solve the problem that arises with human – i.e., cultural – systems of social categorization without appeal to the implausible learning theories mentioned just above. Specifically, I propose that humans possess a distinct competence for folksociology that at once is evolutionarily linked to nonhuman systems of social categorization and meets the challenge of the uniquely human system of cultural categorization.

### 1. CULTURAL SYSTEMS OF SOCIAL CATEGORIZATION

It has been argued that the increasingly complex forms of group living triggered the evolution of a higher-order cognitive capacity to interpret and predict the actions and motives of others by attributing to them unseen mental states. Such a capacity for naïve psychology may play a major role in cooperation, communication, deception and its detection, coalition formation, and social competence generally (see Whiten & Byrne, 1997). However, there is no reason to assume that, in some primates and in particularly in humans, it replaces, rather than complements, forms of social competence found in social species without naïve psychology. Primates (human and nonhuman) simultaneously belong to many social groupings (based on territory, intragroup

status, sex, biological relatedness, and transient or opportunistic coalitions), membership in any of which provides a basis for predicting and interpreting the behavior of others (Hirschfeld, 2001). The cognitive demands of such inference are sufficiently specific and complex to suggest the possibility of a special-purpose modular competence in naïve or folksociology quite distinct from folk psychology, and of probably much greater ancestry.

Human societies are thoroughly cultural. Anthropologists, historians, and increasingly psychologists (as this volume attests) have documented wide and challenging variation in human social experience. This variation accepted, there is reason to believe that it is grounded in innate predispositions that are strikingly specific in the kinds of judgments they support. Several lines of evidence reveal that human infants are capable of differentiating others on information diagnostic of precisely those social dimensions that ultimately play a predominant role in categorizing humans into groups in virtually all known societies. These include age (Brooks & Lewis, 1976), gender (Miller, 1983), language spoken (Mehler and al., 1988), and even race (Kelly and al., 2005). This is not to suggest that innate dispositions directly *deliver* judgments about gender, language, age, or race. All require some – although staggeringly slight – experience with the world. (The nature and scope of the necessary experience varies by social dimension. Six-day-old neonates discriminate between mother’s native tongue and another language, even when both are spoken by an unfamiliar speaker, strongly suggesting that prenatal linguistic input is not trivial. In contrast, 3-month-old but not 1-month-old infants discriminate own – i.e., most commonly encountered – race from other races – i.e., less commonly encountered, yet no one claims that young infants *know* their own race.)

Although infants are predisposed to attend to social dimensions that for adults are further elaborated, there is considerable difference between these precocious representations of difference and later-emerging cultural ones. All forms of social organization, from biological-sounding “kinship” to such artificial groupings as monastic orders and political parties, vary culturally and rely on culturally transmitted, partly explicit institutional rules. Even differences that otherwise seem rooted in “natural” fact vary dramatically across cultures. Consider the classification of kinfolk. On the one hand, as anyone who has witnessed a young child acquire language knows, kin terms like “mama” and “papa” are invariably among the first words produced and understood (Hirschfeld 1989). Particularly for speakers of English, kin terms represent the cultural recognition of relations of procreation and affiliation, and more or less accurately map them linguistically (Goodenough, 1955). All full siblings are biologically equally close relations – and hence are referred to by the same kin term -- first cousins somewhat less so – hence cousins are referred to by a kin term not used for full siblings – second cousins even less so, and so on. Yet, the thrust of kinship studies – largely what anthropologists *did* during much of the first half of the 20th century – has been the demonstration that understanding consanguinity requires an understanding the specificities of cultural tradition rather than the universals of human procreation (Schneider, 1980).

As illustration, consider the system of kin classification of the Batak of highland Sumatra, among whom I worked in the 1970s. Kin categories not only identify *relations* of consanguinity, but their *meanings* as well, and kin terms more or less reflect this. In the case of the Batak system, kin categories, rather than indicating biologically coherent relationships, pick out preferred

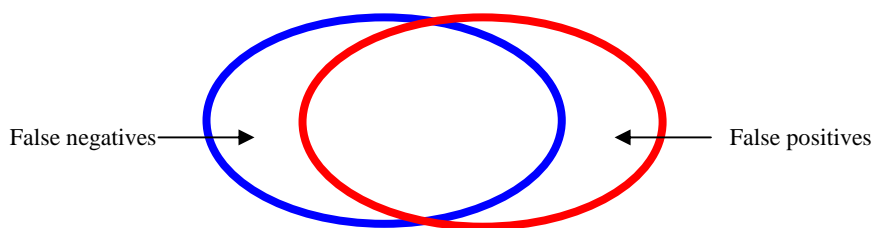
and prohibited marriage partners (this system, found throughout much of southeast Asia, has figured in one of anthropology's most influential debates [Lévi-Strauss, 1949; Leach, 1970]). In contrast to the American system in which marriage between all first cousins is generally avoided, among the Batak, kin classified as parallel cousins (i.e., the child of a parent's same-sexed sibling – e.g., father's brother's child) are in the same category as one's full siblings. Marriage between them is prohibited. On the other hand, cross-cousins (i.e., the child of a parent's opposite-sexed sibling – e.g., mother's brother's daughter) are preferred marriage partners. These contrasting classifications do not reflect relations of biological proximity: parallel and cross cousins are equally close biologically

The classification of kinfolk, of course, is not the only system of “natural” categories which varies across cultures. Even “givens” like “sex” (not gender) vary intriguingly across cultural traditions, as Laqueur (1990) has demonstrated in his history of the shift from a one-sex system to the modern two-sex system. Similarly, while the notion of child is evidently a universal (infants are able to discriminate children from adults, and both from midgets), it is also widely claimed as a cultural construction (Ariès famously and somewhat exaggeratedly [1962] argued that the child was not recognized as a recognized social category prior to the 15th Century). As with most categories, a particular pattern of partitioning a domain is linked to a particular pattern of reasoning about the domain as well. In contemporary American society, for example, pre-adolescents are often seen as incapable of safely crossing a busy street without supervision, whereas in much of the world 8-year-olds are preferred caregivers for infants (Morelli, and al., 2003).

## 2. THE PROPER AND ACTUAL DOMAINS OF FOLKSOCIOLOGY

How do we move from species-wide, innate predispositions – strikingly evocative of but importantly different from later-emerging systems of categorization – to the cultural elaborations that exploit them? To explain this shift, Sperber (1996) introduced the notion of the “domain of a module”. He proposed that a cognitive module – be it a snake detector, a face-recognition device, a language acquisition device – functions to process a specific type of stimuli or inputs – e.g., snakes, human faces, or linguistic utterances. These inputs constitute the *proper domain* of the module. To recognize information relevant to its proper domain, input has to meet specific conditions in order to be accepted for further processing. Inputs that meet the input conditions of a module constitute its *actual domain*. Sperber argues that the actual and the proper domain of a module are unlikely ever to be strictly co-extensive. Some items belonging to the proper domain of the module may fail to satisfy the domain's input conditions – a snake may look like a piece of wood. Some items not belonging to the proper domain of a module may nevertheless satisfy its input conditions – a piece of wood may look like a snake. Figures 1 illustrates this.

Figure 1: the proper domain (in blue) and the actual domain (in red) of a cognitive module



In the case of folksociology, the proper domain of primate and ancestral modules for social categorization consisted in the recognition of group affiliation of conspecifics. The actual domain of these modules was determined by whatever (in an individual's bodily appearance, behavior, language, or the reaction of others to them) provided evidence of their group memberships. The culturalization of human social groupings must initially have consisted in the elaboration of these cues of group membership. For instance, natural sexual dimorphism was superimposed a cultural gender dimorphism. Thus existing mechanisms for social cognition were presented with culturally contrived superstimuli (just as in the case of face recognition superstimulated with make up). Cognitively, groups are characterized by whatever cues makes it possible to identify their members and by the inferences this identification affords.

Just as living kinds are categorized both on the basis of direct experience and communication, the recognition of social groups draws on both visual information and verbal labels, clichés and other expressions of group membership. (In fact, developmentally, attention to verbal information precedes attention to perceptual input, even for putatively “concrete” categories such as race [Hirschfeld, 1996].) The displacement of natural signs of group membership by more salient cultural signs together with communication about the consequences of group membership made possible the construction of novel social groupings, a process which has a self-realizing character (see Hacking, 1995). If a culture recognizes, say, castes as genuine social categories with distinctive consequences for their members, then they are genuine social categories (although their actual sociological character may be misrepresented in the folksociology). Whatever culturally constructed social groupings happen to fill, at a given time and place, the actual domain of a social competence module also falls within its proper domain.

### 3. MODULAR COMPETENCIES AND GROUP-BASED REASONING

To better understand the nature and scope of the modular competence for naïve or folksociology, it is useful to identify and contrast it with another evolved, domain-specific capacity for understanding the behavior of others. In addition to reasoning about people with respect to memberships in groups, humans readily account for the actions of others as a function unseen mental states and dispositions. In earlier research, the two capacities had typically been studied independently, suggesting that they represent distinct phenomena. But it has become more common to consider, as Hamilton and his colleagues argue, that group-based reasoning in fact relies on the same cognitive mechanisms and processes as person perception (Crawford and al., 2002;

Hamilton & Sherman, 1996) and to treat “naïve psychology” and “naïve sociology” as synonyms.

As already observed, it is now widely accepted that mentalizing (or Theory of Mind [ToM]) – the capacity to interpret and predict another’s actions on the basis of unseen mental states – appears to be a species-specific modular capacity (Povinelli & Bering, 2003; Tomasello and al., 2003), subserved by a special purpose neuro-cognitive module (at least in humans) (Frith & Frith, 2003; Gallagher & Frith, 2003). Thus, while culture is likely to elaborate, highlight or background them, clearly, attributions of intentional states have an innate basis. Differences in learning environments do not significantly alter the development of the abilities to make mental state attributions, so that, for example, living in a culture that disprefers attributions of dispositions and traits in favor of more interdependent representations of self or more communal practices and ideation does not reduce the individual’s capacity for such attributions (Nisbett, 2003; Avis & Harris, 1991).

I further propose that explaining the behavior of others in terms of group membership is also based in a distinct, evolved module. Although less comprehensive, evidence for a modular device for folksociology is supported by several lines of research. The first demonstrates that in spite of considerable variation in their elaborations across cultures, the *types* of social categories that have been documented vary little. A surprisingly small number of dimensions of social difference appear to predominate in all cultures and across all historical epochs: sex/gender, age, kinship, language spoken, and race/ethnicity/caste. (For race/ethnicity, imaging studies suggest that the perception of and reasoning about racial stereotypes may involve unique patterns of neural activation [Phelps and al., 2000; Hart and al., 2000; Richeson and al., 2003; Wheeler & Fiske, 2005; Eberhardt, 2005].)

Not only are these dimensions of social difference recurrently encountered in a broad range of cultures, their representations typically share two important qualities. On the one hand, they are among the most important – most likely to be attended to, encoded, and recalled – of group identities. As we observed earlier, the ability to classify people over these types of categories emerges quite early, in some important respects during infancy. On the other hand, these dimensions of social difference are generally linked to a singular mode of reasoning, namely, essentialism. Psychological essentialism, first theorized by Medin & Ortony (1989), is the belief that each member of a group is endowed with a group-specific essence that governs the individual’s development and behavior (Gelman, 2003; Gelman & Hirschfeld, 1999). Sex/gender, age, kinship, language spoken, and race/ethnicity/caste are virtually always, to the degree that current research permits generalization, essentialized (Prentice & Miller, 2006; Haslam and al., 2000; Mahalingham, 1999; McIntosh, 2002; Hirschfeld, 1996). These qualities – wide-spread distribution, precocious knowledge about, and the robust development across very different learning environments – are hallmarks of modular competence (Hirschfeld & Gelman, 1994).

A second line of supporting evidence comes from research on stereotyping. Several studies have shown that the most commonly held stereotypes are based in nonconscious, automatic processes (e.g., similarity judgments, categorization formation, within and between category biases [Banaji & Greenwald, 1994; Hilton & von Hippel, 1996], among other strategies of

category-based reasoning under uncertainty). Relevant to this discussion is work demonstrating that even quite young children are subject to subtle social biases that develop in significant measure on their own. Children, like adults, show ingroup favoritism even when membership is based on trivial commonalities (Nesdale & Flessner, 2001). Even young children are susceptible to stereotype threat (decrements in a person's performance on a challenging task, triggered by priming for stereotypes relevant to the subject's identity [Ambady and al., 2001]). Intriguingly the precocious susceptibility to stereotype threat is evident even among children who otherwise show little evidence that the triggered stereotype plays a significant role in shaping their daily interactions (Hirschfeld, 1996).

These findings are inconsistent with the widely held view that young children's early understanding of social categories is superficial, either in the sense of being tethered to surface differences in appearance or in the sense of reflecting shallow reasoning. For example, young children, according to conventional wisdom, grasp neither racial nor gender constancy, instead believing that superficial and reversible changes in skin color actually change an individual's racial identity or that superficial aspects of appearance like hair length clothing determine one's gender. On this view, only as children mature does their understanding become more adult-like, e.g., grasping that race and gender are functions of a person's biological constitution/heritage. In one important study, Aboud and Skerry (1983) found that when Canadian 5-year-olds were shown pictures of a familiar Anglo-child dressed in traditional Eskimo clothing most agreed that the child had become Eskimo. Semaj (1980) found a similar pattern of reasoning when he asked young children whether a child would change race if he wore a blond wig and light make-up.

Against this view, I hypothesized that if reasoning about social groupings is governed by a modular device, we would predict a different developmental course. Even early representations of social groups would then be more theory-like and less tied to perceptual appearances. In revisiting the question (Hirschfeld 1996), I speculated that children may have found Aboud & Skerry's and Semaj's transformation tasks difficult because the changes were both implausibly abrupt and challenging to integrate with preexisting knowledge about gradual changes typical of familiar biological processes such as growth. To rule out this possibility, I asked preschoolers whether racial and other corporeal properties would change in the context of transformations that occur over one's life span and over generations. I found that when asked which property would remain unchanged as a person grew up – hair and skin color vs. clothing style and color – even 3-year-olds judged that racial properties were more constant than sartorial ones. When asked which property would remain unchanged as the person grew up, 4-year-olds judged that racial properties like skin color were more constant than body build (which they are not). When asked which properties would be inherited (i.e., if a heavy-set parent was black was he more likely to have a thin, black child than a heavy-set white one?), children's reasoning was the same. On a different task, preschool children, when asked whether a child would develop racial properties matching her birth parents or those of her adopted parents, showed a consistent birth parent bias as early as 3 years of age. Although these studies were conducted with North American and Northern European children, a similar theory-like representation of race/ethnicity has been documented by Giménez & Harris for Spanish preschoolers (2002), by Astuti, Solomon & Carey (2004) in their work with

6-year-olds in Madagascar, and by Mahalingham in his study of South Asian preadolescents (1999).

Modular competencies channel children's attention to specific kinds of things (e.g., with folkbiology, nonhuman living organisms or with naïve physics, expectations about the movements of objects). In domains like folksociology, in which cultural input evidently plays a significant role, the modular competence specifies that membership in essentialized groups is particularly informative, but it does not specify which groups are essentialized: e.g., in contemporary North America it is race, but in contemporary South Asia it is caste. Relevant groups must be inferred from cultural information extracted from the flow of everyday social interactions, and virtually all accounts assume that children's cultural competence results from their participation in common cultural experiences. On this view, "expert" models provide frequent and informative input about the norms, expectations, and meanings of the myriad array of social groupings that the child encounters. Thus, it is important for a child growing up in North America that she knows that groups based on a person's occupation are less important than ones based on his race, whereas the opposite is true in South Asia.

Hirschfeld, Bartmess, White & Frith (2007) examined autistic children's grasp and use of common racial and gender stereotypes, with an eye toward testing whether autistic children's well-documented difficulties in explaining the behavior of others (Baron-Cohen 1996) is limited to mentalizing or whether it also affects explanations based on social group membership. The logic of the study was that if mentalizing, but not group-based reasoning, is impaired in children with autism, this would strongly support the hypothesis that the development of group-based reasoning is a function of a module distinct from the module that governs mentalizing. We found that 6-year-old (MVA) autistic children with impaired ToM and normal 3-year-olds (who do not have fully articulated ToM) are as likely to use common racial and gender stereotypes as normally developing or ToM unimpaired autistic 6-year-old children. In a task in which the child could use either group-based or low-order mentalistic reasoning (within the competence of both impaired autistic 6-year-olds and normal 3-year-olds) to explain another's behavior, 6-year-old (MVA) autistic children with impaired ToM and normal 3-year-olds were more likely to use group-based explanations than unimpaired autistic and normal 6-year-olds. In sum, children lacking fully developed ToM, showed a more robust folksociology than children whose ToM is fully articulated, suggesting that folksociology is not only a function of a distinct module but a more precocious one.

These findings support the modular device hypothesis, but they also speak to a second issue, more directly on point here: what sort of social experience is necessary to develop normative group-based reasoning skills? Autistic children's social interactions are by definition not normal. If significant engagement with the flow of everyday social life is necessary, as social learning theory holds, why are autistic children so adept at *learning* common racial and gender stereotypes? Even if we assume a very robust ability for associative learning – one, for example, with which even autistic children's experience of mother's baking cakes and father's mowing lawn is sufficient to learn common gender stereotypes – it does not explain autistic children's unimpaired acquisition of *racial* stereotypes. A capacity for empirical generalizations based on associative learning will not do to explain why

autistic children believe – as our study found – that blacks are less honest, dirtier, and less successful academically than whites. These stereotypes are not true. Unguided observation alone is insufficient. Cultural learning, rather than being a function of redundant encounters with cultural information gained through everyday social experience, is a function of an as-yet-not-understood system for identifying cultural norms. In any event, the most plausible hypothesis is that acquisition is subserved by a modular competence that channels attention to appropriate input. In this case, input about which social groups are essentialized (see below).

What about the role of pedagogical models in acquiring knowledge of group-based reasoning? Folk wisdom holds that local (daily experience-near) models are especially important: “The acorn does not fall far from the tree” or “as the twig is bent, so grows the tree.” The child is seen as a largely passive observer; what counts is the degree of exposure to relevant input and who the model is. Parents and teachers are presumed to be the most informative sources of information. As intuitive as this may seem, for many cultural domains (Maccoby 2000; Harris 1998), and racial attitudes in particular, it is not the case (Bigler, 2004; Aboud, 2003). Parents and teachers wildly overestimate their influence in shaping children’s beliefs (children and parents’ racial attitudes show virtually no relationship, one to the other).

On reflection, this is unsurprising: children need to develop culturally normative understandings; accordingly they should attend to input that reflect the community’s beliefs and practices. Relying on sources that are too local – say, a particular family tradition or a particular teacher’s image of the world – risks relying on input that may be outside community norms. The issue can be cast as one of sampling. The child needs to identify reliable sources of information and hence needs to be biased against sampling too narrowly. In the case of the very young child, whose range of encounters is limited, it often means attending to – privileging – less frequently encountered sources of information over more frequently encountered ones.

As illustration, consider how the child develops an accent. In the typical case, it seems straightforward; the child models her accent on that of her parents or other important care-givers. When the local model, however, is not the best source – e.g., young children of nonnative speakers – giving priority to a local model would lead to inappropriate accent (from the perspective of the broader language community). In fact, young children of nonnative speakers do not speak with the accents of their parents. They develop normative speech patterns (Hirschfeld, 1996; Harris, 1998). Presumably this occurs because the local sources of linguistic information are discounted relative to less local and less frequently encountered sources. Somehow the child knows to sample the broader speech community in acquiring an accent.

If the modular device hypothesis is correct, we might find sampling biases in many domains. Relevant here is whether a sampling bias is used in the acquisition of group-based reasoning. A study I conducted speaks to the point. That study examined the processes by which children come to endorse a culture-specific strategy for attributing racial identity in North America, a system of inference called the one-drop of blood rule (Hirschfeld, 1996). On the rule, any person with traceable black ancestry is classified black. Children were shown pictures of an interracial couple and asked to judge the appearance of their offspring from three drawings, one depicting a black child, another a

white child, and another a child with intermediate features (made by morphing the black and white drawings). By early adolescence white children endorsed the one-drop rule, judging that the child would look black. Black adolescents, in contrast, judged that the couple's child would be mixed. On one interpretation, children's judgments reflect a feature of their local, family environment, namely the subject's race. A second interpretation would be that their judgments derive from a normative community view, reflecting biased attention to a community-wide standard. The initial study did not allow us to distinguish between the two interpretations since the white subjects were drawn from a predominantly white community and the black subjects were drawn from a community with a large minority population. However, when we included white subjects living in the community with a large minority population in the analysis, we were able to disentangle the two interpretations. Unlike their counterparts in the majority community, white children from the mixed race community judged, as had black children from the same community, that mixed race couple's child would look mixed. In short, predictions of how the child would respond were more accurately assessed by looking to the community in which the child lives, not by his race – by looking to the wider cultural environment rather than the more local one.

#### 4. WHY DO WE NEED A FOLKSOCIOLOGY?

Social reasoning makes use of a variety of skills and competencies and is markedly cultural. I have argued that reasoning about the motivations and actions of others is subserved by two distinct modules: one that governs reasoning about persons through attributions of mental states and traits, and a second that governs reasoning about persons in virtue of their status as members of groups. Both modules are exploited culturally, although folksociology appears linked to more elaborately cultural treatments than does ToM. What explains the development of two distinct modules that seem to accomplish much the same task? Why does each module support different degrees of cultural exploitation? Answers to both questions turn on the evolution of these two modules, particularly the tasks they performed and the reasons performing them represents an adaptation to conditions in the ancestral environment.

Both modules illustrate the dynamic interaction between an innate predisposition and ambient environmental exemplars; they do not explain how cultural variation in human groupings emerges. ToM is important to establishing tracking individuals and their commitment to joint endeavors, predicting transgressions to such commitments, and developing strategies for maximum exploitation. In some respects folksociology provides the wherewithal to do precisely what ToM does best: individuate persons. Sorting people into groups is heightened by heuristics that make individuation difficult, the most familiar being the so-called other race effect. People are generally better at discriminating individuals of their own race over individuals of another race. Previous research suggested that this was learned and that younger children were equally capable of discriminating members of their own and other races (Lindsay and al., 1991). Recent work, however, has documented the other-race effect in 3-month-old infants, strongly suggesting that a significant innate structure is involved (Sangrigoli & de Schonen, 2004).

Arguably, however, the most persistent consequence of cultural partitionings of the social world is the cognitive representations that subserve

intergroup hostility and violence. So closely connected are group-based reasoning and intergroup conflict that it is generally accepted that the former is the cognitive system that supports the latter: Unreflective hostility to members of other groups provides protection against outgroup predation somewhat like unreflective fear of snakes provides protection against snake bites. The prevalence of stereotyping (Levine & Campbell, 1971), the ease with which it and other forms of intergroup biases emerge (Aboud, 1988), and their incorrigible automaticity (Banaji & Greenwald, 1995; Hilton & von Hippel, 1996; Tajfel, 1981) all lend support to this hypothesis. Evolutionarily, the cognitive system that subserves intraspecies, intergroup hostility is a fairly ancient one; chimps and other primates engage in significant intergroup violence (Wrangham & Peterson, 1996), that depends on the ability to distinguish members of the ingroup from those of outgroups.

There are several reasons to be hesitant in how we interpret these findings. First, group-based judgments may be less automatic, at least in terms of target populations than previous research suggests. Kurzban, Cosmides & Tooby (2001) provide evidence demonstrating that the susceptibility for group-based classifications may have evolved to facilitate episodic coalition building (with no violent valence) rather than fixed outgroup enmity *per se*. Second, *pace* the argument that group-based biases are a result of an adaptation against outgroup predation, developmental research has established that ingroup favoritism precedes outgroup enmity (Aboud, 2003). Studies using the minimal group paradigm – a task used to demonstrate that individuals favor members of their “ingroup” regardless of whether there is a motivated basis for group membership or whether there is any face-to-face contact with other members of the ingroup – do not reveal outgroup enmity, only ingroup favoritism. The latter does not steel individuals against outgroup predation at all, and presumably could not have evolved in response to it.

Against the protection-against-predation hypothesis, I propose that folksociology evolved from a predisposition to expand the scope of ingroups through an inclusionary heuristic rather than constrict its scope through exclusionary biases (Hirschfeld, 2001). Our ancestors lived in small, nomadic groups, whose size, unlike that of nonhuman primates, was not constrained by cognitive factors: in a number of nonhuman social species, group size can be predicted by knowing the size of the neocortex (Dunbar, 1992), whereas the population size of early *Homo sapiens* bands is considerably smaller than would be predicted by the same technique (Dunbar, 1993). This disjunction between human and other social species suggests that human band populations were constrained either by noncognitive, exogenous factors or that coresidential bands are not the entity on which the size of the neocortex is a constrained. Perhaps the relevant population associated with the human band is systematically larger than the band itself.

Elsewhere I proposed that the latter makes more sense (Hirschfeld, 2002), since, among other things, little evidence suggests that exogenous factors, such as carrying capacity prior to the modern era, constrained population size (Sahlins, 1972). Human groups have always included individuals who were not members of the residential band, either because “ingroups” episodically split into smaller groups to better exploit the environment or because “ingroups” include members who are never coresidential, such as extended kin networks or trade partners. Neanderthals engaged in sustained, although modest-distance, intergroup trade (Gibson, 1996); and certainly since the emergence of

early modern humans, commitment to long-distance intergroup trade and intergroup specialization is well established (Tattersall & Schwartz, 2000; Horan and al., 2005).

From this and other evidence, I argue that folksociology evolved as an adaptation to facilitate the integration of infrequently encountered individuals (and groups) whose language and artifacts (particularly clothing and other decoration) may well have differed from those of the residential ingroup. That is to say, it is plausible that the proper domain of folksociology was a cognitive adaptation that readily included in the ingroup trade-partners, wife “takers”, non-resident specialists, etc. – individuals whose sustained relations with the ingroup (residential band) were crucial. It accomplished this task by creating a cognitive principle of inclusion – shared group essence – that would incorporate nonresidential individuals into the ingroup. This susceptibility plausibly evolved in an ancestral environment in which resources were generally abundant and intergroup competition was low. However, as technologies of ecological, political, and economic exploitation accompanying more permanent settlements and the increase in residential group population, an adaptation to incorporate became a device for supporting group-based exclusion. The same essentialist reasoning that allowed the incorporation of unfamiliar in the ingroup in virtue of a shared, putative essence, served as a cognitive strategy for disincorporating familiar into exploitable resources.

## 5. CONCLUSIONS

The focus here has been on the cognitive foundations of folksociology, but the hope is that the discussion will shed light on the cognitive foundations of cultural phenomena more generally. The point of departure is Sperber’s (1995) theoretical framework that explains such phenomena not by identifying their meanings (cultural significance) but by identifying how and why they become widely distributed and stable. Linking our explanations of cultural phenomena to a modular view of cognitive architecture has the advantage of linking such explanations to plausible cognitive stories. Explanations that rest on domain-general learning, whether they are accounts of kinship, folkbiology, or color naming, remain popular but largely unconvincing. On Sperber’s approach, a broad repertoire of cognitive competencies in dynamic interaction with environment underlies (aspects of) the production and distribution of cultural phenomena. The claim is that the operation of these competencies permits – indeed enables – the cultural exploitation of representations and other phenomena that may otherwise have little cultural valence.

That domain-general processes play a role in the distribution of cultural phenomena is not doubted. Analogical reasoning is fundamental to the creation of the networks of resonance that cultural traditions famously construct – the “weaving of webs of meaning” as Geertz (1973) aptly termed them. The way in which this happens is poorly understood, in good measure because unlike analogies that *reveal* parallel structures in otherwise distinct domains – such as anger and hydraulic pressure [Lakoff, 1987] – cultural analogies seem to *create* parallels. Nonetheless, given the current state of research, the modular organization of human cognitive abilities remains the most comprehensive and compelling account of how both the recurrence and variability in cultural forms is secured.

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### REFERENCES

- Aboud, F. E. (1988). *Children and Prejudice*. York, NY: B. Blackwell.
- Aboud, F. E. (2003). The Formation of In-group Favoritism and Out-group Prejudice in Young Children: Are They Distinct Attitudes? *Developmental Psychology*, 39 (1), pp. 48-60.
- Aboud, F. E., & Doyle, A.-B. (1996). Parental and Peer Influences on Children's Racial Attitudes. *International Journal of Intercultural Relations. Special Issue: Prejudice, discrimination and conflict.*, 20 (3-4), pp. 371-383.
- Aboud, F. E., & Skerry, S. A. (1983). Self and Ethnic Concepts in Relation to Ethnic Constancy. *Canadian Journal of Behavioural Science*, 15 (1), pp. 14-26.
- Ambady, N., Shih, M., & Kim, A. (2001). Stereotype Susceptibility in Children: Effects of Identity Activation on Quantitative Performance. *Psychological Science*, 12 (5), pp. 385-390.
- Ariès, P. (1962). *Centuries of Childhood; A Social History of Family Life*. New York: Knopf.
- Astuti, R., Solomon, G. E. A., Carey, S., Ingold, T., & Miller, P. H. (2004). *Constraints on Conceptual Development: A Case Study of the Acquisition of Folkbiological and Folksociological Knowledge in Madagascar*. Boston, MA: Blackwell Pub.
- Atran, S. (1990). *Cognitive Foundation of Natural History*. Cambridge University Press.
- Avis, J., & Harris, P. L. (1991). Belief-desire Reasoning Among Baka Children: Evidence for a Universal Conception of Mind. *Child Development*, 62 (3), US Blackwell Publishers Inc, pp. 460-467.
- Banaji, M., & Greenwald, A. G. (1994). Implicit Stereotyping and Prejudice. In *The Psychology of Prejudice: The Ontario Symposium, Vol. 7* (Ontario symposium on personality and social psychology, Vol. 7.). Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc, pp. 55-76.
- Baron-Cohen, S. (1996). *Mindblindness: An Essay on Autism and Theory of Mind*. Cambridge, MA: MIT Press.
- Berlin, B. (1992). *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton University Press
- Bigler, R. S. (2004). How Parents Shape the Development of Values in Children. *PsycCRITIQUES* 2004.
- Brooks, J., & Lewis, M. (1976). Infants' Responses to Strangers: Midget, Adult, and Child. *Child Development*, 47 (2), pp. 323-332.
- Crawford, M. T., Sherman, S. J., & Hamilton, D. L. (2002). Perceived Entativity, Stereotype Formation, and the Interchangeability of Group Members. *Journal of Personality and Social Psychology*, 83 (5), pp. 1076-1094.
- Dehaene, S., Izard, V., Pica, P., Spelke, E. (2006). Core Knowledge of Geometry in an Amazonian Indigene Group. *Science*, 311 (5759), pp. 381-384
- Diamond, J. (1966). Zoological Classification System of a Primitive People. *Science*, 151, pp. 1102-1104.
- Dunbar, R. (1992). Neocortex Size as a Constraint on Group Size in Primates. *Journal of Human Evolution*, 22 (6), pp. 469-493.
- Dunbar, R. (1993). Coevolution of Neocortical Size, Group Size, and Language in Humans. *Behavioral & Brain Sciences*, 16, pp. 681-735.

- Eberhardt, Jennifer L. (2005) Imaging Race. *American Psychologist*, 60 (2), pp. 181-190.
- Fodor, J. A. (1983) *Modularity of Mind: An Essay on Faculty Psychology*. Cambridge, Mass: MIT Press.
- Frith, U., & Frith, C. (2003). Development and Neurophysiology of Mentalizing. *Philosophical Transactions of the Royal Society of London. Series B, Containing Papers of a Biological Character*, 358, pp. 459-473.
- Gallagher, H. L., & Frith, C. D. (2003). Functional Imagine of "Theory of Mind". *Trends in Cognitive Sciences*, 7 (2), pp. 77-83
- Gelman, S. A. (2003). The Essential Child: Origins of Essentialism in Everyday Thought. Oxford; New York: Oxford University Press.
- Gelman, S. A., & Hirschfeld, L. A. (1999). How Biological is Essentialism? In D. L. Medin & S. Atran (Eds.), *Folkbiology*. Cambridge, MA, US: The MIT Press, pp. 403-446.
- Geertz, C. (1973). *The Interpretation of Cultures*. New York, NY: Basic Books.
- Gibson, K. (1996). The Biocultural Human Brain, Migrations, and the Emergence of the Upper Palaeolithic. In P., Mellars and K., Gibson (Eds), *Modeling the early human mind*. The McDonald Institute for Archaeological Research, Cambridge, pp. 33-46.
- Giménez, Marta & Harris, Paul L. (2002). Understanding Constraints on Inheritance: Evidence for Biological Thinking in Early Childhood. *British Journal of Developmental Psychology*, 20 (3), pp. 307-324.
- Goodenough, Ward (1955) Componential Analysis and the Study of Meaning. *Language* 32, pp. 185-216.
- Hacking, I. (1995). The Looping Effects of Human Kinds. In *Causal cognition: A multidisciplinary Debate* (Symposia of the Fyssen Foundation.). New York, NY, US: Clarendon Press/Oxford University Press, pp. 351-394.
- Hamilton, D.L., & Sherman, S.J. (1996). Perceiving Persons and Groups. *Psychological Review*, 103 (2), US American Psychological Assn., pp. 336-355..
- Hart, A. J., Whalen, P. J., Shin, L. M., McInerney, S. C., Fischer, H. & Rauch, S. L. (2000). Differential Response in the Human Amygdala to Racial Outgroup vs. Ingroup Face Stimuli. *Neuroreport: For Rapid Communication of Neuroscience Research*, 11, pp. 2351-2355
- Harris, J. R. (1998). *The Nurture Assumption: Why Children Turn out the Way They Do*. New York: Free Press.
- Haslam, N., Rothschild, L., & Ernst, D. (2000). Essentialist Beliefs About Social Categories. *British Journal of Social Psychology*, 39 (1), pp. 113-127.
- Hilton, J.L., & von Hippel, W. (1996). Stereotypes. *Annual Review of Psychology*, 47, pp. 237-271.
- Hirschfeld, L. A. (1989). Rethinking the Acquisition of Kinship Terms. *International Journal of Behavioral Development*, 12, pp. 541-568.
- Hirschfeld, L. A. (1996). *Race in the Making*. MIT Press.
- Hirschfeld, L. A. (2001). On a Folk Theory of Society: Children, Evolution, and Mental Representations of Social Groups. *Personality & Social Psychology Review: Special Issue*., 5 (2), pp. 107-117.
- Hirschfeld, L. (2002). Why don't Anthropologists Like Children? *American Anthropologist*, 104 (2), pp. 611-67.
- Hirschfeld, L., Bartmess, E., White, S., & Frith, U. (2007). Can Autistic Children Predict Behavior by Social Stereotypes? *Current Biology*, 17(12), R451-R452.
- Hirschfeld, L. & Gelman, S. (eds.) (1994). *Mapping the Mind: Domain Specificity in Cognition and Culture*. Cambridge University Press.
- Horan, R., Bulte, E., & Shogren, J. (2005). How Trade Saved Humanity from Biological Exclusion: An Economic Theory of Neanderthal Extinction. *Journal of Economic Behavior & Organization*, 58, pp. 1-29.
- Kelly, Quinn & Slater (2005). Three-month-olds, but not Newborns, Prefer Own-race Faces. *Developmental Science*, 8 (6), Nov 2005, F31-F36.

- Kurzban, R., Tooby, J., & Cosmides, L. (2001). Can Race be Erased? Coalitional Computation and Social Categorization. Tooby, John Cosmides, Leda. *Proceedings of the National Academy of Sciences of the United States of America*, 98, (no26), pp. 15387-92.
- Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind*. Chicago: University of Chicago Press.
- Laqueur, Thomas (1990). *Making Sex: Body and Gender from the Greeks to Freud*. Cambridge: Harvard University Press.
- LeVine, R. A., & Campbell, D. T. (1971). *Ethnocentrism: Theories of Conflict, Ethnic Attitudes, and Group Behavior*. New York,: Wiley.
- Lévi-Strauss, C. (1969). *The Elementary Structures of Kinship*. Boston: Beacon Press.
- Leach, E. R. (1970). *Political Systems of Highland Burma: A Study of Kachin Social Structure*. London: Athlone Press.
- Lindsay, D., Jack, P. C., & Christian, M. A. (1991). Other-race Face Perception. *Journal of Applied Psychology*, 76 (4), pp. 587-589.
- Lutz, C. (1988). *Unnatural Emotions: Everyday Sentiments on a Micronesian Atoll & their Challenge to Western Theory*. Chicago: University of Chicago Press.
- Maccoby, E. (2000). Parenting and its Effects on Children: On Reading and Misreading Behavior Genetics. *Annual Review of Psychology*, 51, pp. 1-27.
- Mahalingam, R. (1999). *Essentialism, Power and Representation of Caste: A Developmental Study*. Unpublished Doctoral thesis. University of Pittsburgh, Pittsburgh.
- Markus, H.R., & Kitayama, S. (1991). Culture and the Self: Implications for Cognition, Emotion, and Motivation. *Psychological Review*, 98 (2), US American Psychological Assn., pp. 224-253.
- McIntosh, J. S. (2002). *The Edge of Islam: Religion, Language, and Essentialism on the Kenya Coast*. Unpublished Doctoral Thesis. University of Michigan, Ann Arbor.
- Medin, D. L., & Ortony, A. (1989). Psychological Essentialism. In *Similarity and analogical reasoning*. New York, NY: Cambridge University Press, pp. 179-195.
- Mehler, J., Jusczyk, P., Lambertz, G., Halsted, N., Bertoncini, J., & Amiel-Tison, C. (1988). A Precursor of Language Acquisition in Young Infants. *Cognition*, 29, pp. 143-178.
- Miller, C. L. (1983). Developmental Changes in Male/Female Voice Classification by Infants. *Infant Behavior & Development*, 6 (3), pp. 313-330.
- Morelli, G. A., Rogoff, B., Angelillo, C. (2003). Cultural Variation in Young Children's Access to Work or Involvement in Specialised Child-focused Activities. *International Journal of Behavioral Development*, 27 (3), pp. 264-274.
- Nesdale, D., & Flesser, D. (2001). Social Identity and the Development of Children's Group Attitudes. *Child Development*, 72 (2), pp. 506-517.
- Nisbett, R. E. (2003). *The Geography of Thought: How Asians and Westerners Think Differently – and Why*. New York: Free Press.
- Phelps, E. A., O'Connor, K. J., Cunningham, W. A., Funayama, E. S., Gatenby, J. C., Gore, J. C. & Banaji, M. R. (2000). Performance on Indirect Measures of Race Evaluation Predicts Amygdala Activation. *Journal of Cognitive Neuroscience*, 12, pp. 729-738
- Prentice, D. A., & Miller, D. T. (2006). Essentializing Differences Between Women and Men. *Psychological Science*, 17 (2), pp. 129-135.
- Povinelli, D. J., & Bering, J. M. (2002). The Mentality of Apes Revisited. *Current Directions in Psychological Science*, 11 (4), pp. 115-119.
- Richeson, J. A., Baird, A. A., Gordon, H. L., Heatherton, T. F., Wyland, C. L., Trawalter, S. & Shelton, J. N. (2003). An fMRI Investigation of the Impact of Interracial Contact on Executive Function. *Nature Neuroscience*, 6, pp. 1323-1328
- Sahlins, M. D. (1972). *Stone Age Economics*. Chicago: Aldine-Atherton.
- Sangrigoli, S., & de Schonen, S. (2004). Recognition of Own-race and Other-race Faces by Three-month-old Infants. *Journal of Child Psychology and Psychiatry*, 45 (7), pp. 1219-1227.

- Schneider, D (1980). *American Kinship: A Cultural Account*. Chicago: University of Chicago Press.
- Semaj, L. (1980). The Development of Racial Evaluation and Preference: A Cognitive Approach. *Journal of Black Psychology*, 6 (2), pp. 59-79.
- Sousa, P., Atran, S., Medin, D. (2002). Essentialism and Folkbiology: Evidence from Brazil. *Journal of Cognition & Culture*, 2 (3), pp. 195-223.
- Sperber, D. (1985). *On Anthropological Knowledge*. Cambridge University Press.
- Sperber, D. (1996). *Explaining Culture: A Naturalistic Approach*. Blackwell.
- Sperber, D. (2001). In Defense of Massive Modularity. In E., Dupoux (ed.), *Language, Brain and Cognitive Development: Essays in Honor of Jacques Mehler*. MIT Press.
- Sperber, D. & Hirschfeld, L. (2004). The Cognitive Foundations of Cultural Stability and Diversity. *Trends in Cognitive Sciences*, 8 (1), pp. 40-46
- Sperber, D., Premack, D., and Premack, A.J. (eds) (1995). *Causal Cognition: A Multidisciplinary Debate*. Clarendon Press
- Tajfel, H. (1981). *Human Groups and Social Categories*. Cambridge University Press, New York.
- Tattersal, I. and Schwartz, J. (2000). *Extinct Humans*, Westview Press: New York.
- Tomasello, M., Call, J., & Hare, B. (2003). Chimpanzees Understand Psychological States - The Question is Which Ones and to What Extent. *Trends in Cognitive Sciences*, 7 (4), pp. 153-156.
- Wheeler, M. E. & Fiske, S. T. (2005). Controlling Racial Prejudice and Stereotyping: Social Cognitive Goals Affect Amygdala and Stereotype Activation. *Psychological Science*, 16, pp. 56-63
- Whiten, A. and Byrne, R.W. (1997). *Machiavellian Intelligence II: Extensions and Evaluations*. Cambridge University Press.
- Wrangham, R., & Peterson, D. (1996). *Demonic Males: Apes and the Origins of Human Violence*. Boston: Houghton Mifflin Company.