

Ten Problems In Search Of A Research Programme: Towards Integrated Naturalistic Explanations of Human Culture

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DRAFT VERSION

Abstract. This is a concise statement of ten different problems for which a behavioural science should (and may soon be able to) provide coherent, empirically grounded explanations. These problems were chosen for their social importance as well as their theoretical interest, as demonstrations of the need to integrate psychological, economic and evolutionary factors in explanatory models. For each question, I mention pointers to incipient or possible research programmes. The questions are the following: What are the natural limits to family arrangements? Do we have an intuitive understanding of large societies? Why are despised social categories essentialised? Why gender differences in politics? What logic drives ethnic violence? How are moral concepts acquired? What drives people's economic intuitions? Are there cultural differences in low-level cognition? What explains individual religious attitudes? Why religious fundamentalism and extremism? The general aim is to propose a new approach to issues of human culture, not through an abstract discussion of paradigms and traditions, but through specific examples of possible empirical research.

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1. Introduction

1.1. The aim

This is a concise statement of ten difficult problems in the explanation of human behaviour, particularly of human culture. The point of listing these questions is not to offer solutions but to outline and advocate a new way of doing social science and explaining culture, which for want of a better term I call an *integrated* behavioural science. What is characteristic of this integrated approach is that it ignores the (generally deceptive) divisions between “levels” or “domains” of reality suggested by reified disciplinary boundaries. Typically, this approach should combine tools and findings from evolutionary biology, game-theory, economics, cultural anthropology, cognitive psychology and neuroscience in causal models of specific human behaviours.

I chose to present specific empirical issues and pointers to solutions as illustrations of this approach rather than discuss its theoretical merits in general. This is because paradigm disputes are often intractable and generally sterile. Rather than theoretically argue for a specific way of doing social and behavioural science, it is much better to demonstrate its effectiveness in addressing specific empirical issues. The foundational and epistemological questions will take care of themselves, or will be better addressed once there is significant empirical progress.

In most sciences the interesting and difficult questions are usually found at an *intermediate* level of abstraction, between high-level questions that are not scientifically tractable (what is society? Or, what is culture?) and low-level detail questions (why do Karen people marry their first cousins? Why does the Sicilian mafia prosper?) that are tractable but only within the terms of a particular theoretical framework. An example of a middle-level question would be “How do people acquire moral concepts?” The question requires a framework that is sufficiently abstract to generalise over different moral systems, yet is also empirically detailed enough to predict certain outcomes (e.g. people acquire a compulsion to cooperate beyond opportunistic needs) and exclude other possible outcomes (people acquire indiscriminately cooperative tendencies).

The point of this article is to provide existence proofs for empirically grounded research programmes that address these particular mid-level questions: What are the natural limits to family arrangements? Do we have an intuitive understanding of large societies? Why are despised social categories essentialised? Why gender differences in politics? What logic drives ethnic violence? How are moral concepts acquired? What drives people's economic intuitions? Are there cultural differences in low-level cognition? What explains individual religious attitudes? Why religious fundamentalism and extremism? As I will show below, such programmes already exist, albeit at an incipient stage, so that there is hope for a more efficient approach to human culture. But one condition for such progress is a recognition that integrated models are indeed possible and desirable.

1.2. Social value and theoretical interest

The questions listed above are of great theoretical interest. They are also of great social importance. These two qualities do not always go together – not is there any reason why they should. It just happens that social and behavioural sciences could make much progress by addressing some of these crucial questions that most outsiders think are really important and worthwhile.

It is never very easy to define what society asks of its scientists; it is even more difficult to say in what circumstances scientists should answer those demands. But the problem is not so difficult here. I have chosen a set of problems, such that most people expect social scientists to have a good answer to them and would be very surprised indeed to find out that there is no good answer in the extant literature. Most people just assume that social scientists are working on these issues and getting closer to scientific answers. The reality, as we know, is that a massive retreat from difficult questions in social sciences has been accompanied by the obsessive pursuit of obscure academic fads or fetishes. However, what matters here is not to complain about this but to provide a way out of this predicament.

1.3. What is an integrated approach?

The approach illustrated here requires not so much a set of specific theoretical commitments as the decision to abandon some bad habits that stand in the way of scientific progress in understanding of human behaviour and to adopt some good habits that are a matter of routine in other empirical sciences. What I mean by “integrated” models are explanatory models that by-pass traditional divisions between “levels” or “domains” of reality (this is a bad habit). I also mean models that are resolutely opportunistic in their use of whatever tools do the explanatory work, regardless of whether they belong to a particular disciplinary tradition (this is a good habit). Consider for instance the question, What are the limits to human fam-

ily arrangements? Any causal model in this domain would need to integrated evidence for cultural variation, cognitive development, brain function and psychopathology, as well as models from economic and evolutionary theories. The notion that social aspects of the family are naturally distinct from its psychological or evolutionary aspects is both misguided and misleading.

Does this simply mean that explaining culture is a “cross-disciplinary” enterprise? Certainly, although the point of an integrated programme is hopefully more precise and perhaps more contentious than that. In practice, what we mean by “cross-disciplinarity” often reduces to a dialogue between people who manage their research programmes from within disciplinary boundaries yet are open-minded enough to sit at the same table and consider each other’s models. What I envisage here is that the models themselves, the empirical theories, mix elements from different traditions to such an extent that they belong to no specific discipline in particular. In my view, the most constructive “cross-disciplinary” research happens when the disciplines meet within one head rather than across a table.

1.4. The toolbox

To be opportunistic is not to be indiscriminate in one’s choice of tools. As well become clear in the following pages, there are recurrent ingredients in the different, problem-focused models sketched below.

For one thing, in tackling all these questions one needs to address the question of *cognitive capacities* that support certain kinds of behaviours. A better understanding of the mind and its neural underpinnings provides us with much richer models of behaviour. To the extent that models of cultural phenomena imply some specific psychological capacities, these implications should be empirically validated.

Second, we should take advantage of *economic models* of behaviour whenever possible, because economic theory provides us with the most precise way of describing any behaviour where considerations of costs and utility are relevant. The game-theoretic reasoning allowed by rational-actor models is the most precise way of describing opportunities and predicting choices.

Third, we cannot provide good accounts of human culture without replacing it in its *evolutionary* context. This means, in particular, that many human behaviours are the way they are because of natural selection, in ancestral social and natural contexts very different from modern or historical lifestyles. Evolution does not create behaviours but brains with specific dispositions for behaviours.

Of particular importance is the assumption that human behavioural dispositions come in the form of highly context-sensitive decision-making systems. A per-

sistent misunderstanding in the social sciences is the notion that evolutionary models are about “closed” behavioural programmes, inflexibly developed whatever the external circumstances. If this was the case, evolution would indeed be irrelevant to any behaviour for which there is variation among humans, that is, to human culture in general (Boyer, 2000a). But evolution in humans and other species results in context-sensitive behaviours, in systems designed for appreciating when the conditions are optimal for this or that course of action. As I try to show in the following pages, evolutionary but also cognitive, economic and neuro-scientific considerations are precisely crucial in the explanation of systematic differences between human groups.

2. What are the natural limits to family arrangements?

2.1. The problem

Family structure is a classical anthropological problem. On the one hand, a bewildering variety of norms and concepts seems to organise family relations. On the other hand, there seem to be definite limits to these variations. What are the general features that make certain family arrangements possible? What limits are there to the envelope of possible family structures? How do evolutionarily novel economic conditions or reproductive techniques modify this envelope?

Kinship theory used to be a cornerstone of anthropological theory, but the domain as a whole has been dissolved in anthropology. This is not because the questions about kinship have been solved but mostly because they have been avoided. The disregard for kinship in anthropology is all the more perplexing as modern technology and social conditions create entirely novel situations in terms of kinship relations. In particular, the development of new reproductive techniques, the availability of cheap and efficient contraception, changes in gender roles, all these have introduced or are introducing changes where a kinship theory would be very useful.

2.2. Pointers: Family and kinship in anthropology

In general, the anthropological approach to questions of kinship has been founded on an axiomatic separation between social aspects of family and alliance processes and what were called the “biological” aspects of kinship¹. However, there

¹ Indeed, most kinship courses in cultural anthropology started with the statement that, e.g. a father in terms of “social” roles is not the same as a genitor in “biological” terms. From such useful distinctions, anthropologists often leaped to the odd conclusion that facts about genealogies and other such “biological” realities were in principle totally unrelated to kinship systems (Gellner, 1979).

is no principled “level of reality” distinction that could separate “biological” from “cultural” facts about kinship.

2.3. Kin categories and genetic relatedness

A symmetrical way to understand the envelope of human family arrangements is to focus on the cognitive processes whereby people categorise their immediate social world into kin categories. In all human groups genealogical relations provide a conceptual frame for social relations. However, kin terms are almost always logically independent from strict genealogical relations. This is why formal models of kin-terminologies are all based on the combination of rules, concepts or constraints that are only *indirectly* connected to genealogical positions². Why is the matrix of genealogy universally applied to understanding these social categories? Hirschfeld argues that genealogical relations may be used to give substance to an intuition of “natural resemblance” provided by other cognitive systems (Hirschfeld, 1986). Kin-terms are ways of naming intuitions of similarity, in the same way as ethnic or racial categories (Hirschfeld, 1989).

To what extent is the intuition of similarity triggered by information about genetic relatedness? Surprisingly, the question is not the object of much anthropological or evolutionary research. Inclusive fitness model predict that relatedness should be the central criterion of decision for many behaviours (e.g. self-sacrifice, nepotism, sharing of resources, mate-choice). Empirical studies generally validate these predictions. However, there is no systematic study of the ways in which relatedness itself is represented. It is just assumed that people somehow produce a fairly accurate estimate of relatedness. Conversely, cultural anthropological studies provide us with a wealth of data about local theories of procreation. But these are considered as conceptual schemes, not in their application to particular cases and mapping to genetic relations.

Computation of relatedness must be done on the basis of evolutionary proxies. That is, humans like other species use indirect evidence for genetic relations. Many rodents use a “family smell” as an index of relatedness. Humans detect and recog-

² Classical models took some relations (“parent of” or “sibling of”) as primitives and constructed more elaborate terms on that basis. However, the basic terms were always understood as indirectly genealogical. A “parent” could be a biological mother or father or some other individual occupying the right social position to be identified as such for the purpose of naming and categorizing. In a more recent and more sophisticated attempt to unify disparate kin terminologies, Jones uses a hierarchy of constraints (Jones, 2003b, 2003a) similar to phonological ones in Optimality Theory (Tesar & Smolensky, 2000). Again, these are based on high-level concepts that are not strictly genealogical in meaning: e.g. “Distinguish lineal and collateral kin”, “Distinguish near and distant generations” or “Distinguish paternal and maternal kin” (Jones, 2004).

nise family looks. An important cue for close relatedness is co-residence. This is particularly clear in people's reactions to the possibility of incest between third-parties. Co-residence duration and age at which two people resided together are the best predictors of disgust at the thought of incest³. In ancestral circumstances, co-residence would have been an excellent predictor of relatedness.

Co-residence would work well as a cue for close genetic relatedness, but it would not be sufficient to support more extensive forms of reciprocal altruism and group solidarity. In most human groups there is a norm of strong cooperation that is represented as a direct consequence of (putative) relatedness. This is particularly intense in tribal societies and small ethnic minorities. The domain of "pseudo-kin" identified as a cohesive group within which one should cooperate is too large for inclusive fitness benefits to be a plausible evolutionary explanation. Many tribal groups are organised on principles of "group nepotism" (Jones, 2000) that include [a] assimilation of members of the group to quasi-cousins, [b] extension of solidarity to all members as a form of communal sharing (Fiske, 1992), [c] enforcement of cooperation norms (punitive feelings against free-riders). Game-theoretic models show that various forms of this group nepotism are evolutionary stable (Jones, 2000).

2.4. Pointers: Parental investment and life-history

To illustrate the advantages of an integrated model, it may be of help to start with a specific example of apparent aberrant or dysfunctional behaviour and connect it to general reproductive strategies. Consider the "matrifocal" systems of the kind widespread in some areas of the Caribbean or Africa (Stack, 1974) as well as in lower socio-economic status classes in the U.S.. In such systems, a woman is at the centre of each family unit, which comprises a number of children fathered by different men, some of whom may still provide for their offspring and one of whom is a current partner who often provides for previous partners' children (Badagliacco, Cook-Darzens, & Brunod, 1999).

These units are generally studied either as the outcome of a complex history of norms and cultural practices (Patterson, 1982) or as a straightforward response to specific economic and social conditions (Cook-Darzens & Brunod, 1999). In both perspectives they are often described as "dysfunctional" or "high-risk" for the de-

³ This is true even when relatedness is controlled for, and obtains when the individuals concerned are not genetically related (Lieberman, Tooby, & Cosmides, 2003). Such reactions at imaginary scenarios are confirmed by historical cases. Traditional Chinese marriages with unrelated co-residents were less likely to endure and much less fertile than marriage with non-co-residents (Wolf, 1993). These false positives of an incest avoidance system are a consequence of specific modern conditions.

velopment and social outcomes of children. Indeed, the absence of “biological” fathers is known to have detrimental effects on young children’s development, with very low investment from step-fathers or “social fathers” (Jayakody & Kalil, 2002) only partly replaced by other social mentors (Zimmerman, Salem, & Maton, 1995). More dramatically, step-fathers are several orders of magnitude more likely to abuse children in their care than biological fathers (Martin Daly & Wilson, 1998). There is good evidence that the people concerned are aware of these outcomes (Badagliacco et al., 1999). This is why social scientists tend to think that the systems are forced upon people who have no other options. Why should women otherwise invest in such relationships?

It may be of help to consider these systems from the standpoint of *parental investment* models from evolutionary biology (R. L. Trivers, 1972; Bjorklund, Younger, & Pellegrini, 2002). Such models take into account the fitness benefits of raising children with the costs (including opportunity costs) incurred, to predict optimal strategies. These are necessarily cued by contextual factors, since in many species (especially in humans) external conditions create high variance in the costs and benefits involved (Cronk, 1991b, 1991a). Another important theoretical tool stems from *life-history* models developed in evolutionary biology to explain variations in the timing of various fitness-relevant events in the typical life-span. The models predict not just evolved differences between species as adaptations to different environments but also the presence of contextually sensitive systems that adapt the onset or duration of life-span phases to changing circumstances (Brommer, 2000). Among humans, the relevant cues generally come from the social environment, such as the perceived variance and level of potential mates’ fitness as well as their number or one’s own economic potential, and result in differences in the perceived risk and benefit of behaviours (Hill, Thomson Ross, & Low, 1997).

These models may help explain why women may favour having children despite a high probability of father absence. Given the number of available men, their perceived propensity to provide for their offspring and their economic potential, serial polygamy and stable matrifocal families may constitute an optimal strategy for extracting resources from men and ensuring the welfare of one’s offspring. This would seem to be confirmed by local variations in the shape of matrifocal units, that correspond to differences in the kinds and amounts of resources that can be provided by men (Anderson, Kaplan, Lam, & Lancaster, 1999; Anderson, Kaplan, & Lancaster, 1999).

Reproductive strategies may also explain the relative prevalence of early pregnancies in some modern environments. A constant goal of social work projects has

been to provide various resources (education in particular) to decrease the number of teen pregnancies, construed as *accidents* that education could help prevent (Collins, Lane, & Stevens, 2003). The unimpressive results of such campaigns suggests that perhaps the phenomenon may be strategic. If durable investment from high-value males is unlikely, and one's own prospects are also unlikely to improve, an efficient strategy would be steeply to discount the future, by increasing the number of one's offspring and having them as early as possible, while sampling available men until one finds the best one on the market (see (Gigerenzer & Todd, 1999) on the intuitive use of such informal sampling strategies)⁴.

Note that lower parental investment from fathers is only half of the balanced sheet, as a teenager is at her reproductive peak and more likely to deliver healthy infants than an older woman. (Conversely, there is a potential cost in terms of lower-fitness infants, as well as high opportunity costs, in the delayed motherhood that is the mode reproductive strategy of affluent social classes.) An early entry into reproduction may also be favoured both because it provides opportunities to attract high-fitness mates and also because it provides a woman with a comparative advantage against rivals (Kanazawa, 2001).

2.5. Questions and programme

When one behaves differently towards one's siblings and one's parents, or one's kin and strangers, the processes engaged happen in one's brain and should be approached by considering cognitive processes, motivation, cultural traditions, hormones and neuro-transmitters *within the same framework*. We are still very far from such integration, but we could start with bringing together various causal factors that impinge on the organisation of family units, such as genetic relatedness, parental investment and intuitions about biological processes. All this points to a study of family organisation and dynamics that would integrate strategic modelling and evolutionary computation as a framework that describes the "envelope" of variation in the domain. This also raises a number of difficult questions listed below.

What cues are noticed and with what results?

We still have little description of the cognitive processes whereby people notice environmentally provided information about social or reproductive prospects. In many cases the cues are indirect. Consider for instance the finding that early sexual

⁴ Obviously, it makes little sense to consider such strategies as explicit or deliberate – particularly as they include the timing of menarche. Rather, it would seem that the social environment provides particular cues that trigger alternative preference sets.

activity, teen-pregnancy and even early menarche are correlated with absent fathers. Young women whose biological father is (for whatever reason) absent from the household during childhood and early adolescence are most likely to engage in early sexual activity but also to become pregnant (Ellis et al., 2003)⁵. Studies of American women's reproductive development show that separation of parents but also the timing of the event are strongly predictive of early sexual activity and pregnancy (Quinlan, 2003). Perhaps "father absence" is a contextual cue for the average male investment in offspring.

I mentioned two kinds of informational proxies here – co-residence for relatedness, absent fathers for male parental investment, but they are certainly numerous and subtle. The study of family organisation must avoid two symmetrical pitfalls, the old anthropological beliefs that socially imposed norms always explain choices and a simplistic evolutionary belief that people have direct knowledge of the fitness consequences of their choices. In the same way as there is a growing psychology of mate-choice there should be a psychology of family investment.

What is the cost-benefit machinery in the brain?

This question is even more difficult, although of great importance for our understanding of family dynamics. Suppose father absence really is a cue for average male parental investment. This requires specialised computational machinery (that for instance computes some kind of mean and variance estimate from the available sample). Although some results of this computational machinery may be explicit and accessible, we do not know anything about the implicit processes that lead from computation of the social environment to emotional motivation for this or that course of action. The strategic decision to procreate is proximally caused, not by an estimate of males in the environment but by a strong desire to procreate with a particular man. There is little research and practically no knowledge of how a particular data-base "tips" neural physiology to make certain decisions intuitively attractive.

How do reproductive intuitions cope with biological novelty?

Progress in biology affects kinship intuitions in two different ways. First, biological knowledge violates certain stable principles of intuitive biology (Atran,

⁵ It does not seem too plausible to explain early pregnancy purely in terms of a lack of "authority" (fathers as laying the law) or social status (men trying to restrain their daughters' sexual activity to "reserve" them for high-status partners) because mothers would have an equal interest in imposing authority and careful choices. Nor is it very easy to explain such facts as the consequence of neglect – there is little evidence that such early pregnancies are correlated with neglect or abuse. Besides, none of these factors would explain the link between father absence and menarche.

1990, 1998), such as the notion that different species carry different internal “essences”. Second, biological progress support novel techniques. These two should probably have very different kinds of social impact. Progress in knowledge does not seem to have much of an impact, simply because science in general has very little impact on intuitive ontologies (Boyer, 2000c). In the same way as people maintain a folk-physics largely untouched by developments since Galileo, they may well maintain an intuitive biology that is refuted by scientific developments.

The question of techniques is more difficult and of more consequence. So far, these have been too marginal to have much of an impact on practices, but this will not last. We should expect novel techniques to be adopted to the extent that they contribute (or are seen to contribute) to evolved strategies. Consider for instance the possibility to alter the genetic makeup of one’s offspring before birth. One would expect people to invest in choices supposed to make their offspring more attractive. But another consequence would be that the fitness of one’s mate might be less crucial importance as some of its effects can be corrected. To evaluate how this and other techniques would affect choices, we need to find out what influences choices in the present circumstances. That study is only just beginning.

3. Do we have an intuitive understanding of large societies?

3.1. The problem

Humans live in very different social conditions, from small foraging groups to modern urban environments. In all these different contexts, people have some explicit description of what society is like, what groups compose it, why this is so, as well as intuitions about social processes. The question is, whether we have specific predispositions for particular social concepts and social cognition. This would mean that we can expect certain conceptions of society to be easily acquired and transmitted.

In the past it was taken as axiomatic in many social sciences that there was not and could not be such dispositions, in the sense that human social behaviour was exhaustively explained by social arrangements. In other words, it is the society you live in that shapes your norms of what a society is. This is now clearly untenable, given recurrent and universal notions of social organisation (Brown, 1991), the obvious connections between primate and human social organisation (De Waal, 1996), and the universality of principles of fairness, reciprocity, and social exchange (Sugiyama, Tooby, & Cosmides, 2002). An integrated account of human behaviour should be able to address the question, Is it part of human nature to see society in a particular way?

Anthropologist Larry Hirschfeld coined the term ‘naïve sociology’ to describe folk-understandings of social groups and social relations. ‘Naïve’ does not mean that these understandings are primitive or necessarily misguided but that we develop them spontaneously without the systematic training that we need to acquire scientific concepts. Naïve sociology is constrained by expectations about the nature of human groups that we develop very early (Hirschfeld, 1988).

3.2. Pointers: Strong solidarity in groups.

In what ways did humans ever form groupings that went beyond small kin-based groups? This evolutionary question is crucial because it is in the context of such groups (immediately beyond kin and millennia before complex polities and states) that we developed intuitive understandings of the social world.

Models of social evolution generally chart progress from very elementary forms of kin-based associations (bands) to larger tribes, chiefdoms and states (Maryanski & Turner, 1992). It is now clear that the first step in this progression is quite old. The archaeological record would suggest the existence of distinct *cultural* groups early in the evolution of modern Humans. These are social groups with recognisably different norms and concepts, bringing together a number of bands with a common language and common norms of cooperation. Ever since the appearance of the modern *sapiens* species, and probably some time before, humans have lived in groups that included a number of genetically unrelated individuals. In this context, “unrelated” only means that the genetic distance is long enough to be irrelevant in most circumstances, and too long to be tracked by human minds. Our mental systems track genetic relatedness in particular ways (see above section 2) that only track close relatives.

Reciprocal altruism may be invoked as one of the forces binding such groups of weakly related individuals (R. Trivers, 1985). However, it may be insufficient to explain the kinds of groupings found in human societies, in particular the combination of [a] solidarity with unrelated individuals and [b] a commonality of norms both positively valued and defended against defection by punitive strategies. Such “norm-based communities” seem to have been an important feature of human social organisation for a long time. Founding tightly-knit groups on the basis of norms requires particular psychological dispositions, such as capacities for observational learning (Boyd & Richerson, 1996) as well as inferring presupposed norms from actual behaviour by taking the perspective of other agents (Tomasello, Kruger, & Ratner, 1993) that seem uniquely developed in humans. But that is not sufficient. How do *norms* contribute to solidarity?

One hypothesis is that consistent norms are a by-product of conformist predispositions, which themselves result from the evolution of learning. Conformism would evolve as a way of minimising information costs and maximising one's knowledge of the environment (Boyd & Richerson, 1996). In this sense, cultural learning may be adaptive because it boosts adaptiveness to changing conditions and also because it lowers information costs (that is, one reaches satisfactory solutions to most problems by observing what others do, without having to discover the solutions anew) (Boyd & Richerson, 1995). This also creates a context in which commonality of norms is a condition for cooperation. Since people from other tribes do not share our norms, it is difficult to understand their signals and measure how trustworthy they are. For that reason, the potential cost of social exchange or interaction with them may well exceed its potential benefit (Henrich & Boyd, 1998). In such a context, a disposition to see members of other tribes as inherently unreliable or dangerous would certainly be both advantageous and self-fulfilling. Theoretical models show that norm internalisation is an evolutionary stable strategy (Gintis, 2003).

3.3. Pointers: Groups as entities and agents

Social categories like families, social class, ethnic group, caste, profession, differ in what social psychologists call "entitativity", that is, the perceived cohesiveness of the group. A neighborhood may or may not be perceived as a social entity, an ethnic group almost invariably is, and an occupation-based category very rarely so. Typical features that influence perceived entitativity are duration of the group and member-similarity (Lickel et al., 2000). This is crucial for deciding whether the group "hangs together", to what extent individuals should for instance be blamed for or feel guilty about other group members' misdemeanours (Lickel, Schmader, & Hamilton, 2003). Note that member-similarity may well be inferred rather than observed and constitute a rationalization for intuitive criteria of affiliation. For instance, the similarities postulated between members of ethnic groups are generally stereotypical and construed as the consequence of some internal "essence" common to the group rather than the reason for membership (see below section 4).

Our "naïve sociology" invariably treats not just such norm-based groups but also most social entities as quasi-agents. Villages or social classes or nations are described as *wanting* this, *fearing* that, *taking decisions*, *failing to perceive* what is happening, etc. Even the workings of a committee are often described in such psychological terms: the committee realised this, regretted that, etc. To think that a village, a company or a committee is a big agent spares us the difficult work of describing the extraordinarily complicated interaction that occurs when you get more than two people together. Obviously, these explicit concepts lag far behind the in-

tutions they are supposed to explain. However, this may be the only way in which we can construe the units of social life.

3.4. Pointers: Dominance and evolution

A fundamental question of political psychology is why and how dominance regimes exist, that is, why power of the few over the many seems to be the rule rather than the exception. A tempting causal explanation links the existence of political dominance to the hierarchical structures found in many primate species. This would suggest that humans inherited dispositions for hierarchical status differences, with consequences for both reproduction and, in modern human polities, practical control of other people's actions. This view is defended for instance by Somit & Peterson, whose goal is to explain why democracies are so rare while complex dominance systems (with a small group of powerful individuals lording over an obedient mass) have been the norm throughout historical times (Somit & Peterson, 1997).

Are complex hierarchical polities a simple result of dispositions for hierarchical status? The issue may be more complex than Somit & Peterson's model suggests. As we know from ethological and psychological studies, humans and other primates are from an early age disposed to identify, acknowledge, negotiate or challenge hierarchical status rankings (Barkow, 1989). However, we also know that, in the context of human evolution, status had to be reached within small groups (bands and associations of bands) of personally known individuals. Small group boundaries were permeable and wealth accumulation well nigh impossible. This allowed a rich suite of contextual political strategies, including the pursuit of higher status but also coalitional affiliation with lower-status individuals, the pursuit of alternative hierarchies, or the construction of a niche of "indispensability", that is, a specific capacity that ensures that one is in demand. Ancestral conditions also imply hierarchy that develops with only *slightly* different access to reproduction or resources (although sufficient to increase fitness) and certainly little coercive power. This, on the whole, is confirmed by studies of modern hunter-gatherer groups (Maryanski & Turner, 1992).

This is a far cry from the complex dominance systems that obtain in complex polities, particularly agrarian and industrial state polities, with coerced taxation and participation in group defence. These complex dominance systems reflect the operation of status systems in a novel context for which they were *not* evolved. Status relations evolved in contexts where both parties in a relation are agents and both could defect. The substitution of institutions for agents is certainly not intuitive to the human mind, despite our long political history. This may be why representations of political systems to this day are generally based on the fiction that the

nation or state is an agent and the quasi-fiction that every citizen enters a *personal* contractual relation with that agent. This may be the only way we can think of political systems and why we are very badly equipped to understand and challenge dominance.

3.5. Questions and programme

Whence democratic systems?

Evolved dispositions may also illuminate the question, how did humans ever achieve better political systems? In Somit and Peterson’s model, the explanation for the existence of democracies is simply that humans are “indoctrinable”, that is, can in some contexts acquire socially transmitted norms that loosen the leash of evolved dispositions (Somit & Peterson, 1997). In other words, more sophisticated political systems would be those in which evolved dispositions are less relevant. But this is not necessarily the case. True, novel social systems and social attitudes may be “anti-evolutionary” – but they may also recruit evolved dispositions in a new way⁶.

By contrast, one may argue that the persistence of democratic systems – and the fact that many human beings strive to achieve the kind of personal freedom and security guaranteed by such systems – shows that democracy is not so much against the grain as hierarchy-and-dominance models assume. Indeed, one could make a strong case for salient similarities between forager groups and modern industrial democracies, in terms of family structure, relative security from pillage and predation, absence of excessive coercion, absence of rent-seekers, and above all group flexibility and personal freedom (Rubin, 2002). There is still no clear understanding of the way different kinds of democratic participation interact with dispositions for personal exchange, although this is clearly crucial in understanding, for instance, the real appeal of democracy and its limits or the establishment of new democratic institutions.

Large scale group and false preferences

A consequence of large groups is that they create entirely new dynamics for the expression of individual preferences. In particular, they create contexts in which many individual preferences are not expressed, and publicly “acceptable” opinions

⁶ That humans can engage in maladaptive or fitness-neutral courses of actions is not controversial (Durham, 1991). This may be because people *decide* to act against evolved dispositions – but it may also be because evolution does not create specific behaviours, it only creates cognitive dispositions that support behavioural “proxies”, courses of actions that were fitness-enhancing in ancestral environments. Among these proxies is our evolved psychology of status.

are substituted for them (Kuran, 1995). This may be in part a result of the importance of reputational effects in large groups. To the extent that people live in small groups, their behaviour is observed by others, which means that they are judged on the basis of many distinct events. If a particular preference offends others, there may be many other opportunities to cooperate with them. In a large group by contrast, one may lose opportunities by expressing non-shared preferences, because they will be no other encounters. This would result in what Kuran describes as a systematic distortion of preferences (Kuran, 1995).

Such cascading phenomena are formally well-understood and their effects on cultural evolution can be precisely described, in particular the effects of the actual and perceived frequency of a trait on transmission, as well as frequency-based biases such as prestige models (Boyd & Richerson, 1996; Henrich & Boyd, 2002). The formal models are available but we do not have much by way of an empirical study of these effects and their interaction with personal preferences.

Whence the “visions” of politics?

Much political thought and action is organised around particular “packages” of ideas, sometimes framed as different political “visions” (Sowell, 1987). This at least is one explanation, why political options come in bundles rather than as independent choices. In most modern industrial democracies, choosing lower taxation entails favouring a rather strict approach to public morality. There is no conceptual rationale for this combination. Indeed, rational models would make the two themes exclusive (Nozick, 1974). So why are these apparently unmotivated associations of preferences the norm rather than the exception in politics? Why do choices come in bundles rather than as independent items? More intriguingly, why do so many people find that natural?

This question is all the more intriguing, as we now have a wealth of evidence for connections between various cognitive and personality variables and political choices in *particular* domains (Oskamp, 1991). Empirical studies focus for instance on the background of an authoritarian orientation (Feldman, 2003) and its effects on perception of social situations (Lambert, Burroughs, & Nguyen, 1999), or on the extent to which people are inclined to find dominance and inequality justified (Pratto, Sidanius, Stallworth, & Malle, 2001). But actual politics, contrary to the survey and laboratory studies, does not offer particular choices but bundled choices, united by a particular style or visions.

There is still little research into what makes such visions cohesive. One possible interpretation is in terms of interpersonal relations and personality variables. That is, the common thread that links otherwise disparate choices is an *attitude*, e.g.

compassion and solidarity, or authority and dominance, or negotiation and exchange. Preferences for this or that political style would be dependent on personality variables. This is the route taken by most social political psychology. Another possibility is that each political vision, underneath the modern accoutrements of issues and policy, activates one particular strategy in the suite of plans that we developed for political interaction in small bands. In this view, people's conditions rather than dispositions would lead them intuitively to adhere to a "join the powerful", "side with the underling" or "create your own niche" strategies – and different political offerings would appear attractive as they are intuitively similar to some of these strategies. Both models are plausible. The empirical work remains to be done.

4. Why are despised social categories essentialised?

4.1. The problem

In many different cultural environments, members of arbitrary social categories are maintained in a low social (and generally economic) status. These may be members of culturally specific groups (Ainu in Japan, tribal people in India) or technical specialists (undertakers or blacksmiths or potters in Africa and Asia). This form of social stratification is often accompanied by the notion that members of these groups are often thought to be *naturally* different from the rest of society (Haslam, Rothschild, & Ernst, 2000). This is particularly salient in the case of racial ideologies. "Race" concepts are only one subset of the broader domain of *naturalised* understandings of social categories. Indeed, in most tribal societies, it is the difference between the tribe and strangers that is considered *natural* rather than social or conventional. Naturalised social categories are generally *essentialised*. Members of the target group are said to carry a particular "something" that is [a] undefined, [b] inherited, [c] unchangeable and [d] causally efficacious. Why is the ideology of essential natural differences so powerful and widespread? Is it an inevitable consequence of social stratification or ethnic differences? What are its consequences for social relations?

4.2. Pointers: biological essentialism

Several authors had suggested that social groups may be construed in terms of biological essentialism, as analogous to animal species (Atran, 1990; Boyer, 1990; Rothbart & Taylor, 1990). Indeed, essentialist intuitions are very robust and ex-

plicit in representations of the natural world⁷. In this view, then, social categories may be construed as quasi-natural kinds because this kind of inference is salient in human cognition. Also, some features of the representation of ethnies resemble some input conditions of the intuitive biology inference engine (Gil-White, 2001). Humans process ethnic groups (and a few other related social categories) as if they were “species” because (1) category- based endogamy and (2) descent-based membership make them partly similar to living species. In this view, the essential understanding is parasitic on intuitive biology.

What makes essentialism relevant? In Gil-White’s model, a pseudo-natural understanding of group differences provides a causal framework in which people can make sense of their own intuitions about norm-similarities within a group, strong group-wide solidarity and misgivings about outsiders (see above section 3.2.). The constitution of distinct norm-based groups means that interaction with other groups is always potentially costly, as one does not know their norms, in particular the local signals of reliability. Also, cooperation with them is not immediately more beneficial than with one’s own group. This is also self-feeding, as members of other groups have larger incentives to cheat than members of your own. Although people’s intuitions are probably caused by some computation of this kind, they obviously do not explicitly reason in such game-theoretic terms. A construal of other groups as internally and naturally different may be the easiest way to understand these intuitions.

4.3. Questions and programme

Is ostracism coalitional?

Because of their dependence on collective hunting and collective defense, humans are extremely good at using *coalitional* affiliation to carry out collaborative endeavors by efficiently allocating trust among cooperators (Kurzban, 2001). People will spontaneously form groups where a certain degree of trust ensures cooperation and mutual benefits⁸. There is now ample psychological evidence for a

⁷ Atran and colleagues have demonstrated that animal species are intuitively construed in terms of species-specific “causal essences” (Atran, 1990). That is, their typical features and behavior are interpreted as consequences of possession of an undefined, yet causally relevant quality that is particular to each identified species. This assumption appears early in development (Keil, 1986; Gelman & Wellman, 1991).

⁸ Note that coalitions are a very special form of association. To have a common goal is not sufficient to build a coalition; you and I may wish our streets were cleaner, but that does not bring us into a coalition. It is not even sufficient that people are aware of having the same goal and co-operate to achieve that goal. Coalitional solidarity presupposes an activity in which joining is (presumably) voluntary, de-

“coalitional psychology”, a specific kind of inferences that apply to these trust-based groups but not to other social interaction.

In a series of striking experiments, Kurzban and colleagues showed that this coalitional psychology is probably involved in representations of “race” by Americans (Kurzban, Tooby, & Cosmides, 2001). For many years, social psychology experiments had shown that the ‘race’ of displayed persons was automatically encoded in psychology experiments⁹. On evolutionary grounds, Kurzban et al. reasoned that “race” was automatically encoded because it was a proxy for coalitional affiliation. Indeed, when subjects were required to encode coalitional links, their memory of racial identity was considerably confused.

This coalitional interpretation is also suggested by a more general social dominance framework (Sidanius & Pratto, 1999). In this model, ostracism and dominance behaviours result not just from the desire to stay with one’s group or to favour one’s clan, but also in a more insidious way to favour one’s group in a way that maintains the other group’s lower-status position. That is, what drives people’s behaviour is a coalitional structure where it is actually advantageous to try and keep members of other groups in a lower-status position, with distinctly worse outcomes. This has important consequences. In classical “stereotyping” models, all members of the target group would be equally discriminated against. In the dominance model, males would be the prime targets for prejudice, as they constitute a more salient threat to one’s coalitional advantages. This indeed seems to be the case (Sidanius & Pratto, 1999).

Is ostracism a form of contagion-avoidance?

In many social dominance contexts, people have the intuitions (a) that members of the subordinate group carry some dangerous, invisible substance (“pollution”), (b) that any contact with them can transmit that substance, and (c) that the amount or frequency of contact is irrelevant. These principles are very similar to those produced by the *contagion-contamination system*, an inference engine that produces strong feelings of aversion to (even very remote) contact with likely sources of pathogens (decayed corpses, dirt, excrement, etc.). As Rozin and colleagues have shown, easy acquisition of such disgust reactions is vital to generalists like rats and humans (Rozin, Haidt, & McCauley, 1993). More generally,

fection is possible, benefits can be accrued by co-operation and there is a notable cost in being a co-operator when others defect.

⁹ No matter what explicit instructions are given, no matter how irrelevant race is, no matter how much extra cognitive work has to be done, participants always seem to recall the racial identity of the faces they see during an experiment.

pathogen avoidance is made very efficient by three intuitions: *a*) that pathogen presence is usually invisible, *b*) that contagion accompanies all sorts of different modes of contact, and *c*) that the amount or frequency of contact is irrelevant.

In some situations information about the ostracised group seems directly (although not consciously) processed by the mental systems that handle contagion. This might be an explanation for the emotional intensity of representations of ostracised groups in many places. A purely ideological explanation (groups are described as “dirty” to legitimise the political order) is not quite sufficient to explain either the intensity of these emotional effects or their precise tenor (disgust and fear).

We now have a more precise understanding of the neuro-physiology of disgust as well as contagion-avoidance. This is mostly due to studies of the impairment of danger-avoidance functions in obsessive-compulsive disorder (Adler et al., 2000; Rauch, Whalen, Curran, Shin, & Coffey, 2001). So it may not be too long before neuro-imaging evidence tells us whether a single source of intuitions (in the form of a specialised neural structure) underpins reactions to natural and social invisible danger.

How do people combine different cues for membership?

Different historical circumstances may make particular kinds of inferences more efficient in the explanation of a particular interaction. Thus people may well entertain several not necessarily congruent potential representations of the ethnic landscape at once. To understand how this complex of intuitions is projected onto diverse social realities, we need additional empirical work in the following directions: [a] to what extent are essentialist intuitions about social categories similar to those about living kinds? [b] how is the incoherence of essentialist understandings by-passed in everyday reasoning? For instance, people maintain an essential attitude to groups that could perfectly well inter-marry, indeed do it. We should study how such situations are represented or ignored. Finally, [c] what historical circumstances support essentialised groups? For instance, castes of craftsmen are despised and essentialised in West-Africa, while specialist lineages are not ostracized in most central African polities.

5. Why gender differences in politics?

5.1. The problem

In most societies throughout most of known history, a publicly displayed domain of “politics”, of managing collective decision-making and collective interests,

has been a virtually exclusive male preserve. Even in places where such attitudes have been relaxed, like in the modern West, women's political participation has remained rather low¹⁰. It would seem that women do participate in politics (e.g. in voting, demonstrating) but not in political activity (standing for office, organising social movements). Why is that so? To what extent is this difference explained by a cartel-like resistance of men to female competition? Is there something about forms of political activity that does not attract women? Is this a specific phenomenon of large, modern polities?

5.2. Background: Limits of agentive models

For a long time and in many places, the women's exclusion from official decision-making was accompanied by fairly aggressive attitudes against women, including attempts to circumscribe or imprison them. Women were quite simply barred from public activity as well as constrained in their everyday life. In such places there is often a large amount of cooperation between men in order to keep women "in their place". This seems to suggest that men are actively trying to accrue political influence at the expense of women. Since male social dominance and privileged male access to political power seem pervasive throughout history, it would seem that this relational mode is well entrenched, and perhaps rooted in human and primate evolution. This I what I call here an "agentive" model, in the sense that one gender is construed not just as a mere category of people but also as a quasi-agent with definite goals, stable throughout human history.

Could such agentive properties be a feature of human evolution? This is very unlikely, for several reasons. First, note that humans evolved in social contexts very different from what we know from historical times. As far as we know, the ancestral circumstances of nomadic foragers included [a] a division of labour between sexes (with hunting and group-defense overwhelmingly male activities) but also [b] a large degree of autonomy for women, [c] insignificant "public politics" institutions and [d] no way to enforce or indeed conceive of the kind of purdah and everyday restrictions that are imposed on women in so many agrarian societies. So it seems plausible that, for most of our evolutionary history, women's political roles and everyday autonomy were largely comparable to what they are in modern polities now. The oppressive purdah situation is a "recent" phenomenon – recent in

¹⁰ Recent changes in this domain, in some societies, are fairly limited (Inglehart, Basanez, & Menendez Moreno, 1998). Women participate less than men, and the women who are most affected by political decisions even less than the average (Plutzer, 1998). When they do, they face more rigid stereotypical reactions than men (Huddy & Capelos, 2002)

the evolutionary jargon, which means that it may well have been typical of most agrarian societies in the last ten thousand years.

Another problem with agentive gender models is that they would predict behaviour that conflicts with inclusive fitness. Genetic relatedness extends to both genders in the same way, predicting more common interest between a man and his daughters than a man and his male parallel cousins – not to mention unrelated males of the same ethnic group. Genetic and agentive gender models may converge in predicting some political rivalry between spouses, but they diverge when it comes to siblings. Evolutionary considerations predict that nepotism should generally over-ride gender prejudice.

Associations between men to oppress women, as we know them from history, are not an automatic or general fact of human evolution, and are certainly not predicted by evolutionary considerations. What I mean by that is not that such oppressive cartels do not exist, but that they require a *specific* explanation, and that this explanation cannot be in terms of a general, atavistic male desire to oppress or downgrade women. This is where agentive gender models are most unhelpful since they are essentially question-begging, construing male solidarity against women as a prime mover rather than the outcome of specific social and environmental conditions. Many models of gender-based discrimination take it as based on very general and ancient male dispositions. But that is precisely what evolutionary considerations would challenge.

5.3. Pointers: Control of reproduction and male cartels

What is women's oppression about? Most evolutionists and some feminist theorists converge on the answer that oppression is invariably about female sexuality. Women may be prohibited from talking or writing or driving or even going to school but the central point is always that women should be kept under strict surveillance because they must be sexually controlled¹¹. Why would men want to control women's sexual choices? An obvious reason is the evolved psychology of sex including specific male reactions to paternity uncertainty, which makes parental investment potentially disastrous for males. Male inquisitiveness about their partners' potential sexual forays and intense jealousy at the mere thought of betrayal are common dispositions that evolutionary considerations can illuminate (M. Wil-

¹¹ Some social theorists and feminists want to see the sexual aspects as, on the contrary, part of a broader and purely political oppression. But this is not the most promising way to tackle this issue. First, in many societies men actually state quite clearly that their aim is to control women's sexual behaviour. Second, this particular goal may explain the other features of women's oppression, whereas the opposite is not true. Finally, the explanation as most agentive models presupposes the very solidarity that ought to be explained.

son & Daly, 1992, 1998; Buss, 2000). They may fuel oppressive attitudes once other specific conditions are present – and these conditions are what we should better understand.

Oppression may reduce the costs occasioned by intrasexual competition. Differential reproductive costs imply that females tend to be more picky than males and that males have to compete in the mating market. As we know, male behaviour includes many fitness signals supposed to influence female choice. Competition makes cartel-like arrangements highly desirable. In such a cartel the “big” players agree to leave a share of the market for smaller players, on condition that their predominance is not challenged. In the mating market, this would be advantageous both for high-fitness males – who would expend fewer resources competing – and to other males as well – who would enhance their likelihood of finding a mate. Conversely, this would be detrimental to women, for several reasons. First, male and female preferences often do not converge. To the extent that males can agree on mating choices, they can effectively block women’s preferences. Second, the only way males can enforce such choices and prevent female defection is by direct coercion. Given that paternity certainty is destroyed by the mere possibility of a woman’s short encounter with another male, the most efficient arrangement for males would be the complete seclusion of women (M. Wilson & Daly, 1992).

5.4. Questions and programme

What makes a cartel possible?

An oppressive and efficient cartel is *improbable* in the reproductive market as in any other market. That is to say, it requires very specific conditions. First, the control of women requires economic conditions in which constant interference with women’s productive capacity is affordable and constant surveillance can be achieved. This takes time, energy and people away from production. Second, cartels require that the parties engaged keep up long-term promises, for instance, by forgoing a particular marriage alliance against the promise of a future one. This would require social arrangements with stable inheritance-based groups, like lineages and clans, rather than ephemeral coalitions like bands. A society where people can flexibly enter or leave groups does not allow long-term reciprocation of the kind required here. Third and most important, cartels work fine as long as all parties stick to the arrangement, but opportunities for defection are frequent. A man may at any point decide to follow his daughter’s or sister’s reproductive strategies rather than stick with decisions advantageous to allied but unrelated males.

Although we know a lot about group-wide norms of female behaviour and constraints on women’s actions, we have little empirical research on the individual

dynamics of such social arrangements. Is it really the case that only stable social groups can enforce cartel-like male solidarity against women? The cartel model would also predict that defection likelihood is reduced – and male solidarity against women thereby strengthened – in places where males who exchange wives are also genetically related. Mediterranean societies where marriage often takes place between parallel patrilineal cousins are a clear example of that particular strategy. Is that a general trend?

Does politics favour ostensive helplessness?

Male interest in reducing paternity uncertainty suggests that men would prefer women who seem more easily “controlled”, a preference that is largely documented (Buss, 1989). This provides a context in which other psychological findings make sense, notably a very general tendency in young women to display hesitancy, low competence and a willingness to be helped in the context of interaction with young men. According to Hopcroft, this tendency would constitute an attempt to signal compatibility with male preferences (Hopcroft, 2002). So lowered self-esteem in the presence of men would be an attempt to manipulate male preferences in competition with other females. Two facts support this hypothesis. First, in accordance with evolutionary predictions, women show this disposition in interaction with men but not with other women. Second, the signals would be all the more efficient if they were honest. As it happens, social psychology evidence reports a consistent disposition in women to lower their estimates of own competence or achievements when compared to men, but not to other women.

Whether or not this evolutionary account is supported by further evidence, the psychological findings themselves are of great interest for the question of political activity. Is the domain of organised official politics particularly apposite for this kind of “ostensive helplessness” strategy? This would be the case if the task structures and social atmosphere required by politics in a large society were (for other reasons, detailed below) more attractive to men. If that was the case, we should expect women to demonstrate more of that “ostensive helplessness” in such domains than in equally male but differently organised domains. An empirical test of Hopcroft’s hypothesis would require this comparison between domains of social interaction.

Is there a male political brain?

To understand why women politicians are few and far between, it might be of help to describe more precisely the psychological appeal and costs of political office. To the extent that political psychology has dealt with politicians, it had largely focused with leaders (Donald, 2004) and considered external variables that may

influence motivation for leadership, such as birth-order for instance (Sulloway, 1996; Andeweg & Van Den Berg, 2003). However, most politically active people are not leaders. They are party officials, town or county councillors, state (in the US) or regional (in Europe) council members, etc.. These people are mandated to spend hours in committee meetings and public functions that most non-politicians find excruciating. They generally do all this for a very low compensation. What explains this? Certainly not the benefits of actual influence and leadership. Such people do not appear much in public and they certainly do not have much direct influence on the course of events. Ambition explains some but not all of this willingness to incur the costs of political activity. True, politicians discount the present costs of their activities because of the possibility of reaching higher spheres of influence. But the likelihood of winning is rather remote, and the discount curve seems very steep indeed given the actual benefits of leadership. So perhaps there are actual rather than potential rewards for political activities, and especially so for men. Or perhaps the costs are lower for them.

We know that status and hierarchy are extremely important to male reproductive success and a constant factor in sexual selection. As a result, the domain of official politics – which is pervaded by considerations of hierarchy and relative status – would be especially attractive to males, as it affords opportunities to display rank and power differentials relevant to sexual selection. In other words, the spontaneous attractiveness of such social relations to males would make the costs of participation comparatively lower. Another important factor is that political decision-making in any complex polity is highly coalitional, being based on solidarity within arbitrary groups (parties, factions) against other equivalent groups (see above section 4.3 for more details on coalitional psychology). Males generally seem to invest more readily in coalitional affiliation than women, which again may tilt the cost-benefit matrix of participation. There is still very little empirical evidence to evaluate the model, which would reverse the usual understanding of the issue of political participation. Instead of asking, Why do women participate less?, the question would be, What is special about males that they can find this kind of activity appealing?

Is official politics the whole of politics?

What is usually described as “politics” in a given group does not exhaust the set of power relations. In most human groups, there is a culturally defined sphere of “managing the group’s affairs”. This is found in tribal cultures as in hunter-gatherer bands, early city-states and modern polities. In many groups this public, demonstrative “management” is conducted between men. However, many power

relations (that is, situations in which one person is able to influence another's decisions in view of his/her preferences) occur outside this official frame.

People in most social contexts (the nomadic band as well as the village or a corporation) strive to optimise access to resources by creating small-scale informal networks of friendship. Strikingly, although these informal strategies are ubiquitous and all-important in actual decision-making, they are less than perfectly understood. Some psychologists have suggested that *friendship* is one such evolved strategy (Tooby & Cosmides, 1996). A friendly, that is genuinely disinterested, provider of help places herself in the position of becoming a precious resource for the recipient. As a result the welfare of the provider becomes a concern for the recipient. This in some conditions may create the pattern of escalating commitment that we call "friendship" and observe in similar forms in all human cultures¹². Now it may be the case that such interactions (maintained by reciprocal altruism, coalitional psychology, friendship) operate in different ways in males and females, although there is not enough empirical research in this domain to settle the issue.

6. What logic drives ethnic violence?

6.1. The problem

Outbreaks of inter-ethnic violence, of a kind completely distinct from traditional state-waged wars, challenge our models of conflict and possible resolution. The parties do not seem to be pursuing rational strategies and the level of violence is often much higher than in traditional conflicts, leading to apparently irretrievable grievances and to unending cycles of revenge. Another specific trait of these situations is the fact that large segments of the population can engage in escalating violence. Under what conditions can ethnic conflict escalate in this way? What psychological, economic, historic factors lead to these situations?

Perhaps these conflicts all stem from different, historically specific causes. But what matters here is not just the aetiology but also the dynamics of this specific process. Because we find some recognisably similar features in many of these conflicts, it makes sense to wonder what features of human motivation are involved, as a first step to (hopefully) understanding how best to put a break on the process.

¹² Note that this is different from reciprocal altruism, in which one can incur a cost in order to gain a possible benefit from reciprocation. The strategy of friendship precisely consists in offering unconditional help as a way of making oneself an important part of some other agent's welfare.

6.2. Pointers: Dispositional and contextual models

Ethnic groups are those that construe inter-group solidarity, and difference from other groups, as a consequence of inheritance. A tempting type of explanation relates ethnic conflict to stable dispositions within the groups concerned, in the form of ancient hatreds that subsist for no other reason than that they form part of the local identity. Obviously, ethnic ideologies often rehash past events, sometimes centuries old, as the main source of present enmity. However, these themes may well reduce to rationalisations of current tactical intuitions rather than their causes (Carment, 2000). Also, we often tend to think that ethnic pride or passion is intrinsically irrational, acting as a sentimental bond that over-rides self-interest. However, in evolutionary terms, certain irrational behaviours may be the outcome of adaptive dispositions in other conditions. Finally, we often see such conflicts in terms of majorities committed to peaceful coexistence while minorities of fanatics on both sides try to push their communities towards the unacceptable. This has historical support, in the sense that terrorist tactics contribute to make certain situations of ethnic strife nearly irretrievable. This is plausible as a description of initial conditions and initial triggers. But the next question is, what do those triggers actually create? What fuels the rest of the ethnic conflict in such a way that there is intense and massive violence? Rather than stable, group-wide *dispositions*, it may be of help to consider how particular *contextual* features interact with general human psychology to create a situation where apparently irrational, self-defeating and escalating violence may appear to be inevitable.

6.3. Pointers: Ethnicity and signaling

Ethnic affiliation often requires the adoption of particular signs of affiliation (clothing, rituals, etc.). The people concerned readily mention their “pride” in a particular cultural or (pseudo-)genetic inheritance, as well as the feeling of solidarity and protection provided by such groups. Why and how do such signals spread? The most precise framework for understanding these questions is *signalling theory* as developed in evolutionary biology (Bradbury & Vehrencamp, 2000). Signals are features that indicate fitness-relevant qualities of the organism (strength, intelligence, status, health, reproductive potential, hazard for predators, etc.) with variable reliability and at a variable cost to the organism. Game-theoretic models help specify the conditions under which honest signals (e.g. the bright colours of poisonous frogs) as well as misleading ones can appear and become evolutionarily stable. In many cases, various groups in a nation can ascribe their origins to different past events and peoples, without generating ethnic opposition or conflict. Under some conditions we observe the development of “ethnification”, that is, spread-

ing adoption of ethnic signals (Kuran, 1998). What makes affiliation signals spread?

Kuran's model of "reputational cascades" is an attempt to describe this dynamic. Ethnification is a step beyond the mere existence of ethnic differences. It occurs when each agent's choices systematically affect the consequences of other agent's choices. In particular, each individual's adoption of ethnic signals transforms the environment for other agents and nudges their own preferences towards similar adoption of *manifesta* (Kuran, 1998). The spread of a particular signal, as predicted by biological models, transforms non-signalling from a neutral attitude into a marked strategy. Being a grey frog in an environment that includes brightly coloured poisonous ones amounts to advertising oneself as edible. Choosing to shave in the morning can become a political gesture rather than a personal grooming preference. In a situation where two ethnic groups coexist, this would predict that the adoption of ethnic signals is self-reinforcing, as each person who adopts the signals increases for all other agents the reputational cost of *not* doing the same.

Ethnification does not just highlight prior differences and make the social environment more "legible" for all concerned. It also creates differential trust and distrust along inter-ethnic lines (Bacharach & Gambetta, 2001)¹³. This however does not in itself predict either the outbreak of hostilities between groups, nor the extreme, escalating violence patterns observed in such cases.

6.4. Questions and programme

Does pre-emptive escalation explain violence?

In most cases the outbreak of violence is accompanied by the collapse of the state or the fact that the state, being to some extent identified with one of the groups, suddenly drops its pretence of being above the fray (Rotberg, 2004). The trigger is generally some event that can be construed by one party as a grievance that demands reparation. If state structures either refuse to get engaged in this game or side with one of the parties, reparation or revenge start the cycle of inter-group violence.

¹³ What matters to trust is a set of underlying dispositions for trustworthiness or defection, which Bacharach & Gambetta call the *krypta* of trust, that can only be assessed through evaluation of observable properties or *manifesta*. Some of these *manifesta* are given for free, as it were, by pre-adapted signals like eye-gaze, blushing, voice tone, etc., which in many conditions provide clues as to a person's reliability. Another set of clues may be provided by behaviours that would be far more costly to a defector than to a cooperator. Finally, some the *manifesta* are affiliation signals, that is, they indicate that a person has certain features by virtue of being a member of a particular group.

This much is familiar to observers of such conflicts. But it remains to explain [a] why the violence can be *pervasive*, that is, mobilise vast sectors of the groups concerned, [b] why it often happens in places where people had the most civil personal relations across groups until the violence broke out, and [c] why the violence is *self-reinforcing*, indeed generally escalates to levels unseen in “classical” national conflicts with their limited goals and specific rules of engagement.

Large-scale ethnic conflict requires very specific conditions. First, several (generally two) groups must be identified in such a way that coalitional logic can be applied. All members of the population should be (at least potentially) clearly identified as being of one camp or another. Second, it must be felt that these affiliations are exclusive and “essential” (see above section 4.3). Third, it must be felt that these affiliations are more likely to drive other people’s behaviour than their previous dispositions or even their self-interest.

Perhaps a relevant model could be imported from the study of differential levels of violence in different societies. Addressing the simple question, what makes certain societies (e.g. Mexico) far more violent than others (e.g. Finland) is not as easy as it seems (M. Daly & Wilson, 1988; Nisbett, 1993). Rather than imaging specific behavioural dispositions in different cultures, one can explain the behavioural differences as contextually appropriate reactions of a similar mental system to different situations (M. Daly & Wilson, 1988). In particular, the willingness to engage in violent acts may be predicted by measuring the perceived danger of a non-violent attitude. Depending on external conditions, a non-violent attitude may amount to either offering cooperation or inviting plunder. This is why it is reasonable to suggest that signals of non-violence would in general invite cooperation in peasant societies – where predation is difficult in any case – but not in pastoral societies, where stealing other people’s property is easier (Nisbett, 1993; Nisbett & Cohen, 1996).

This would apply to situations of ethnic conflict that suddenly modify the valence of traditionally positive signals of non-violence. To the extent that members of another group are construed as potentially dangerous, it is highly advantageous to advertise one’s disposition to react to provocation. This in practice is the standard measure to take against possible threats. However, this kind of disposition is very difficult to advertise in a society where groups have coexisted for some time without major conflict, because it constitutes a sudden *change* in dispositions. The only efficient signalling of the new disposition is actual behaviour, that is, retaliation against minor attacks or provocation. This in turn nudges the other group towards perceiving the first party as a threat, and therefore makes symmetrical ad-

vertising all the more likely. In such conditions the perceived danger of non-violence is such that it is not a viable strategy for any of the parties.

Why extreme violence?

The model may explain why situations of this kind seem irretrievable, barring the intervention of a third party. Because of the pre-emptive and reactive nature of the acts committed, each group can perfectly well *both* initiate the worst violence and see itself as the victim. It is one of the consequences of this pre-emptive logic that the aggressor feels victimized – precisely, victimised into a situation in which the only solution is extreme violence.

The model may also help explain why violence in these situations is often gruesome. If perceived non-violence is very dangerous, then signals of one's disposition to violence are all the more efficacious if they are more visible, salient, memorable. Mafia assassinations often occur in public, in broad daylight, in front of many witnesses, with a great and unnecessary expense of bullets, for precisely such signalling purposes (Gambetta, 1993). A similar pattern may be observed in the ritualisation of violence. As anthropologist Chris Taylor reports, violence during the Rwanda massacres of 1994 often took on specific, arbitrary forms apparently unconnected to the purpose of inflicting maximum pain and damage. Many of these gruesome details were directly inspired by traditional methods of animal sacrifice (Taylor, 1999). The perpetrators' intuition would be that they need to use methods that, in the local cultural context, manifest most clearly their willingness to inflict extreme violence. This may be one of the grisly consequences of the search for maximally efficient signals. However, we still have very little empirical study of the representations engaged in such strategies.

Why violence against former friends?

In a more speculative manner, the model might also illuminate why terrible violence is observed in places where "people knew each other very well", where each individual had personal relationships with many members of the other group, in other words where people were accustomed to sharing a social world as well as a physical territory. Once outsiders are identified as potentially dangerous, the danger is greater as people are more familiar with each other and know each other's social world. Possible attack may come from every direction and the need to demonstrate one's reaction to aggression is therefore all the more important. Also, the *change* of dispositions that needs to be signalled is all the more radical and therefore in need of clearer signalling, as people enjoyed normal social relations so far. Which would lead to this terrible paradox, that the places where the two groups

have had the most cordial relations in everyday life for the longest time would be the ones where you can expect the most dreadful pre-emptive violence.

7. How are moral concepts acquired?

7.1. The problem

We all have moral intuitions ('My friend left her purse here, I must give it back to her'), moral judgements ('He should have returned his friend's purse'), moral feelings ('He stole his friend's purse, how revolting!'), moral principles ('Stealing is wrong') and moral concepts ('wrong', 'right'). How is all this organised in the mind? Is there an evolved moral sense? In this case, how do we explain personal differences in moral intuitions and motivation? How do we make sense of apparent cultural differences?

7.2. Pointers: Children's morality

An important source of evidence comes from developmental studies of early moral understandings. Children, generally lack the verbal sophistication to explicate their own intuitions, so that subtle experimental techniques are necessary. When psychologist Eliot Turiel used indirect tests he found that even young children had sophisticated moral understandings (Turiel, 1983, 1994, 1998). Turiel found that children could make a distinction between violations of moral principles (e.g. hitting people) and violations of conventional rules (e.g. chattering while the teacher is talking). The violation of a convention disappears if there is no convention; if the teacher did not insist on silence then chattering is no offence. Moral transgressions by contrast are such that they remain violations even in the absence of explicit instruction. The distinction points to what is specific about ethical rules as such. Also, children make a difference between moral principles and prudential rules (do not leave your notebook next to the fire-place!) (Tisak & Turiel, 1984). They justify both in terms of their consequences but assume that social consequences are specific to moral violations¹⁴.

¹⁴ These results were replicated in different cultural environments (Song, Smetana, & Kim, 1987). They also, surprisingly, replicated with abused children (Smetana, Kelly, & Twentyman, 1984) and neglected children (Sanderson & Siegal, 1988). These results argue against a "mere socialisation" understanding of morality, following which "society" gradually imposes socially useful norms upon reluctant individuals (see below for evolutionary aspects of this claim). Important aspects of moral understandings are in place before children learn their precise parameters, which suggests that moral development is probably not a gradual inductive generalisation process based on instances of moral judgements. Indeed, in the case of abuse and neglect it means that children develop moral norms *against* the most commonly observed behaviours.

An interesting aspect of these early norms is that they are often focussed on social interaction. It takes very little input for children to construe most interruptions to smooth cooperation (e.g. knocking over a table as other children are playing a game) as morally wrong.

Obviously, that young children have early moral concepts does not mean that they produce the same moral judgements as adults, far from it. Children are different for a variety of reasons. First, they have some initial difficulty in representing what others believe and feel. Second, children need to acquire all sorts of local parameters, for instance the understanding of what counts as ‘hurting’ in a particular social context. Third, older children and adults have a much larger repertoire of previous situations and judgements about these situations, on the basis of which they can produce case-based analogies.

7.3. Pointers: Evolved models and commitment

People behave in altruistic ways in many circumstances where no common genes are involved and no reciprocation is expected (Frank, 1988; Gintis, 2000). This does not stem from rational calculation, for instance from the fear of possible sanctions, for the behaviour persists when there is clearly no chance of getting caught misbehaving. People just say that they would feel awful if they did such things. Powerful emotions and moral feelings seem to be driving behaviour in a way that does not maximise immediate benefits (Krebs, 1998). Congruent with the emotion-driven account of morality acquisition, people seem to have a “moral sense”, that is, a capacity to acquire moral concepts and a propensity to adopt one’s group’s moral norms (Alexander, 1987; J. Q. Wilson, 1993; Krebs, 1998). What could be its evolutionary background? A “pure socialisation” account of morality would suggest that morality evolved because it is socially useful. Stated in these terms the explanation is a non-starter, as it would make cooperative dispositions an easy target for higher-fitness cheating strategies.

However, specific conditions make the evolution of moral feelings possible. Humans depend on co-operation, which creates trust and commitment problems. In many situations you just cannot be sure that others will co-operate rather than defect or cheat. Throughout human history, a number of *commitment gadgets* have helped solve these problems. A good way to show commitment to honest co-operation is to put yourself in a situation where you are actually forced to honour that commitment. You signal your honesty by tying your own hands (Schelling, 1960; Frank, 1988). You join a professional association that would expel any member convicted of malpractice. You agree to advertise complaints against your operation.

Such legal binds and reputation maintenance are not the only commitment gadgets. In many situations, dispositions will do the trick too. As Frank noted, commitment models imply that some emotions are all the more advantageous to individual fitness as they are genuinely uncontrollable, and visibly so (Frank, 1988). For instance, one is unlikely to cheat a partner known to be so hot-blooded that he will sue a cheating partner, even if the costs of doing so far exceed the damage incurred. So to be known as someone who is in the grip of passionate feelings is a very good thing as long as they are, precisely, feelings that over-ride rational calculations. So we may have evolved to be swayed by such feelings and to be *visibly* swayed by them, because that too would be adaptive.

Some moral feelings have the typical features of commitment devices. They are outside voluntary control; they are often difficult to conceal; they constitute a reliable signal of future dispositions; they signal dispositions that support long-term cooperation. Some other moral feelings (like indignation and punitive sentiments) may motivate us to punish free-riders or cheaters despite the cost of enforcement (Price, Cosmides, & Tooby, 2002). It would be easy and advantageous to steal from one's friends but moral disgust imposes a negative reward that decreases motivation towards that course of action; it may be costly to help a friend in need but moral pride provides a positive reward that boosts motivation. In general, then, moral feelings seem to operate like emotional rewards that nudge the reward matrix of strategic interaction.

7.4. Questions and programme

Neural morality

We can ground models of moral understandings on a precise description of the neural mechanisms involved. This stems both from neuro-psychological studies of patients with impaired moral sense and from neuro-imaging studies of normal subjects. To consider pathology first, it would seem that at least some people are impaired in the kind of processes that support moral intuitions. Behavioural and neuro-cognitive studies of psychopaths support this hypothesis. It may be tempting to consider such individuals as simply "closed" to other people's thoughts, feelings and interests, but that is not the case. Indeed, they manipulate social relations quite skilfully. Tests show that they are quite competent at "theory of mind" and similar to average on many (not all) personality dimensions (Knap, 2000). A crucial difference is a failure to simulate other people's experience, that is, to "feel the pain" of their victims, a failure that is connected with these people's inability to feel guilt for their crimes, contrary to most ordinary criminals (Blair, 2001, 2003).

Neuro-imaging studies, too, contribute to a description of moral understandings as dependent upon particular neural structures (Allison, 2001; Moll et al., 2002). In particular, a specific set of networks in the superior-temporal sulcus is engaged by stimuli related to social interaction (facial expressions, gaze direction, voice tone) and relays activation to anterior cingulate and amygdala networks that handle perception of emotions as well as links between plans and emotions (Allison, Puce, & McCarthy, 2000; Allison, 2001).

Morality and empathy

Neuro-psychological cases and neuro-imaging studies suggest an important role for *empathy* in the constitution of moral understandings (Decety & Chaminade, 2003). The extent to which people's actions are constrained by moral principles seems to track the extent to which they can produce sustained representations of other people's experience. Furthermore, these should consist in simulations that share at least some of the emotional valence of the actual experience. An important question is, to what extent do specific experiences play a role in shaping the sensitivity of these networks? What is their sensitivity to context? After all, we know that empathy is a spontaneous human attitude that can also be by-passed, with spectacular effects, in the treatment of others. So an important issue is to understand what other neural structures participate in the activation or inhibition of this simulation system.

8. What drives people's economic intuitions?

8.1. The problem

People do not usually think like economists. There is a well-documented and impressive discrepancy between most people's understandings of the causes and effects of economic facts and the specialists' opinions on such matters as inflation, budget deficits or employment (Caplan, 2001). One could dismiss this as a simple matter of differential access to knowledge. But the differences are actually deeper and more interesting. We have empirical evidence for all sorts of ways of thinking and behaving that (apparently) make little economic sense, especially in the context of modern impersonal markets. The question is not just why this occurs, but also why this seems to be no impediment to market institutions in many places.

During most of human evolution, economic exchange was a matter of gift and barter of tangible goods, in the context of face-to-face interaction between partners who know each other. This form of exchange was predominant until the appearance of sedentary villages, towns and city-states, and finally large capitalist produc-

tion and commerce. Does human psychology include some elementary economic psychology? Does that psychology actually track genuine properties of markets, or does it tend to lead people astray?

8.2. Pointers: Fairness and feelings

For some time now, experimental economics has demonstrated systematic differences between people's behaviour in certain economic situations and the rational solutions predicted by economic theory (see review in (Smith, 2003)). For instance, participants in "ultimatum games", in which they have full powers to decide how to share a gift between themselves and other players, are generally over-generous. Conversely, the recipients of these shares are often spiteful, ready to deny themselves their share of the gift if they judge it too small (Gueth & Tietz, 1986; Gueth & van Damme, 1998). In "public goods" games, where people can choose to contribute to a common pool or hoard their gains, participants generally avoid the tempting (and rewarding) selfish strategy (Kurzban, McCabe, Smith, & Wilson, 2001). Why do people behave in this way?

In particular, it would seem that most participants' reactions in these games are founded on the assumption (obviously false in these experimental contexts) that most cooperation is long-term cooperation. Moreover, they seem to assume that their *feelings* (and their feelings about other agents' feelings) should constitute a guide to behaviour. So for instance one does not want to offer too small a share of the gift to another participant, because that would be "mean". Also, one expects that the offer will be turned down if it looks "mean". People do turn down small offers because they feel "offended" by the other participants' "meanness"; and so on. Why do people trust their feelings, when they are explicitly instructed not to, and when the feelings prove to be such poor guides anyway?

8.3. Pointers: adaptive rationality of feelings

For some time, it was widely accepted in cognitive psychology that human decision-making in general was not quite rational, so one should not expect it to be efficient in complex domains like economics. In this view, ordinary cognition depends on fallible heuristics and is driven by misleading biases in decision-making (Kahnemann, Slovic, & Tversky, 1982). If that is the case, we should not be surprised that most people are less than perfect players in economic games. However, these alleged biases and defects of ordinary reasoning, including statistical reasoning, seem largely artefactual. Indeed, problems presented in formats that replicated features of natural environments seem to elicit sound intuitions and rational decisions (Gigerenzer, 1991; Gigerenzer & Hoffrage, 1995). In other words, people may be equipped with economic capacities that are *not* optimal in the context of

certain specially prepared games but would have been optimal in the contexts in which they evolved. So subjects' non-trivial deviations from normative models could be re-cast in terms of adaptive rationality, given the specific parameters of ancestral situations.

In the economic domain, feelings of fairness and spite, far from being poor sources of intuitions, may be sophisticated computational devices with adaptive value. This may be the case if they provide a quick estimate of other people's reliability and of their other stable dispositions, as well as a summary of memories of past interaction. Indeed, people notice such personality traits – and their construal of exchange does not reduce to gains and losses, but includes what economists call “good-will accounting”, that is, an evaluation of other agents' cooperative tendencies (McCabe & Smith, 2001). In other words, the feelings activated in situations of exchange and sharing may be the outcome of processes similar to (or partly overlapping with) the commitment mechanisms described above (Frank, 1988).

8.4. Pointers: Social exchange and cheating

An important source of specific economic intuitions lies in cognitive systems specialised in personal social exchange, extended in modern situations to non-personal markets. People become much better at solving complex logical tasks if these are presented as social-exchange problems; it does not matter if the situation is exotic (Cosmides & Tooby, 1992; Gigerenzer & Hug, 1992). To check whether members of an imaginary tribe actually abide by the rule ‘if people get their faces scarified then they have a right to eat buffalo’, subjects spontaneously look for buffalo-eaters with intact faces (rather than scarified individuals who do not eat buffalo). Inferences in such situations follow a specific ‘check for cheats’ rule rather than a general logic. Indeed, subjects are confused when asked to check an equivalent but non-social-exchange rule, such as ‘if people get their faces scarified then they have visited Peking’. Psychologists observed these same experimental results in American college students and Shiwiari hunter-gatherers in the Amazon (Sugiyama et al., 2002).

Some features of this cheater-detection inference-system are important for economic reasoning. The system is automatic, that is, any problem that has the *format* of a direct, personal social exchange should activate it. Also, it seems to trigger a memory search for characteristics of the exchange partner to assess their reliability or consistency on past form. Now many modern economic decisions involve impersonal markets, in which the past behaviour of an agency may not be only the most relevant feature. The cost-benefit matrix of a company may be a surer guide to its future actions than the “personality profile” that seems to emerge from its past behaviour.

8.5. Questions and programme

Do markets create impersonal goodwill?

Notions of “fairness” are universal but their parameters may be very different from place to place. This is a domain where “ideology” – people’s official or explicit representation of how they behave may often be very different from the actual facts. In most tribal societies one is subjected to an incessant paean to the virtues of communal, disinterested sharing; but most anthropologists find a great deal of hoarding, scrounging, and downright skulduggery. By contrast, people in industrial economies are said to behave opportunistically and often believe that they do; but economists observe a great deal of non-opportunistic behaviour, from tipping to sharing to charity donations.

This is why it is misleading, although tempting, to assume that good-will intuitions are acquired through social learning, among the social conventions one acquires as part of one’s cultural competence. A more promising kind of explanation is that at least part of our intuitions in this domain are shaped by the kind of economic circumstances in which we operate. This would seem to be the conclusion of the cross-cultural study of people’s offers and reactions in ultimatum games (Henrich, 2000; Henrich, Fehr, & al., 2001). The evidence is quite surprising. The offers are often more generous in modern industrial contexts than in tribal settings, despite the difference in ideologies mentioned above. In fact, a variable that explains an important part of the variance in people’s offers and reactions is their “exposure to markets”. The evidence is still fragmentary, as the field of comparative experimental economics is in its infancy, but it would suggest a suite of distinct fairness intuitions and strategies and a context-sensitive decision-making mechanism.

How are institutions represented?

People’s intuitions seem to be fine-tuned by economic *institutions* in the sense of patterns of practices and expectations (North, 1992; Denzau & North, 2000). In neo-institutional economics, the term denotes a great variety of social and cognitive facts. Institutions can consist of informal habits, behavioural dispositions, concepts, as well as institutions in the usual sense, such as property rights, insurance or a judicial system. Even though the role of institutions is now much better understood, this has not been connected to the question of a natural sense of fairness. There is little research so far on the potential divergence between such institutions and evolved preferences for specific patterns of exchange (Knight, 2000).

Nor do we know much about the representation of institutions. For instance, most economic game studies assume that all subjects represent the rules fairly accurately but also represent them in the way they are modelled by game-theory. The latter assumption may be less than perfectly sound, given our knowledge of interaction representation in general. We know for instance that the jurors' interpretation of the rules for evidence in civil or criminal trials is quite different from the legal norm (Hastie, 1994). So a valuable research programme may experimentally assess the difference between game-theoretic rules and actual behavioural rules internalised by participants.

9. Are there cultural differences in low-level cognition?

9.1. The problem

Do people in different places think the same way? Here I emphasise differences in low-level cognition, because they are the object of specific research. Processes are said to be "low-level" to the extent that they occur near the physical stimulus (e.g. auditory perception and phoneme identification) and "high-level" if they are further removed from the stimulus (e.g. interpreting the implications of a sentence). So the question is, do we find differences in low-level processes correlated with life in particular places or specific kinds of socially transmitted information?

9.2. Pointers: Modes of Thought

The anthropological literature includes many attempts to define different, culturally specific "modes of thought" (Hollis & Lukes, 1982). In general, these attempts were flawed in two ways. First, their main goal was to highlight a contrast between some idealised form of rational thinking (often assumed to be typical of science) and an equally idealised form of "magical thinking" (often – and without much empirical evidence – described as more typical of non-industrial peoples) (Buchowski, 1997). Second, these claims did not include much by way of a cognitive description of the processes involved, often leading to claims that were just downright incompatible with what we know of human minds (Sperber, 1985). Cross-cultural social psychology experiments show us that we are now beyond these simplistic understandings of culture and that a proper understanding of its effects on cognitive processes may be a valid research programme.

9.3. Pointers: Asian and Western reasoning

The question of cognitive differences has been recently revived by a number of experimental psychologists. The main focus of these studies has been the difference between "Western" folk (the usual population of experimental psychological

studies) and “Asian” participants, usually university students from China or Japan. Some of these studies demonstrate limited differences. For instance, “Asian” participants tend to see social causation as more pervasive than “Western” subjects, much more prone to the attribution error and therefore likely to explain other people’s behaviours in terms of stable dispositions. By contrast, the same studies report that members of both groups make similar assumptions about *physical* causation (Morris & Peng, 1994). Such evidence would suggest a limited and “shallow” influence of cultural differences. This interpretation fits with other, familiar data on shallow cultural differences, such as Ekman’s demonstrations of a difference between quick, almost imperceptible facial expressions (largely involuntary and very similar across cultures) on the one hand and slower, more stable ones (voluntary and culturally specific) on the other (Ekman, 1999).

However, some cognitive differences seem to go deeper than socially transmitted norms for overt behaviour. Recent social psychological experiments have focused on several dimensions along which the “Western”-“Asian” contrast is most salient (Ji, Peng, & Nisbett, 2000; Norenzayan & Nisbett, 2000; Masuda & Nisbett, 2001; Norenzayan, Smith, Kim, & Nisbett, 2002). One of them is the perception of complex visual or narrative scenes, in which Westerners are alleged to focus on the properties of individual events or items, while the Asian participants more readily respond to relations between different events or items (Ji, Peng et al., 2000). For instance, Japanese and American subjects recognise objects seen in previous scenes more easily if they are presented with the same contextual information, but the effect is much stronger in the former (Masuda & Nisbett, 2001). Another difference is observed when subjects have to deal with apparent contradictions. White American participants seem more inclined to polarize their understanding of both statements to find out which one to exclude, while Chinese participants tend to try to reconcile them (Peng & Nisbett, 1999) (although see (Lee, 2000) for limits to such effects). When faced with a difficult problem, “Asians” are more disposed to set aside formal rules of reasoning for intuitive insight; the reverse is true for White Americans (Norenzayan et al., 2002).

9.4. Questions and programme

Is culture a factor?

This evidence does not tell us much about the processes involved in creating differential effects between “Asian” and “Western” participants. The only proposal in this literature points to centuries-old differences in scholarly styles, educational practices and general cultural ambience (Nisbett, 2003). There is some empirical support for (a very gross approximation of) this claim. For instance, Asian Ameri-

cans who live in the US but spent some of their early years in Asian countries or whose social relations are mainly with “traditional” folk often perform in ways that are intermediate between the typical White American and Asian response patterns (Norenzayan et al., 2002). This however only gives us a very vague indication that some form of “social context” is involved.

It makes sense to identify “culture” as a factor (in the statistical sense) in such studies. But we cannot take “culture” as a *cause* of cognitive differences. “Culture” only denotes a rough similarity of concepts and norms with a group (and difference between groups). It only tells us rather vaguely in what direction to seek independent variables: in this case, perhaps in education, or in conversational norms, or norms of social interaction. In other words, the real research in this domain has only just started¹⁵.

What is different? What is the developmental schedule?

This leads to the question of causal mechanisms underlying such differences. One could interpret differences as a matter of selective attention to particular patterns, or of encoding of scenes, or of task-relevant constraints on what needs to be retrieved to make sense of the task. This is important as these would lead to very different hypotheses about the cultural stability of the differences. This would suggest a series of new experimental studies, aimed at dissociating the processes engaged.

Additional evidence for the processes underlying cultural differentiation is likely to come from developmental studies. We know that at different ages children are sensitive to different kinds of external input. The point at which each cultural difference in cognitive style appears in development should tell us what kind of cultural input is involved. There is however very little study of these factors in cross-cultural psychology so far.

¹⁵ It would be all the more difficult to draw conclusions from such studies that some cognitive processes do not seem to reveal differences of the kind described here. Consider for instance hindsight bias, the tendency to over-estimate after a particular event the amount or quality of our previous expectations about that event (Hell, Gigerenzer, Gauggel, Mall, & et al., 1988). Given the reported effects of cultural style on general features of autobiographical and episodic memory (Ji, Schwarz, & Nisbett, 2000), one might expect strong cultural differences. But hindsight bias seems similar in many cultures (Pohl, Bender, & Lachmann, 2002).

10. What explains individual religious attitudes?

10.1. The problem

There are marked differences between individuals in the degree of commitment to supernatural agency and powers. While some people find the existence and actual efficacy of these agents to be a matter of direct intuition, others find them a convincing account of events without much of that intuitive appeal, and others yet may be rather indifferent to the entire domain. These differences are found in most cultural environments, although the extent to which they are expressed, and the format in which they are expressed change with historical circumstances. The question is, can we identify the factors that drive these differences in religious attitudes and commitment?

10.2. Pointers: External factors and commitment

The data-base for religious commitment is less than satisfactory. Ideally, we should have reliable and precise data on individual differences in people's attitudes to religious morality or supernatural agency in different cultures. In actual fact, most non-Western religions are described ethnographically, with little concern for individual variation and attitudes, and more emphasis on the way religious concepts blend into a culturally specific world-view. By contrast, we have many statistical surveys of religion in Western places, especially so in the United States, providing a wealth of correlational data between external social factors (education, class, gender, etc.) and religious affiliation or attitudes (Batson, Shoemaker, & Ventis, 1993).

Although many variables (age, gender, social class, education) have been identified by such studies and do demonstrate interesting correlational evidence at least in some cultural environments, the causal mechanism that leads to commitment is not really explored, for two reasons. First, in most psychology of religion the concepts are a *given*. External factors are seen as modifying people's attitudes to concepts and norms that they already have. Considering commitment without describing the acquisition process is certainly misguided, for the ways in which the concepts are organised and associated with other aspects of one's semantic knowledge are certainly a crucial part of what makes them intuitively *plausible*. Second, most models of external influences on religion assume that religious concepts and norms are entirely accessible to conscious inspection. That is, beliefs are reduced to explicit beliefs. This, however, is rather misleading. In this as in other conceptual domains, most of the causal processes that make concepts cohesive and beliefs plausible happen outside conscious access.

10.3. Pointers: A standard model of religious thought

In the past fifteen years, various accounts of specific features of religion (Lawson & McCauley, 1990; Boyer, 1994b; Barrett, 1996; Boyer, 2001; Pyysiainen, 2001; Atran, 2002) have converged to constitute what could be called a common or “standard” model of religious thought and behaviour, that can be summarised as follows:

[1] Supernatural concepts (found in religion but also in fantasy, dreams, “superstitions”, etc.) are informed by very general assumptions from domain concepts such as PERSON, LIVING THING, MAN-MADE OBJECT. Such notions are salient and inferentially productive because they combine (i) specific features that violate some default expectations for the domain with (ii) expectations held by default as true of the entire domain (Boyer, 1994a; Barrett, 1996). These combinations of explicit violation and tacit inferences are culturally widespread and may constitute a *memory optimum* (Barrett & Nyhof, 2001; Boyer & Ramble, 2001).

[2] A subset of this supernatural repertoire consists in religious concepts proper, which are taken by many people as, firstly, quite plausibly real and secondly, of great social and personal importance. These concepts generally describe *intentional agents* so that all standard agency assumptions are projected onto them (Lawson & McCauley, 1990). Concepts of gods and ancestors require minor but consequential ‘tweaking’ of standard theory of mind (Barrett & Keil, 1996).

[3] Religious morality is parasitic upon evolved moral intuitions that are there, religion or not. Non-physical agents are associated with moral intuitions in that the agents are construed as “interested parties” in decision-making (Boyer, 2000b).

[4] Religious rituals are constrained by agency assumptions, such that the presence of superhuman agents as presumed actors or patients in rituals predicts a number of intuitions about the positions of other elements such as instruments and human participants (Lawson & McCauley, 1990; Barrett & Lawson, 2001).

[5] Intuitions about religious “purity” and “pollution” are directly derived from intuitions developed in the context of contagion- and contamination-avoidance (Boyer, 2001).

[6] Notions of souls and spirits are connected to concepts and theories about death and predation that derive from non-religious sources (Boyer, 2001). Religious concepts of this kind receive additional boost from perception of dangers (and mortality risk) in environments of human evolution (Atran, 2002).

[7] Religious concepts are optimally suited for the building of coalitional affiliation, as they provide easily recognisable group-membership markers

(Bacharach & Gambetta, 2001) and shared commitment to costly activities (Atran, 2002).

10.4. Questions and programme

Is commitment a high-level interpretation?

Our common view of religious adherence assumes that people [a] consciously examine the contents of the religious conceptual package, as it were, and [b] make a decision to believe based on a set of additional reasons or factors. This however is misguided on several counts. First, from a simple empirical standpoint, there is no sense in which people could be said to have religious beliefs because they have pondered the evidence for or against the actual existence of particular supernatural agents. Rather, they grow into finding a culturally acquired description of such agents intuitively plausible. Second, the very notion of “centralized” commitment to a particular belief presupposes the kind of unitary mind that has no reality in terms of cognitive processes¹⁶. Cognitive functioning does not require that a particular “belief” be considered by a centralized decision-making faculty and accepted as plausible (Boyer, 2003).

Belief in supernatural agents (like many other explicit beliefs) is a high-level, conscious and metarepresentational state. People are aware of their assumption that ancestors are around (by contrast, they also assume that objects fall downwards but are not necessarily aware of that assumption). In other words, explicit beliefs of this kind are interpretations of one’s own mental states. It is a plausible hypothesis in cognitive neuroscience that some mental systems, possibly supported by specific networks, are specialized to produce explicit, relevant interpretations or post-hoc explanations for the operation and output of other mental systems (Gazzaniga, 1995).

Perhaps the impression that elusive agents really are around is an interpretation of this kind, as a result of the coordinated activity of many automatic mental systems. In this view, spirits and ancestors would be seen by some as plausibly real because thoughts about them activate ‘theory-of-mind’ systems and agency-detection and contagion-avoidance and social exchange. We still have little empirical evidence (e.g. from neuro-imaging) of this link between high-level interpretation and intuitive commitment.

¹⁶ All we can say as a measure of “commitment” is that people will engage in certain behaviours (like assenting to the particular statement, making decisions based on entailments of the statement) and be in certain states (like entertain the statement, be offended if someone makes fun of it, be surprised that other people do not accept it, etc.) with a certain probability.

Differences in cognitive function

The standard model could help us account for differences in individual commitment. The conceptual resources for thinking about supernatural agency stem from a variety of cognitive systems that usually serve other functions. We do not know much yet about individual differences in the functioning of these specialized systems. Yet that difference could prove to be crucial as the output of these systems contributes to building up religious notions.

Consider for instance religious morality. It certainly rides piggy-back on a set of moral intuitions and feelings that are there, religion or not (see above, section 4.3). Now it is probably the case that people differ in the extent to which they produce moral intuitions, in the strength of the feelings associated with them, and in the conditions in which the feelings are elicited. Such differences would have a ripple effect on religious morality, in the sense that it would make different individuals differently receptive to the specific kind of moral system offered by religious specialists.

In the same way, differences in “theory of mind” could well have consequences for the salience of supernatural agency concepts. It is clear that we can observe differences in the operation of at least some theory-of-mind systems, for instance in terms of empathy. It is also the case that sensitivity to animacy and agency cues differs from one person to another. Now one could speculate that such differences in the operation of low-level (motion detection) or high-level (theory of mind) agent-systems would make people more or less receptive to descriptions of supernatural agents.

Or consider purity and pollution notions, described in the standard model as activating contagion-avoidance systems. These systems do not operate in all people in the same way with the same intensity on the basis of the same external cues. Even if we discount exceptional pathologies like OCD, there are large phenotypic differences here. This may well influence the attention-grabbing power of culturally widespread notions of mystical pollution and ritual cleansing.

So progress in our understanding of belief therefore depends on a greater development of the cognitive neuroscience of individual differences, which is still in its infancy.

11. Why religious fundamentalism and extremism?

11.1. The problem

We should explain why some individuals are prepared to place themselves in great danger, sometimes face certain death, in order to commit violent acts, apparently on the basis of religious convictions. Note that one should distinguish between *fundamentalism* and religious *extremism*. In the most diverse traditions (American Christianity, Islam, Hinduism, and even more surprisingly Buddhism) one can find movements entirely focused on a return to old religious values supposedly perverted by further developments. Although not all “fundamentalists” are committed to violence, virtually all the religious extremists who commit or condone violence in the service of religious goals belong to some fundamentalist groups.

11.2. Pointers: Fundamentalism and modernity

There are two commonsense ways of dealing with fundamentalism, both of which are unsatisfactory. On the one hand, it is tempting to think that this is *all to do with religion*, that is, an excessive form of religious adherence. A second interpretation is that religious fundamentalism has *nothing to do with religion*, it is a brazen attempt on the part of small groups to reach or retain influence, power or prestige. Both interpretations fail to explain what is special about such movements. If fundamentalism were just an extreme form of religious persuasion, this would not tell us anything about the reasons why some people in some circumstances are led to this particular version of their religious tradition. Also, the notion that fundamentalists are simply lusting after power fails to tell us why they seek it in that particularly dangerous, costly and often ineffective way.

A plausible explanation focuses on a perceived modern threat to traditional ways. In this view, the fundamentalist reaction is mostly against religious and cultural competition, specially acute in the case of Third-World societies confronted with powerful, ex-colonial Western influence. In this view, fundamentalists want to return to a (largely mythical) past when local values and identity were taken for granted, when no one was aware that there were other ways of living (Marty, 1992).

We can get a better sense of fundamentalist reaction if we describe more precisely what is so scandalous about modern influence in a religious milieu. The message from the modern world is not just that other ways of living are possible, that some people may not believe, or believe differently, or feel unconstrained by religious morality, or (in the case of women) make their own decisions without male supervision. The message is also that people can do that *without paying a heavy price*. Non-believers or believers in another faith are not ostracised, those who

break free of religious morality, as long as they abide by the laws, still have a normal social position, and women who dispense with male chaperones do not visibly suffer as a consequence. Seen from the point of view of a religious coalition, this means that defection is not costly and is therefore very likely.

11.3. Pointers: Extremism without pathology

Religious extremism may be construed as a very special subset of this fundamentalist situation. Extremists are those who place themselves in great danger – indeed in many cases are willing to perform suicide missions – to commit acts of violence. A common temptation is to “pathologize” this phenomenon, by considering that such people have to be beyond the range of normal human motivation. However, this is not just of limited interest (the label does not purchase us much explanatory power) but it misses some important points about this form of violence.

As Scott Atran points out, suicide killing is not a novelty, but a strategy recurrent in different historical circumstances (Atran, 2003). Atran also notices that, against popular stereotypes, most recent suicide terrorists are not poor, ignorant or psychotic. The few empirical studies on members of such groups or perpetrators who survived their attempts show no evidence of psychotic features, which in any case would probably be incompatible with their complicated missions. More striking, they generally come from well-educated and socially prominent or middle-class families. So what explains the motivation to sacrifice oneself for such causes?

We may gain better understanding of religious extremist movements if we consider their behaviour in terms of *conditions* most likely to elicit it rather than stable individual *dispositions* that would lead to it. In this view, it may be of help to consider those circumstances that lead to non-opportunistic behaviour, that is, situations in which people generally tend to act against their own best interests.

11.4. Questions

Is fundamentalism trying to raise the price of defection?

Fundamentalism may be seen as an attempt to deter potential defectors by demonstrating that defection may be very costly, that people who adopt different norms may be persecuted or even killed. This would account for several features of extremism that would otherwise remain puzzling. First, many fundamentalist groups are predominantly concerned with control of *public* behaviour: how people dress, whether they go to religious meetings, etc., even though their religious doctrine often is primarily concerned with personal faith or commitment. Second, fundamentalist groups often try to make the punishment of immoral behaviour

much more public and spectacular than it would have been in their respective traditions. This makes sense if it is in fact directed at potential defectors, to make it all the more obvious how costly defection can be. (See above, section XX for ostensive violence). Third, a good part of fundamentalist violence is directed, not at the outside world but at other members of the same cultural, religious communities. The most imperious domination is exerted inside the community: by leaders over mere members, by dedicated followers over non-committed people, and above all by men over women. If the movement was all ethnic-religious differences, it would concentrate its attacks on outsiders. Fourth, the main target of many fundamentalist movements is often a local form of modernised religion¹⁷.

Is extremism explained by commitment?

Commitment models (see above section XX) account for feelings such as pride, guilt, shame, but also for the more negative aspects of emotional motivation, such as punitive sentiments and spite. A *logic of spite* may be an important component of credible threat mechanisms. Spite is generally used in game-theoretic models to denote the willingness to incur large costs in order to inflict some cost on another agent. This is well-documented in human psychology. In particular, most punitive attitudes seem to involve some element of spite. We are prepared to punish transgressors even if it costs us far more than the original transgression itself. Again, this may be economically sub-optimal and evolutionarily advantageous. How would spite be involved in situations of religious extremism?

This might occur in conditions in which some people do not perceive any possible positive change in their outcomes by “normal” methods of negotiation or fight. Accepting immense risk, and in some cases the certainty of death, may well approximate a rational strategy under such extreme circumstances. On the basis of recent historical evidence, it would seem that self-sacrificial terror is engaged when [a] members of one group do not perceive negotiation or traditional fight as liable to bring about any change in their situation, [b] they perceive another group as the agency responsible for that situation, [c] they perceive the two groups as engaged in a zero-sum interaction, because what benefits the other group is causing damage to their own, and [d] the inference becomes natural and widespread, that any damage to the other group will therefore benefit one’s own group. Very few historical

¹⁷ This is quite obvious in American fundamentalism – both Christian and to some degree Jewish – which obviously cannot be a reaction to colonial or foreign influence, but is directed against liberal versions of these creeds, a phenomenon observed also in other places, notably Islam and in Hinduism. These reformist movements were particularly popular with the educated, urban middle classes and therefore represented a real political danger for those whose authority is purely grounded in religious hierarchies.

situations are so clearly and consistently defined by the people concerned that they afford all these conclusions. For lack of empirical studies we do not know whether this model is valid and therefore whether one should explore its policy implications.

12. General considerations

In these pages I have tried to present mid-level problems and possible approaches while eschewing “paradigm” issues. I do not think there is space here to present a proper “epistemology” and a defence of the causal integration of evolutionary, psychological, economic models that I think will provide us with better accounts of human behaviour. Limited space is not the sole reason for avoiding these debates. Pragmatic considerations are relevant too. Although it is in principle possible to mount an energetic, coherent and in my view convincing defence of this research programme as a general “paradigm”, I simply do not think that would be of much help. Paradigmatic debates in the social and behavioural sciences have an unfortunate habit of persisting at the programmatic level, without ever generating much in terms of specific hypotheses or evidence. By contrast, should we decide to pursue some of the issues presented here in a way that integrates various levels or domains of explanation, the cumulative effect of such models would probably have important consequences on the way we think of behavioural sciences and their different “fields”. The present disciplinary divisions are silly but the belief that we could dissolve them dissolve them *by argument* is of course is downright naïve. We are after all social scientists – we know institutions are not shaped or governed by reason.

12.1. Good habits

There is no general “recipe” that would provide a clear path to a solution to any of the problems listed here. Each of them probably has to be approached in a different way, using different methods. As the reader noted, we recommend very diverse tactics of tackling these problems (and we are not really certain that any of these is optimal – these are just suggestions). However, there is a general style of enquiry that is probably positive in the explanation of cultural phenomena. This style seems to consist in the following qualities:

Revisionism. There is no good reason to think that past models are necessarily good or that established practices are necessarily valuable. Since a great deal of scholarly effort is spent fortifying various fortresses and defending property-claims to parts of intellectual turf, it may not be surprising that many claims that a certain

problem *must* be addressed in a particular way turn out to reduce to one such defensive manoeuvre.

Opportunism. In approaching a question, use whatever tools you can find that might be of help. It does not matter where they came from, whether they were thought to be consistent or not.

Reductionism. A whole lot of explanatory work in any account of anything is generally done by laws and principles that account for regularities at a “lower level” of reality. As a consequence, explaining a pattern of phenomena often is the same as showing that the pattern *reduces* to a particular configuration of previously known laws or patterns.

These three dispositions (revisionism, opportunism and reductionism) are generally taken as great qualities in most fields of scientific enquiry or indeed of general scholarship. Indeed, in most fields they are so taken for granted that it would seem strange if someone had to recommend them. It is all the more surprising that these dispositions are often taken as intellectual or moral defects in some fields of the behavioural sciences. We have all heard of arguments denounced as “reductionistic” as if that was in itself a problem. Naturally, not all reductions are good and sufficient explanations but some reduction is always necessary for causal explanation and scientific integration. In the same way, opportunism is often lauded in the language of “inter-disciplinary” inquiry but often frowned upon when actually displayed by individual researchers. The propensity to use whatever tools work, with a healthy disregard for where they came from, is a necessary disposition for progress in scholarship.

The next step is the pursuit of causally integrated models of the kind I tried to outline here for a variety of urgent issues, to do with the family, perceptions of society and the economy, religion and extremist violence, ethnicity and its consequences, etc.. The list is far from exhaustive, obviously. This is only a sampler, biased by the author’s personal interests as well as a more important reason. A list of the theoretically important issues a renewed, integrated social and behavioural science should address seems to overlap a lot with the list of issues an educated public would think ought to be addressed. So working towards theoretical integration here might nudge social and behavioural sciences a few inches closer to their ideal.

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