ETHNIC IDENTITY

An Integrative Evolutionary Perspective on Ethnicity

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Abstract. **This paper integrates several different but mutually consistent evolutionary approaches to ethnicity: genetic similarity theory, social identity theory, individualism/collectivism, an evolved racial/ethnic human kinds module, and rational choice mechanisms relying on domain general cognitive mechanisms. These theories are consistent with each other, and together they illustrate the interplay of evolved cognitive and motivational systems with mechanisms of rational choice that are able to choose adaptive strategies in uncertain, novel environments.**

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This article develops a pluralistic account of theories underlying ethnocentrism, ethnic identity, and relations between ethnic groups. Ethnicity is not unique in calling for theoretical pluralism. Pluralism of mechanisms devoted to solving the same adaptive problem is common, especially, I suggest, for systems designed to solve problems with very high potential costs or benefits for the organism. For example, an adequate theory of aggression must include universal adaptations triggered in specific contexts (e.g., sexual jealousy triggered by signs of infidelity; threat to an ingroup; certain types of aversive stimulation—Berkowitz, 1982; Buss, 1999). However, we also need theories that can account for sex differences, individual differences, and group differences in aggression. These imply the importance of genetic and environmental influences on a variety of evolved systems, including temperament/personality differences in behavioral approach systems associated with aggression (sensation seeking, impulsivity, and social dominance). Also implicated are differences in emotionality, which subsumes variation in the tendency to exhibit anger, a primary emotion of aggression, and sociopathy, which includes variation in the opposing emotions of sympathy, empathy, and love (MacDonald, 1995). Finally, learning mechanisms, such as being exposed to successful or unsuccessful models and negative reinforcement, and cognitive mechanisms (e.g., tendencies to over-attribute hostile intent) have also been implicated in aggression (Coie and Dodge, 1998). A similar situation obtains with the fear system, where there are sex-differentiated personality systems (the behavioral inhibition system, emotionality), domain-specific modules designed to respond to evolutionarily significant sources of fear (snakes, spiders), domain-general learning systems (classical conditioning) able to respond to novel sources of fear, and general intelligence able to develop elaborate plans to escape sources of fear (Gray and McNaughton, 2000; LeDoux, 1996; MacDonald and Chiappe, 2002; Öhmann and Mineka, 2001).

The following discusses five systems underlying the phenomenon of ethnic identity: genetic similarity theory, a racial/ethnic human kinds module, social identity mecha-

nisms, individualism/collectivism, and domain-general problem solving mechanisms.

Genetic Similarity Theory (GST)

Genetic similarity theory extends beyond the mechanisms of kin-based inclusive fitness by proposing mechanisms that assess phenotypic similarity as a marker for genetic similarity (Rushton, 1989). These proposed mechanisms promote positive attitudes, greater cooperation, and a lower threshold for altruism for similar others. The data compiled by Rushton (1989, 1999) demonstrate that people not only assort positively for a wide variety of traits, but they are more likely to do so on traits that are relatively highly heritable. GST is also highly compatible with substantial evidence for direct kin recognition mechanisms in a variety of animals and plants (Pfennig and Sherman, 1995; Rushton, 1989). GST is the most plausible explanation for three critical empirical findings: assortative mating, the very powerful effect of similarity in psychological research, and the fact that people tend to assort with others on more heritable traits.

GST has important implications for theories of ethnocentrism. It implies that the continuum from phenotypic and genetic similarity to phenotypic and genetic dissimilarity also acts as an affective continuum, with liking, friendship, marriage, and alliance formation being facilitated by greater phenotypic and genetic similarity. This in turn suggests a genetic basis for xenophobia independent of the theory of groups—that the liking and disliking of others facilitated by this system is independent of whether the other is a member of a socially designated (culturally constructed) ingroup or outgroup.

It is important to qualify these findings by noting that the relationship between similarity and heritability occurs within category—e.g., within the area of cognitive abilities, there is greater similarity among spouses and friends for general intelligence (h=.8) than for specific cognitive abilities (h=.5). These data also support the importance of resource reciprocity in relationships of marriage and close friendship, since, for example, spouses and best friends are more similar in age, attitudes, and religion than they are on physical characteristics, even though the latter are more heritable. (Age isn't heritable at all.) Others who are similar in these ways presumably provide self with more psychological rewards; for example, similar interests and attitudes form the basis of mutual attraction, and similar personality traits—such as sensation seeking—promote common interests. A common finding in the developmental literature is that friends establish common ground. Children with vastly different interests and attitudes really have nothing to be friends about. Friendship, marriage, and other voluntary alliances are fundamentally relationships of reciprocity of valued resources (MacDonald, 1996).

There are therefore two complementary evolutionary theories of similarity in human relationships—one based on attraction to genetic commonality in others (e.g., assortatively marrying for intelligence and a variety of other genetically influenced traits) and one based on reciprocity in the resource value of others (e.g., a beautiful, young woman marrying a wealthy older man from a different ethnic group—Lusk, MacDonald, and Newman, 1998).

Because the similarity-detecting mechanisms implied by GST assess low levels of genetic relatedness, they would not be expected to produce detectable levels of providing unreciprocated resources to others (altruism), but to affect the cost/benefit structure of self-interested behavior. There is no psychological evidence that relative liking in relationships of friendship, marriage, and alliances typically involves this sort of altruism. Indeed, DeBruine (2002) found that subjects showed greater trust of others in a two-person trust game if the other person's face resembled their own. However, despite the greater trust in a phenotypically similar other, phenotypic similarity had no effect on selfish betrayals of the partner's trust in a situation where the partner could not retaliate.

Relationships of marriage, friendship, and ethnic group affiliation fundamentally involve reciprocity, and self-interest is an obvious component of all of these relationships: Assortative mating increases relatedness to children, so that one receives a greater genetic payoff for the same parenting effort. Successful alliances and successful friendships have a greater payoff to self if genetically similar others succeed when you succeed. Successful alliances of any kind with genetically similar others have a lower threshold for trust (DeBruine, 2002) and a higher threshold for defection: It remains in one's self-interest to persevere in maintaining the alliance in the face of other self-interested opportunities. These considerations fit well with views that ethnic groups represent diluted reservoirs of genetic self-interest (Johnson, 1997; Salter, 2002; van den Berghe, 1999).

Ethnic Groups Processed by a "Human Kinds" Module

Gil-White (2001) argues that the human brain is biased toward viewing ethnic and racial groups as biological kinds because they superficially resemble animal species. This tendency is an evolutionary accident—an exaptation: There was no natural selection for viewing ethnic groups or races as biological kinds, but the brain is fooled into supposing that different ethnic groups and races are biological kinds because they resemble natural kinds in several ways, including normative endogamy, descent-based membership, and the existence of culturally created phenotypic markers (scarification, forms of dress) that make different ethnic groups appear to be of a different kind. Ethnic groups become a useful essentialist category supporting valid infer-

ences not because of any biological reality to ethnicity but because the cultural markers peculiar to different ethnic groups lower the cost of interactions within the group.

Hirschfeld (1994, 1996) provides several arguments against such analogical transfer models in which human social categories are analogized from naïve biological categories (see also commentary in Gil-White, 2001). Hirschfeld notes that developmental data indicate that knowledge of race does not develop in coordination with knowledge of animal species as predicted by the analogical transfer model. Hirschfeld argues for a domain-specific module specific to human social kinds. Children have a natural curiosity about groups that is "shaped by a set of abstract principles that guide the child's attention toward information relevant to discovering the sorts of intrinsicalities and naturally grounded commonalities that are entrenched in his or her particular cultural environment" (1996:193). Hirschfeld thus posits an interaction between an innate domain-specific module of intrinsic human kinds combined with cultural input that race is the type of human kind that is intrinsic—that it is inherited and highly relevant to identity, more so even than other types of surface physical characteristics like muscularity or occupation. People cannot voluntarily join or leave such a social category. Even 4-year-old children view racial categories as essentialized and natural: "Young children's thinking about race encompasses the defining principles of theory-like conceptual systems, namely an ontology, domain-specific causality, and differentiation of concepts" (1996:88). "But racial kinds are not natural kinds (at least, not as they have classically been conceived), and they certainly are not kinds whose existence is triggered by external reality" (1996:197).

A third possibility is that we have a human kinds module designed not simply to categorize people in essentialist terms but to specifically categorize people in different racial/ethnic groups in an essentialist manner—as highly relevant to identity and not changeable by the person. Hirschfeld's results are consistent with such a model because they show that even at very early ages children view race in more essentialist terms than either occupation or body build, although of course they are also consistent with his view that information about race is provided by the culture.

It is noteworthy that part of Mongol folk psychology is that people from other nearby ethnic groups look different and would continue to look different even if they had adopted the culture of another group. Thus, Gil-White's subjects suppose that a Kazakh child adopted into a Mongol family would "not look or behave anything like a Mongol" (Gil-White, 2001:523) even though being reared in a Mongol culture. They suppose that there is something "inside" that makes them different from outgroups despite enculturation in the outgroup.

Gil-White's subjects may be correct that at least some of the physical and even behavioral differences between ethnic groups (e.g., differences in size, as between pyg-

mies and non-pygmies, or a reputation for fierceness or intelligence) would occur even if individuals from those groups were reared in another culture. Their essentializing tendencies may reflect an adaptation sensitive to real genetically influenced differences between the groups—an adaptive response to recurrent encounters with other human groups that differed in observable, genetically influenced traits. From this perspective, the process of essentializing groups that differ only culturally from one's own group is a misfiring of an adaptive mechanism designed to respond to real genetic differences between groups.

The argument for an adaptation specific to ethnic outgroups is strengthened by evidence showing information encapsulation (restriction to particular types of input), rapid, unconscious processing, and automaticity—characteristics notably absent from Gil-White's analysis (Rothbart and Taylor, 2001). Social psychology experiments show that subjects respond differently to faces of racial ingroups and outgroups (Fiske, 1998). For example, subjects are better able to recall the faces of racial ingroup members (Platz and Hosch, 1988; Bothwell, Brigham, and Malpass, 1989). Hart et al. (2000) found that both Blacks and Whites showed differential amygdala responses to photographs of racial ingroup and outgroup members as assessed by Functional Magnetic Resonance Imaging recordings. The amygdala is known to respond subconsciously to facial expressions of fear and evolutionarily prepared sources of fear such as snakes and spiders (Le Doux, 1996; Öhmann and Mineka, 2001; Whalen et al., 1998). The greater amygdala activation to outgroup faces noted by Hart et al. (2000) occurred during later stimulus presentations; subjects habituated to repeated presentations of ingroup faces but not to outgroup faces. These findings are consistent with Whalen's (1998) proposal that the amygdala acts as a vigilance system that monitors the environment for potentially threatening stimuli and ceases responding when the stimulus is no longer viewed as threatening.

It is noteworthy that these results are specific to facial features rather than the culturally-imposed ingroup/outgroup markers emphasized by Gil-White (2001). As noted above, DeBruine (2002) found that subjects showed greater trust of others in a two-person trust game if the other person's face resembled their own. Similarly, Heschl (1993) found that politicians in the Soviet Union were more likely to support the party leader if they showed facial resemblance to that leader. These results suggest that people are sensitive to facial similarity as a marker for genetic similarity.

Implicit, unconscious, and rapid processing are hallmarks of evolved cognitive modules (Tooby and Cosmides, 1992). Hart et al.'s subjects did not report any *conscious* differences in emotional reaction to racial ingroups or outgroups. Moreover, subjects are quicker to classify pictures of racial outgroup members than ingroup members (Levin, 1996; Valentine and Endo, 1992).

Nevertheless, in the absence of similar data from cross-cultural samples and from more closely related but different looking ethnic groups, it is premature to conclude that there is an evolved, domain specific module designed to categorize people in different racial/ethnic groups in an essentialist manner. Hart et al.'s (2000) results could also be explained by lower levels of experience with the racial outgroup, since less experience with a stimulus would be expected to result in greater ambiguity and therefore increased monitoring by the amygdala vigilance system (see Whalen, 1998). Nor is this system encapsulated, since conscious beliefs and attitudes also influence responses to racial and ethnic outgroups (e.g., van den Berghe, 1981). Similarly, the amygdala is known to react to evolutionarily significant sources of fear in a modular, domain specific manner, but is also known to respond to experiential influences, as in the case of learned fears (LeDoux, 1996; Öhmann and Mineka, 2001).

Arguments that humans possess a module for race and ethnicity as intrinsic natural kinds based solely on genetically influenced physical features require that human groups had repeated interaction with other races or ethnic groups differing in their genetically influenced physical features in the EEA. Such arguments also require that there be valid inferences about races or ethnic groups that could have selected for an essentialist architecture specific to race or ethnicity as a genetically influenced category, and that inferences about ethnic groups or races had fitness consequences in the EEA (see Barrett, 2001:12).

Regarding the first point, Harpending (2002) notes that long distance migrations have easily occurred on foot and over several generations, bringing people who look different for genetic reasons into contact with each other. Examples include the Bantu in South Africa living close to the Khoisans, or the pygmies living close to non-pygmies. The various groups in Rwanda and Burundi look quite different and came into contact with each other on foot. Harpending notes that it is "very likely" that such encounters between peoples who look different for genetic reasons have been common for the last 40,000 years of human history; the view that humans were mostly sessile and living at a static carrying capacity is contradicted by history and by archaeology. Harpending points instead to "starbursts of population expansion." For example, the Inuits settled in the arctic and exterminated the Dorsets within a few hundred years; the Bantu expansion into central and southern Africa happened in a millennium or less, prior to which Africa was mostly the yellow (i.e., Khoisan) continent, not the black continent. Other examples include the Han expansion in China, the Numic expansion in northern Africa, the Zulu expansion in southern Africa during the last few centuries, and the present day expansion of the Yanomamo in South America. There has also been a long history of invasions of Europe from the east. "In the starburst world people would have had plenty of contact with very different looking people" (Harpending, 2002). Finally,

there was considerable overlap among various *Homo* species during human evolution, as for Neanderthals and modern humans (e.g., Noble and Davidson, 1996)

Would such a mechanism have fitness consequences in the EEA? Population genetic studies show measurable genetic distance even between closely related groups, as between English and Danes (e.g., Salter, 2002). Individuals have a greater genetic interest (inclusive fitness) in their tribal and ethnic groups than outgroups, and would benefit by mechanisms that fostered discrimination between ingroups and outgroups—the same evolutionary logic underlying social identity theory (see below) or, indeed, Gil-White's exaptation model.

A putative evolved human kinds module would be expected to exacerbate distrust and animosity between groups, because outgroups are viewed as composed of people who are fundamentally and intrinsically different (Hogg and Abrams, 1987). Social identity research has indicated that *social mobility* (i.e., the extent to which group boundaries are permeable) influences ingroup/outgroup attitudes. The perception of permeability reduces perceptions of conflict of interest and reduces the ability of the other group to act in a collective manner, while perceptions of impermeability lead to group strategies involving competition with the other group and negative evaluations of the outgroup. Ethnic groups "tie their differences to affiliations that are putatively ascriptive and therefore difficult or impossible to change" (Horowitz, 1985:147). People are inclined to view those in outgroups as "of a different kind" and therefore not potential members of one's one group, leading to greater conflict between groups.

Social Identity Theory

Theories based on phenotypic similarity, such as genetic similarity theory, do not address the crucial importance of cultural manipulation of segregative mechanisms as a fundamental characteristic of ethnocentric groups. It is common for groups to develop segregative cultural practices with the result that ingroup membership becomes of critical importance for all relationships. For example, there are large cultural barriers between Anabaptist groups (Amish and Hutterites) and the surrounding society, including modes of dressing, familiarity with the wider culture of the mass media, religious beliefs, and associational patterns (MacDonald, 1994/2002). As a result, phenotypic and genetic similarity between individual Anabaptists and non-Anabaptists on a wide range of traits was effectively precluded as a mechanism for promoting friendship, business alliances, and marriage with outsiders, and there was a corresponding hypertrophy of the importance of religious/ethnic affiliation (i.e., group membership) as a criterion of assortment.

Moreover, generalized negative attitudes toward dissimilar others seem insufficient to account for hostility directed

against individuals because of their group membership. The mechanisms implied by GST or proposed evolved mechanisms of xenophobia postulate that each individual assesses others on a continuum ranging from very similar to very dissimilar. However, an important feature of ethnic competition is that there are discontinuities created by ethnic separatism and the consequent hypertrophy of religious/ethnic (i.e., group) status as a criterion of similarity. Fundamentally, what is needed is a theoretical perspective in which group membership per se (rather than other phenotypic characteristics of the individual) is of decisive importance in producing animosity between groups.

Social identity theory offers a promising evolutionary theory of groups (see also MacDonald, 1998; Tullberg and Tullberg, 1997; van der Dennen, 1999). An early form of social identity theory was stated by William Graham Sumner (1906:13), who concluded that

> Loyalty to the group, sacrifice for it, hatred and contempt for outsiders, brotherhood within, warlikeness without—all grow together, common products of the same situation. It is sanctified by connection with religion. Men of an others-group are outsiders with whose ancestors the ancestors of the we-group waged war. . . . Each group nourishes its own pride and vanity, boasts itself superior, exalts its own divinities, and looks with contempt on outsiders. Each group thinks its own folkways the only right ones, and if it observes that other groups have other folkways, these excite its scorn.

The classic study of Sherif et al. (1961) found that when randomly chosen groups of boys engaged in between-group competition, group membership became an important aspect of personal identity despite the lack of systematic genetic or phenotypic differences between the groups. The groups developed negative stereotypes of each other and were transformed into groups of "wicked, disturbed, and vicious" children (Sherif, 1966:85). Fear and dislike of strangers are easily developed, and group differences, especially when marked by obvious physical differences such as skin color, are quickly registered in consciousness (Hebb and Thompson, 1964). Levine and Campbell (1972) evaluated theories and anthropological evidence related to the "ethnocentric syndrome" of positive perceptions and behavior toward ingroups and negative perceptions and behavior toward outgroups.

Social identity research shows that people are highly prone to identifying themselves with groups. There is a tendency to conceptualize both ingroups and especially outgroups as more homogeneous than they really are. The stereotypic behavior and attitudes of the ingroup are positively valued, while outgroup behavior and attitudes are negatively valued (Brewer and Brown, 1998; Fiske, 1998;

Abrams and Hogg, 1990; Hogg and Abrams, 1987). While negative attitudes and behavior toward outgroup members are muted by normative prohibitions against harming outgroup members (Hewstone, Rubin, and Willis, 2002), such norms are not in place in many societies, so that "in one country after another, other ethnic groups are described in unflattering or disparaging terms" (Horowitz, 1985:7).

The result of these categorization processes is behavior that involves discrimination in favor of the ingroup; beliefs in the superiority of the ingroup and inferiority of the outgroup; and positive affective preference for the ingroup and negative affect directed toward the outgroup. These tendencies toward ingroup cohesiveness and devaluation of the outgroup are exacerbated by real conflicts of interest between groups (see also Triandis, 1990:96).

Nevertheless, ingroup favoritism and discrimination against outgroups occurs even in so-called minimal group experiments, i.e., experiments where groups are constructed with no conflicts of interest, or indeed any social interaction at all. Even when the experimental subjects are aware that the groups are composed randomly, subjects attempt to maximize the difference between the ingroup and the outgroup, even when such a strategy means they would not maximize their own group's rewards. The important goal seems to be to outcompete the other group. Rather than dismiss the minimal group experiments as not meaningful because of the highly artificial situation, these studies attest to the power of "groupness" in the human mind—the tendency for even the most randomly constructed groups to elicit discrimination against outgroups.

The empirical results of social identity research are highly compatible with supposing that social identity processes are a psychological adaptation designed for between-group competition. Current evidence indicates that the minimal group findings can be generalized across subjects of different ages, nationalities, social classes, and a wide range of dependent variables (Bourhis, 1994). Anthropological evidence indicates the universality of the tendency to view one's own group as superior (Vine, 1987). The tendency for bias in favor of ingroups arises automatically and implicitly (i.e., without conscious awareness) even in minimal group experiments (Otten and Wentura, 1999); although these qualities may arise for other reasons, automaticity and implicit, unconscious processing are characteristic of evolved domain-specific modules designed as adaptations to recurrent problems in the EEA (Tooby and Cosmides, 1992). Moreover, social identity processes occur very early in life, prior to explicit knowledge about the outgroup. They also occur among some animal species. Russell (1993:111) notes that "chimpanzees, like humans, divide the world into 'us' versus 'them,'" and van der Dennen (1991:237) proposes, on the basis of his review of the literature on human and animal conflict, that advanced species have "extra-strong group delimitations" based on emotional mechanisms.

Further indicating adaptive design of cognitive mechanisms related to group interactions, Rutherford et al. (1997) found that people weigh individual/group cost/benefit pay-offs in an adaptive manner that is inconsistent with rational choice theory but which would be highly adaptive in a context of competing groups. Again, the evidence indicates that perceptions of ingroups and outgroups are the result of adaptive design and that between-group competition is a reality of the human environment of evolutionary adaptedness.

The powerful emotional components of social identity processes are very difficult to explain except as an aspect of the evolved machinery of the human mind. The ingroup develops a *positive distinctness*, a *positive social identity*, and increased self-esteem as a result of this process (Aberson, Healy, and Romero, 2000; Rubin and Hewstone, 1998). Within the group there is a great deal of cohesiveness, positive emotional regard, and camaraderie, while relationships outside the group can be hostile and distrustful. As Hogg and Abrams (1987:73) note, the emotional consequences of ingroup identification cannot be explained in terms of purely cognitive processes, and a learning theory seems hopelessly *ad hoc* and gratuitous. The tendencies for humans to place themselves in social categories and for these categories to assume powerful emotional and evaluative overtones (involving guilt, empathy, self-esteem, relief at securing a group identity, and distress at losing it) are the best candidates for the biological underpinnings of social identity processes. Clearly, categorization of humans into groups is far more than simply an example of the general process of human categorization.

Social identity processes also are exacerbated in times of resource competition or other perceived sources of threat (e.g., Hogg and Abrams, 1987; Hewstone, Rubin and Willis, 2002), suggesting that this is an adaptation for between-group conflict. A common source of ethnic conflict is fear of being dominated by ethnic strangers (Horowitz, 1985:188). Keeley (1996:129, 138-41) has found that among pre-state societies, "hard times" and expanding populations are often associated with warfare. As emphasized by Alexander (1979) and Johnson (1995), external threat tends to reduce internal divisions and maximize perceptions of common interest among ingroup members. An evolutionary interpretation of these findings is also supported by results indicating that social identity processes occur among advanced animal species, such as chimpanzees (van den Dennen, 1991). The powerful emotional components of social identity processes are very difficult to explain except as an aspect of the evolved machinery of the human mind. The tendencies for humans to place themselves in social categories and for these categories to assume powerful emotional and evaluative overtones (involving guilt, empathy, self-esteem, relief at securing a group identity, and distress at losing it) are the best candidates for the biological underpinnings of participation in highly cohesive collectivist groups.

The results of social identity theory support the claim that people's categorization of sets of individuals into groups involves an adaptive distortion of reality in the form of a loss of detail. The perception of the social world as sharply dichotomized between ingroup and outgroup results in some loss of information. People in ingroups are relatively likely to fail to attend to individual differences within groups, with the result that both ingroup members and especially outgroup members become characterized by the stereotypical traits of their group—positively evaluated traits for members of the ingroup, negatively evaluated traits for members of the outgroup (Hogg and Abrams, 1987). This loss of detail therefore results in sharpening group boundaries, intensifying positive feelings about the ingroup and negative feelings about the outgroup, and discriminating in favor of the ingroup and against the outgroup. Groups also invent or at least choose attributes on which they differ from other groups in order to develop a positive self-image: "If a group suffers by invidious comparison along the dimension of achievement motivation, it may nonetheless have a special connection with the land that furnishes an alternative basis for relative group evaluation" (Horowitz, 1985:186).

The empirical data derived from social identity theory indicate that perceptions of ingroups and outgroups have been the focus of natural selection, i.e., the mechanism evolved because humans were recurrently exposed to situations in which perceptions of ingroups and outgroups as groups rather than concatenations of individuals were adaptive. Social identity research indicates that people in threatened groups develop a psychological sense of shared fate (Rabbie and Wilkins, 1971). The fact that social identity mechanisms appear to be highly sensitive to the presence of external threat to the group is compatible with supposing that people continue to track individual self-interest; in the absence of threat, people are more individualistic, and in times of threat, group and individual interests increasingly coincide and group members increasingly have a shared fate.

Shared fate in human groups is likely to occur during situations such as military conflicts and other examples of intense between-group competition in which defection is not individually advantageous, or is not an option at all. Warfare is the most likely candidate to meet these conditions. Warfare appears to have been a recurrent phenomenon among pre-state societies. Surveys indicate over 90% of societies engage in warfare, the great majority engaging in military activities at least once per year (Keeley, 1996:27-32). Moreover, "whenever modern humans appear on the scene, definitive evidence of homicidal violence becomes more common, given a sufficient number of burials" (Keeley, 1996:37). Because of its frequency and the seriousness of its consequences, primitive warfare was more deadly than civilized warfare. Most adult males in primitive and pre-historic societies engaged in warfare and "saw combat repeatedly in a lifetime" (Keeley, 1996:174).

Shared fate would be likely in situations where potential defectors were summarily executed or severely punished by the ingroup, or in situations were survivors were summarily executed by a conquering outgroup or lost access to women and other resources. There is little evidence for high levels of discipline and coercion in pre-state warfare, although it occurred at least in some cases (Turney-High, 1971). Nevertheless, cowards were often shamed and courage was a highly valued trait (Keeley, 1996:42-44; Turney-High, 1971), so that defection from the fighting group did indeed have costs as a result of social pressure.

More important perhaps is that the slaughtering of conquered peoples, especially males, has been a persistent feature of warfare. In their rise to power, the Aztecs probably "slaughtered those who opposed them, as all conquerors have always done" (Keegan (1993:114). In pre-state warfare, while women were often taken as prizes of warfare, immediate death was often the fate of women and children and the certain fate of adult male prisoners: "Armed or unarmed, adult males were killed without hesitation in battles, raids, or the routs following battles in the great majority of primitive societies. Surrender was not a practical option for adult tribesmen because survival after capture was unthinkable" (Keeley, 1996:84).

There is reason to suppose, therefore, that situations of intense between-group conflict have recurrently given rise to shared-fate situations. Moreover, Boehm (1997) shows that human hunter-gatherer groups are characterized by an "egalitarian ethic" for an evolutionarily significant period— long enough to have influenced both genetic and cultural evolution. The egalitarian ethic implies that meat and other important resources are shared among the entire group, the power of leaders is circumscribed, free-riders are punished, and virtually all important decisions are made by a consensus process. The egalitarian ethic thus makes it difficult for individuals to increase their fitness at the expense of other individuals in the same group, resulting in relative behavioral uniformity and relatively weak selection pressures within groups. Mild forms of social control, such as gossip and withholding social benefits, are usually sufficient to control would-be dominators, but more extreme measures, such as ostracism and execution, are recorded in the ethnographic literature. By controlling behavioral differences within groups and increasing behavioral differences between groups, Boehm argues that the egalitarian ethic shifted the balance between levels of selection and made selection between groups an important force in human evolution (see also below).

Individual and Group Differences in Individualism/Collectivism

The theory of individualism/collectivism developed by Harry Triandis (1990, 1995) emphasizes individual differences and cross-cultural differences in many of the same tendencies discussed by social identity theory. The theory of individualism/collectivism describes cross-cultural differences in the extent to which emphasis is placed on the goals and needs of the ingroup rather than on individual rights and interests. For individuals highly predisposed to collectivism, ingroup norms and the duty to cooperate and subordinate individual goals to the needs of the group are paramount. Collectivist cultures are characterized by social embeddedness in a network of extended kinship relationships. Such cultures develop an "unquestioned attachment" to the ingroup, including "the perception that ingroup norms are universally valid (a form of ethnocentrism), automatic obedience to ingroup authorities [i.e., authoritarianism], and willingness to fight and die for the ingroup. These characteristics are usually associated with distrust of and unwillingness to cooperate with outgroups" (Triandis, 1990:55); collectivist cultures are more prone to ingroup bias (Heine and Lehman, 1997; Triandis and Trafimow, 2001). Like social identity processes, tendencies toward collectivism are exacerbated in times of external threat, again suggesting that the tendency toward collectivism is a facultative response that evolved as a mechanism of between-group conflict.

If there are important individual differences in psychological mechanisms related to developing a sense of shared fate, it would not be surprising to find that some individuals are extremely prone to a sense of shared fate, to the point that defecting from the group is not a psychologically available option. There are, in fact, examples of such people. Especially striking has been the phenomenon of individuals who readily undergo martyrdom or mass suicide rather than abandon the group. We see examples periodically in modern times, and there are many historical examples, ranging from Christian martyrs in ancient times to a great many instances of Jewish martyrdom over a two-thousand-year period. Persecution of highly collectivist groups does not typically result in defections, but rather an increase in collectivist tendencies. For example, Peter (1987) finds that the high point of Hutterite collectivism was during the seventeenth-century religious persecutions. "No other nation can be shown to have fought so often in defence of its own way of life, and the readiness of Jews to die for their cause is proved by example after example" (Sanders, 1992:239).

Examples of martyrdom are theoretically important because it is very difficult to suppose that such people have an algorithm that calculates individual fitness payoffs by balancing the tendency to desert the group with anticipated benefits of continued group membership. The obvious interpretation of such a phenomenon is that these people are obligated to remain in the group no matter what—even to the point of being martyred. Such examples suggest that there are no conceivable circumstances that would cause such people to abandon the group, go their own way, and become assimilated to the outgroup.

I do not suppose that such an extreme level of self-sacrifice is a pan-human psychological adaptation. As is the case for many other psychological adaptations, there are important individual differences (MacDonald, 1991, 1995; Wilson, 1994). Conceptually, this range of individual differences in personality systems and mechanisms related to social identity and individualism/collectivism may be seen as representing a continuous distribution of phenotypes that matches a continuous distribution of viable strategies. At one extreme end of this variation, it appears that there are a significant number of humans who are so highly prone to developing a sense of shared fate that they do not calculate individual payoffs of group membership and readily suffer martyrdom rather than defect from the group.

It should also be noted that the existence of significant numbers of people for whom desertion of the group is not a psychologically available option shows that between-group selection must be presumed to have occurred among humans. However, the existence of such people is not a necessary condition for groups being a vehicle of selection. Even if all humans were entirely opportunistic and fickle in their group affiliations, so that group membership was always contingent on individual self-interest, groups as a vehicle of selection would still be required in order to understand the behavior of coordinated groups (Wilson and Sober, 1998).

It is likely that enduring, bounded, discrete gatherings of people have been a common feature of the social environment for many humans (Levine and Campbell, 1972). The phenomenon is important because it would imply that a great many humans have in fact lived in group-structured populations where the status of ingroup and outgroup was highly salient psychologically (see Palmer, Fredrickson, and Tilley, 1997 for a contrary perspective). Examples include Gypsies, Anabaptist religious groups (Amish, Hutterites), the seventeenth-century Calvinists and Puritans, and overseas Chinese groups occurring in several parts of the world (see MacDonald, 1994/2002).

Some culture groups are notably more collectivist than others. The Middle Old World cultural area, including cultures from China through North Africa, tends toward collectivism, with extended kinship groups, strongly patricentric social organization, endogamous marriage, ethnocentrism, and xenophobia (Burton et al., 1996). Society is centered around male-dominated groups that functioned as military units to protect herds, suggesting that between-group conflict is an important component of their evolutionary history. There is a great deal of pressure to form larger groups in order to increase military strength, and this is done partly by acquiring extra women through bridewealth.

Middle Eastern societies—also part of the Middle Old World culture area—are characterized by anthropologists as "segmentary societies" organized into relatively impermeable groups (e.g., Coon, 1958, 153; Eickelman, 1981:157-74). Individuals in these societies have a strong sense of group identity and group boundaries, often accompanied by external markers—such as hair style or clothing—and different groups settle in different areas, where they retain their homogeneity alongside likewise homogeneous groups. Consider Carlton Coon's (1958) description of Middle Eastern society:

> There the ideal was to emphasize not the uniformity of the citizens of a country as a whole but auniformity within each special segment, and the greatest possible contrast between segments. The members of each ethnic unit feel the need to identify themselves by some configuration of symbols. If by virtue of their history they possess some racial peculiarity, this they will enhance by special haircuts and the like; in any case they will wear distinctive garments and behave in a distinctive fashion. (Coon, 1958:153)

On the other hand, Western societies are more inclined toward individualism, simple rather than extended family structure, and relative de-emphasis on extended kinship ties and ingroup affiliations (e.g., Horowitz, 1985; Triandis, 1995; MacDonald, 1998/2002). Ethnic conflict in Western societies is correspondingly less intense than in Africa and Asia, where collectivist societies are the norm: "In the divided societies of the West, . . . there is generally a more complex pattern of group loyalties than in Asia and Africa. Ethnic loyalties are less exhaustive, for they compete with an array of other politically important loyalties, reflected in mixed party systems and complex issue configurations" (Horowitz, 1985:21). "The world of ethnic relations would be quite different—and, I believe less civil than it already is—were it not for the pervasive importance of individualist thought" (Horowitz, 1985:89).

Rational Choice Mechanisms

Humans possess rational choice mechanisms that make cost/benefit calculations aimed at adaptively attaining evolutionary goals in novel environments. In psychological terminology, these are domain-general mechanisms, such as the *g*-factor of intelligence tests, classical conditioning, and social learning, that enable humans to make rational, adaptive choices in novel, complex, and relatively unpredictable environments (MacDonald, 1991; Chiappe and MacDonald, in press). Applied to the issue of group membership, such mechanisms enable individuals to opportunistically join or leave groups depending on immediate cost/benefit calculations (see Goetze, 1998), to efficiently monitor group boundaries to prevent free-riding, and to regulate relationships with outgroups (MacDonald, 1994/2002).

For example, the promise of financial rewards might incline a person to abandon one group for another (e.g., those who converted to Islam during the Turkish occupation of the Balkans). Jewish religious law has highly elabo-

rated regulations regarding Jews who inform on other Jews or endanger the lives of other Jews; these laws were invoked in a steady stream of cases against Jews who betrayed other Jews, often for personal profit (Shahak and Mezvinsky, 1999). Rational choice mechanisms also underlie defining and pursuing group interests in constantly changing environments, as, for example, in navigating the institutional structure of modern multi-ethnic democracies.

Discussions of general intelligence emphasize that intelligence is useful in solving novel problems. From an evolutionary perspective, a critical function is the attainment of evolutionary goals in unfamiliar and novel conditions characterized by a minimal amount of prior knowledge (fluid intelligence): "[Fluid intelligence] reasoning abilities consist of strategies, heuristics, and automatized systems that must be used in dealing with 'novel' problems, educing relations, and solving inductive, deductive, and conjunctive reasoning tasks" (Horn and Hofer, 1992:88). Research on intelligence has consistently found that more intelligent people are better at attaining goals in unfamiliar and novel conditions characterized by a minimal amount of prior knowledge. Intelligence is "what you use when you don't know what to do" (C. Bereiter, in Jensen, 1998:111).

The general model is that human evolved motive dispositions may be attained by a variety of mechanisms. It is often noted by evolutionary psychologists that humans are not designed as generalized fitness maximizers—that our adaptations are geared to solve specific problems in specific past environments (e.g., Tooby and Cosmides, 1992). However, the model adopted here—the model of domain-general mechanisms aimed at attaining evolutionary goals in novel, unpredictable environments—has quite different implications. That is, humans are conceptualized as potentially flexible strategizers (Alexander, 1979) in pursuit of evolutionary goals. From this perspective, individuals are members of ethnic groups as rational egoists (Tullberg and Tullberg, 1997), and the ethnic groups themselves behave as rational egoists.

For example, in the ethnically divided societies of Asia and Africa, ethnic groups typically form political parties to advance their interests within the current institutional structure (Horowitz, 1985:293ff). Behaving adaptively in this institutional structure requires domain-general problem-solving mechanisms. These mechanisms generate explicit plans based on assessments of the current situation, making alliances, rallying ingroup members, and obtaining resources. Similarly, the interests of minority groups in contemporary Western societies are typically advanced via knowledge of the political and legal process: developing mechanisms for raising money; utilizing and creating social science research to influence media messages; rallying ingroup members and manipulating ingroup and outgroup members; utilizing the internet, etc. Classical conditioning, another domain-general mechanism

(MacDonald and Chiappe, 2002) may also be important. Johnson (1997) proposes that manipulation of kinship terms to increase allegiance to ingroups relies on classical conditioning of relationships whose emotional power derives from their being rooted in kinship recognition mechanisms (e.g., motherland, brotherhood).

Because of the linkage between IQ and economic success (Gottfredson, 1997; Lynn and Vanhanen , 2002), groups such as the Overseas Chinese and Diaspora Jews, with a relatively high IQ—a domain general ability—are able to attain relatively high levels of economic success; they therefore have the resources to support effective ethnic interest organizations and influence the political process. Domain general abilities that evolved to solve novel problems in constantly shifting environments are used to advance evolutionarily ancient goals.

Several theorists have emphasized that ethnic groups are not natural entities, but are socially constructed entities typically aimed at achieving the political and economic interests of ethnic leaders (and, I suppose, in at least some cases, their followers). This perspective fits well with the domain-general perspective developed here. Ethnies can indeed appear and disappear; they coalesce and divide, and kinship relationships may be manipulated in a self-serving manner (e.g., Anderson, 1983; Horowitz, 1985). There is the belief, if not always the reality, of common descent. Nevertheless, there is every reason to suppose that the coalescing and dispersing often reflects evolutionarily comprehensible interests. As van den Berghe (1999:23) notes, "Ethnic relations always involve the interplay of the objective reality of biological descent and the subjective perception, definition and manipulation of that objective reality."

Given the importance of biological descent for understanding human interests and the flexibility provided by domain general mechanisms to achieve those interests, we may ask how one might in general develop a biologically adaptive ethnic group given the evolutionarily novel environment of large states with hundreds of millions of people and with a myriad of genetic fault lines. Designing adaptive strategies is nothing new. Among other things, the Old Testament provides a clearly articulated strategy for surviving and prospering economically while maintaining genetic integrity of the ingroup and for specializing in particular economic niches. There are other examples, including the Spartans (MacDonald, 1988, 1994/2002), and several Christian groups that have emulated aspects of Old Testament practices (e.g., Puritans, Mormons, Anabaptists—Miele, 2000; MacDonald, 1994/2002; Wilson, 2002).

Another common pattern reflecting perceptions of rational self-interest has been for ethnic groups to pursue strategies of assimilation with closely related groups in order to increase their strength in a multi-ethnic environment created in the post-colonial era. For example, the Fang of Gabon "sensed that, in a political conflict, their clan and dialect divisions were a disadvantage, and they set about
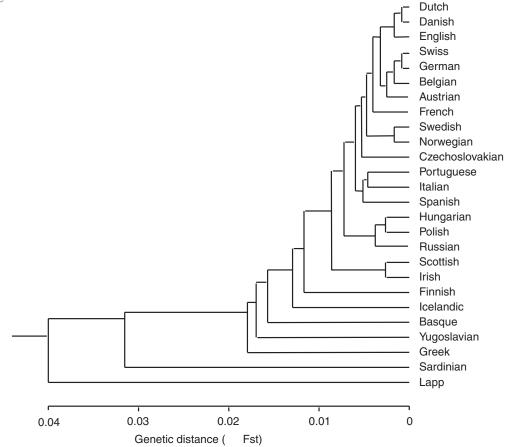
Figure 1. Genetic Tree of 26 European Populations Based on *F*st Measures Estimated from the Average of 88 Genes

Source: Cavalli-Sforza, Menozzi, and Piazza, 1994:268

recreating their former unity. A prominent part of the Fang revival was played by a legend of common origin and migration, which rested on genuine genealogies but also contained new elements, of dubious historical accuracy" (Horowitz, 1985:70).

An obvious strategy for maximizing individual genetic interests in the contemporary world would be to use domain-general problem-solving mechanisms to discover ideal patterns of association with others, depending on their genetic distance from self. Ethnic groups are breeding populations; individuals have genetic interests in ethnic groups by virtue of having a greater concentration of inclusive fitness in their own ethnic group than other ethnic groups (Salter, 2002). For example, population genetic studies show that the various European populations are much closer genetically than continentally separated races (Cavalli-Sforza et al., 1994), and that the distances between those populations correspond approximately to what a reasonably well informed historian, demographer, or tourist would expect. All things being equal, Scandinavians have greater overlap of genetic interests with other Scandinavians than other Europeans, and Europeans have

a greater genetic interest in other Europeans than in Africans (see Figures 1 and 2).

The point is that whatever the fuzziness that characterizes genetic distances, people can creatively decide how best to strategize to promote their genetic interests in the current environment (see Salter's [2002] conceptual typology of strategies for advancing genetic ethnic interests). Reasoning about creating adaptive ethnic groups in the novel environments present in the contemporary world is a problem that is solvable with domain general mechanisms. For example, Goetze (1997) notes that the optimal size of a political unit varies as a function of context: small states are not viable in a world of hostile empires, and even in the modern world, small states may be the victims of unfavorable regional environments.

An ethnic strategizer could look at the map of European genetic distances and decide to promote, organize, and identify with movements of his closest genetic grouping. Thus, a Swede might opt for the advancement of the Swedish and Norwegian gene pool, or a Yugoslav might opt for the Yugoslavian and Greek gene pools. Or such a person could look at the larger map and promote, organize, and identify with the Caucasoid group, or could promote, organize, and iden-
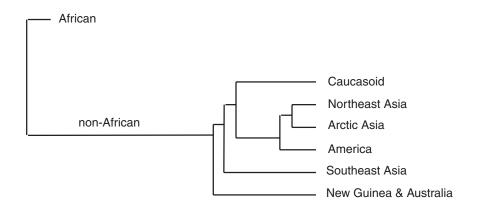
Figure 2. Genetic Distances between Seven Major Population Groups

Note: The African group is more distant from all the others, which are more closely related to each other than to the Africans.
Source: Drawn from Cavalli-Sforza, Menozzi, and Piazza, 1994:79

tify with an alliance between Caucasoids and Northeast Asians. How one decides these issues is a pragmatic matter involving optimizing long-term evolutionary interests best achieved via the decontextualizing and abstraction functions characteristic of domain-general mechanisms.

Given our current knowledge of human genetic distances and human behavior, as well as the need to cement powerful alliances able to act effectively on the world stage, some choices are obviously better than others. I suppose that it would be foolish for a Scandinavian-American, for example, to promote Scandinavian-American interests to the exclusion of larger groupings, because larger groupings would have more political clout, especially in a multi-ethnic context like the United States. I suppose the best strategy would be an analogy with the model of inclusive fitness in which people participate in ethnic groups as a function of genetic distance— at the extreme, teaming up with all of humanity against an alien invader.

Notice that there is no one natural place on this genetic landscape where it is rational to direct one's energy. Different contexts demand different responses, and even one's best choices are made under uncertainty. An effective response for a Serbian living in Kosovo might be quite different from an effective response for a Serbian living in the United States. The former, feeling threatened by a cohesive, non-assimilating European ethnic/religious group (the Albanians), may choose to identify with a narrow and relatively homogeneous ethnic group. The latter, feeling confronted by a polyglot of many different ethnic and racial groups, may choose to identify with larger divisions of European-derived peoples in the United States. But whatever choices are made, domain-general problem solving is critical to the choices that are made.

Conclusion

Of the mechanisms discussed here, only GST and the putative evolved human racial/ethnic kinds module imply a genetically based assessment of genetic distance. Social identity mechanisms are triggered by crowds of ethnically identical people on opposing sides at football games, or even arbitrarily created groups, as well as when the outgroup is a different race or ethnic group. According to Hirschfeld and Gil-White, essentialist thinking about race and ethnicity is not the result of real, genetically influenced racial or ethnic differences. And domain-general rational choice mechanisms may be utilized in the service of attaining any number of human goals (e.g., social status) in addition to maximizing genetic interests by forming optimal coalitions based on current scientific estimates of genetic similarity.

I suggest that social identity mechanisms were adaptive in the EEA because an important set of outgroups were groups living in nearby areas that did not show detectable physical differences in appearance while nevertheless being on average less genetically similar than ingroups. That is, members of a given tribe or band were more closely related to other members of their ingroup than they were to other tribes or bands, even if there were no detectable differences in physical appearance. As a result, mechanisms that result in discrimination in favor of ingroup and against outgroups would also tend to benefit people genetically. Obviously, in multi-racial, multi-ethnic states, social identity mechanisms may often result in maladaptive behavior, because ingroups and outgroups can be manipulated by the media, ethnic leaders, and other elites.

Mechanisms that do not assess genetic distance seem unable to account for the extraordinarily stubborn continuity of ethnic consciousness in many parts of the world. As van den Berghe (1999:31) notes, many ethnic groupings are remarkably stable: the Flemings and Walloons of Belgium, for example, are "almost exactly where their ancestors were when Julius Caesar wrote *De Bello Gallica.*" It is difficult to imagine how social identity mechanisms could produce such stability, given that these mechanisms

are triggered even in arbitrarily created groups. Mechanisms for assessing genetic distance, as proposed by GST and built into the putative racial/ethnic human kinds module, are the most reasonable candidates for the persistence of the ethnic phenomenon. As noted above, there is substantial evidence for direct kin recognition mechanisms in a variety of animals and plants (Pfennig and Sherman, 1995). Assessing the degree to which these genetically sensitive processes are important in ethnic conflict is difficult because, in actual cases, ethnic differences coincide with a variety of cultural markers, such as language and religion, that would be expected to trigger social identity mechanisms. As a result, it is difficult to know the extent to which judgments of genetic distance are actually relevant to the sense of being part of an ethnic ingroup.

One can imagine a thought experiment in which people are stripped entirely of their consciously held group identities, followed by assessment of the extent to which they assort on the basis of genetic distance. The results of GST research indicate that genetically similar others would be preferred as spouses, friends, and as partners in alliances. Such a world is an atomistic world, however; it is insufficient by itself to create ethnic groups. To accomplish that, mechanisms of social identity, including establishing and maintaining group boundaries, are required. The results of social identity research indicate that the boundaries may be drawn in a arbitrary manner and still result in ingroup favoritism and discrimination against outgroups. Nevertheless, the results of GST predict that such groups would lack the rapport and cohesion of ingroups that are more genetically similar compared to the outgroups they are living among. Genetically similar groups composed of similar appearing people would also trigger the putative racial/ethnic human kinds module, thereby leading to a natural sense of "we-ness."

To that extent, ethnic groups composed of genetically similar others are indeed natural groups, and it is mechanisms of genetic similarity and, quite possibly, a racial/ethnic human kinds module that account ultimately for the staying power of ethnicity as a human grouping.

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