

Ethnic Interactions: Analysis of a Sample of Boundaries

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Abstract

In this paper, we analyze a sample of 46 ethnic boundaries drawn from the literature. The principal aim is to test whether there is a universal syndrome of ethnocentrism, the idea that ethnic relations can be characterized along a single dimension of differences, or, whether there are instead multiple types of ethnic relations. The latter hypothesis is based on a cultural evolutionary perspective that suggests that there may be competing forces leading to the evolution of ethnic markers, and hence to the possibility that ethnicity is a multi-dimensional phenomenon. These competing forces may yield a variety of types of ethnic boundaries, not all of which may be conflictual. Thus, we also examine what factors do most closely correlate with violent conflict.

Keywords: *ethnocentrism, ethnic conflict, ethnicity, cultural evolution*

1. INTRODUCTION

The concept of ethnicity has a long and contentious history in the social sciences. Questions of the emergence, the function, and the consequences of ethnic affiliation are all of great concern. The major events of the 20th C., decolonization, partitioning, and immigration, have driven considerable research into the twin problems of assimilation and conflict. Specifically, researchers wish to understand such things as, why does assimilation proceed at differing rates for differing groups or settings? Is conflict driven by ideology or by competition for material rewards? Answers have remained elusive. Even the most basic aspect of the phenomenon, how to define ethnicity, is unresolved. Is ethnicity primarily to do with common ancestry, and primordial sentiments? Or, are self-ascription and constructed identities more important? Certainly, these definitional problems are related to how authors conceive of the functional significance of ethnicity, and yet, the vast majority of writings fail to specify the underlying processes generating ethnicity.

In this paper, we argue that it is necessary to understand such processes in order to understand the phenomenon of ethnicity, and to gain illumination on these deeply important contemporary issues. We argue that a theory of ethnic relations that is based on cultural evolutionary theory does a particularly good job of explaining widely divergent perceptions of the nature of ethnicity. Such theory suggests that ethnicity is not a universal syndrome, but rather, there are multiple types of relations that result from competing evolutionary mechanisms. We are certainly not the first to suggest that ethnicity is a ‘family’ of phenomena (e.g. Eller 1999), or that there may be multiple causal bases for ethnicity (e.g. Gurr and Harff 1994; Horowitz 2001; Verkuyten 2005). However, we attempt to more clearly ground empirical understanding in theory.

We begin by providing a brief history of thought on ethnicity and ethnic relations. Limitations of space necessitate providing only the rough outlines of what are often very nuanced

discussions. However, more detailed reviews can be found in many texts including Levine and Campbell (1972), Eller (1999), and Fearon and Laitin (2000). We follow this discussion with a synopsis of a cultural evolutionary theory of the evolution of ethnic markers that has been published elsewhere (Boyd and Richerson 1987; McElreath, Boyd, and Richerson 2003), and here elaborate on the significance of that model for understanding ethnic relations. Finally, we contribute to the empirical literature by presenting an analysis of a sample of 46 ethnic boundaries, drawn from the literature. We examine these boundaries with two goals in mind. First, to test whether there are general features common to all boundaries, and second, to examine how violent conflict relates to other boundary characteristics. While the classical approach in anthropology was to take individual ethnic groups and the extent of their ethnocentrism as the unit of analysis, we follow Barth (1969) in focusing on boundaries. Barth argued that the classical approach is problematic since it is the "ethnic boundary that defines the group, not the cultural stuff it encloses" (p. 15). He stresses that the cultural features that are most important are boundary-connected since they are the criteria by which membership is signaled and the standards by which peoples' actions are judged.

2. PERSPECTIVES ON ETHNICITY

SOURCES OF ETHNICITY

In the early 20th C, William Graham Sumner provided one of the first definitions of ethnocentrism (1906). He argued there is a universal syndrome whereby members of a society regard ingroup characteristics and behavior as ideal, while viewing outgroups as inferior and with hostility. In very rudimentary form, he argued that ethnocentrism serves to reduce in-group discord

by focusing aggression on out-group members (see also LeVine and Campbell 1972; Bentley 1983). Since that time, numerous authors have further developed this idea of a universal syndrome that is a part of 'primordial' human nature. Psychologists, in particular, have provided many refinements both to the premise that humans are universally predisposed to favor ingroup membersⁱ, and that ethnocentrism functions to displace frustration and aggression (Levine and Campbell 1972;Verkuyten 2005). The idea of symbolically mediated ascriptive group characteristics that inspire loyalty is also central to the views of many cultural anthropologists such as Geertz (1963) and Sahlins (1976), as well to sociobiologists such as van den Berghe (1981); note however, that Geertz's writings are more subtle than the view commonly ascribed to him (Eller 1999; Fearon and Laitin 2000). While there are many refinements to the broad idea, generally these 'primordialists' attribute the phenomenon of ethnicity to some deeply felt loyalty to one's descent group (Isaacs, 1975); ethnicity is thus a 'backwards-looking' phenomenon in which shared ancestry is the cornerstone (De Vos 1995). The contents of ethnic identity are believed to be prior to experience, deep-seated, and the salience of particular symbols unchanging (Eller 1999). The persistence of ethnicity in the modern world and the willingness of individuals to engage in seemingly irrational and costly conflicts that occur along ethnic lines are all thought to be evidence for this broad school of thought

In contrast, instrumentalists or constructivists, view ethnicity and ethnocentrism not as hard and unchanging, but rather, as fluid and constructed (Fearon and Laitin 2000; Horowitz 2001). Ethnicity is an instrument to be deployed and modified as necessary in distributional contests. Ethnocentrism arises through competition or real threat from outgroups, rather than arising independently within the ingroup. Moreover, constructivists require only a 'belief' in common ancestry rather than the genetic fact (Conteh-Morgan 2004), and some not even that; Cohen (1974) takes what is perhaps the most extreme position in defining ethnicity exclusively as common interest groups. Leach's early work on the ill-defined boundaries of Burmese hill tribes (1954) was

one of the earliest influences on this perspective in anthropology, forcing many to grapple with the established tradition of recording ‘the culture’ of individual groups. Now classic publications by sociologists Glazer and Moynihan (1963), and anthropologists Barth (1969), and Cohen (1974), subsequently reported cases where individuals use ethnic identifications contingently as parts of strategies of economic activity and political action, or where groups invent or remodel their ethnicity as parts of collective political and economic strategies. Many authors within this tradition, particularly Cohen, also recognize that people often see themselves as belonging to multiple ingroups (Cohen 1974, Banton 1994, Brewer 1997). The persistence of ethnicity, the slow rate of assimilation, is taken by constructivists to be evidence of the utility of ethnic identity rather than of its resistant nature.

Fearon and Laitin (2000) further distinguish between two varieties of constructivist thought; rationalism and culturalism. Rationalists prioritize the role of individuals who actively manipulate symbols of ethnicity for their own personal ends. Elites may do so in order to gain political power even at the expense of the peace; in the extreme, fostering genocide. The masses may do so in order to achieve personal goalsⁱⁱ. In contrast, for culturalists ethnic identity emerges as a product of a social discourse that is influenced by broad historical and structural trends; individual motivations are constrained by this discourse. This approach is distinct from primordialism, insofar as the discourse is socially constructed rather than innate, and distinct from rationalism insofar as individuals are limited in their ability to manipulate the salience of ethnicity. Fearon and Laitin note that this approach, though potentially valuable, is problematic insofar as the existing literature rarely provides any discussion of how such discourse arises, or why it is sustained in the face of potentially injurious interactions.

Horowitz (2001) further complicates this classification of approaches by noting that some authors argue that individuals manipulate ethnic symbolism for the benefit of the ethnic group rather than just the individual. Thus, Caselli and Coleman (2002) argue that ethnicity developed as

a means of identifying coalition members, where the benefits of coalition formation are to gain disproportionate control of natural resources. They argue that ethnicity, to a greater or lesser degree prevents individuals from ‘passing’ and so getting access to resources controlled by the target ethnic group. If it is easy to perceive separate ethnic identities, it is easier for a stronger ethnic group to initiate conflict that leads to control over resources. Thus, conflict should be associated with ethnic cleavages that are based on difficult to change traits, for example, skin color and physiognomy. However, they make no explicit discussion of how coalition members achieve in-group cooperation and avoid problems of defection that could potentially unravel such coalitionsⁱⁱⁱ. In summary, much of the writing on the nature of ethnicity appeals to one of three main sources; innate human psychology, individual or group rationality, or historical-cultural context.

ETHNIC RELATIONS

The consequences of ethnicity are profound. Horowitz (1985) notes that early modernization theorists assumed that traditional ethnic categories would rapidly disappear as the state grew in political importance; particularly within the context of decolonization. However, not only did ethnic groups fail to assimilate (even in Western countries, e.g. Glazer and Moynihan 1963) rather they have proliferated and ethnic conflict appears to have increased since the end of World War II and particularly since the end of the Cold War (Posen 1993). There are a number of competing theories for this observation. One suggestion is that the problem is simply an artifact of a greater number of ethnic groups being identified as such; colonial governments required a means of identifying collaborators, modern states need ways to categorize and administer subpopulations (LeVine and Campbell 1972; Bates 1974). However, most authors argue that conflict arises from modernization not in spite of it, with varying emphasis being place on structural or cultural forces, rational decision-making, or primordialist sentiments. Arguments that ethnic conflict grows from a desire to protect a common way of life can be identified with the latter approach (Gurr and Harff

1994). Structuralists have argued that ethnicity and class conflict are linked and exacerbated from economic changes; a growing awareness of inequality is thought to mobilize ethnocentrism on the part of the middle class (e.g. Bates 1974; Gellner 1983; Eriksen 1992). Yet as Horowitz (1985) notes, many of these theories provide no a priori reason why conflict is mobilized around ethnic lines rather than class lines. Bates (1974), however, pointedly argues that conflict should be expected to occur along ethnic lines insofar as modernization occurs in particular spaces, not everywhere at once. This means that spatially organized ethnic groups experience modernity at different rates, giving some groups early advantages over others. In recent years, considerable attention has also been paid to the idea that population pressure and resultant resource scarcity drives conflict (Homer-Dixon 1994)^{iv}. Fearon and Laitin (2003) counter the argument that structural sources of conflict arising in the post-Cold War period led to greater ethnic fractionation and to a greater incidence of civil wars and ethnic violence. They find no evidence that indices of ethnic and religious diversity, or of ethnic grievances, are associated with a higher likelihood of civil war. Rather the best predictors of civil war are those that predict the incidence of insurgency; difficult terrain, low per capita income, large population, rebels with good local knowledge, and weak governments. Similarly, Easterly (2000) finds that although ethnic fractionation apparently increases the likelihood of ethnic conflict, the effect disappears when institutional quality is included in the model; good institutions completely mitigate any negative effects. On a smaller scale, findings are varied as to the effect of ethnic diversity on the ability of communities to cooperatively manage resources (e.g. Bardhan and Dayton-Johnson 2002, Ruttan in review); once again there are indications that institutional design may be a critical explanatory variable (e.g. Varughese and Ostrom 2001).

Rationalist approaches to explaining ethnic conflict take a variety of forms. Posen (1993) argues that the post cold-war breakup of Eastern European nations provides a type case for the 'realist' tradition in international relations theory. Faced with anarchy the first order for new states

is to secure the peace. However, because it is often hard to distinguish offensive and defensive capabilities of neighboring groups, it can be tempting to gain the advantage with a pre-emptive strike. Elites often have much to gain in ethnic conflicts. Figueredo and Weingast (1999) critique these arguments by noting that ethnic violence often precedes the collapse of larger states, and secondly, that this approach does not explain why ordinary citizens willingly participate in extraordinary violence. Their analysis of genocide in Rwanda and in the former Yugoslavia suggests that rational citizens do so when motivated by fear for life and property. They argue this is the rational, equilibrium outcome from the social dilemma in which they find themselves.

Finally, the observation of increasing conflict is itself open to question. Fearon and Laitin (2003) find that rates of civil war have not increased since the end of the cold war, despite the common perception. In a separate study of interethnic relations, they also found that ethnic relations are generally less violent, and much smaller in scale, than is commonly supposed (Fearon and Laitin 1996). Other authors have also argued that ethnic relations are not universally conflictual. For example, Barth (1969) predicted three scenarios of stable inter-ethnic relations. The first is one in which the ethnic groups have distinct niches with little competition for resources; the result being a minimal level of interdependence (perhaps only through trade). In the second scenario, ethnic groups occupy separate territories and compete for control over resources resulting in an emphasis on border politics. Lastly, ethnic groups may have reciprocal and different niches resulting in a large degree of ethnic group interdependence. His analysis suggests that economic and political factors are central to identifying and defining the character of ethnic boundaries. Further evidence that ethnic groups are not universally hostile comes from the phenomenon of conscious adoption of cultural traits from outgroups (Brewer and Campbell 1976; LeVine and Campbell 1972). These findings contradict the formulation of ethnic groups solely on the basis of common descent as proposed by Sumner and thus the universality of an ethnocentrism syndrome based on this common descent.

3. TOWARD A THEORY OF ETHNOCENTRISM

As illustrated above, explanations of ethnic behavior exemplify a major pattern in debates about human behavior. Some give innate psychological processes the weightiest role in explanation, as in the frustration aggression displacement or primordialist explanations. Some explanations give a calculus of individual or group advantage pride of place, as in rational choice explanations. Explanations of ethnocentrism appealing to resource competition between individuals or to realistic group conflict are examples relevant to the problem at hand. Others give historical and cultural processes a major role in the construction of the institutions defining inter-group conflict, and even of psychological structures like primordial sentiments. Each of these traditional explanations rests on an argument from theory, positive empirical evidence, and serious weaknesses of competing hypotheses. For example, cognitivists' claim for a central role for the processes of the mind is supported by a considerable body of experimental evidence. The progress of evolutionary cognitive psychology is beginning to tie that field to the evolutionary theory of function. However, cognitivists have almost completely marginalized the study of social learning and hence culture. Rational choice theorists, particularly those that derive their expectations of the goals of rational calculation from evolutionary considerations, have a powerful theory of the ultimate function of behavior. However, psychologists find much fault with the empirical reality of the rational selfish maximizer, while anthropologists and historians point out that the diversity and relatively slow rate of change of cultural institutions are incompatible with a theory that derives from the instant equilibration of behavior of rational optimizers controlled by market-like forces. Cultural explanations derive support from uniquely powerful human psychological abilities to imitate others and from their ability to account for human behavioral diversity in terms of cultural traditions. However, rational choice theorists are, quite reasonably, dissatisfied with the ad hoc

character of cultural explanations, and cognitive psychologists are rightly critical of most cultural explanations to take proper account of the biological complexities of human minds.

We believe both that the evidence supporting each of these three basic explanatory frameworks is strong, but that the critiques each has of the other are equally persuasive. In our view, human behavior is controlled by an evolving psychological system that is powerfully influenced by both cultural and innate components. This much has been said by any number of sensible commentators reflecting on the partisan debates on these subjects, not least LeVine and Campbell (1972) in the case of ethnicity. What is more difficult is deriving and testing a theory that gives adequate weight and a proper role to all parts of the system. In this paper, we briefly review the dual inheritance theory of gene-culture co-evolution as it pertains to ethnic behavior. We argue this theory does provide the outlines of a satisfactory explanatory system for human behavior and that its predictions regarding ethnocentrism survive empirical tests. In particular, we argue that the theory provides an adequate explanation for cross-cultural patterns of ethnic interactions.

A CULTURAL EVOLUTIONARY EXPLANATION

Boyd and Richerson (1985, Ch. 8; 1987; Richerson and Boyd 1998) investigated the evolution of ethnocentrism using gene-culture coevolution models. The models use population genetics style recursions to model both cultural and genetic evolution to develop a theory of when selection on genes should favor a capacity for using neutral symbolic marker traits like dress style and dialect as the basis for selective imitation of individuals similar to oneself. These models lead to a step-wise hypothesis for the evolution of ethnocentric behavior. In the first phase, the most primitive function of symbolic markers of group membership was to avoid imitating people whose adaptation is different than yours, i.e. a 'local marking' effect. Theoretical models show that rules of cultural imitation of the form "preferentially imitate people with neutral cultural symbolic traits similar to mine" can arise in spatially variable environments in the face of migration. Along a

gradient of aridity, for example, different mixes of crop farming and livestock rearing might be optimal. A strategy of selectively imitating people with the same dialect you learned at home will tend to prevent young subsistence agriculturalists from picking up erroneous strategies from neighbors adapted to a different ecological zone. This ethnocentric rule is favored when there is a correlation between the dialect marker and behaviors that are adaptive in different environments. Such correlations will indeed arise by a combination of the ethnocentric bias rule and natural selection or biased imitation of successful people. Essentially, ethnocentric bias helps individuals to ignore migrants from other environments whose behavior is not economically advantageous in the home environment. As an example, Bettinger (1991) argues that the development and spread of ethnic markers, and the fine-tuned local adaptations they protect, may explain the population jump in Europe that is associated with the replacement of Neanderthals which have scant indication of symbolic culture, by Anatomically Modern populations who made striking use of symbolically and stylistically variable artifacts. Similarly, McElreath, Boyd, and Richerson (2003) show that if societies have different norms for solving coordination problems, such as which side of the road to drive on, imitating people from neighboring societies may be a bad idea and attention to symbolic differences is adaptive. In this case, symbolic boundaries can arise even on the same geographical territory, leading to the possibility of symbolically marked classes, castes, and occupational groups living in the same social system. The mechanism acts like the innate pre-mating isolation mechanisms of closely related species that allows them to adapt independently to different niches. Unlike true speciation, this cultural "pseudo-speciation" can evolve between groups exchanging substantial numbers of migrants, and these porous boundaries easily allow the spread of behaviors that are adaptive in multiple environments. In complex societies, symbolically marked groups often define occupational specialties, as well as class boundaries. Lawyers, refuse haulers, and college professors all belong to symbolically marked groups of more or less formality. While such groups are not ethnic groups by the usual definitions, they have some of the same characteristics. We

expect no sharp boundaries between ethnic groups and occupations, classes, religions, and regions, all of which are frequently symbolically marked. As evidenced in Barth's famous study in Swat, an ethnic division of labor is common in complex societies. Classical India is the most extreme case; ethnic groups are absorbed into the Hindu caste system, gradually evolving from marginal tribes to members of prestigious castes (Gadgil and Malhotra 1983). In such societies, symbolic marking, even when invidious, leads individuals to acquire the attitudes and skills necessary to do their jobs.

Boyd and Richerson (1985, ch 7; Richerson and Boyd 1998) hypothesize that in the second phase, humans became subject to group selection on cultural variation. Imitation rules like simple conformity (imitate the most common type) reduce the effects of migration and help to preserve cultural variation between groups in the face of migration (Henrich and Boyd 1998). What is important is that conformity can be expected to interact with the 'cultural pseudo-speciation' effect that creates group boundaries. The higher rates of interaction of people within such bounded groups will tend to cause conformity to reinforce processes of symbolic marking. Moreover, the use of other kinds of imitation rules based on symbolic markings (e.g. imitate those judged to be of high prestige or wealth) may lead to runaway exaggeration of symbolic behavior. This increases arbitrary differences between groups, some of which may differentially affect group level success (see Kelly's 1985, example of how differences in bridewealth customs gave rise to the military advantage of the Nuer over closely related Dinka Sudanese pastoralists). Thus, the reserve towards outgroup members that arose due to the 'cultural pseudo-speciation', or 'local marking', effect that was described in the first step became reinforced by political conflicts arising because group selection favored ingroup cooperation that sometimes results in collective predatory and aggressive behavior towards outgroups. The second step seems to be necessary because models suggest that symbolic markers cannot arise in the first instance to protect solutions to games of cooperation (McElreath, Boyd, and Richerson 2003).

The third step in this model of the development of ethnic markers was a long period of gene-culture co-evolution. Both the pseudo-speciation and group selection effects were presumably acting for some tens or hundreds of thousands of years or more before the pattern suddenly became archaeologically visible in its final, or near final, form in Africa some 50,000 years ago (McBrearty and Brooks, 2000). Given a span of hundreds or thousands of generations, innate psychological processes most likely coevolved with cultural institutions. Human ‘nature’ did not evolve in a culture-free world and then begin affecting cultural evolution via ancient, culture-free, psychological impulses. Rather, culturally constructed environments substantially shaped our innate psychology for a significant part of our evolutionary history. Elsewhere, we argue in more detail that gene-culture coevolution has resulted in the evolution of a set of tribal social instincts, an innate psychology adapted for ingroup-outgroup relations (Richerson and Boyd 1998, 2000). Thus, Gil-White (2001) argues that ethnic markers have come to be processed with the same innate cognitive machinery that we also use to distinguish biological species. Humans are innately primed to be members of symbolically marked groups and to discriminate in favor of ingroup members. The innate parts of our social psychology still require considerable socialization to actually function. Cultural institutions in large measure determine what groups we will belong to, for example. At the margin, individuals can often alter the groups they belong to and subscribe more or less strongly to the norms and expectations of those groups. Some groups are voluntary in the sense that one must make a conscious decision to join. Religion in the US is near the voluntary end of the continuum even though most people remain in the church in which they are raised. Others are more or less primordial, and ethnicity is by definition at that end of the continuum.

Thus, the main prediction of the theory is that ethnic boundaries will be diverse. We expect no tightly correlated family of variables that could be described as a syndrome of ethnicity as the tradition of Sumner would suggest. Note that each of the traditional explanations of human behavior plays a theoretically motivated role in this model. Humans are assumed to make adaptive

decisions as the psychologists and economists who want to rest explanations on some form of human nature suppose. However, psychological realism, to wit the impossible costliness of an omniscient rational utility or fitness maximizer, demands that decisions generally be made using efficient but simple heuristics (Todd and Gigerenzer 2000). The use of a symbolic marker to choose whom to imitate is such a cost-effective decision rule. Human culture more generally can be thought of as a complex of cost-effective decision-making rules (Boyd and Richerson 1993). Experienced members of your own society provide a rough-and-ready guide to sensible behavior. In a world in which the underlying rate of change is not too rapid but which is very complex to figure out for oneself, theory tells us imitation of elders is the rational thing to do. Through imitation, human populations build up complex adaptive traditions, shaped by marginal decisions and by natural selection favoring some cultural variants rather than others.

EXPLAINING ETHNIC CONFLICT

We argue that an understanding of ethnicity as having primordial, rational, and cultural elements helps to explain the seemingly contradictory observations made by many researchers; particularly, the diverse findings as to the logic or irrationality of violent conflict^v. The logic of violent conflict, as developed by the game theorists of the Cold War period, is quite paradoxical and not as well appreciated as it ought to be (Thomas Schelling's classic *Arms and Influence*, 1966, is an excellent introduction). Violent conflict is normally exceedingly costly to both sides of a conflict. As is well known in game theory, following Schelling, the simple economic logic of peace is complicated by the coercive power of a credible threat to fight. However, even weaker parties have some coercive power if they can convince stronger powers that they will fight hard for an extended period of time. Yet the threat of a weaker party is hard to make credible, conflict is disproportionately costly to weaker parties. One solution is for the weaker party to, say, appoint an irrationally belligerent general to head its army. In the psychological laboratory, groups tend to

elect extreme leaders when they expect conflict with another group (Haslam 2001: Ch. 3). That will tend to make the threat more credible but at the risk of making backing down once hostilities commence impossible. If Schelling's picture is correct, contestants slice and dice commitment and decision freedom as best they can in situations tightly constrained by the power and suspicions of adversaries. In a certain sense, the weaker party especially is in a stronger position if it is irrationally committed to fight. Fighting actually occurs only when one party misjudges the commitment of the other. But because demonstrations of commitment, such as the appointment of belligerent leaders, intrinsically contain an element of risk and irrationality, misjudgment is built into the saber-rattling element of diplomacy. War and communal violence happen.

The existence of ethnic sentiments potentially furnishes this rational irrationality. As Hirshliefer (1987) notes, one function of individual emotions like rage and love may be to guarantee commitments to attack if threatened by a stronger party or to remain married in the face of later better prospects (see also Frank 1988, Nesse 2001). Without an ability to make credible commitments, bullies would not be deterred and marriages would not take place. Ethnic sentiments are emotions that are mobilized in collective ceremonies, often in the context of the potential for violent conflict. If the game theory hypothesis is correct, the incidence of violent conflict should be more strongly correlated with strong, symbolically motivated, emotional differences between groups than by economic and political differences of a more mundane sort. The paradox is that beginning from an economic analysis of violent conflict leads one step by step to the conclusion that violent conflict is not likely to break out over economic disputes and other real differences between contending parties. Under the threat of war, most real disputes between societies (and between smaller groups and individuals) will be worked out without violence. In other words, realistic intergroup conflict is common (e.g. US trade disputes with Japan and the EC) but are worked out by hard bargaining short of war. Violence will tend to occur most often when ordinary conflicts lead to the successful mobilization of ingroup solidarity and outgroup hate in an effort to

deter or coerce another party. Once such sentiments are mobilized, irrational commitments are made, and tragic miscalculations occur. *Thus, the proximal cause of violent conflict should most often be cultural differences between groups even though the ultimate cause is real material struggles over scarce resources.*

PREDICTIONS OF THE THEORY

This study thus focuses on ethnic boundaries to test two basic propositions derived from gene-culture coevolution theory. First, it identifies two functions of boundaries, one due to the pseudo-speciation process resulting in the acquisition of adaptive culture in a spatially or socially complex world, and the other due to a cultural group selection process resulting in ingroup-outgroup politics. The first function does not assume any interactions between the social groups involved except migration. In the case of an adaptive division of labor without dominance/subordination relations, outgroup hostility ought to be minimal even in groups that are culturally and economically quite distinctive. The ethnic differences that evolve for this reason are adaptive and generate no objective reason for interethnic conflict. On the other hand, the ethnocentrism syndrome idea does accurately reflect the argument that cultural group selection probably acted for a long time at the level of ethnic groups. Ongoing cultural evolution has led to relationships of dominance and subordination, competition, alliance, and division of labor between groups. As described earlier, Caselli and Coleman's (2002) provide a formal model consistent with the verbal reasoning that seems to underlie the syndrome hypothesis. In their model, ethnic differentiation functions primarily to exclude losers in competitions over resources and thus, ethnic relations are inherently conflictual. In our model, the adaptive differentiation and group interaction functions will tend to cause cross-cutting relationships among variables. In these cases, group interactions are as important as individual interactions, and culture-culture coevolution will lead to complex institutions to regulate interethnic social interactions. All else equal, humans find it easier

to organize cooperation within culturally marked groups than between them. If our basic argument is correct, ethnic boundaries will be quite diverse, not least in whether they are marked by violent conflict or not.

Second, concerning violence, our theory suggests that the degree of symbolic difference between groups will be a strong predictor of violence. The degree of symbolic difference regulates the perception of foreignness of the other group. When the social distance between two groups is low, conflicts over material resources are more likely to be decided short of violent conflict. Conflicts over material resources are likely to be more acute when symbolic cultural differences are large. Also, more differences between groups can evolve when there are strong symbolic boundaries. For example, subordinate groups often seem to evolve cultures of resistance that include behaviors like criminal acts that in turn reinforce differences and justify repression (Sidanius and Pratto 1999: 246-53). Interethnic violence may thus often result in irrational and maladaptive behavior because the necessary inter-ethnic trust is insufficient to create alliances and productive division of labor.

4. METHODS

This research involved examining ten summary variables considered important in defining ethnic boundaries. We analyzed the relative importance of these variables in explaining the variation across a sample of forty-six ethnic boundaries. The ethnic boundaries chosen from the literature specifically included ethnographies that dealt in detail with the relationship between the focal society and an integrated or neighboring ethnic group. The sample was limited by the available literature (pre-1994); only boundaries with sufficient information to score all or most of

the original 120 questions were used. However, an attempt was made to include representatives from diverse localities and a range of economies (see Appendix 1 for a summary of the ethnic boundaries). The actual selection process began with the identification of relatively well-known ethnic boundary cases and these comprised the original sample. The holes in the sample were then identified in terms of type of boundary (e.g. between hunter-gatherers and horticulturalists) and geographic location (e.g. continent). Where possible, ethnographic cases were found to fill in these holes so as to get a more representative sample. However, ethnographies dealing with certain boundary types were not found, for example hunter-gatherers with an urban-society elite. While there may be a slight bias toward including boundaries relating to well-known conflicts, we do not believe the sample was unduly biased in this direction; in part, because the sample was also driven by the selection of anthropologically well-recognized cases which tend to be less focused on violence per se, and because we ended data collection in 1994, prior to the publication of a very large number of ethnographies on violent conflict. Our method differs from that of Fearon and Laitin's (2003) more recent classification of ethnic fractionalization in that we include caste relations and other 'ranked' ethnic boundaries (Horowitz 1985). We believe it important to do so precisely in order to avoid omission of boundaries that are characterized by relatively stable relations.

A series of questions were prepared for coding each boundary according to the following variables: racial/genetic, language, other symbolic (e.g. religion), ideology of common descent, dominance/subordination, political organization, violent conflict, economic interdependence, technoenvironmental differentiation, and territoriality^{vi}. The questions used for evaluating each boundary according to these variables are presented in Appendix 2. Scores were assigned for each variable on a scale of 0-3, with 3 representing the greatest degree of differentiation between the two ethnic groups being considered. The scores given to the forty-six ethnic boundaries for these 10 variables are presented in Appendix 3. A brief description of each variable follows:

01. **Racial/Genetic (R/G)**: the degree of genetic differentiation between the two groups or history of interbreeding.
02. **Language (LANG)**: the relatedness of the languages used by each group.
03. **Other Symbolic (OS)**: the formality and significance of separate memberships such as religious affiliations.
04. **Ideology of Common Descent (ICD)**: the degree to which differences in common descent are recognized by each group.
05. **Dominance/Subordinance (DS)**: the degree to which one group systematically dominates the other.
06. **Political Organization (PO)**: the relative formality of decision-making structures present in the two groups (i.e. do the groups have equivalent political representation under the same political structure or equivalent separate structures).
07. **Violent Conflict (VC)**: the degree of conflict between the two groups and the extent to which conflict is settled through violence.
08. **Economic Interdependence (EI)**: the level of similarity between the economic/ecological strategies employed by each group and the degree of interdependence between them.
09. **Technoenvironmental Differentiation (TD)**: the degree of difference between the general type of subsistence strategy employed by each group (e.g. hunter-gatherers and horticulturalists are scored one degree apart).
10. **Territoriality (TER)**: the degree of territorial integration of the two groups.

There were a total of four coders responsible for evaluating ethnographies according to the method outlined in the codebook. The reliability of each coder was measured by comparing their codes for several ethnographies with those of a standard coder. The average reliability was calculated and used to determine the standard deviation for each coder. The formula $n = 4\sigma^2/\beta^2$ (where n is sample size, σ is standard deviation, and β is range) was used to determine that the average coder reliability, calculated at 81%, fell within ± 0.08 of the true reliability with 95% confidence.

Correlations between the pairwise variables were determined. In addition, the data was analyzed using factor analysis (principal components) and multiple regression. The statistics program SPSS was used for data analysis.

[Insert Table 1 about here]

5. RESULTS

PEARSON CORRELATIONS

The correlations between the pairwise variables are in general very weak (see Table 1). The strongest correlation (correlation = 0.65; $p \leq 0.001$) is found between the variables economic interdependence and technoenvironmental differentiation (see Figure 1). Many variables for which a strong correlation was expected had weak or insignificant correlations. For example the correlation between ideology of common descent and violent conflict only approached significance (correlation = 0.269, $p = 0.071$) (see Figure 2).

[Insert Figures 1 and 2 about here]

FACTOR ANALYSIS

The factor analysis showed four principal components (factors) which together account for 73.9% of the variance among the forty-six ethnic boundaries (see Table 2 and Figure 3). The first factor we label “politico-economic.” The variables, technoenvironmental differentiation, dominance/subordinance, political organization, and economic interdependence load most heavily on this factor. This first factor accounts for 28.3% of the variance among the boundaries. The second factor we label "external markers." Language, racial/genetic, and other symbolic variables load heavily on factor 2.. It accounts for 23% of the variance and 51.3% when combined with the first factor. The territoriality and violent conflict variables loaded heavily on factor three and we label it "conflict". Alone it accounts for only 12.5% of the variance and 63.8% when combined with the first two factors. The ideology of common descent loads heavily on the last factor, accounting for only 10.1% of the variance by itself. The total variance explained by all factors equals 73.9%.

[Insert Table 2 and Figure 3 about here]

MULTIPLE REGRESSION ANALYSIS

In the first analysis, we made violent conflict the dependent variable and regressed it against all nine of the other original variables (see Table 3). Stepwise regression resulted in the equation:

$$VC = 0.197 + 0.316 (TER) + .330 (ICD) \quad [\text{adjusted } r^2 = 0.180]$$

[Insert Table 3 about here]

An additional analysis was done by first performing a factor analysis without the violent conflict variable. The results of this principle component analysis are presented in Table 4a. The

three factors (principle components) were then used in the regression analysis with violent conflict as the dependent variable (see Table 4b.). The resulting regression equation is:

$$VC = 1.158 + 0.255 (\text{factor 2}) \quad [\text{adjusted } r^2 = 0.120]$$

Factor 2 was composed of the variables racial/genetic, other symbolic, and language.

[Insert Table 4 about here]

6. DISCUSSION

PEARSON CORRELATIONS

Our finding of generally weak correlations among the pairwise variables (Table 1) is support for our diversity hypothesis. Additional evidence for real diversity among the ethnic boundaries is found by looking closely at some of the outliers in the pairwise regressions. The correlation between ideology of common descent and violent conflict is not as strong as we expected it to be (see Figure 2). For example, a high degree of violent conflict can occur between groups that share an ideology of common descent (e.g. the Quechan Yuman and the Maricopa) while a strong, but different, ideology of common descent between two groups does not mean that conflict commonly arises, or that when it does it is solved through violence (e.g. the Basques and other San Franciscans).

FACTOR ANALYSIS AND CASE EXAMPLES

We further consider the evidence for our diversity hypothesis through an examination of the factor analysis results. Each ethnic boundary case received a factor score for each of the principal components identified through factor analysis. The factor scores are distributed around zero and positive or negative scores close to 2.000 are considered extreme scores. Extreme factor scores result when the boundary has very high or very low scores for all the variables included in the factor. We discuss the cases with the extreme factor scores for our four principal components in order to illustrate why we find these extreme scores, and thus, where some of the diversity among these 46 ethnic boundaries is found. The diversity illustrated by these examples provides further concrete support for our hypothesis.

Factor 1: Politico-economic

The politico-economic component alone accounts for the largest percent of the variation (28.3%) among the ethnic boundaries investigated. It includes the variables: technoenvironmental differentiation, dominance/subordination, political organization, and economic interdependence. The following two cases had extreme scores for this factor and show the extent of variation that exists among the ethnic boundaries for these variables.

Pakhtun/Swati_(Case #15). Usually economic interdependence is characterized by moderately unequal political representation and modest degrees of dominance. The extreme positive factor score for this boundary (1.90) implies economically interdependent ethnic groups characterized by unequal political representation and dominance of one group over the other. The information for this boundary is taken from the ethnography written by Barth (1959) and concerns the Pakhtuns and Swatis who reside interspersed in the Swat valley of Pakistan.

The high score on technoenvironmental differentiation of these groups results from the fact that only the Pakhtuns are able to own land and act as political leaders while the lower castes, the Swatis, act as laborers, blacksmiths, carpenters, craftsmen, muleteers, shopkeepers, barbers and shepherds. A high degree of economic interdependence is evidenced by Barth's statement that "in

occupation the two groups stand in a symbiotic relationship” (p.10). The focus of most occupations is centered around the production of grain on the Pakhtun lands and the Swatis are tied into the system through numerous labor and tenancy contracts with these landowners. Because the Swatis cannot own land, they are largely dependent upon these labor and tenancy contracts for their subsistence.

In reference to political organization and relations of dominance/subordination Barth states: "Pakhtuns serve as political patrons to the others, and are thus clearly superior to everyone but the Saints” (p.18). Although there is no political dominance/subordination relationship explicit in the economic contracts, landowners are able to gain political authority over their subordinates because of the importance of these contracts in the lives of the Swatis. In other words, the fear of losing such contracts is often enough to encourage political loyalty. In addition, the political organization is such that the Swatis act as followers to the Pakhtun leaders but do not themselves receive direct political representation. Barth writes: "The non-landowners [Swatis] have not any such political organization as would enable them to unite and seize the land....they are merely a kind of sea of politically unorganized peasants and craftsmen” (p.69).

French Swiss/German Swiss (Case # 36). The extreme negative factor score (-1.71) for this boundary between the French and German-speaking citizens of Switzerland suggests an entirely opposite situation; one with low economic interdependence, highly equal political representation, and little evidence of dominance/subordination. The information for this boundary is taken from the ethnography written by Schmid (1981).

Switzerland is divided into cantons organized around language differences, each of which are "sovereign in all matters except those expressly delegated to the federal government” (p.20). German, French and Italian are all listed in the Constitution as being official languages of Switzerland, thus ensuring complete equality of all three language groups. No relationship of dominance/subordination is found between the French and German-speaking Swiss. The political

organization allows for representation of all language groups. Constitutional amendments may be proposed by any group through the right of "initiative" and this enables the minority language groups to combine as a check to the majority group's power if needed. Schmid states that "from an economic standpoint, there are no outstanding disparities between French and German Switzerland" (p.33). There is not a correlation between economic status and linguistic boundaries, rather the language groups are characterized by economic equality. Schmid concludes that "in Switzerland we find not only acceptance of, but also a commitment to, interethnic equality" (p.153).

Factor 2: External markers

This factor is comprised of the variables language, racial/genetic, and other symbolic and it accounts for 23.014% of the variance among the ethnic boundaries. The following cases illustrate the diversity of situations for these variables.

Pakeha (Whites)/Maori (Case #35). This case has an extreme positive score (1.80) implying a significant difference in the variables making up this factor. The Pakeha and Maori reside in New Zealand; the Maori are the original inhabitants and the Pakeha are descended from European colonists who began arriving in the middle of the 19th century. The sources of information for this boundary are Macdonald (1985) and Spoonley (1988).

The racial/genetic variable and the language variable both score high for this boundary because the Maori are believed to have come from East Polynesia (with ultimate origins in South China), arriving in New Zealand around AD 1000, while the Pakeha are of European descent. Despite the diverse origins of these two groups, there is a considerable occurrence of intermarriage and as of 1985 the incidence of this was increasing (Macdonald, 1985). The situation for the Maori language in New Zealand is described by Spoonley (1988): "The Maori language is spoken only in New Zealand and by a minority within the country. In practice, it is neither used by the State nor is it necessarily an official language of the country...although there are legislative changes being

made in New Zealand which will improve the status of the Maori language...” (p.53). As of 1985, a few bilingual primary schools existed with more being added, and there was an increasing number of Maori language classes being taught (Macdonald, 1985).

Differences between the Maori and Pakeha in terms of the variable other symbolic are evident in their respective spiritual beliefs (i.e. Christianity versus pantheism) (Macdonald, 1985), and in their practices associated with major events such as marriages and funerals (Spoonley, 1988). In reference to religion, Spoonley states: "In essence, religious conservatives believe that the importance given to things Maori, especially the spiritual component of the taha Maori [the Maori dimension or view of things (MacDonald, 1985)], undermines the Christian basis of New Zealand society...The attempt to create a more positive image and role for Maoritanga [Maori culture and custom (Macdonald, 1985)] is defined as being contrary to the continued centrality of Christianity in New Zealand. Thus it is argued that Christianity and Maoritanga are in sharp contrast with one another, and the attempt to 'subvert' Christianity is seen as politically motivated and highly suspect” (p.21). In reference to basic lifestyle, Macdonald (1985) writes that “...Maori society remained basically communal in outlook and resisted attempts to make it personally competitive and individualistic in the European mode” (p.4). In the late 20th century it appears that the Maori are becoming more intent on preserving the components of their culture that have been weakened by the dominant European culture of the Pakeha.

Tribal Kurds/De-tribalized Kurds (Case #41). These two groups are essentially identical in the variables making up this factor, as indicated by the extreme negative score (-1.83) this boundary received. Information is taken from the ethnography written by Barth (1953) and the ethnographic location is Southern Kurdistan, Iraq.

The essential difference between 'tribal' villages and 'de-tribalized' villages is that the first is home to free-holding farmers (i.e. farmers with property) while the second is home to tenant farmers. Barth (1953) writes: "The typical situation is for the free-holding farmers to have retained

what is generally called tribal organization, whereas the tenant farmer has no clear political affiliation, but is largely subject to the control of the landowner...the dichotomy [between the tribal, free-holding farmer and the tenant] is clearly made by Kurds themselves, and is associated with the co-variance of other institutional forms” (p.21). The villages in which these two groups of Kurds live tend to be territorially distinct. The racial/genetic similarity is great as expressed in the following statement: "The assumption is generally, and I think legitimately, made that all non-tribal groups of Kurds are ultimately to be derived from one or more tribal groups...there is further considerable indication that only the two poles themselves, described as 'tribal' and 'feudal' are moderately stable and that change from the one to the other, once initiated, is a moderately rapid process” (Barth, p.132). No real distinction is made either regarding the religious practices of the tribal and de-tribalized Kurds. Barth observes that "...the Kurdish villager attempts to the best of his ability to follow Islam...” (p.82). The most significant distinction seems to be that Shaikhs, who are descendants of the Prophet, are generally only found in non-tribal villages.

Factor 3: Conflict

The "conflict" factor accounts for only 12.501% of the variation alone, but when combined with the first two components, the total variation explained is 63.8%. The following ethnic boundaries will demonstrate some of the variation for this factor.

Quechan Yuman/Maricopa (Case #12). The extreme positive score (2.29) suggests an ethnic boundary characterized by a high degree of territoriality and a high frequency of violent conflict. The Quechans and Maricopas are among the Yuman tribes living in the Colorado River region of the southwest United States. The information for this case is taken from the ethnography written by Forbes (1965) that covers the period of approximately 1780-1880.

The territories of these two Yuman tribes were distinct; the Quechans lived dispersed along the banks of the Colorado River and the Maricopas lived along the Gila River. At various points throughout their history of contact, the Quechans and Maricopas were forced to retreat to regions

farther from the other group's territory due to the dynamics of intertribal warfare. While it appears that wars were instigated for either the purpose of fighting a major battle or out of hostility and the desire to take captives, it is also true that warrior like behavior was celebrated. Thus, the River Yuman culture placed "great emphasis on warfare as a semi-religious activity" (p.42). Similarly, "One aspect of ordinary life upon which Quechans placed great stress was on warfare....There is some indication, however, that winning a victory was not quite as important as fighting well" (p.74). However, it seems that although the Quechans and Maricopas were historically enemies for the purpose of ritualized warfare and the acquisition of captives, the presence of the Spanish intensified hostilities. In addition, the instigation of the slave trade added an economic incentive for intertribal warfare in the region. Furthermore, Forbes proposes that the decline in Quechan numbers during the 1830's and 1840's may have been due to the "effects of intertribal warfare stimulated by the sale of slaves to the Mexicans" (p.287-8).

Basque/San Franciscans (Case #23). The ethnographic research for this case was performed in 1976, 1977 and 1979 by Decroos (1983) in San Francisco, California. The extreme negative score (-1.77) arises from an ethnic boundary for which there is territorial integration and little to no violent conflict. This is essentially true for the Basques and other San Franciscans with whom they share the city.

The Basques are a group of people migrating from provinces in both France and Spain, who identify themselves as 'Euskaldunak', meaning that they speak the Basque language. They seem to have experienced a long history of separateness evident in their language (which is unrelated to the Indo-European languages) and distinctive genetic characteristics (for example an especially low frequency of blood type B). Decroos (1983) states: "It would.... appear that the Basques are one of the oldest ethnic groups in Western Europe, and that their claim to ethnic uniqueness is particularly strong....This explains in part why....Basque-Americans retain a strong commitment toward the preservation of their 'race' " (p.2).

The Basque population in San Francisco was more concentrated (i.e. localized) within one district of the city in the period before WWII than at the time of the study. However, there were still only four districts in which a significant number of Basques lived and two of these contained 63.5% of the total Basque population. In general, however, there is no rigid segregation of the Basque population from the other residents of San Francisco.

Basques living in rural areas of the western United States prior to the urban migration of most Basque-Americans, seem to have been the only group of Basques experiencing any violent conflict with other Americans. These were the sheep-herding Basque and the conflict they experienced was with the cattlemen who competed for access to the range. Violent conflict, however, does not appear to have been especially commonplace.

Factor 4: Ideology of common descent

Ideology of common descent is an essential component in primordialist theories of ethnocentrism. However, according to our analysis, it is not one of the most important components in defining ethnic boundaries. Alone, this factor explains only 10.1 % of the variation among the ethnic boundaries. To illustrate this we consider in detail the ethnic boundaries with the most extreme factor scores for ideology of common descent.

St.Felixers/Trettners (Case #7). The case with the most extreme positive score (2.43) is that involving the St.Felixers and the Trettners, living in two villages, St. Felix and Tret respectively, located within an alpine valley within northern Italy. The information for this ethnic boundary is obtained from the ethnography by Cole and Wolf (1974).

St. Felix lies within the Italian Province of Bozen, and Tret within the Italian Province of Trento. Although the two villages are separated by only a half an hour's walk, the St. Felixers are German-speakers while the Trettners are Romance-speakers. Before World War I both provinces formed part of the Austrian land of the Tyrol. After the war, both were transferred to Italy making the German-speakers of St. Felix an ethnic minority in Italy. During the war, the Fascist movement

in Italy brought about a policy of "forcible acculturation" (p.269) that was applied to the German minority living in St. Felix. Though this policy was eventually abandoned, it was likely a strong influence in promoting the emphasis on German identity that still persists among the St. Felix population. Thus, the German-speaking St. Felixers appear to place emphasis on demonstrating that "the South Tyrolese [i.e. German-speakers in the Province of Bozen] as Tyrolese are true Germans" (p.280). Their identity as Germans plays a large role in structuring their lives, for example, they place much importance on political autonomy and a peasant lifestyle and they are strongly against working in Italian industry. In summary, "the South Tyrolese [German-speakers of St. Felix] have responded to their position within the Italian state by emphasizing all the cultural contrasts that divide them from the Italian majority" (p.270).

In contrast, the Romance-speaking Trettners do distinguish themselves as Italians but only as a means of distinguishing their identity from that of their German neighbors. It is not likely that any of the original settlers in St. Felix were Romance-speaking but at the time of this ethnography there were seven Romance-name households in St. Felix. In reference to these Romance-name households in St. Felix, Cole and Wolf state that, "while their presence is generally accepted and they have intermarried freely with other villagers, their Italian origins are remembered" (p.114). In general, interethnic marriages between German and Romance speakers have increased since the 19th century however they rarely involve the pairing of individuals from St. Felix and Tret. In this case, ideology of common descent does seem to play an important role in defining the ethnic boundary between the St. Felixers and Trettners, although more so from the side of the St. Felixers.

Mayos/Mexican Mestizos (Case #5). The Mayo/Mexican Mestizo case scored lowest (-1.78) for the ideology of common descent factor suggesting that these two groups share an ideology of common descent. The ethnography used in coding this ethnic boundary was written by Crumrine (1977). The ethnographic location is northwest Mexico in the Mayo River Valley and Fuerte River Valley.

The cause for such a low factor score is that "modern Mayos are no different from Mexicans" and that Mayos and Mestizos can be lumped together as "country people" (p.4). The formerly distinctively Indian Mayos have substantially assimilated to Hispanic Mestizo culture and intermarriage has substantially eliminated genetic differences. In recent census counts there is no distinction made between Indians and Mestizos, only distinctions based on languages spoken. In addition, most Mayos reside in areas interspersed with Mestizos with most communities being 10-20% Mestizo or greater (many are greater than 50%). Most important to the idea of a shared ideology of common descent is the connection Mayos have with the poorer Mestizos stemming from the Mexican Revolution and their mutual support of the PRI (the party of the Revolution) because of their fight to put this party in power. Crumrine illustrates this connection by writing that "all radiate pride in being Mexicans and share a prejudice against some of the wealthy landowners, lawyers, and politicians" (p.44). Mayos and Mestizos are integrated through such things as common schooling for children, ejidos (cooperative farm plots), marriage, compadres (co-parents), residence patterns, use of a common legal system, use of common government agencies, and the armed services. "Mayos participate with other Mexicans in all these kinds of institutions without reference to their identity as members of Mayo societal units or as carriers of Mayo traditions" (p.45).

The major distinction between Mayos and Mestizos appears to be an emphasis on Mayo culture, in opposition to Mestizo culture, among those who maintain a Mayo identity. The majority of Mestizos consider Mayo culture as lower than their own and they encourage Mayo individuals to assimilate. An assimilating Mayo is required to reject Mayo culture and such Mestizos with Mayo ancestry are held in low esteem among the Mayos. Crumrine states that "the enclaved Mayo group's way of life has become a symbol which Mayos utilize to distinguish themselves from the members of the dominant Mestizo society" (p.48).

Thus, in comparison to the St.Felixer/Trettner ethnic boundary, the Mayo/Mexican Mestizo boundary does have a much greater degree of a shared ideology of common descent. In this case the boundary seems to be defined not with respect to ideology of common descent (or rather, "internal markers") but with respect to such factors as religion and cultural tradition, which in our analysis would fall under the title of other symbolic.

MULTIPLE REGRESSION RESULTS

The results of the multiple regression analyses suggest that the “external markers” (i.e. racial/genetic, other symbolic, and language) seem to be the most important in terms of the proximal causes of violent conflict, as our hypothesis suggests. Territoriality and ideology of common descent also seem to have some connection to violent episodes.

7. CONCLUSION

The central hypothesis proposed, that ethnic boundaries will be diverse, is supported by the separation of the ten summary variables into four distinct factors, and by the weak pair-wise correlations among the variables. This suggests there is no simple uni-dimensional pattern of ethnic relations and no unitary process leading to the formation of ethnic cleavages. In this respect, it is also notable that factor 4, which is composed solely of the variable, ideology of common descent, explains the least amount of variation among boundaries. This finding suggests that there is considerable variation in the nature of ethnic identity, that identity is not always restricted by strict calculations of descent, and thus, that only a weak version of primordialism is supported. In contrast, the finding that the politico-economic factor accounts for the most variation among this

sample of ethnic boundaries lends support to Barth's view that economic and political variables are central in defining the character of many ethnic boundaries. This fits with the notion developed in more recent constructivist writings, that ethnic affiliations are mobilized to support political and/or economic goals. The extent to which any benefits realized accrue to the groups concerned or to the individuals promoting ethnic identity is not evident from this analysis. Despite this, it must be emphasized that we also find that the external marker factor, (composed of the variables language, racial/genetic, and other symbolic), accounts for nearly as much variation as the politico-economic factor. Not all boundaries are characterized primarily by political or economic conflict, and many are characterized primarily by markers of ethnicity.

With respect specifically to relations characterized by conflict, correlations are appreciable and significant for two other variables, other symbolic (mainly reflecting religious differences), and territoriality (conflicts tend to take place when groups have separate territories). Correlations with the racial/genetic and identity of common descent variables are more modest and only approach conventional significance values. In a stepwise multiple regression analysis using violent conflict as the dependent variable and the nine other variables as independents, territoriality enters first followed by ideology of common descent. When the three factors are used as independent variables, only the factor relating to external markers is significant. These findings do lend some support to the common perception that ideology, particularly ideology of shared ancestry and religion, is related to violent conflict. However, the correlations are not particularly strong. As we have seen in the analysis of the outliers, closely related but territorially distinct populations sometimes have violent conflicts.

While our empirical analysis does not attempt to identify causal relationships, we are able to provide evidence that ethnic boundaries are diverse. As noted earlier, we are certainly not the first to argue this point. However, we do make the novel point that an evolutionary perspective on the emergence of symbolic markers (as developed by Boyd and Richerson 1985, 1998, and

McElreath et al. 2003) provides a strong conceptual basis for understanding why we should expect there to be a variety of types of relationships, rather than a uni-dimensional phenomenon. The models suggest that symbolic marking has two basic effects. First, it protects locally adaptive variations in subsistence and social organization. In addition, this mechanism makes it easier for co-existing ethnic groups to carve out distinctive but complementary niches. Second, by facilitating the buildup of between group variation, symbolic marking makes cultural group selection more plausible. The result is competitive relationships made worse by the ready availability of markers for discriminating against outgroup members. A long co-evolutionary history of human culture and genes is likely to have reinforced cognitive tendencies to use ethnicity as a rule-of-thumb for identify with whom one should cooperate, and with whom conflict is acceptable (Richerson and Boyd (1998, 2000). The result is that symbols of ethnicity may be somewhat more salient than other symbols of difference, such as class, or political affiliation. Nevertheless we are surprised that ethnicity in the classic sense of groups founded on an ideology of common descent are relatively unimportant in explaining the variation in this data set, including a relatively weak role in explaining violent conflict on ethnic boundaries. Perhaps this reflects the tendency for symbolic marking to grow up rapidly along any fault lines that appear in human social systems. This tendency is perhaps best demonstrated in the case of dialect evolution by sociolinguists (Labov 2001). Class and region, as well as race in the U.S., are marked by subtle dialect changes almost as soon as they appear. Neither the fact nor a fiction of a shared history is necessary for a social group to acquire symbolic marking. A shared religion or political organization may furnish as potent an ideology of ingroup similarity and outgroup difference as an ideology of common descent.

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Appendix 1. Ethnic Boundary Cases

1. !Kung/ Herero

The !Kung are hunter-gatherers and the Herero are pastoralists, swidden horticulturalists and traders. The ethnographic location is Africa and the approximate date of the ethnographic information is 1982. Information was taken from Lee (1984), Shostak (1983), and Bridgman (1981).

2. Agta/ Palanan

The Agta are hunter-gatherers and the Palanan are agriculturalists and rural proletariat. The groups are located in the Philippines. The information is taken from Peterson (1978); the ethnographic present is 1977.

3. Washo/ White Settlers

The Washo are hunter-gatherers living in the Western United States (the ethnographic present is 1860) and the White settlers are agriculturalists, rural proletariat and urban proletariat. The information for this case is taken from Downs (1966).

4. Kachin/ Shan

The ethnographic location for this ethnic boundary case is Burma. The Kachin are hunter-gatherers and the Shan are pastoralists, swidden horticulturalists and traders. Information is taken from Leach (1954).

5. Mayo/ Mexican Mestizos

This case involves the Mayo (pastoralists, swidden horticulturalists and traders) and the Mexican Mestizos (agriculturalists and rural proletariat) living in Sonora, Mexico around 1960. The two groups are often found living in the same communities and the main differentiating characteristic is the lifestyle adopted. Assimilated Mayos must abandon the Mayo way of life and are thus looked down upon by the Mayo community. Information comes from Crumrine (1977).

6. Mbuti Pygmies/ Mixed Bantu-Bira Villages

The Mbuti Pygmies are hunter-gatherers and in the mixed Bantu-Bira villages the people are pastoralists, swidden horticulturalists and traders. The ethnographic location is Africa. The information for this case comes from Turnbull (1965).

7. St. Felixers/ Trettners

The villages of St. Felix and Tret are located in an alpine valley in Northern Italy. Both the St. Felixers and the Trettners are agriculturalists and rural proletariat, however, the St. Felixers are German-speakers while the Trettners are Romance-speakers. The ethnographic present is approximately 1969. Information is taken from Cole and Wolf (1974).

8. Nuer/ Dinka

The location of this ethnic boundary case is Sudan (Africa) and the ethnographic present is 1930 and 1972 (information is taken from two studies: Deng, 1972 and Evans-Pritchard, 1940). Both the Nuer and the Dinka are pastoralists, swidden horticulturalists and traders.

9. Cuna/ Panamanians

The Cuna are pastoralists, swidden horticulturalists and traders while the Panamanians are agriculturalists, rural proletariat and urban proletariat. The ethnographic location is Panama and the information comes from Holloman (1975) and March (1934); the more recent ethnographic present is approximately 1967.

10. Manus/ Usiai

The Manus are hunter-gatherers, pastoralists, swidden horticulturalists and traders and the Usiai are pastoralists, swidden horticulturalists and traders. The ethnographic location is New Guinea and the

ethnographic information (taken from Schwartz, 1982 and Mead, 1942) covers the period from 1930 until more modern times.

11. Punan/ Kenyh

The Punan and Kenyh are both characterized as pastoralists, swidden horticulturalists and traders living in Southeast Asia. The Punan, however, are also known to be hunter-gatherers. The information for this ethnic boundary case comes from Hoffman (1984), Needham (1972) and LeBar (1972).

12. Quechan Yuman/ Maricopa

The Quechan Yuman and the Maricopa are located in the Colorado River Region during the ethnographic present (1780-1880). They are described as pastoralists, swidden horticulturalists and traders. These two groups had a long history of violent conflict which was often highly ritualized. Warfare during the ethnographic present took on the function of capturing slaves for the slave trade. Information on this ethnic boundary case comes from Forbes (1965) and Spier (1936).

13. Quechan Yuman/ Kamia

The Quechan Yuman are pastoralists, swidden horticulturalists and traders while the Kamia are hunter-gatherers. The ethnographic location is the Colorado River Region during the period of 1780-1880. Information is from Forbes (1965).

14. Quechua/ Mestizo

This ethnic boundary location is Peru and the ethnographic present is 1973. The Quechua are pastoralists, swidden horticulturalists, traders, agriculturalists and rural proletariat while the Mestizos are urban proletariat. Information for this boundary is taken from van den Berghe and Primov (1977).

15. Pakhtun/ Swati

The Pakhtun and Swati reside in Pakistan. The ethnographic present is 1954. The Pakhtun are elites, utilizing the surplus production of the Swati who are agriculturalists and rural proletariat. Only the Pakhtun are able to own land and membership in the Pakhtun group is by descent. The Pakhtun also act as political patrons for the Swati, whose loyalty they maintain through a series of contracts (e.g. tenancy contracts or labor contracts) and through generous gestures to those men visiting their men's houses. Ethnographic information comes from Barth (1959).

16. NY Chinese/ White

The NY Chinese/White ethnic boundary information is taken from Wong (1982) and the ethnographic present is 1980. Both groups are urban proletariat residing in New York City.

17. Afro-Guianese/ East Indian

The Afro-Guianese are urban proletariat and the East Indians are agriculturalists and rural proletariat. The ethnographic present is 1961 and the location is British Guiana. Information is from Despres (1967).

18. Guatemala Indian/ Ladino

Information on the Guatemala Indian/Ladino ethnic boundary case is from Hawkins (1984). The location is Guatemala and the date is 1974. The Guatemala Indians are agriculturalists and rural proletariat while the Ladinos are urban proletariat and elite.

19. Burakumin/ other Japanese

The Burakumin are agriculturalists, rural proletariat and urban proletariat living in Japan with other Japanese who are urban proletariat. The ethnographies we used cover the period from 1964 until 1972; they are Yoshino and Murakoshi (1977) and Brameld (1968).

20. Cheyenne/ Arapaho

The Cheyenne and the Arapaho are both hunter-gatherers. The ethnographic location is the Midwestern U.S. during the period of 1775-1850. Information for this ethnic boundary comes from Hoebel (1978), Gussow (1974), Lowie (1954) and Hilger (1952).

21. Hutu/ Tutsi

The ethnographic location is Burundi and the more recent ethnographic present is 1973. The Hutu are agriculturalists and rural proletariat while the Tutsi are elite. Information comes from Weinstein and Schrire (1976), Lemarchand (1970) and McDonald et al. (1969).

22. Kikuyu/ Kamba

This ethnic boundary case occurs in Kenya around 1880. The Kikuyu are agriculturalists and rural proletariat and the Kamba are pastoralists, swidden horticulturalists, traders, agriculturalists and rural proletariat. Information is taken from Muriuki (1974) and Middleton and Kershaw (1965).

23. Basque/ San Franciscans

The Basques reside in San Francisco (with the San Franciscans) and the ethnographic present is 1979. Both groups are urban proletariat. The Basques are immigrants from Basque provinces located in both France and Spain, but they claim to be neither French nor Spanish. The Basques cannot be distinguished from other San Franciscans on the basis of appearance, however, they have a strong national identity reflected by the cohesiveness of the Basque community in San Francisco. Younger generations, however, are becoming more assimilated into the American culture which is a source of conflict with the older Basque generations. Information is from Decroos (1983).

24. Yaquis/ Mexicans

Both the Yaquis and Mexicans are characterized as agriculturalists and rural proletariat in the ethnographic present (1840). The location is Mexico. Information is taken from Spicer (1980).

25. Overseas Chinese/ Thai

The overseas Chinese and the Thai are both scored as urban proletariat although the Chinese are more involved in commerce, industry and wage labor while the Thai are in agriculture, government professional fields. The ethnographic present is 1955. Information is taken from Coughlin (1960) Skinner (1957).

26. Apa Tani/ Nisu

The Apa Tani are agriculturalists and rural proletariat while the Nisu are pastoralists, swidden horticulturalists and traders. However, at the time of writing, both groups' practices were changing with increasing contact with the outside world. The location is the Eastern Himalayas. Information is from Furer-Haimendorf (1962).

27. Creole/ East Indian

The location is rural Trinidad and both groups are rural proletariat. However, education is valued among the East Indians and many go on to become teachers. The ethnographies we used are Breman (1974), Malik (1971), and Freilich (1960) and they cover the period of 1957-1958.

28. Anavil Brahmans/ Dublas

Traditionally the Dublas are agricultural serfs or slaves of the high caste land-owning (i.e. elite) Brahmans, however, Dublas were beginning to find employment outside the agricultural sector. Religious and racial differences between these two groups are minor although the Dublas are less "hinduized" than the Brahmans. The location is India (Gujarat) and the ethnographic present is the 1800's. Information is taken from Breman (1974).

29. Sinhalese/ Sri Lankan Tamils

Both groups are coded as rural proletariat. The location is Sri Lanka during the 1980's. Considerable violent conflict occurs between the two and at the time of writing, the minority Tamils consider themselves

disadvantaged although the situation was previously reversed. Note that there are important racial and religious differences between the groups. The information for this case comes from Ross and Savada (1988), Manogaran (1987) and Sabaratnam (1987).

30. Malays/ Chinese-Malay

Malays form the bulk of the rural proletariat while Malaysians of the Chinese heritage form the urban proletariat. There is also a stereotyped view (according to Nagata) that the Malays control the political system while the smaller population of Chinese control the economic power. Note that there is not a distinct religious boundary since some Chinese are Muslim. The location is Malaysia and the period covered is the 1970-1980's. Information is from Winzeler (1985), Tan (1982) and Nagata (1975).

31. Berbers/ Arabs

The Berbers are characterized as agriculturalists and rural proletariat and the Arabs as agriculturalists, rural proletariat and urban proletariat. However, this was a particularly difficult boundary to score since the Berbers are composed of many different tribes each having their own conflicts. Moreover, both groups are Sunni Muslim and both groups are comprised of peoples who are pastoralists and agriculturalists. In urban settings, however, Arabs tend to form the elites while Berbers compose the urban proletariat and are viewed as "country bumpkins" (Gellner and Micaud, 1972). The location is Morocco. Information is taken from Nelson (1985), Gellner and Micaud (1972), and Hoffman (1967) and covers the period of 1970-1980's.

32. Tukanoan/ Maku

The location is the border area between Brazil and Colombia in the Amazon region. The Tukanoans and Maku discussed are of the Bara subgroup. The Maku are primarily hunter-gatherers and fishermen although they have some gardens, and the Tukanoan are primarily swidden horticulturalists but do a little hunting and fishing. The ethnographic present is 1968-70. Information is from Jackson (1983) and Silverwood-Cope (1972).

33. Han Chinese/ White Yi (Min Chia)

Hsu's work from the 1940's was used as background for this ethnography. Both groups are comprised of rural and urban proletariat, as well as elites. Despite the Han being the national majority group, in recent years (1980's), Yi ethnic status appears to be desirable because of affirmative action programs. Yi identity seems thus to depend on the period of the ethnography. The location is China (Yunan) and the two sources of information used are Harrell (1990) and Hsu (1949).

34. N. Tungus/ Manchu

The ethnographic location is Manchuria and the period covered is 1924-29. The Manchu are sedentary agriculturalists while the Tungus are primarily nomadic pastoralists who also do some hunting and gathering. However, at this time the Tungus were being "settled" and thus pursuing some agricultural activities. Both groups were being increasingly influenced by China at this time. Information is taken from Shirokogoroff (1929, 1924).

35. Pakeha (Whites)/ Maori

This was a difficult boundary to score because both groups are very diverse, e.g. there are important differences between urban and rural populations. For the most part, however, the whites form the elite while the Maori are the rural and increasingly urban proletariat. In the last century there was considerable violence between these two groups but less so in this century. The Maori are also gaining a small degree of political power along with increasing Maori cultural awareness. The location is New Zealand and the ethnographic information (Spoonley, 1988 and MacDonald, 1985) covers the period of 1970-1980's.

36. French speaking Swiss/ German speaking Swiss

The ethnographic location is Switzerland during the 1970's. Both groups comprise the rural and urban proletariat as well as elites. The much larger German speaking population appears to be more involved in industry. Religious differences cross-cut both groups, e.g. there are French and German speaking Catholics

and French and German speaking Protestants. These religious differences may be more salient than language differences, however, the division of the country into cantons is organized around language differences. Ethnographic information is taken from Schmid (1981).

37. Flemings/ Walloons

The ethnographic location is Belgium during the 1980's. Both groups comprise the rural and urban proletariat as well as elites. However, Flanders is becoming a greater industrial power. At the same time there is conflict over the increasing Francophone presence in Brussels. Historically, neither group has a strong sense of identity as Flemish, Walloon or Belgian. Ethnographic information is taken from Thomas (1990) and Murphy (1988).

38. Gypsies/ Gorgios (English primarily)

The ethnographic location for this ethnic boundary case is England and Wales and the period covered by the ethnographic information is the 1960's and 1970. The gypsies are primarily nomadic traders and scavengers (recyclers) of urban refuse while the English (and Welsh) are rural and urban proletariat as well as elites. There is some difficulty in ascertaining exactly who is a "romany" gypsy (versus simply a traveler) and thus, self- ascription is used by these authors. Some different words are also used by "real gypsies". Information comes from Okely (1983), Adams (1975) and a Ministry of Housing and Local Government, Welsh Office document (1967).

39. Greek Cypriots/ Turkish Cypriots

The ethnographic present is 1974-1980 and the location is Cyprus. Both groups form the rural and urban proletariat as well as elites in their respective regions. Prior to the early 1960's most villages were composed of Turkish and Greek speaking Cypriots with little obvious animosity. By 1974, after much violence, the two populations had segregated geographically as well as politically. Religion appears to be more of a symbol than a genuine difference and there are Muslim Greek speakers and Christian Turkish speakers. Historically, there is little sense of being a Cypriot, and Greek and Turkish identities are themselves 20th century creations. Information for this case comes from Bunge (1980) and Attalides (1977).

40. Arabs/ Jews

The ethnographic information for this ethnic boundary case covers the 1970's and 1980's in Israel. Arabs comprise primarily the rural and urban proletariat while Jews are of the elite and the urban proletariat. Arabs comprise a fairly diverse group of Muslims, Christians, and Druse and historically have a stronger sense of clan allegiance than pan- Arabic identity. Information is taken from Ben Rafael and Sharot (1991), Smootha (1987) and Tessler (1980).

41. Tribal Kurds (Hamawand)/ De-tribalized Kurds (Meskjin)

Ethnographic information comes from Barth (1953). The location is Kurdistan and the ethnographic present is 1951. The Hamawand are agriculturalists and pastoralists while the Meskjin are de-tribalized tenant farmers and labourers.

43. Skolts/ Finns

The location is Finland and the ethnographic present is 1958-1972. The Skolts are pastoralists and traders (although increasingly dependent on external jobs and welfare) while the Finns described in these ethnographies are agriculturalists and rural proletariat. The interaction between these two cultures might be seen less as a conflict between different lifestyles, technologies, etc. and more as an interplay between two cultures each using their own unique advantages to press for economic, political and social benefits. The Finns view the Skolts as a unique cultural minority to be valued as one of the country's social/ cultural resources. The Skolts take advantage of Finnish social systems to supplement and in some ways augment changes in the reindeer ecology. Information comes from Ingold (1976) and Pelto (1973).

43. Walbiri/ Whites

The ethnographic location is Australia (W. Desert). The Walbiri are hunter-gatherers and occasionally farm labourers while the whites are agriculturalists and ranchers. Information is taken from Myers (1986) and Meggitt (1962).

44. Walbiri/ Pintupi

The ethnographic location is Australia (W. Desert). Both groups are primarily hunter-gatherers although increasingly dependent on welfare (the Walbiri more so) and occasionally ranch labour. Information is taken from Myers (1986) and Meggitt (1962).

45. Fulbe/ Bamana (Bambara)

The ethnographic present is 1974 and the location is Mali. Both groups are Muslim although the Fulbe converted much earlier. Occupational status and ethnicity are strongly tied together almost to the point of being a caste system. Although the Bamana are presently the politically dominant group the Fulbe were previously. There is also a strong ideology of the superiority of the lighter-skinned Fulbe with some Bamana wishing to pass as Fulbe but no Fulbe wishing to be Bamana. Information comes from Grayzel (1977).

46. Gidjingali/ Nagara

The location is Australia (Arnhem Land) and the ethnographic present is 1958-1960. Both groups are hunter-gatherers although at the time of writing most individuals were living in "settlements" rather than on traditional lands. Information comes from Hiatt (1965).

Appendix 2. Ethnicity Codebook

Part I: Boundary Scores

This section characterizes interactions across social boundaries in a semi-quantitative manner. One score is used for each pair of groups. Each dimension is to be coded on a four-point scale, as defined for each dimension: the higher the score, the greater implied ethnocentrism. If necessary, decimal fraction between whole scale numbers may be used, but no more than three significant figures (i.e. 2.75) should be used.

01. Racial/Genetic

- 0- No significant genetic differentiation (long history of substantial interbreeding, no remarkable physical differences, e.g. most modern class boundaries, boundaries between simple societies that have long exchanged significant numbers of mates).
- 1- Slight genetic differentiation (short history of interbreeding of rather different people, long history of moderately strong endogamy within an ancestrally related group, e.g. differences between Indian castes, between many “tribal” people from different stocks but with significant recent interbreeding).
- 2- Moderate genetic differentiation (short history of interbreeding of quite different people, long history of near-isolation of ancestrally related stocks, e.g. difference between Northern and Southern Europeans, or between Chinese and Malays or Filipinos). Note: code the special case of ideal mestizos, equal mixtures from the classic races, as 2.5 compared to each ancestral race.
- 3- Strong genetic differentiation (major racial difference, essentially unmodified by interbreeding). American Black/White difference would rate ca. 2.75 due to partial mestizaje.

02. Language

- 0- No recognizable difference in dialect (e.g. between classes in the U.S. in areas where dialect changes are slow).
- 1- Dialect differences recognized, but no significant barriers to conversation (e.g. between typical Southern and Northern accents in the U.S.).
- 2- Language differences large enough to make free conversation impossible, but languages still closely enough related to make bilingualism easy (e.g. Spanish- Italian). Distantly related languages of the same major group might be scored 2.5 (e.g. English- Spanish).
- 3- Languages are unrelated, bilingualism difficult (e.g. English- Chinese).

03. Other Symbolic

The general boundary strength score should be reached by scoring each group separately, then averaging the scores $[(\text{Score I} + \text{Score II}) / 2]$. Each group’s individual score should be retained and entered as part of the “basic data” for that group (#36 in codebook).

- 0- No separate memberships in formal or informal groups marked by rituals of inclusion/exclusion (e.g. some occupational specialties in complex societies; let us rate such groupings with some minimal formalization such as unionized crafts and professional groups, as 0.25). If symbolically marked groups occur but give rise to mostly cross-cutting memberships so that clear cleavages are weak, rate near 0, even if some single marked group in isolation would justify a higher ranking. In other words, in the case of multiple symbolic systems, departure from 0 must depend upon the tendency of these groups to covary with the boundary under consideration.
- 1- Separate formal memberships common in groups marked by conspicuous rituals of inclusion and exclusion, with memberships moderately significant to participants (e.g. memberships in one or another American Protestant sect of the same generic type).
- 2- Separate memberships of considerable emic significance (e.g. Catholic vs. Protestant religious affiliation). Changes in membership, if they occur, have the character of conversions entailing significant shifts in lifestyle and rates of contact with individuals in own/other group.
- 3- Separate memberships of very great significance entailing completely different lifestyles and patterns of association (e.g. membership in different “world” religions, adherence to elitist

(Leninist) political parties, or to a correlated set of marked groups of lesser significance). Belonging to the group requires participation in symbolic performances.

04. Ideology of Common Descent

Note: choice of groups to be compared sets the scale here; evaluation should be based on the degree to which the chosen units are differentiated by an ideology of common descent. The boundary code should be reached by scoring each group separately, then averaging the scores $[(I + II) / 2]$. Each group's individual score should be retained and included in the "basic data" for that group (#42 in codebook).

- 0- No recognition of differences in common descent other than those of kinship that can be reckoned by unaided memory (e.g. exogamous residential units within the same speech community lacking a strong corporate kinship system or deep genealogical calculation).
- 1- Kinship, real or fictive, reckoned with enough genealogical depth to provide some sense of relatedness with individuals outside the sphere of everyday interactions. The sentiments of ICD weaker than at higher and/or lower level units. Examples might be the higher-level units of classical Evans-Pritchardian segmentary systems, where lower-level units are more salient, or mid-level units in nation-states where national identity may be stronger than more local affiliations.
- 2- Strong ideology of distinctiveness, as strong as to any higher or lower level unit (e.g. the sense Pathans or American Blacks have of belonging to an historically rooted unit).
- 3- Exclusive ideology of ethnic identity; even family loyalties actively subordinated to a glorification of the descent group (e.g. strong racist nationalistic ideologies of the type promoted by the Nazis).

05. Dominance/Subordinance

- 0- Neither group systematically dominates the other (e.g. the more evenly matched Plains Indian tribes contested energetically for hunting grounds and horses, but advantage depended on luck).
- 1- One group has a persistent advantage, but weaker group has a sufficient deterrent, or a refuge, to escape direct subjugation (e.g. the Sioux, with a larger population and better access to firearms could usually dominate encounters with other Plains Indians in the first half of the 19th century). Many modern ethnic minorities' less-than-perfect access to the political system fit about here.
- 2- One group achieves a permanent, formalized overlordship of another. Typically, an explicit ideology of group superiority will be well developed among the elite. Classic agrarian states where one group forms a ruling elite is an example. Examples among simpler societies might include the Congo villager-Pygmy situation, at a rating of 1.5 or 1.75. Subordinate groups should retain significant de facto or de jure powers or freedom of action, for example the ability to regulate their own internal affairs, to have this rating. Apartheid, as envisioned by the Nationalists, perhaps rates a straight 2. As it actually operates, it might be more like a 2.25 or 2.5.
- 3- One group completely dominates and enslaves or virtually enslaves the subordinate one. Normally accompanied by a strong ideology of superiority. Spartan domination of Helots or Deep South slavery ought perhaps to be rated 3.0.

06. Political Organization

The general boundary code should be reached by coding each group separately, obtaining the difference between their scores, and making it positive. Individual group's scores should be retained and included in the "basic data" for that group (#54 in codebook).

- 0- Effective formal or informal decision-making structures absent (e.g. political organization restricted to shallow-geneology kinship units). In complex societies, unorganized groups may rate close to 0.
- 1- Informal decision-making structures can occasionally generate collective actions relevant to the group boundary. If segmentary lineage systems, councils of chiefs or big men, and the like, can generate coordinated actions by the group in response to emergencies or major challenges once per generation or so, a rating of 1.0 should be given.
- 2- Weak formal procedures exist that enable group to act collectively on a fairly routine basis. A tribal chiefdom, organized ethnic groups in complex societies, and the like, should rate 2.0.
- 3- Strong formal institutions exist to mobilize the group as a whole to deal with other groups. The modern nation-state, to the extent its actions are not weakened by internal division, is a classic

example. The presence of highly organized political parties based on sectarian lines, strong, near monarchal chiefdomships, and the like, should depart from 2.0 toward 3.0 as the power and salience of group political organization increases.

07. Violent Conflict

- 0- Groups concerned live in completely trusting harmonious association, without evidence of issues that could lead to active opposition. Some closely allied groups, such as the Sioux and Cheyenne on the historic Great Plains or the 20th century U.S. and Great Britain may approach the extreme value of 0.
- 1- Groups have serious rivalries or conflicts that are almost always settled by peaceful means or within the context of markets, legislatures, or similar mechanisms for regulating competitive behavior (e.g. typical ethnic interactions in contemporary complex societies; Switzerland may be a useful benchmark case). Cases with occasional outbreaks of disorganized violence (e.g. Black/White race riots in the U.S.) ought to be rated 1.5.
- 2- Rivalrous groups that do not routinely use mutually legitimate institutions to regulate conflicts, but do routinely use violence or threats of violence (deterrence, diplomacy) as a means of affecting the behavior of the other group. Relations between nation-states, especially those lacking any sense of ethnic resemblance are a good anchor. These groups will be engaged in a repetitive war/peace cycle.
- 3- Two groups are hereditary enemies between whom a state of unremitting hostility exists. Contact between members of the two groups normally results in violence; norms in both groups require aggression even if no local provocation exists. Hereditary enemies that often negotiate suspicious truces but never attempt permanent peace rank 2.5.

08. Economic Interdependence or Economic Differentiation Without Integration

- 0- Groups have identical economic/ecological strategies (e.g. many neighboring hunter-gatherer, horticultural, and agricultural societies; virtually identical resources are exploited by virtually identical technology). No staple goods are regularly exchanged, nor is exchange itself a significant economic activity.
- 1- Groups have broadly similar strategies, but differ sufficiently so that a modest division of labor and trade between groups exists or somewhat different environments are ideal for each group, or one group is persistently less efficient than the other. In the absence of the other group, a focal group would make modest adjustments of its own strategy.
- 2- Groups have rather different strategies and the absence of the other group will result in quite sharp changes in the focal group. For example, the decline in Mediterranean trade had substantial effects on the Greeks because of their extensive trade of wine and oil for grain. Similarly, the elimination of the Plains Indians allowed a major expansion of Anglo farming, ranching, and mining into the West.
- 3- Groups have such extreme differences that the absence of one group will cause the other to shift strategy dramatically. In the case of a tightly integrated system with an extreme division of labor, the strategy will be inviable without the other group. In the case of extreme exploitation, the absence of the exploiting group would allow the exploited to shift to an entirely different strategy (e.g. the movement of Blacks from Southern agricultural labor to Northern unskilled occupations).

09. Technoenvironmental Differentiation

Use the difference between the two groups' scores as the code. Retain the individual group's score to be included in "basic data" (#72 in codebook).

- 0- hunter-gatherers
- 1- pastoralists, swidden horticulturalists, traders
- 2- agriculturalists (sedentary, intensive), rural proletariat
- 3- urban proletariat
- 4- elite utilizing surplus production of others

10. Territoriality

- 0- The two groups are completely integrated geographically, holding no “turf” that can be associated with group membership (e.g. groups of socioeconomically similar American professionals).
- 1- Groups are informally segregated by patterns of residence and landholding such that a complex mosaic of territoriality exists (e.g. racial segregation of residence in the U.S., the interpenetration of Germanic and Slavic peoples in some areas of Central Europe during Medieval and Early Modern periods).
- 2- Groups are fairly clearly segregated into regional blocks with minimal areas of interpenetration and some formalization of boundaries (e.g. the Catalan and Basque areas of Spain, the Quechua region of Peru, Quebec, the Walloon and Fleming areas of Belgium, etc.). As nations restrict immigration and formalize restrictions on any resident foreigners they depart in the direction of a 3 rating.
- 3- Groups are rigidly segregated into territories that are sufficiently well formalized that outsiders normally cannot obtain any legitimate access to resources (e.g. the many farming and horticultural groups where rights to land are vested in a community with the legal obligation to restrict its use to recognized community members).

Appendix 3: Case scores on 10 summary variables.

Case #’s	Variables									
	01. R/G	02. LANG	03. OS	04. ICD	05. DS	06. PO	07. VC	08. EI	09. TD	10. TER
01	2.75	3.00	2.00	1.00	1.50	1.00	1.00	1.00	1.00	2.00
02	1.00	1.00	1.50	1.00	1.00	1.50	1.00	2.00	2.00	1.50
03	2.00	3.00	3.00	2.00	1.75	1.00	1.50	2.00	2.50	0.00
04	1.00	2.00	2.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00
05	2.25	3.00	2.50	0.00	2.00	0.00	1.50	1.00	1.00	2.00
06	2.00	3.00	3.00	0.50	1.50	1.00	1.00	2.00	1.00	2.00
07	2.00	2.00	2.50	3.00	1.00	1.50	1.50	0.00	0.00	1.00
08	1.00	1.00	1.00	1.00	1.00	0.00	1.50	0.00	0.00	2.00
09	3.00	3.00	3.00	2.00	1.00	1.00	1.50	0.50	1.50	3.00
10	1.00	1.50	2.00	1.00	1.00	0.00	1.50	2.00	0.50	3.00
11	0.00	1.00	0.25	1.00	1.00	2.00	0.00	3.00	0.50	1.00
12	0.00	1.00	1.00	1.00	0.00	1.00	2.50	0.00	0.00	3.00
13	0.00	1.50	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00
14	0.50	3.00	2.00	1.00	1.50	1.50	1.50	2.00	1.50	2.00
15	1.00	0.00	2.00	2.00	2.00	2.00	1.00	3.00	2.00	2.00
16	2.75	2.00	2.25	2.25	1.00	1.00	1.00	1.00	0.00	2.00
17	2.75	1.00	2.50	2.50	0.00	0.00	1.50	2.00	1.00	1.00
18	0.50	0.50	2.00	1.00	1.50	1.00	1.00	2.00	1.50	2.00
19	0.25	0.25	0.50	1.50	2.00	1.00	1.25	1.50	0.50	1.50
20	0.25	1.50	1.50	1.00	0.00	0.00	0.25	0.50	0.00	1.00
21	1.25	0.50	2.00	2.00	2.50	1.75	2.50	2.00	2.00	1.00
22	1.00	1.50	2.00	1.50	0.00	0.00	1.50	1.50	0.50	3.00
23	1.75	1.50	1.00	2.00	0.00	1.50	0.25	1.00	0.00	0.50
24	2.50	3.00	2.75	2.25	1.50	0.50	2.25	2.00	0.00	2.50
25	1.50	2.50	1.75	1.75	1.00	0.75	1.25	1.50	0.00	1.00
26	0.00	2.00	0.00	2.00	1.00	0.50	1.50	1.00	1.00	3.00
27	3.00	3.00	1.50	2.00	0.00	0.00	1.00	0.00	0.00	0.00
28	1.00	0.00	0.50	1.50	3.00	2.00	0.50	3.00	2.00	0.00
29	2.00	2.50	1.50	2.25	1.00	0.50	2.50	1.00	0.00	2.00
30	2.00	3.00	1.50	2.00	1.00	1.00	1.50	2.50	1.00	1.00
31	0.00	2.00	0.00	1.00	1.00	1.00	2.00	1.00	0.25	1.00
32	1.00	2.00	0.50	0.50	2.00	3.00	0.00	1.00	0.25	2.00
33	0.00	2.00	0.00	1.75	1.00	0.50	0.00	0.00	0.00	0.00
34	1.00	2.00	1.50	1.00	2.00	1.50	0.00	2.00	1.00	2.00
35	2.75	3.00	3.00	1.50	2.00	1.00	1.00	1.00	1.50	1.00
36	1.00	2.75	0.00	1.50	0.00	0.00	1.00	0.00	0.00	2.00
37	0.50	2.50	1.00	1.00	0.00	0.00	1.00	1.00	0.00	2.00
38	0.00	2.00	2.00	0.50	2.00	3.00	1.50	1.50	2.00	1.00
39	0.50	2.50	3.00	1.00	1.00	0.00	1.75	0.00	0.00	2.50
40	1.50	2.00	3.00	1.75	2.25	2.50	1.50	1.50	1.00	1.00
41	0.50	0.00	1.00	1.00	2.00	1.00	1.75	0.50	0.00	1.50
42	1.50	2.00	2.00	2.00	1.00	1.00	0.50	2.50	2.00	2.00
43	3.00	3.00	3.00	2.00	1.75	3.00	2.00	2.00	2.00	2.00
44	0.00	2.00	3.00	1.50	0.00	0.00	0.50	0.00	0.00	2.00
45	0.00	2.00	1.00	1.00	0.00	0.00	0.50	2.00	1.00	1.00
46	0.00	1.50	0.00	0.00	0.00	0.00	0.50	1.00	0.00	1.00

Figure 1. Regression for the variables economic interdependence and technoenvironmental differentiation

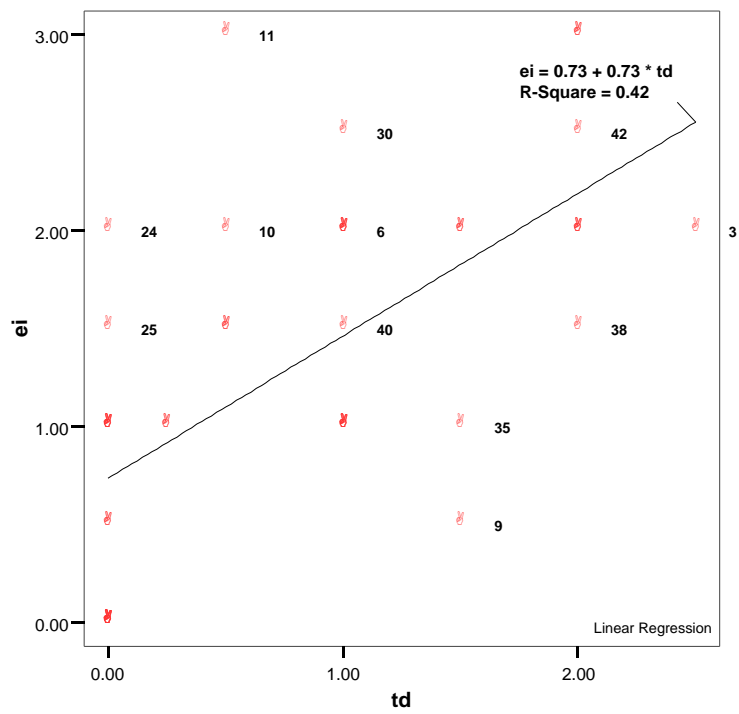


Figure 2. Regression for the variables ideology of common descent and violent conflict

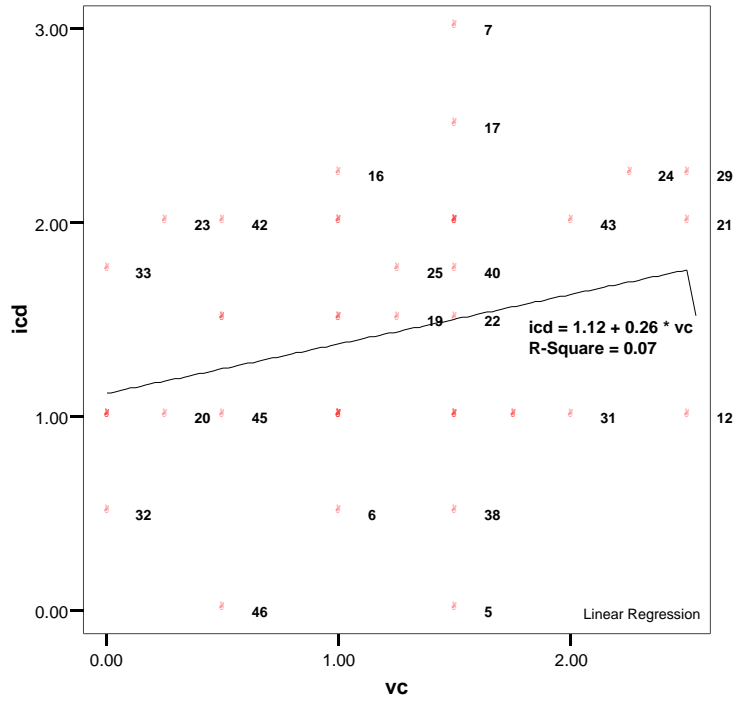


Table 1. Pearson Correlations for the ten ethnic boundary variables.

		RG	LANG	OS	ICD	DS	PO	VC	EI	TD	TER
RG	Pearson Correlation	1.000	.482	.595	.491	.178	.062	.268	.068	.172	.001
	Sig. (2-tailed)	.	.001	.000	.001	.237	.680	.072	.651	.253	.997
	N	46	46	46	46	46	46	46	46	46	46
LANG	Pearson Correlation	.482	1.000	.381	.058	-.134	-.147	.110	-.217	-.053	.093
	Sig. (2-tailed)	.001	.	.009	.701	.375	.331	.469	.147	.726	.537
	N	46	46	46	46	46	46	46	46	46	46
OS	Pearson Correlation	.595	.381	1.000	.258	.206	.068	.332	.099	.340	.192
	Sig. (2-tailed)	.000	.009	.	.084	.170	.654	.024	.515	.021	.201
	N	46	46	46	46	46	46	46	46	46	46
ICD	Pearson Correlation	.491	.058	.258	1.000	-.010	.063	.269	.048	.044	-.118
	Sig. (2-tailed)	.001	.701	.084	.	.949	.679	.071	.753	.771	.434
	N	46	46	46	46	46	46	46	46	46	46
DS	Pearson Correlation	.178	-.134	.206	-.010	1.000	.639	.188	.430	.515	-.061
	Sig. (2-tailed)	.237	.375	.170	.949	.	.000	.212	.003	.000	.689
	N	46	46	46	46	46	46	46	46	46	46
PO	Pearson Correlation	.062	-.147	.068	.063	.639	1.000	-.030	.414	.484	-.149
	Sig. (2-tailed)	.680	.331	.654	.679	.000	.	.845	.004	.001	.321
	N	46	46	46	46	46	46	46	46	46	46
VC	Pearson Correlation	.268	.110	.332	.269	.188	-.030	1.000	-.073	.050	.345
	Sig. (2-tailed)	.072	.469	.024	.071	.212	.845	.	.630	.740	.019
	N	46	46	46	46	46	46	46	46	46	46
EI	Pearson Correlation	.068	-.217	.099	.048	.430	.414	-.073	1.000	.649	-.090
	Sig. (2-tailed)	.651	.147	.515	.753	.003	.004	.630	.	.000	.553
	N	46	46	46	46	46	46	46	46	46	46
TD	Pearson Correlation	.172	-.053	.340	.044	.515	.484	.050	.649	1.000	-.116
	Sig. (2-tailed)	.253	.726	.021	.771	.000	.001	.740	.000	.	.444
	N	46	46	46	46	46	46	46	46	46	46
TER	Pearson Correlation	.001	.093	.192	-.118	-.061	-.149	.345	-.090	-.116	1.000
	Sig. (2-tailed)	.997	.537	.201	.434	.689	.321	.019	.553	.444	.
	N	46	46	46	46	46	46	46	46	46	46

** Correlation is significant at the 0.01 level (2-tailed).

Correlation is significant at the 0.05 level (2-tailed).

Table 2a. Total variance explained by the four principle components.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.826	28.264	28.264	2.826	28.264	28.264	2.687	26.869	26.869
2	22.301	23.014	51.278	2.301	23.014	51.278	1.901	19.005	45.874
3	31.250	12.501	63.779	1.250	12.501	63.779	1.423	14.228	60.102
4	41.012	10.119	73.898	1.012	10.119	73.898	1.380	13.796	73.898
5	5.764	7.645	81.543						
6	.535	5.354	86.897						
7	.453	4.527	91.424						
8	.381	3.812	95.236						
9	.249	2.491	97.726						
10	.227	2.274	100.000						

Extraction Method: Principal Component Analysis.

Table 2b. Rotated Component Matrix: Variables comprising the four principle components

	Components			
	Factor 1	Factor 2	Factor 3	Factor 4
DS	.809			
EI	.773			
ICD				.924
LANG	-.228	.857		
OS	.245	.731	.305	
PO	.774			
RG		.741		.492
TD	.831			
TER			.822	-.279
VC			.779	.392

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations.

Table 3. Regression equation for violent conflict as the dependent variable (Stepwise regression).

Model		Unstandardized Coefficients		Standardized Coefficients	F	Sig.
		B	Std. Error	Beta		
1	(Constant)	.712	.207		11.87	.001
	TER	.285	.117	.345	5.90	.019
2	(Constant)	.197	.298		0.438	.512
	TER	.316	.112	.382	7.88	.007
	ICD	.330	.143	.314	5.34	.026

a Dependent Variable: VC

Table 4a. Rotated Component Matrix: Variables comprising the three principle components minus VC

	Components		
	Factor 1	Factor 2	Factor 4
DS	.809		
EI	.773		
ICD		.458	.678
LANG	-.240	.703	
OS	.242	.814	
PO	.772		
RG		.855	.270
TD	.828		
TER		.243	-.779

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 4 iterations.

Table 4b. Regression equation for VC (dependent variable) and the factor scores.

Model		Unstandardized Coefficients		Standardized	F	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	1.158	.096		145.9	.000
	Factor 1	3.028E-02	.097	.044	.097	.756
	Factor 2	.255	.097	.373	6.93	.012
	Factor 4	-8.469E-02	.097	-.124	0.764	.387
2	(Constant)	1.158	.095		149.0	.000
	Factor 2	.255	.096	.373	7.08	.011
	Factor 4	-8.469E-02	.096	-.124	0.780	.382
3	(Constant)	1.158	.095		149.7	.000
	Factor 2	.255	.096	.373	7.11	.011

a Dependent Variable: VC

Table 4c. Pearson correlations for VC and the three factors (principle components)

	Pearson Correlation VC	Sig. (1-tailed) VC	N VC
VC	1.000	.	46
Factor 1	.044	.385	46
Factor 2	.373	.005	46
Factor 3	-.124	.206	46

ⁱ For a useful discussion of cognitive propensities to form affiliative groups, and to sharply perceive contrasts with other groups, see Horowitz (2001).

ⁱⁱ It should be noted that rational manipulation of ethnic symbolism is not restricted to cases of violent conflict. For example, Grief's (1994) work on long-distance trade by Mahgrebi traders in the eleventh and twelfth centuries suggests ethnically based institutions can reduce informational uncertainty faced by individual traders. It is notable that Mahgrebis disappeared after the ruler of Egypt prohibited Mahgrebis from trading, thus removing incentives to maintain Mahgrebi identity as distinct from other Jewish populations.

ⁱⁱⁱ In a twist on Caselli and Coleman's argument, we might note that relying on ethnic markers that are difficult to change may also prevent defecting individuals from preying on the type of trusting behavior between 'true' co-ethnics that Grief describes.

^{iv} This work has been extensively critiqued, both with respect to the proposed mechanism which translates scarcity into conflict, and to the extent that the approach distracts attention from many other environmental conflicts that are not driven by rising population and/or scarcity, e.g. state construction of dams, mining projects, etc. (e.g. Hartmann 1998; Peluso and Watts 2004).

^v We note that we are not the first to argue that primordialist and constructivist approaches are not mutually incompatible (e.g. Gurr and Harff 1994; Horowitz 2001).

^{vi} Note that we have also coded a large number of more detailed questions relating to each of the ten summary variables.