

Nave, Ari<sup>1</sup>. Culture Hybrid Zones Maintain Ethnic Group Boundaries: Data from Mauritius

Ethnicity is re-conceptualized as an emergent property of the underlying evolutionary mechanisms of cultural transmission and decision-making. People prefer marrying individuals who share the same culture because marriage is a form of social exchange and people prefer to enter into exchange relationships with those who share the same culture. Games of social exchanges, such as reciprocity and coordination, are best entered into when it is possible to predict the behaviors of one's partner. As culture shapes behavior, people prefer to enter into complex social exchanges with others who share the same rules of behavior, making outcomes more predictable. Due to the high costs of individual experimentation, marriage choice is a sphere of social exchange in which people conservatively choose members of the same ethnicity to ensure their partners behave as expected in such critical roles as child rearing. Data from Mauritius confirms that rates of inter-ethnic marriage are low due to fears of uncoordinated exchange. However, even small numbers of inter-ethnic marriages would eventually dissolve ethnic group boundaries if ethnicity was inherited bilaterally. Evidence from Mauritius suggests that ethnicity is transmitted to children as a complex. Ethnicity is a marker of culturally transmitted beliefs, preferences, and ideas which individuals use to model how others will behave during the course of social exchanges. Therefore, children take on the ethnic identity and corresponding culture of one parent over the other. It is hypothesized that children of mixed marriages who attempt to integrate the ethnic identity and corresponding cultural complexes of both parents potentially incur heavy fitness costs for failing to follow established conventions. In other words, culture hybrid zones maintain ethnic group boundaries.

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## **I Introduction**

Scholars have debated the reasons why ethnic group boundaries remain stable over time. Some have argued that ethnicity is a product of group-level competition for scarce resources (Banton 1983; Despres 1975). Their models ultimately depend upon group-selection spreading strategies of punishment. Otherwise, they cannot explain why individuals conform to group-beneficial norms instead of defecting (Axelrod and Hamilton 1981; Axelrod 1984). As of yet, the lack of evidence makes the spread of punishment through group selection a less than fully convincing story (Soltis 1995). An alternative model of ethnicity is presented here, one which explains ethnic group boundaries in terms of the presence of cultural hybrid zones, analogous on many ways to genetic hybrid zones, which create barriers to cultural diffusion. Culture seems particularly susceptible to hybrid zones due to the transmission of ideas in integrated wholes.

Forces of cultural diffusion, or meme flow, would cause the distinctions between groups to dissolve. There are several forces of integration at work in plural societies like Mauritius which increase cultural diffusion. In Mauritius neighborhoods and villages are ethnically integrated (Mannick 1979; Christopher 1992). Except for a small number of private institutions, children attend ethnically mixed schools (Bunwaree 1994). Kreole is the lingua franca and primary tongue of the vast majority of citizens (Baker 1968; Eriksen 1990; Hookoomsing 1986).

Employment opportunities are also increasingly based upon personal qualifications rather than social networking. All these factors increase the opportunity for cultural diffusion between groups.

Despite having an integrated society, ethnic boundaries are clearly not dissolving in Mauritius. It appears that significant cultural differences exist between members of separate ethnic groups despite the forces of social, economic, and political integration. Primarily this is due to the low levels of inter-ethnic marriage. If the inhabitants of Mauritius selected spouses at random (at least with respect to ethnicity), within a few generations the distinctions between ethnic groups

would disappear, giving way to a homogeneous ethnic melange. But people in Mauritius clearly do not select spouses at random, choosing instead to marry endogomously, passing their culture to their children along with their ethnic identity. No other act is as central to the reproduction and maintenance of ethnic group boundaries and cultural traditions as endogamy. Marriage is a social contract regulating reproduction, child rearing, and enculturation, through which spouse preferences are replicated in time. Ethnic endogamy, then, is institutional in that it is self-replicating (Sperber 1995).

It is hypothesized that evolved psychological dispositions to enter into social exchanges with members of the same ethnic group are largely responsible for the low numbers of inter-ethnic marriages. Despite this tendency, some inter-ethnic marriage occurs in every generation. In the absence of other forces, this would still lead to the dissolution of ethnic boundaries. But other evolutionary properties of culture, such as frequency-dependent transmission, prevent memeflow and reinforce existing established cultural conventions. Together these forces create cultural hybrid zones.

A pile sorting exercise revealed the importance of ethnicity in defining spouse choice over class while in-depth interviews uncovered the motives driving ethnic endogamy, namely, a desire to marry people who behave according to the same norms.

### **Results from a pile sorting exercise.**

Approximately 200 students from the University of Mauritius were administered a pile sorting exercise. Each student was asked to sort 56 cards into two piles. Each card contained a narrative description of a hypothetical potential partner. The narratives contained information on the potential partner's religion, income, and education. The reverse side of the card contained a photograph of the individual. Between the religion and the photograph, the ethnicity of each partner could be ascertained. These cards represented every possible combination of the

variables. For example there was one Hindu, wealthy and educated. One card described a Hindu who was wealthy but uneducated.

In this way it was possible to disentangle the relative importance of different variables, particularly income versus ethnicity, in guiding decisions as to in which pile to place the card. A total of six consecutive exercises were conducted. In the first three exercises, subjects based their choices on the narratives only. The first exercise asked subjects to separate the cards into two piles according to whether or not they would consider dating the potential partner. The second exercise asked subjects to separate partners they would consider marrying from those they would not consider marrying. In the third exercise, subjects were asked to separate the cards according to whether or not their parents would approve of them marrying the potential partner. These three exercises were later repeated with the additional determinant that subjects were allowed to use both the narrative and the photo to guide decisions. Ethnicity plays a more central role than class in defining all of these choices. Tables 1, 2, and 3 outline the results of the pile sorting exercise. For example, table 3 shows a clear preference for ethnic endogamy (69% versus 31%) in the absence of class preferences (51% versus 49%). When taking into consideration parental consent, the reliance on ethnic endogamy increased to 84% while class endogamy, at 43%, stays remarkably close to the 50% predicted by pure chance.

	same class	different class	
same ethnicity	28.2%	31.8%	<b>60.0%</b>
different ethnicity	18.7%	21.2%	<b>40.0%</b>
	<b>46.9%</b>	<b>53.1%</b>	<b>100%</b>

Table 1. Probability of picking dating partners based upon narratives. Chi-sq is insignificant.

	same class	different class	
same ethnicity	35.4%	33.7%	<b>69.1%</b>
different ethnicity	15.7%	15.2%	
	<b>51.1%</b>	<b>48.9%</b>	<b>100%</b>

Table 2. Probability of picking marriage partner based upon narrative. Chi-square is insignificant.

	same class	different class	
same ethnicity	36.0%	47.9%	<b>83.8%</b>
different ethnicity	6.8%	9.4%	
	<b>42.7%</b>	<b>57.3%</b>	<b>100%</b>

Table 3. Probability of picking marriage partner accounting for parental expectations, based upon narratives. Chi-square is insignificant.

This data contradicts the expectations of class-based models of ethnicity which assume that ethnic endogamy is but a by-product of class endogamy within a historical context of colonialism where class and ethnicity correlate. In countries like Mauritius where ethnic groups are increasingly stratified by class, the saliency of ethnicity is left unexplained.

While choices were shaped predominately by ethnic identity, all people, regardless of ethnicity, seem to rely on the same fundamental cognitive mechanisms for choosing a spouse. This universal cognitive machinery produces different outcomes because they are contextualized within a cultural environment. A single heuristic such as “marry someone of the same cultural norms” produces different outcome depending upon how similarity and difference in culture is signaled within a particular context. Hindus and a Chinese Mauritians behave differently in that their marriage choices are predictably different, despite the fact that the underlying rule they may be using is the same.

### **Actual Rate of Inter-ethnic marriage**

Eriksen posits that Mauritius is experiencing a rapid increase in the incidence of inter-ethnic marriage, and that this increase may lead to the development of a post-ethnic society (in press). I believe he is wrong in both of these assumptions. There is no strong evidence that inter-ethnic marriage is on the rise. And ethnic groups can remain stable in the presence of some degree of inter-marriage. Figure 2 summarizes rates of intermarriage from 1982 through 1995 using data from the *Militant* article a more recent article from *Week-End* (François 1996). The mean rate from this data is 6.6%. Eriksen based his prediction on the first two data points in Figure 2 only.

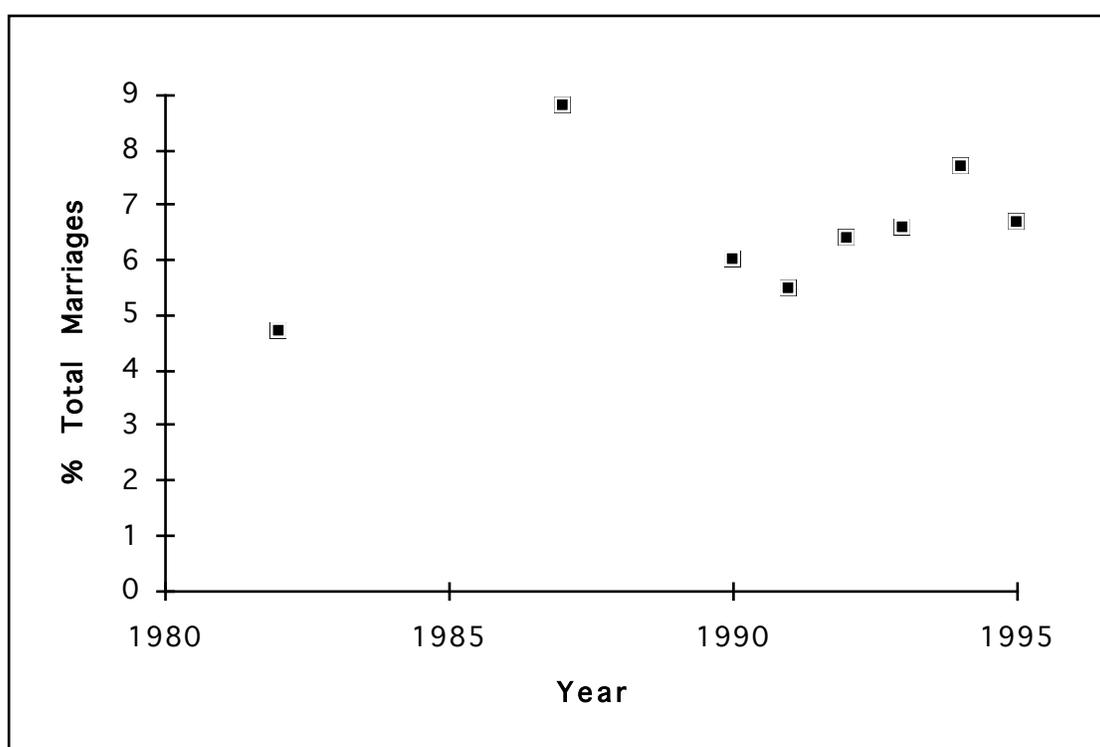


Figure 2: Rates of inter-ethnic marriage by year. (Source: Patel, 1988; François, 1996)

But these rates of inter-marriage were potentially inaccurate, being based upon constitutionally defined communities, some of which do not map on to ethnic groups (Christopher 1992). For example the community which is labeled “General Population” by the Civil Status Office subsumes at least two distinct ethnic communities: the Franco-Mauritians and the Creoles. During my fieldwork, I conducted a survey to more accurately assess the overall rate of inter-

ethnic marriage in the entire population, collecting data from some 1245 randomly selected individuals (Nave, in press). From this data I determined that the rate of inter-ethnic marriage in Mauritius is about 8.2% +/- 2% at 95% confidence. This is in accordance with the Civil Status Data, which underestimates actual rates of inter-ethnic marriage by grouping endogamous groups under larger categories. There is no evidence to suggest that the rate of inter-ethnic marriage is rapidly increasing.

### **Reliance on Social Learning for Guiding Marriage Choices**

The vast majority of Mauritians I interviewed had a preference for marrying someone of the same ethnic group. This makes sense given human reliance on social learning to guide complex behaviors which are potentially costly and which do not readily lend themselves to individual experimentation (Boyd and Richerson 1985). Entering into a marriage can be a costly decision, economically, socially, and particularly reproductively. Marriage choices also do not lend themselves to learning through personal experience. Such individual learning requires the accumulation of many data points through experimentation from which to draw accurate inferences (Hadley, 1967; Holland et al 1987). How would one go about accurately assessing whether someone will make a good parent and invest heavily in the offspring of a monogamous relationship without actually having a child with the person? The test becomes a “*fait accompli*.”

Furthermore, dating and marriage are forms of social exchange between two individuals, and often their families. Individuals are also relying upon their spouses to behave in culturally bound ways. Expectations extend to child rearing, economic participation in the household, food ways, hospitality behaviors, and a multitude of other arenas. Outcomes of social exchanges, including marriage, depend upon the behavior of both parties (Homans 1958; Blau, 1964). In other words, marriages are forms of games in that outcomes depend upon the actions of both parties (Sugden, 1986; von Neumann, 1928). When two people marry, they enter into a number of different kinds of exchanges, including forms of coordination and reciprocity. Coordination games differ

from reciprocity games in that in the former, all parties are better off if no one defects from the established convention (Lewis 1969). Driving on the left side of the road is an example of a convention in the United Kingdom. Coordination requires knowledge of what the conventions are, a product of culture. By entering into a coordination exchange with someone of another culture, one runs the risk that the other party will not know the standard conventions and fail to adopt the more profitable strategy. Conflicts also arise around coordination games like child rearing when each spouse's behavior is derived from different cultural beliefs.

Deva, a Tamil woman contemplating divorce from her Hindu husband, described with surprise:

You know, it just got to the point where I thought "Shit, I've gone in for the wrong thing here." I don't know. I never thought it would be like that... Values are totally different about how to bring up children. [His family] just totally spoil children. The more we were together, the more I realized that our values were totally different.

But values of life, you know it never came up (while courting) and I think I was pretty foolish. I don't know how it went past me because I tend to think that I do think a lot about things but I didn't think much about that.

In all forms of exchange, someone who is able to predict the possible behaviors of the other parties and avoid heavy costs is at an advantage (Heider, 1958; Berscheid & Graziano 1979; Cosmides 1989;). Predicting the behavior of partners requires modeling their behaviors, which in turn requires a knowledge of how they categorize and place values on the world around them. As behaviors are largely culturally learned, exchange with members of other culture groups may be much more unpredictable than similar exchanges with members of one's own culture group.

People who enter into inter-ethnic marriages may discover that their spouses have different expectations and beliefs about fundamental aspects of marriage as a contract; leading to conflict. Harré writes that, "The intensity of the conflicts and the amount of adjustment required depended on the degree to which each spouse was committed to the cultural values and customs associated with his or her race [read ethnicity]" (1966: 91; see also Rhee 1988; Tseng, 1977). Many of these beliefs are subtle and difficult to articulate and communicate, such as beliefs about

pollution and hospitality. Consequently, it is perceived to be “safer” to marry within one’s own ethnic group, to rely upon socially learned preferences and criteria when choosing a spouse. In so doing the individual is less likely to enter into a marriage only to find their partner behaves in unexpected and unacceptable ways. Time and again, informants reiterated that marriage to someone of another ethnic group could lead to grave conflicts as each spouse would be committed to different cultural norms of behavior.

Given this selective pressure, it is posited that a psychological bias evolved to minimize social interactions with people who differ culturally and maximize interactions with people similar to one’s self. The universality of this phenomena needs to be assessed empirically.

### **Inter-marriage and Ethnic Boundaries**

Ethnic boundaries persist due to the existence of hybrid zones. Individuals from each ethnic group follow a complex of values and beliefs to guide behavior. These complexes can be thought of as adaptive solutions to environmental problems. Often time environments are heterogeneous. There are also numerous ways of solving the same problem, so that random elements can create numerous distinct solutions. For these reasons, distinct cultural traditions arise.

While inter-marriages would act to increase meme-flow and break down barriers between groups, other forces act to the contrary. To begin with, social exchanges with members of another culture can be costly. It is posited that this pressure has led to an evolved bias against such interactions, including marriage. But even in the presence of a significant amount of inter-marriage, the different cultural traditions remain distinct. This is because other forces of cultural evolution are at work which reduce the extent to which ideas can recombine and move between populations, reinforcing existing hybrid zones.

Despite the fact that ethnicity is the single most important factor in shaping spousal choice, a small but not insignificant amount of inter-ethnic marriage does occur. In the absence of other forces, even a small amount of inter-ethnic marriage would rapidly eliminate any boundaries between ethnic groups. If 5% of marriages crossed ethnic lines, within about 25 years, almost the entire population would become “creolized”. In other words, if ethnic identity and culture were inherited in a blending manner, differences between ethnic groups would disappear (Jenkin 1864). The strength and persistence of ethnic group boundaries, therefore, are predicated upon the more or less complete transmission of one ethnicity over another and not simply a function of rates of endogamy as is commonly considered. For example, Talcott Parsons writes:

Ethnic groups are traditionally mutually exclusive. This would be rigorously and uniformly the case, however, only insofar as they are consistently endogamous. There are many cases, however, of the marriage of members of different ethnic groups. The question therefore of the ethnic adherence of a married couple can become indefinite and the same is of course true for the children and for their further descendants. (1975)

Selective forces prevent people from adopting a mixed ethnic identity. Take, for instance, the child of a marriage between a Hindu man and a Muslim woman, named Shenaz. As Shenaz approaches the age of marriage, she encounters few, if any, peers who are also of Hindu-Muslim descent. By far the vast majority of her peers will be either of Hindu or Muslim. These peers will have a strong preference for ethnic endogamy, as well as pressure from family to marry endogamously. As discussed above, this is because of people’s reliance on culture to make complex and potentially costly decisions about who to marry. Shenaz will therefore be under strong pressure to choose one ethnicity over another.

As ethnicity is a marker of cultural heritage, people of mixed ethnicity become wild cards to potential spouses. Many of the most fundamental values, morals, and beliefs one learns as a member of a particular tradition are difficult to articulate yet nevertheless deeply tied to feelings of proper behavior. Marrying someone of mixed ancestry, then, introduces an additional potential dimension for conflict. For these reasons, individuals are under pressure to conform to

one or the other ethnic identity. Often this is decided by the parents who stress one culture over the other. Harré found a similar pattern in New Zealand, noting that “Most parents were of the view that their children would be identified either as Maoris or as Pakehas by the community and that it would be unrealistic not to follow this procedure themselves,” (1966: 133).

Most often children of inter-ethnic couples seem to adopt the ethnic identity and corresponding culture of one parent over the other (see for example Lee 1994). Even if the child attempts to mix the cultural beliefs of his or her parents to some extent, the next generation generally identifies with only one. If Shenaz were to marry a Hindu but continue to follow some Muslim traditions, her children would probably become predominately Hindu culturally and take on a Hindu ethnicity completely. Likewise if Shanz married a Muslim, the children would be ethnically Muslim. Shenaz’s grandchildren, in turn would become increasingly culturally aligned with their ethnicity. Figure 3 schematically represents how forces eliminate cultural hybrids. This is because there are pulls toward established norms.

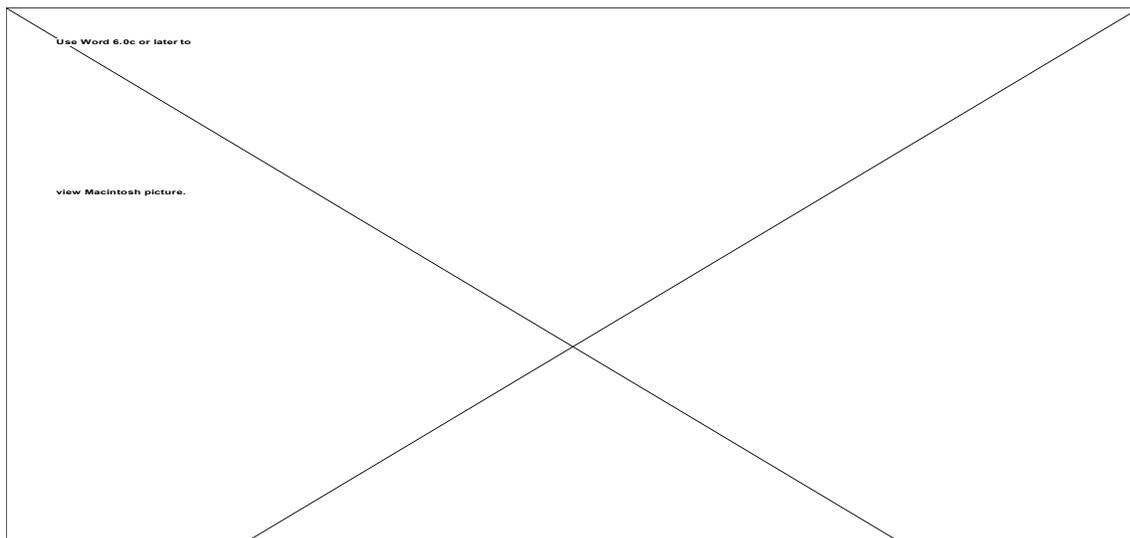


Figure 3: Cultural Hybrid Zone. In the vast majority of cases, a child of an inter-ethnic marriage,  $\alpha$ , chooses between a member of one ethnicity,  $\beta$ , or another,  $\delta$ , to marry. Biases of cultural transmission cause cultural information to be unequally weighted in their transmission, leading to stable boundaries between ethnic groups.

## Hybrid Zones

Several psychological biases cause the genesis of distinct cultural traditions between neighboring groups which are stable enough in time to make it adaptive for people to discern these distinct cultural norms and act upon them, including heuristics of social learning and the need for internal cultural congruency. Cultures map onto adaptive peaks. Figure 4 represents two adaptive peaks created by ethnic groups following different established conventions.

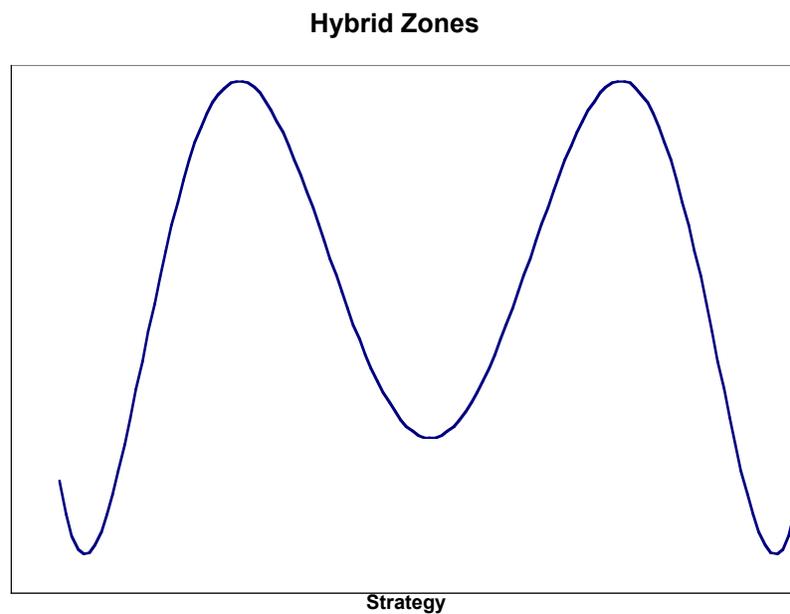


Figure 4: Multiple Adaptive Peaks

Boyd and Richerson have modeled how a reliance on social learning can cause a homogenous culture group to diverge into two distinct traditions in response to different selective pressures in a heterogeneous environment. These biases create a self-reinforcing process which allows distinct cultures to emerge from a homogenous one and which sets up barriers to cultural diffusion between neighboring groups (1987). Psychological biases of social learning also cause a homogenous culture group to diversify into distinct traditions when multiple stable adaptive peaks exist within a single environment.

Korona together with colleagues (1994) conducted a number of elegant experiments which support the claim that in any given environment, multiple adaptive peaks exist and random events can cause populations to climb any number of adaptive peaks (Wright, 1932). Eighteen different populations of a bacteria, *Comamonas*, were propagated from an identical ancestor in two different environments for over 1000 generations. Stochastic processes led to the evolution of distinct populations, suggesting that early mutations created constraints on later adaptations.

Consequently, one would expect that a number of culturally distinct sub populations would emerge within the same ecosystem, as we learn a corpus of culture traits from those we interact with more frequently and on a more intimate level and given that culture is transmitted with imperfect fidelity (Boyd and Richerson, 1985). At least this would hold true for a cultural core of characteristics where the sampling frame is more confined to the ethnic group. Traits learned later in life would be the result of observing a much larger and extended frame of the population, increasing homogenization between groups.

To the human actor, cultural content is changing slowly, to the extent that knowledge of someone's ethnicity remains a good indication of their beliefs, values, and behaviors. The nature and degree of cultural viscosity is currently debated. At least some elements of culture appear to be transmitted as complete units, as clusters (McElreath 1997)<sup>1</sup>. There are several possible reasons why cultural elements are transmitted in clumps. To begin with, some elements of culture seem to be integrated and resistant to diffusion of new ideas by virtue of their internal logic. Iron smelting must be learned as a unit. Leave out the bellows and you produce only heated rocks.

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<sup>1</sup>An analogous mechanism exists in the transmission of genetic information, known as coadaptive gene complexes (Barton 1983; 1986).

Other mechanisms reinforce the following of established cultural traditions, isolating specific units of culture from diffusion. Boyd and Richerson have proposed that people are likely to conform to the cultural patterns which are found most frequently in a population (1985; 1987). Following the most common variant of a behavior makes for a good heuristic of social learning, as beneficial behaviors will generally spread through a population while costly ones will tend to be eliminated. In addition, there are benefits to following more established conventions, one reason why market share was so important in determining which computer operating system became the norm. Consequently, an innovative hybrid is less likely to be adopted by others, given its low frequency in the population.

Not all elements of culture seem to be equally mired from diffusion. Some traits, such as using gunpowder and smoking tobacco, rapidly spread from group to group (Kroeber, 1948). The degree of cultural diffusion depends, in part, upon the traits congruency or fit with the existing cultural corpus which predominates in the ethnic group. So, for example, the diffusion of daal (split pulses) into the Creole diet has faced less resistance than the introduction of beef into the Hindu diet, for obvious reasons.

To date the nature and units of cultural transmission continue to be one of the great mysteries in anthropology. It remains unclear if culture is composed of a stable central core, surrounded by a readily changing cultural periphery, or if culture consists of relatively independent cultural components (Boyd et. al, in press). While the exact qualities of cultural units is unknown, it is evident that some elements of culture are transmitted as larger units and are more resistant to change within these boundaries, such as religious systems of thought. Cultural congruency and mechanisms such as frequency dependent selection serve to reduce variation within an ethnic group. To the actor, then, ethnicity is a good indicator of cultural content at any given time.

### **Summary**

As social exchanges such as marriage are largely influenced by shared culture, and as ethnicity is a good marker of cultural content to any individual within a time-frame of real decision making, ethnic boundaries are maintained. Combined with forces of cultural linkage, this results in the formation of culture hybrid zones. Over long periods of time, some segments of culture will diffuse (while others may be more resistant to diffusion) leading to changes in the content which defines a single ethnic identity. However, the boundaries may be resilient to change. Cultural hybrid zones exist then in the sense that hybrid cultural traditions are transmitted less successfully than established traditions. This is due both to biases against ethnic exogamy and due to the linked nature of some cultural ideas.

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