The East Indian Diaspora in Costa Rica:
Inbreeding Avoidance, Marriage Patterns, and Cultural Survival

ABSTRACT  Anthropologists have long been interested in the survival of Indian cultural traits in the New World. In this article, we present results of an ongoing project with a Costa Rican community that descends from East Indian indentured servants. We focus on the group’s marriage patterns and how these patterns might have helped keep the community as a cohesive ethnic group. We investigate the group’s level of inbreeding by computing the inbreeding coefficient using two different methods. We show that the community has been successful at keeping its inbreeding low, despite its small size, by allowing marriage with nonmembers of the community. We propose that unless consanguineous marriages are allowed virtually all of the community’s marriages will be with noncommunity members. Absorption into tourism, as well as the community’s staunch avoidance of consanguineous marriages and virtually universal marriage with noncommunity members, will likely contribute to their disappearance as a viable ethnic group. [Keywords: East Indian diaspora, inbreeding avoidance, Costa Rica]

The marriage patterns of people in the Indian subcontinent have been the focus of much biological anthropological research (Bittles 2002; Rao and Inbaraj 1977; Rao and Murty 1986; Reddy 1992; Reddy 1983; Reddy and Modell 1995; Sanghvi 1966). Although there is some local variation in marriage preferences, all Muslim East Indian communities favor consanguineous unions (different communities having different preferences). In contrast, only Southern Hindu communities favor consanguineous marriages (preferring either uncle-niece or maternal cross-cousin marriage). The north-central Indo-European speaking Hindu groups actually avoid consanguineous marriage (Bittles 2002; Kapadia 1966; Karve 1965; Ross 1961). In this article, we refer to the people from the area that was prepartition India and which now consists of India, Pakistan, Sri Lanka, and Bangladesh with the term East Indian for the sake of brevity and to distinguish them from West Indians.

It is of anthropological interest to determine whether populations of the East Indian diaspora have preserved their culture in general, and their marriage patterns in particular, in their new homelands. The East Indian diaspora has been the subject of countless articles and books (Birth 1997; Brah 1996; Ehrlich 1971; Jain 1998; Jayawardena 1968, 1980; Lai 1993; Manuel 2000; Nevadomsky 1980, 1983a, 1983b; Patel 1972, 1974; Richardson 1975; van der Veer 1995; van der Veer and Vertovec 1991; Vertovec 1992, 1994, 2000; Warikoo 2005). Here, we are interested in the diaspora of indentured servants from prepartition India that started in earnest after the abolition of the African slave trade—that is, in the late 1800s—and which ended roughly in 1917 (Vertovec 1994). The Indian British colonial government provided nominally nonslave labor to British interests worldwide in the form of impoverished indentured servants for whom indentured emigration was the only alternative to deteriorating living conditions. Just as African slaves had sustained the European imperial expansion in the previous centuries, the indentured servants from the Indian subcontinent (and China) sustained the British economic expansion of the late 1800s. As a result of this diaspora, millions
of people of East Indian descent are found throughout the world. Perhaps the largest of these communities are found in Fiji, Ceylon, Malaysia, Mauritius, South Africa, Trinidad, Suriname, and Guyana.

In the Caribbean, the East Indian communities of Guyana, Suriname, and Trinidad have received a great deal of attention from anthropologists because these groups have been able to maintain their own religious practices and music and have become important political actors in their countries (Angrosino 1974; Klass 1961; Lai 1993; Manuel 2000; Speckmann 1965; van der Veer 1995; Vertovec 1992, 1994, 2000; Weller 1968). In contrast, the East Indian community in Jamaica, which was never large in number and never became “nucleated” in villages or urban centers, was unable to maintain a clearly Indian culture (Ehrlich 1971). The number of indentured servants who came to Guyana and Trinidad was certainly sizeable: S. S. Vertovec estimates that a total of 239,000 migrants arrived between 1838 and 1917 to (then-) British Guiana, 144,000 into Trinidad between 1845 and 1917, and 34,000 into Suriname (Dutch Guiana) between 1873 and 1916 (Singh 2005). The current population of East Indian descent in these regions is smaller, as between 32 to 34 percent of these migrants returned to the Indian subcontinent, and as many of those who remained subsequently migrated to the United Kingdom, Canada, the United States, and so forth.

Because of the diverse geographic and socioeconomic background of the migrants from the prepartition subcontinent, a so-called “creolized plantation Hindi” became the lingua franca in the plantations in Trinidad, Suriname, and Guyana (van der Veer and Vertovec 1991). Indeed, people of Hindu, Muslim, and Christian faiths came into close contact in the New World (Jha 1974). Indo-Trinidian and Indo-Guyanese groups maintained some sort of prestige differentiation loosely similar to caste. However, the caste system for all intents and purposes collapsed, given that status, prestige, and occupation were assigned, and activities such as washing and eating were carried out without regard to caste (Jayawardena 1968; Weller 1968). Both M. Klass (1961) and J. D. Speckmann (1965) report that Muslim Indo-Trinidian and Indo-Surinamese groups prefer close-cousin mating, whereas Hindu Indo-Trinidianans and Indo-Surinamese groups disapprove of it. The disapproval of close-kin marriage in the Hindu communities in Suriname and Trinidad would indicate that these migrants came from the north-central part of India, as the south Hindu Indians favor close-cousin mating (Bittles 2002).

Within this well-established body of literature on the Indo-Caribbean groups from Guyana, Surinam, Trinidad, and Jamaica, we could not find a single published work on the East Indian diaspora in Costa Rica. Indeed, when L. Madrigal raised the issue of studying an Indo-Costa Rican group that she had “bumped into,” she was told by other anthropologists that the members of this community “had all died out.” When the cultural anthropologist of our team (F. Otárola) first visited the community, she learned that the community was very much alive and self-conscious of its own ethnicity. Here, we report results from a biocultural project with a previously undescribed ethnic group of Indo-Costa Ricans. Specifically, we report the community’s inbreeding and relatedness coefficients and discuss its marriage patterns. We place its marriage patterns within the context of the Indo-Caribbean diaspora and address the question of cultural continuity with India. Finally, we discuss the likely future of the community, as the entire Atlantic Coast of Costa Rica is becoming engulfed by the capitalist world economy in the form of tourism.

MATERIALS AND METHODS

The first issue we must address in this section is the name our community members give to themselves. Throughout the world, communities of the Indian diaspora have been referred to in a pejorative manner by a term that means “slave.” However, our community proudly uses for itself a term derived from the pejorative one. When we brought up the issue of offending others in publications, our informants said they wanted us to refer to them using their own term. We feel that if we put the feelings of the larger, more powerful, and politically engaged communities of the Indian diaspora before the feeling of our very small community, we would be guilty of imperialism. For that reason, we refer to our community with the name they use with pride: the Culís of Costa Rica.

The Culís live in the province of Limón, Costa Rica, where much anthropological research has focused on the population that descends from Jamaican workers who came in the late 1800s through the early 1900s to work on the railroad construction and banana industry (Duncan 1981; Herzfeld 2002; Lefever 1992; Madrigal 2006; Madrigal et al. 2001; Purcell 1993). The Culís live in a small settlement called Westfalia, to the south of Puerto Limón, although one family has relocated to the Costa Rican Central Valley, three others to the south of Westfalia, and a few more to Puerto Limón. When we speak of the Culí families or the Culí community, we are including all of these families. Westfalia itself has no more than 30 houses. Our best estimate is that there are fewer than 100 people who call themselves Culí, and this estimate includes the families in all of the locations mentioned above. The Culís who live in Westfalia are more or less part of the broad, national, cash economy. Whereas some commute to Puerto Limón for their jobs, others fish or raise their own food, and some are beginning to take tourism-related jobs. Most, if not all, own the land on which they live.

We know virtually nothing about the migration of the ancestors of the Culís, except that they came along with workers from multiple nationalities to complete a railroad line in 1873. There are numerous sources on the history of Limón, the railroad construction, and the development of the banana monoculture under what eventually became the United Fruit Company, but none of them mentions East Indian workers in any detail (Casey-Gaspar 1979; Chomsky...
the coast of Puerto Limón, where they started walking south. The official who delivered them was a British Government office, complaining of the poor state of health of East Indian indentured servants who were delivered to Panama and who, because of their poor health (they were blind because of nutritional deficiencies), were denied entry. According to the document, the vessel took these people north and simply dropped them off on the coast of Puerto Limón, where they started walking south in hopes of making it to Panama. None of our informants had heard this story, and we have to wonder if they descend (at least in part) from these unfortunate abandoned workers. We also know that the area where Westfalia is now was given at some point to the Culís. However, we do not know if this was done by the Costa Rican government, by the United Fruit Company (which held the rights to this land for many decades), or by another agency. However the Culís came to be in Westfalia, it seems clear that physical transnational links with the Indian subcontinent or other diasporic communities were not maintained by this group, although their origins continue to be an important part of their ethnic identity.

Since 2003, an international team of biological and cultural anthropologists from the University of South Florida and the Universidad de Costa Rica has been working with the community. The project was approved by the committee on bioethics of both universities. We have collected anthropometric, hypertension, and DNA data from 44 adult participants. In other words, our sample consists of virtually half of the Culí population. All families are represented in our sample, including members from Westfalia and the other places where Culí families have relocated. In addition, we have genealogies of all the Culí families. From a genetic viewpoint, we have multiple copies of each and every one of the mitochondrial and the Y-chromosomal lines of the group. We base this statement on our study of the community’s genealogy.

For each individual in our sample of 44, we have his or her two surnames. In Costa Rica, as in other Spanish-speaking countries, an individual (in principle) carries two surnames: the first from one’s father and the second from one’s mother. We compare the surnames in our community with those reported in an Indo-Trinidadian sample to determine if the two groups share some of the same family names.

We computed the inbreeding coefficient by pedigree analysis and by the proportion of consanguineous matings (by type) out of the total number of unions that produced children. The inbreeding coefficient is usually defined as the probability that an individual receives two genes identical by descent at the same locus. A related measure that we also computed is the coefficient of relatedness or kinship, which is the fraction of genes of two individuals that are identical by descent from a recent ancestor (Cavalli-Sforza and Bodmer 1971).

The inbreeding and kinship coefficients were computed from the pedigrees (Reid 1973) using the computer program DESCENT. The inbreeding coefficient of an individual (I) is calculated from his or her pedigree by tracing all the paths of gametes that lead from one of I’s parents back to the common ancestor, and then down again to the other parent of I. The inbreeding coefficient is simply \((1/2)^i\), in which \(i\) is the number of individuals in the path linking I’s parents. If information is available on the common ancestor’s inbreeding coefficient, then the formula is slightly more complicated (Cavalli-Sforza and Bodmer 1971). DESCENT computes the inbreeding coefficient of each individual by tracing his or her pedigree and provides interesting output statistics such as the number of individuals who are related to a particular person out of the total population. In addition, it computes the average inbreeding and relatedness coefficients. We computed the inbreeding and relatedness individual of all individuals shown in the community pedigree (see below).

Last, we computed the inbreeding coefficient by the proportion of unions that are consanguineous out of the total number of matings that produced offspring. To do this, we simply looked at each of the matings recorded in the community’s genealogy and determined its level of consanguinity (Agarwala et al. 2001; Cavalli-Sforza and Bodmer 1971).

RESULTS

The Culí Pedigree

The genealogies of all living members of the Culí community converged into a single one, which is shown in Figure 1. There are four ancestral couples from which the community descends, although not all of them migrated at the same time. Because the pedigree is very large, we did not include anyone who was a teenager or younger in 2003, nor did we indicate if an individual had died. We do not make a distinction between legal, religious, visiting, common-law, or any other kind of union because—particularly for the early generations—most of these unions were unlikely to be legally sanctioned, given Westfalia’s distance from any governmental officer. After four years of fieldwork with this community, our cultural anthropologist (Otárola) feels confident that she is including in this pedigree each and every one of the families of the group.

We acknowledge that the pedigree is not complete, but it is based on all the information we could obtain from our informants. Several of the unions that produced children involved a partner whose identity we could not establish. Indeed, the names of five men and seven women who produced children is not known. An additional source of uncertainty in our pedigree is the question of the ethnicity of people who did not descend from members of the community but, rather, who married in. We cannot use their surnames to establish ethnicity with great confidence (unless their surname was Spanish) because people of Jamaican and East Indian descent had English names. In one case, we were told by our informants that a couple of East Indian ancestry migrated three generations after the first three couples
and contributed to the growth of the community. Thus, in this case, we know that these people, who do not descend from members of the community, were of East Indian descent.

In all other cases, we see new people (with English surnames) mating with Culí community members, and we cannot be certain that they are of Afro-Jamaican or East Indian descent. In these cases, we cautiously assume that they were of Afro-Jamaican descent, as migration from India was rare and the Culís are and were neighbors of the Afro-Limonense descendants of the Jamaican workers. Indeed, our initial genetic analysis demonstrates a strong contribution from Africa to the Culí gene pool (Madrigal et al. 2006). These individuals are marked as “NC” for “non-Culí,” whether their union produced offspring or not. When we considered the 23 unions between a Culí and a non-Culí that produced offspring, 15 males (65 percent) and eight females (35 percent) appeared to be from outside the community. Although these frequencies do not achieve significance ($X^2 = 3.13$, $df = 1$, $p = .0768$; Fisher’s exact test $p = .0758$), they suggest that more males than females married into the community. We intend to look at the Y-chromosomal and mtDNA frequencies to determine if these also reflect a male-biased in-migration.

The pedigree also shows that serial monogamy was relatively frequent, so that many members of the community after the second generation were related as half-siblings or cousins. However, in comparison with the frequency of union dissolution in Suriname reported by Speckmann (1965) in the early 1960s (up to 30 percent), the Culís appear to have a lower frequency of dissolution. We computed the proportion of males and females who had more than one partner, and we found that out of a total of 53 unions four males had two partners, and six females had more than one partner (five females had two partners and one had three). These frequencies are not significantly different between the genders ($X^2 = 0.11$, $df = 1$, $p = .7397$; Fisher’s exact test $p = .7415$). Because we ignore the names of five males and seven females who produced children, these numbers might be biased.

**Consanguineous Unions**

An analysis of each union in the pedigree reveals that not one is consanguineous even at the third-cousin level. Because there are 0 consanguineous unions, the inbreeding coefficient computed by considering the number and type of such unions out of the total number of matings yields a coefficient of 0 (Cavalli-Sforza and Bodmer 1971). For comparison purposes, in a Catholic rural population in Costa Rica between 1860 and 1890, 14 percent of the marriages were consanguineous up to the third degree (Madrigal and Ware 1997). The avoidance of close consanguinity seen in the Culís is similar to that reported in Suriname (Speckmann 1965) and Trinidad (Klass 1961), where, however, the communities were large enough that daughters were usually married to a family that lived in another village. In the case of the Culís, close-kin mating avoidance was probably made possible by the high frequency of unions with non-Culís. Of course, because we ignore the identity of five men and seven women who produced children, we might be underestimating the frequency of consanguinity in the community, but we can only work with the data we have. Nonetheless, it is clear that although all members of the community can be linked into a single pedigree, the different families are joined by affinal links, and consanguinity was kept to a minimum.

**Pedigree Coefficient of Inbreeding and Relatedness**

The average coefficient of inbreeding obtained from the pedigree with the program DESCENT is 0, and the average coefficient of kinship (or relatedness) is 0.032. These results confirm our analysis of the pedigree, which showed that there was no close-kin mating in the population at all, resulting in an average inbreeding coefficient of 0. We are reminded of an example offered by L. L. Cavalli-Sforza and W. F. Bodmer (1971) of an Aleut group, which, despite a small sample size, had a relatively low inbreeding level, namely 0.003. In contrast, the high average coefficient of relatedness, which measures the fraction of genes of two individuals that are identical by descent from a recent
an ancestor, reveals that many individuals share genes in the community. For comparison, an inbreeding coefficient of 0.125 is seen in an uncle–niece mating, one of 0.0625 is seen in a first-cousins union, and one of 0.03125 is seen in a first-cousins-once-removed union. Therefore, although at an individual level inbreeding was kept at a minimum, at a population level, in terms of average relatedness (degree of relatedness with all blood relatives in the population), individuals were related (on average) almost at a first-cousins-once-removed level.

Surname Analysis
An examination of the names and surnames of our participants across generations revealed that the legal and usual naming system in Costa Rica is not followed in this community, particularly in the earlier generations. For example, children of the same couple frequently do not have the same last names. In the earlier generations, it was obvious that the English system of a wife taking her husband’s surname was used more than the Spanish system in which a married woman does not change her name. In some cases (also among the earliest migrants), the Spanish system was not properly applied, and some children carried their mother’s surname first, and their father’s surname second.

Table 1 shows the surnames we recorded for our 44 participants. There were a total of 30 surnames recorded; most of them are English, two are Spanish, and only three are of possible Indian origin (Goupie, Sultan, and Rupan). J. C. Jha (1974) provides a list of surnames in his Indo-Trinidadian community, and only one is similar to one in our community: namely, Gopal or Gopaul, which could be related to Goupie among the Culís. Jha notes that the Indian indentured servants usually had no surnames when they came to Trinidad. Thus, it stands to reason that the first Culí migrants adopted English surnames on their way to Costa Rica. Jha also provides a list of first names in his Indo-Trinidadian community, but we found none of these names in our group, the members of which only have English or Spanish first names.

Discussion
Although anthropologists have been interested in the migration of Afro-Jamaican laborers to Costa Rica, they have been mostly unaware of the migration and settlement of indentured servants from prepartition India, who were part of a diaspora that produced sizable populations in Trinidad, Suriname, and Guyana. Thus, some anthropologists knew of the migration of the first Culís but thought everyone had died and that there was no community left. Even though we know very little about the origin of this community, we found them to be a clear ethnic group that saw itself as different and separate from their neighbors and who were recognized as such by the latter. At the same time, the community has no ties with their Indian homeland or with any diasporic communities. For example, only one of their last names appears to be similar to those from the Indo-Trinidadian community, but none is exactly the same. Probably because of their small numbers and isolation from larger Indian-derived groups, the Culís have neither maintained obvious traces of the Hindu or Muslim religions nor kept any traces of Indian clothing or language (except for a few words, mostly referring to food). But they have not adopted Christianity wholeheartedly, either. The lack of more clearly Indian cultural traits among the Culís—such as is usually seen in Guyana, Trinidad, and Suriname—mirrors what is reported by A. S. Ehrlich (1971) in Jamaica.

Whereas the oldest generation favors speaking in English—as a matter of fact, the oldest member of the community does not speak any Spanish, even though she was born in Costa Rica—the younger generations favor Spanish. This is a similar situation to that seen among Afro-Limonenses who are abandoning their Creole—affectionately named /mekaytelyuw/ (from Jamaican Creole in which “make I tell you . . .” means “Let me tell you . . .”; see Herzfeld 1995)—in favor of Spanish. We should add that although our team regretfully did not include a linguist, to our anthropologists’ ears the English spoken by the Culís was quite different from that spoken by the Afro-Limonenses. Specifically, the Culís’ English sounded more British.

Although union dissolution does not appear to be as high among the Culís as it was among the Indo-Surinamese in the 1960s, serial monogamy was relatively frequent. We should also note that the residential arrangements we see in the Culís are different from those seen in their Afro-Limonense neighbors. The latter, who also have relatively
frequent union dissolutions (as compared with the rest of the Costa Rican population), tend to live in houses that are headed by a great-grandmother or a grandmother and which include middle-aged daughters, their daughters of reproductive age, and their children. This arrangement has been frequently referred to as the Caribbean matrifocal family (Ho 1999). In contrast, among the Culís, we see more households headed by single males or females, in addition to households headed by both a male and a female. Thus, we see the Culi family structure is different from that of the Afro-Limonense group or the wider Costa Rican population (mostly nuclear).

How have the Culís, currently numbering fewer than one hundred, kept their sense of community and identity? We propose that their decision rules on who belongs to the group help to explain this to some extent. Whereas in Puerto Limón the offspring of a Hispanic and Afro-Limonense union would be considered to be Afro-Limonense, in the Culi community the offspring of Afro- or Hispanic Limonenses and Culis is considered to be Culi. Then there are discussions and jokes about who is a “real” or “full-blood” Culi and who is not. Yet several of our key informants of middle age descend from the union of a Culi with a non-Culi and have no doubt that they belong to the community. It is interesting to consider whether the non-Culis who married in were using this marriage as a means to bolster their socioeconomic status (SES) and that of their offspring. At this point, we do not think this is the case. Whereas the Culís live in a small settlement in which some people still fish and raise their food in their own land, their Afro- and Hispano-Limonense neighbors live in a fully urban environment. This difference in economic activity, however, does not necessarily imply that one group occupies a higher SES into which members of the other groups want to marry.

As keen as the Culís were to see the offspring of these unions as their own, they were even keener to avoid close-kin mating, and at this they were exceedingly successful. We computed the inbreeding coefficient using two methods: namely, by pedigree analysis and percentage of consanguineous unions. These methods yielded exactly the same coefficient, namely 0. A union-by-union analysis of matings in which both partners were known revealed that none was consanguineous even to the third degree. Thus, whereas individual members had many relatives in the group, no one was born to a consanguineous mating. We acknowledge that we do not know the identity of a few parents in the community, so we might not have detected the occurrence of rare close-kin mating. But the bottom line remains that these would be rare.

This avoidance of close-kin mating is similar to that seen in other Indo-Caribbean groups, which, however, have large sample sizes and even live in several settlements. This avoidance also tells us that the ancestors of the Culís probably were Hindus from north-central India, as the literature tells us that Muslims and southern Hindu Indians favor consanguineous marriages. Thus, in terms of preferred marriage partners, we see clear similarities between the Culís of Limón, the other Indo-Caribbean groups, and some populations from India. It could also be argued that the inbreeding avoidance we see in the Culís is not a result of “sociocultural mores” but that they simply had no other recourse but to mate with outsiders because no one (relatives included) of the same age group was available (Alfonso-Sanchez and Peña 2005). A cursory look at the pedigree shows that this is not the case, because possible mates were available in most generations. However, these individuals were related to each other.

In that the Culís allow marriage with non-Culis, our community departs from the stated marriage preference and the practice seen in Trinidad, Suriname, and (former) British Guiana in the 1960s (Klass 1961; Speckmann 1965). Although Klass (1961) does not even mention the occurrence of marriage with non–Indo Trinidadians in his community, Speckmann (1965) speaks of them as rare in Surinam. Clearly, in other Indo-Caribbean communities, there was strong resistance and disapproval of interethnic unions. This was not the case among the Culís, who frequently married non-Culis. What was crucial to the survival of our community was that the offspring of these unions were seen as belonging to it, were seen as Culís.

Klass (1961) and Speckmann (1965) both note that the prohibition against close-kin marriage was more easily enforceable in Trinidad and Suriname (respectively) for the earlier generations in their communities. However, as time went by, and families had exchanged partners with most other families, it became more difficult to find acceptable, nonconsanguineous partners—this, in the face of a virtual prohibition against marrying with people of other ethnic groups. In the case of the Culís, their openness to marrying non-Culis allowed them to maintain the prohibition against close-kin mating. A look at the Culi pedigree makes us think that they have reached the point in which they will have to start marrying Culís to whom they are related or that most marriages will have to be with non-Culis. We have to wonder, if they choose the latter option, if they will be able to maintain their community as the viable ethnic group it has been for several generations. As Westfalia becomes enveloped in the blossoming tourist industry, and more economic opportunities become available to the young people, the latter are more likely to migrate out, and the community will be increasingly threatened. Whereas the expansion of the British imperialist economy brought the Culi ancestors to Westfalia, the expansion of the world capitalist economy will likely contribute to their downfall.

Indeed, when we went back to the community two years after our initial field work, one of our key informants was dead, and Westfalia was then inhabited mostly by non-Culis. Another key informant who lived in the central valley foretold the community’s future as thus: Her elderly mother owned land by Westfalia, which was worth little now, but in a few years, because of the tourist industry, would be worth a lot. They would eventually sell their land and move permanently out of Westfalia. She said that she had no
desire to go back and live there where life is hard and she could not hope to find a husband because everyone was her cousin. She is probably right. After eight generations, the Culis are probably beginning to disappear as a viable ethnic group.

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NOTE

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