LARGE-SCALE COOPERATION AMONG SUNGUSUNGU "VIGILANTES" OF TANZANIA: CONCEPTUALIZING MICRO-ECONOMIC AND INSTITUTIONAL APPROACHES

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ABSTRACT

Sungusungu non-state justice organizations in Tanzania exemplify large-scale cooperation. Sungusungu third-party enforcers protect property and resolve interpersonal disputes for ethnic Sukuma and individuals from other ethnic groups who have joined the hierarchically structured organizations. We use ethnographic and experimental data to highlight the importance of institutional forces when attempting to understand patterns of large-scale cooperation. We acknowledge the usefulness of considering micro-economic theories (e.g. costly signaling theory) to understand Sungusungu, but show that social institutions and a human predisposition to act as a "strong reciprocator" are important mechanisms to explain both the origins and maintenance of Sungusungu cooperation.

Socioeconomic Aspects of Human Behavioral Ecology
Research in Economic Anthropology, Volume 23, 117–145

ISSN: 0190-1281/doi:10.1016/S0190-1281(04)23005-0

INTRODUCTION

Ethnic Sukuma from northwestern Tanzania created "vigilante"[1] non-state justice organizations in 1982 because they believed the Tanzanian justice system was too corrupt and unreliable to protect them. Sukuma agro-pastoralists experienced particular problems when cattle rustling rates increased due to an influx of unemployed and armed men following the end of the Ugandan war in 1979 (Bukurura, 1994). To resolve the problem, the Sukuma created a hierarchical justice system that in their native language became known as *Basalama*, or "people of peace." The system later came to be called *Sungusungu*, a Sukuma word for poison, and a Swahili word for a local type of highly cooperative and aggressive black ant. Both words were fitting; the Sungusungu aggressively controlled cattle rustlers (sometimes using poison arrows) with swift and severe punishments. The system was soon adapted to enforce customary rules (including the punishment of suspected witches), as well as to resolve most types of interpersonal disputes (e.g. adultery, debts). Within a year, the Sungusungu system had spread from northwestern Tanzania to Sukuma populations living in distant regions across the country to create in effect a quasi-national justice institution (Heald, 2002; Paciotti, 2002).

Upon emergence, all ethnic Sukuma were expected to join Sungusungu. To facilitate the initiation process, Sungusungu leaders traveled to distant areas to teach the system to Sukuma villagers (Bukurura, 1994). Those failing to swear loyalty to their local village Sungusungu chapter were suspected to be thieves, publicly identified, and forced to repay their debts to the community. To govern the new movement, elected organizational leaders and committees were created at each of Tanzania's village, ward, division, district, and regional political levels (Bukurura, 1994). Today, enthusiastic support of Sungusungu by most Sukuma, as well as a sophisticated organizational system, results in effective large-scale cooperation both within and between distant villages. An example from the traditional Sukuma territory in northern Tanzania illustrates the magnitude and scope of Sungusungu cooperation (Hangaya, 1989). In 1987, suspecting that some villages were harboring cattle thieves, ten thousand Sungusungu members ostracized entire villages by forbidding villagers to enter or leave. The villages were sealed for an entire month until their groups paid the Sungusungu a fine.

The Sungusungu system raises theoretical questions about how large groups of individuals can motivate the necessary number of volunteers to create and sustain such a large-scale cooperative system. To explain such cooperative behavior, models based on dyadic forms of interaction are not applicable; Sungusungu enforcement involves very large numbers of individuals who are often strangers with no prior social interaction. Considering this problem, we summarize two

different theoretical approaches. First, micro-economic approaches assume self-interest, and that individual-level forces (e.g. augments to one's individual reputation) are sufficient to explain cooperation. Second, institutional approaches assume that institutional rules are important societal structures that have evolved (possibly by cultural group selection) to facilitate cooperative behavior; rules encourage individuals to not only punish deviants, but also those who fail to punish deviants. In addition, through the process of gene/culture coevolution, humans may have become "strong reciprocators" who – even at a personal cost – initially cooperate in social dilemmas or administer sanctions to defectors. Hereafter, we refer to the institutional and coevolutionary perspective under the theoretical paradigm in which these processes have been modeled – cultural inheritance theory (CIT).

We conducted research among a few Sungusungu organizations in the Rukwa region of Tanzania. Our findings, like other studies (Abrahams, 1998, 1989, 1967; Bukurura, 1994; Fleisher, 2000; Heald, 2002; Paciotti, 2002), indicate that Sungusungu members cooperate between local and distant villages throughout the country to identify, apprehend, and punish social deviants. With a description of Sungusungu cases, we first illustrate the large-scale nature of Sungusungu operations, and suggest that mechanisms such as kinship and indirect reciprocity are by themselves unlikely to explain the cooperation achieved by Sungusungu (Henrich, 2003). Next, using ethnographic and experimental data, we find support for three predictions generated from CIT. We conclude that CIT, in stressing the role of institutions and strong reciprocity, should be integrated with other evolutionary fields such as human behavioral ecology to form more a complete understanding of large-scale cooperation.

THEORIES OF LARGE-SCALE COOPERATION

Cooperation, or collective action for mutual benefit, involves two or more individuals interacting to coordinate their actions to achieve some end – usually a collective good (Smith, 2003). Some collective goods, such as the policing and justice provided by Sungusungu, come in the form of public goods; the benefits of controlling deviants – regardless of who participates – can be enjoyed by all. These situations take on the payoff structure of the well-known Prisoners' Dilemma game in which individual and group-level interests conflict. Individuals lack the incentive to cooperate because the expectation that others will free ride decreases their net benefits (Olson, 1965). In this section, we consider both individual and group-level theories posited to resolve the problem of large-scale cooperation.

Methodological Individualism and Large-Scale Cooperation

Human Behavioral Ecologists (HBE) and many economists in the rational choice paradigm assume that individuals strategically interact to maximize their own selfish interests. Scholars from HBE are interested in evolutionary explanations of human behavior, whereas rational choice theorists are less concerned with questions about the origins of preferences (but see Bowles, 1998; Hirschleifer, 1977). Although these fields are distinct, they both share a preference to evaluate human behavior from the perspective of individual strategic action (Nettle, 1997). Thus, hereafter we will refer to these scholars under the label "methodological individualism," or (MI). MI theorists explain cooperation by mechanisms involving kinship[2] (Hamilton, 1964), reciprocity (Trivers, 1971), signaling (Smith & Bliege Bird, n.d.), and punishment (Axelrod, 1986). In general, cooperation results if individuals can identify which individuals in a population to cooperate with (or punish). For example, models of indirect reciprocity suggest that if cooperative individuals (but not defectors) receive a reputation for their prosocial behavior, other cooperators can reward them by reciprocating cooperation. Models involving costly signaling theory also stress the importance of differentially associating with individuals who are likely to cooperate, but provides a way in which individuals can be assured that a potential "cooperator" is not faking such intentions. By engaging in behaviors that are costly to fake (e.g. taking extreme risks to capture thieves), individuals can signal that they are worthy of cooperation, and thus reap the benefits of these interactions.

Kinship, reciprocity and signaling are all likely important for many dimensions of smaller-scale cooperation and interaction, but additional models and empirical data illustrate that such processes are insufficient themselves to explain large-scale cooperation (Henrich, 2003). This is mainly because the problem of cooperation in dyads (e.g. mutualistic exchange of goods) is much different from cooperation among larger groups (Boyd & Richerson, 1989; Leimar & Hammerstein, 2001; see also Panchanathan & Boyd's, 2003 critique of Nowak & Sigmund, 1998). Bowles and Gintis (2003, p. 432) summarize the problem:

> Critical differences between dyadic and *n*-person interactions in this respect are that: (a) the number of accidental defections or perceived defections increases with *n*, and such "trembles" dramatically increase the cost of punishing defectors; (b) the probability that a sufficiently large fraction of a large group of heterogeneous agents will be sufficiently forward-looking to make cooperation profitable decreases exponentially as *n* rises; and (c) coordination and incentive mechanisms required to ensure punishment of defectors by self-regarding group members become increasingly complex and unwieldy as *n* increases.

As discussed below, the Sungusungu depend on hundreds or thousands of other members in local and distant villages to control cattle rustlers and other deviants.

Thus, we propose that these MI mechanism themselves are insufficient to explain Sungusungu cooperation.

MI researchers from both HBE and traditional economic fields often stress the importance of aggregate individual-level differences in technology and wealth to explain cooperation. For example, individuals with more property to protect might have unilateral interests to encourage cooperation by bringing sanctions against individuals who do not punish social deviants (Olson, 1965). Thus, men with larger cattle herds may be willing to hold leadership positions and reward or punish younger males who help or hinder them to capture and punish thieves. At a group level, these different payoffs to cooperation can create direct incentives to promote cooperation (Ruttan & Borgerhoff Mulder, 1999), as well as facilitate the emergence of cooperative social institutions (Smith, 2003). Although these are likely important forces, as group sizes get larger than a dozen, it becomes increasingly unlikely that the direct per capita benefits of cooperation will be greater than the cooperator's per capita costs (Boyd & Richerson, 1992).[3]

Institutional Theories of Large-Scale Cooperation

Social institutions, as defined here, are sets of cultural rules that uphold patterns of human behavior through sanctions (rewards and punishments) produced by individuals (Ellickson, 1991). Social institutions consist of primary rules that specify the substantive behavior to be controlled (e.g. police cattle rustling), and higher-order rules that encourage individuals to enforce primary rules. Higher-order rules (if enforced) reduce the second-order problem of cooperation by governing enforcement behavior. For example, other members enforcing higher-order rules could punish an individual failing to shame a Sungusungu member for missing a meeting. However, punishing and rewarding others is itself a public good that is susceptible to free-riding (Boyd & Richerson, 1992). Thus, a second and higher-order problem of cooperation occurs in which individuals are tempted to free ride from their duties to punish and reward individuals for cooperating or defecting (Sober & Wilson, 1998). To resolve this problem, we first consider the origins of social institutions, and then ask how such structures can maintain cooperation. Finally, we illustrate how CIT, in tracking cultural evolution on both long and short timescales, bears on the three hypotheses we examine in this paper: (1) institutional sanctions; (2) strong reciprocity; and (3) prosocial cooperative outcomes that are possibly the result of cultural group selection.

Methodological individualists focus on the outcomes of individual choices within ecological or economic constraints, thus often discount the importance of cultural evolutionary processes and resulting cultural diversity (Henrich &

Boyd, 1998, p. 232). However, many researchers from HBE and subfields within economics and sociology do attribute importance to social institutions (Alvard & Nolin, 2002; Bates, 1994; Ensminger & Knight, 1997; North, 1990; Sosis, this volume). These researchers (and those from the CIT perspective) generally agree that cooperation can be resolved if institutional rules constrain individual behavior and reduce transaction costs (Ellickson, 1991). However, the most important question to MI researchers (Smith, 2003), as well as those working from a CIT perspective (Henrich, 2003), is to understand the origins of institutions; assuming social institutions resolve the cooperation problem only pushes the problem to a different level: what processes generated the social institutions in the first place?

To explain institutional origins, MI theorists recognize numerous processes that facilitate the emergence of higher-order cooperative rules. For example, cooperative rules are more likely to evolve in populations in which: (1) most individuals benefit from the institution; (2) there are membership boundaries; (3) the group is small and individuals interact over a period of time; and (4) group members are relatively equal with similar interests (Acheson, 2002). Group equality may be related to the fact that the emergence of norms is less problematic in games of coordination (e.g. driving on one side of the road) because there is less individual conflict over the pattern of behavior to be followed. However, when conflict exists (as it does in cooperation problems), institutional rules will often emerge to uphold the interests of those with the most bargaining power (Ensminger & Knight, 1997). In support of this perspective, there are plentiful examples of institutions that are biased in favor of categories of people with greater access to resources and power (Smith, 2003). However, there are also examples of institutions that do provide prosocial services, and some MI researchers have argued that MI approaches concerning institutional origins may be limited (Acheson, 2002; Eggertsson, 1990).

Researchers from CIT (Boyd & Richerson, 1992; Henrich, 2003) posit that in addition to individual-level processes, group-level processes are likely required to explain the emergence of cooperative institutions that produce "other-regarding" behaviors such as voting, giving to charities, and fighting in foreign wars (Bowles & Gintis, 2003). More specifically, CIT suggests that cultural group selection (unlike genetic group selection) is a plausible force among human groups due to social learning processes that maintain within-group variation so that between-group selection can occur.[4] Henrich and Boyd (2001) build upon previous models of cultural evolution (Boyd & Richerson, 1985) and illustrate that to reduce decision-making costs, humans often conform to the behavior of others in the group. As a result, higher-order rules that motivate sanctions are likely to be learned (copied) by most group members. Once such rules are common (and assuming people

are willing to enforce them as discussed below) there is weak selection against rule sanctioning (Boyd et al., 2003). With reduced intra-group variance, variance between groups becomes more sharply defined, and inter-group selection can be stronger. This argument is similar to Sober and Wilson's (1998) discussion about the relative ease of cultural group selection acting on higher-order rules. As a greater proportion of individuals in population enforce higher-order rules, the enforcement costs can be reduced for each individual. For example, if most people are willing to enforce the rules, cheap mechanisms such as gossip can have a substantial influence on an individual breaking a primary rule. An individual can quickly gain a bad reputation (and the costs of having such a stigma) when most of his or her peers are gossiping.

Theory from CIT leads us to three hypotheses about Sungusungu cooperation. First, in documenting the sophisticated set of Sungusungu higher-order rules, we suspect that sanctions resulting from these are important in maintaining the system. Although the direct benefits of participating in Sungusungu are likely substantial (e.g. living in a community free of thieves), we need to explain *how* such cooperation can be maintained among such large groups. Thus, in our first hypothesis concerning Sungusungu, we posit that institutional sanctions cannot be ignored. Hypothesis 1: sanctions provide indirect incentives to motivate Sungusungu cooperation.

Second, to explain why individuals are willing to pay the costs of rewarding and punishing other individuals for their cooperative or non-cooperative behavior, CIT scholars argue that the process of gene/culture coevolution, along with cultural group selection, led to human preferences to cooperate with both non-kin and individuals one is unlikely to engage with in future interactions. In contrast to the "weak" reciprocity mechanism discussed above, most humans may act as "strong reciprocators" by coming to a new social situation with a predisposition to cooperate with others and punish defectors – even at a personal cost (Fehr et al., 2002). Evidence for this comes from experimental economic games in which individuals in non-iterated, anonymous situations often cooperate initially, and punish free riders with costly sanctions (Henrich, 2003). However, such preferences are influenced by institutional rules of social groups, thus the magnitude and scope of "strong reciprocity" is often conditional on cultural variation (Henrich et al., 2001; Paciotti & Hadley, 2003). As discussed below, different Tanzanian ethnic groups have different cultural histories; the Sukuma are predisposed to large-scale cooperation, whereas the Pimbwe are not. Although individuals from both ethnic groups are likely to act as strong reciprocators, we predicted that Sukuma individuals would be more prosocial than Pimbwe, especially across a wide social scope. Hypothesis 2: Sungusungu cooperation is influenced by "strong reciprocity" and institutional context.

Finally, numerous empirical studies suggest that cultural group selection has been an important force among human groups (Kelly, 1985; Stark, 1997; Wilson, 2002). An important outcome is that cultural group selection can create institutions that limit within-group conflict and curtail one's self-interests. We suspect that Sungusungu is based on foundation of institutional rules that were at some point influenced by group-level processes such as cultural group selection. With few data, we can only speculate on the processes that led to the emergence of Sungusungu. However, the outcomes of such processes can be measured, and we predicted to find to Sungusungu behaving as an adaptive system. Hypothesis 3: Sungusungu, although imperfectly, limits internal corruption, and provides prosocial services to the community as a whole.

SITE DESCRIPTION AND ETHNIC GROUPS

Ethnographic fieldwork was conducted in the Rukwa region (Mpimbwe Division, Mpanda District), specifically in the villages of Mirumba and Kibaoni (Fig. 1). Pimbwe, Fipa, Sukuma and a few individuals from other ethnic groups live interspersed in villages south of Katavi National Park. The Pimbwe (original inhabitants of the area who hunted game and cultivated maize) now mainly depend on horticulture following the implementation of a national game reserve. After the state settlement scheme in the 1970s (*Ujamaa*), some of the Pimbwe were forced to leave their isolated households within the forest areas and locate centrally in villages that now contain a few thousand people. The Pimbwe political structure during pre-colonial periods involved loosely linked clans controlled by a chief in a centrally located village (Willis, 1966). Ethnographic data in the study region confirms the persistence of smaller scale institutions that encourage cooperation within smaller units such as clans or villages. Pimbwe have few large-scale gatherings or events involving individuals from outside the extended family or friendship networks. They interact mostly with their families and friends from their village. As a result, Pimbwe residential mobility is low, and most individuals live in the village in which they were born (Holmes, 2003)[MSA1]. Concerning social control, the Pimbwe rely mainly on the state justice system, gossip, and personal violence to mediate disputes. Finally, due to multiple social and economic forces, Pimbwe institutions have decayed, and few individuals beyond a few elders remember traditional beliefs and customs (Paciotti & Borgerhoff Mulder, 2004) The second ethnic group are the Fipa from the nearby Fipa plateau located a few kilometers south of the study villages. A substantial number of them have migrated to the area from the plateau to the lowland areas of Rukwa. Many Fipa live dispersed within Pimbwe villages, but others live a few kilometers outside of

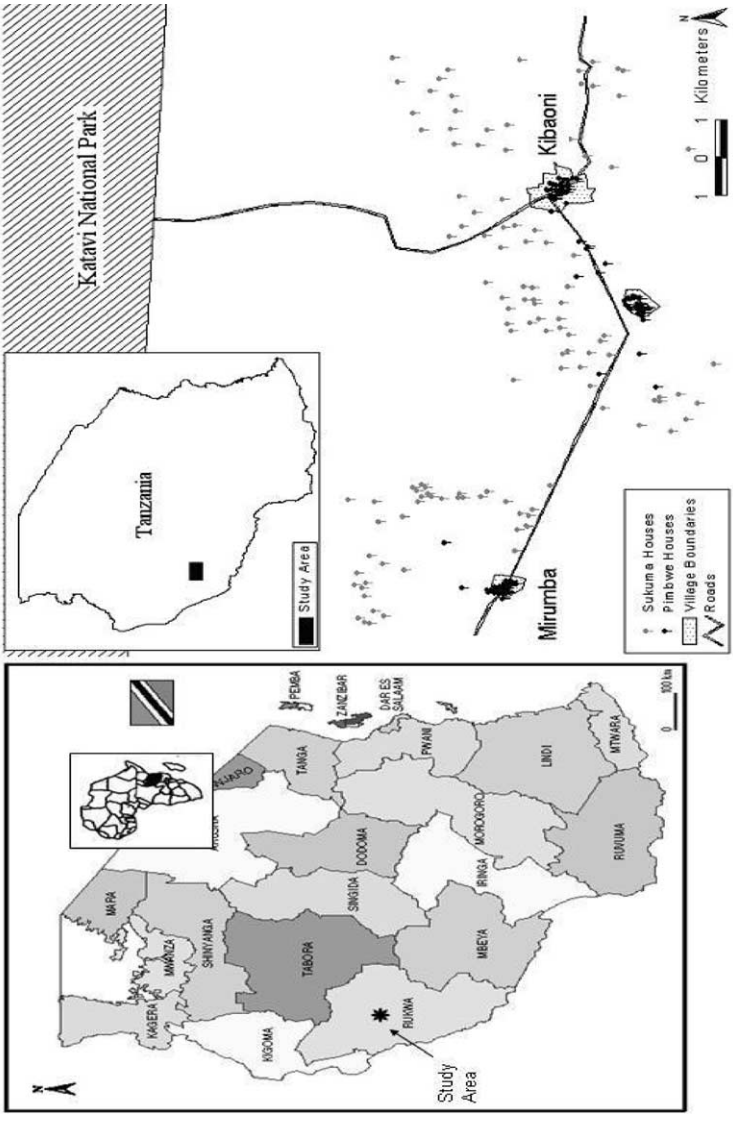

Fig. 1. Map of Tanzanian Regions and Study Area.

the village in smaller isolated settlements. They are linguistically and culturally similar to the Pimbwe, yet historically were involved in larger scale cooperative due to stronger chiefdoms (Willis, 1966).

Sukuma agro-pastoralists, the third ethnic group, migrated in large numbers starting in the 1960s from the Shinyanga and Mwanza regions (Fig. 1). After a short time, Sukuma reached the Rukwa region, as well as more distant regions of Tanzania (Galaty, 1988). In the study area, the Sukuma live outside of the Pimbwe villages in large extended households, and often cultivate large amounts of maize, sweet potatoes, millet, and rice. In addition, many Sukuma households have a few dozen cattle, and some have large herds numbering in the thousands. In comparison to the Pimbwe and Fipa, the Sukuma have social institutions that operate on much larger scales. Historically, the Sukuma lived in a multiple chiefdom system in which local chiefs controlled large areas but also cooperated with distant chiefs. Sukuma cooperate at larger social scales than the Pimbwe. In the study area, they organize yearly dance competitions in which almost all Sukuma from the neighboring villages (between 2 and 15 miles away) come to compete and socialize. There is a continual influx of new Sukuma migrants, and individuals quickly integrate within their new communities. In contrast to Pimbwe, Sukuma have strong symbolic ethnic markers signaled by jewelry, colorful capes, and hats.

SUNGUSUNGU: HIERARCHY, PUNISHMENT, IDENTITY, LEGITIMACY

It is an important qualitative finding that the Sungusungu has all of the institutional components described by Richerson and Boyd (1998). Sungusungu, similar to armies or state bureaucracies, benefits from structures or processes that form: (1) organizational hierarchies; (2) higher-order institutional rules producing rewards and punishments; (3) in-group symbolic identity; and (4) legitimacy. In this section, we illustrate the importance of these components within the Sungusungu institution. This qualitative framework will provide a background to explore the hypotheses in later sections.

First, organizational hierarchies strengthen the lines of command and control through nested hierarchies of offices or units. The Sungusungu hierarchy is structured like an army in that it defines membership and provides leadership structures to guide specific actions. However, unlike many armies or large-scale organizations, Sungusungu is a voluntary organization without direct monetary remuneration. During the initiation process, leaders informed villagers that by joining the organizations they would receive the benefits of living in an area free of cattle rustlers and other thieves. However, as stressed below, the Sukuma

mandated participation; those not joining Sungusungu were assumed thieves. In addition, individuals from other groups were given an opportunity to pay a fee to join the organizations. By limiting membership to Sukuma and individuals who pay the joining fee, the Sungusungu internalize the benefits of the public goods they provide. Although the organization cannot exclude the benefits of overall reduced levels of crime and deviance, they are able to limit some of their services to those individuals who are members of the organizations; Meonly upstanding members earn the privilege of being able to ask Sungusungu for help.

With a large number of subordinate members, Sungusungu requires formal leadership structures. At the lowest political level, Sungusungu leadership is organized to control the affairs of each village. A chief called the *Ntemi* holds the highest village-level rank. Working with the Ntemi is a secretary who documents all organizational business. The Sungusungu emphatically stress the importance of preventing corruption, thus they document in writing all their decisions and actions. Second in command to the Ntemi is a chairperson (*Mwenyiketi*) who uses charismatic speaking skills to lead meetings and trials. Although the leaders have substantial prestige and power to lead, each village has an elected committee of a few dozen men who through discussion and voting procedures work with the leaders to make decisions. Finally, a rank-and-file of commanders and guards (police) are responsible for the apprehension of cattle thieves and other deviants. Each village has a grand commander who dictates orders to lower-ranked commanders who control about a dozen guards living in their section of the village.

Effective inter-village Sungusungu cooperation is achieved by higher-level leadership structures. At each level of the Tanzanian political system an elected leadership, similar to the system described for the village, controls the lower-level Sungusungu chapters. Thus, an Ntemi, chairperson, secretary, and a dozen or so council members are responsible for Sungusungu affairs in their ward, division, district and region. The higher-level governing is important for coordinating efforts, as well as controlling possible corruption within the system. Higher-level leaders seek information about the behavior of village leaders and call meetings to assess how well individuals performed their duties.

A second mechanism to explain large-scale cooperative institutions – higher-order institutional rules producing punishments and rewards – is important in Sungusungu (Boyd & Richerson, 1992). Leaders and council have the power to extract large fines from social deviants. Those found guilty of crimes such as stealing cows can be fined any number of cattle, goats, or chickens depending on the severity of the violation. Offenders are required to: (1) pay back the loss to the victim; (2) pay a fine to the Sungusungu (1000 Tanzanian shillings in the study area); and (3) remunerate any Sungusungu members for costs accrued during the case. In addition, the organizations have strict rules and punishments to control their

members. Organizational rules mandate attendance and punctuality to all meetings, bringing thieves and witnesses to the Sungusungu court by guards, and general compliance to any order from high-ranking members. Rules prohibit the slandering of the organization or its leaders, mandate the reporting of all crimes to appropriate leaders, obeying ostracisms, and never lying or stealing; even the slightest dishonest remark or the "borrowing" of organizational property are serious infractions. Other important rules forbid council members from spreading information discussed in the secret meetings. Finally, any information about thieves must be brought to the committee immediately so that thieves do not have the opportunity to flee – failure to do so may result in a fine. Although few of these rules are codified in Sungusungu records, there is consensus (at least within villages) about what the rules are and what sanctions they produce. The council members are responsible to meet, and through an open forum, come to an agreement about the exact fine or other sanction to be administered (Paciotti, n.d.).

Sungusungu members are entitled to a fraction of the fines (usually in the form of cattle) that the organizations collect. Sungusungu in the study area, as well as in the area described by Bukurura (1994), use part of the fines for extravagant feasts in which all members are welcome to eat and drink. In the study area, thieves stealing major items such as livestock are fined two cows; one cow is eaten at a Sungusungu feast, and one cow is saved for the village Sungusungu bank. The bank is an informal way to store fines obtained by the organizations. The Ntemi keeps the fines, but the secretary writes down the amount of money or livestock he is holding, and members monitor the Ntemi to ensure that he is not expropriating the funds. Resources in the bank are saved for future Sungusungu expenses such as expeditions to retrieve stolen cattle or even as a source of loans for needy members.

Third, in-group symbolic identity as defined by forces such as institutional rules or ethnicity can stimulate cooperative behavior by shifting preferences to sustain group over individual interests as well as promote interpersonal trust (McElreath et al., 2003). As shown below, it is interesting that most Sukuma participate in Sungusungu due to an ethnic mandate for their compliance. Finally, those involved in the system must view the organizational sanctioning systems as legitimate. Elsewhere the senior author discusses the democratic nature of Sungusungu (Paciotti, n.d.); there is general enthusiasm to control organizational corruption and challenge the decisions of leaders and council members. We illustrate this point with examples below.

Our description of the Sungusungu illustrates that institutional rules likely exist, and set up a strong foundation for large-scale cooperation. Although we have little data about the processes leading to the emergence of Sungusungu, we know that in pre-colonial times of the past few centuries, sophisticated Sukuma

institutions had the ability to promote large-scale cooperation. The Sukuma had neighborhood organizations, secret societies, dance societies, and male youth associations (Abrahams, 1967) that likely prepared them for the introduction of externally sponsored socioeconomic programs (Iliffe, 1979), and political mobilization campaigns that took hold in northern Tanzania in 1959 (Abrahams, 1965). Associations of young boys performed duties similar to Sungusungu such as searching for lost cattle or relaying messages, and the courts assembled by Sungusungu are similar to the traditional neighborhood courts (Abrahams, 1965). The rapid emergence of Sungusungu, and its spread to Sukuma villages across the country in a few years, is testimony to the hypothesis that Sukuma were already well endowed institutionally to engage in large-scale cooperation (Bukurura, 1994; Paciotti & Borgerhoff Mulder, 2004).

METHODS

Ethnographic fieldwork in the Mpimbwe Division of Mpanda District amounted to 10 months spread over three trips; 1998 (Aug.–Oct.), 1999 (July–Sept.), 2001 (April–July). One of us (Paciotti) became a member of the Sungusungu during a pilot trip to the field site and was invited to attend all meetings and activities.[5] Because Paciotti was invited to be a council member in the committee, he had the opportunity to attend secret meetings open only to committee members. Using participant observation techniques, he gathered information during meetings and activities in order to document rules and patterns of Sungusungu behavior. In the final trip to the study site, a survey about attitudes toward Sungusungu was conducted among Sukuma and non-Sukuma.

The survey was designed for Sungusungu members, including both Sukuma ($N = 42$) and non-Sukuma individuals ($N = 26$). Male head of households were interviewed in most cases, but in a few cases, the sons of household heads were interviewed in place of their fathers because some older men had difficultly understanding Swahili. Sampling for the survey was non-random because it was often difficult to locate specific individuals when needed. For example, men were often on trips tending to their rice fields or cattle herds. Although some sampling bias may exist, the survey questions generally corresponded with the more in-depth interviews conducted among key informants. With respect to wealth asymmetries, we discovered from an earlier census of the village that wealthier Sukuma herders live in specific areas. Thus, Paciotti made an effort to visit households in all of these areas, and we believe the sample captures a great deal of variation with respect to household wealth. Finally, a sample of Sukuma and Pimbwe played different roles in the Ultimatum and Dictator games developed by economists. The procedures

used in these experiments are discussed below, and in more detail in Paciotti and Hadley (2003).

ETHNOGRAPHIC AND EXPERIMENTAL RESULTS

In this section, we first document the large-scale nature of Sungusungu cooperation. We present a sample of cases that illustrate the sophisticated level of inter-village cooperation to resolve problems that go beyond the local village. In the next subsections, we evaluate each of the three hypotheses concerning CIT and Sungusungu cooperation.

The Nature of Sungusungu Cooperation

Through both personal experience and documentation of Sungusungu case records, we found that the organizations effectively cooperate with all nearby and distant organizational chapters (Table 1). In one case, thieves armed with guns and machetes violently robbed a nearby store. Sungusungu guards from five neighboring villages responded to the alarm call and stood guard at all of the major trails and roads leading out of the area. They apprehended two of the four thieves. In another case, the Sungusungu in the study area received news that thieves were operating unpunished in a distant city 100 miles away. At the time, there were not any local Sungusungu to resolve the problem. Realizing the need to control these deviants, the Sungusungu of Mirumba financed transportation and lodging costs for their leaders and about forty Sungusungu guards to apprehend and punish the thieves. Next, it is interesting that the Sungusungu treat all cases very seriously. In in In one case, a group of dancers was hired by a Sukuma family to perform for them while wedding their crops. A cattle horn was sounded to alarm the Sungusungu that another group of Sukuma had "stolen" the dancers so that they could perform at their weeding party. Informants estimate that about 50 guards and their commanders cooperated to bring these rather benign "thieves" to the village court for punishment. In addition, we have witnessed young Sungusungu guards from distant villages looking for suspects and gathering information to resolve cases. Such cooperation is facilitated by Sungusungu rules that mandate the local Ntemi to provide assistant to other Sungusungu members on missions or in distress.

Ostracism cases also illustrate members' widespread commitment to cooperate between villages. In the study area, we found evidence that the Sungusungu are able to completely ostracize individuals from other Sungusungu members (effectively

Table 1. Examples of Sungusungu (SS) Cases Involving Inter-village Cooperation and Trust.

Event Type (Frequency)	Actions Taken	Scale of Cooperation
Store Robbery (1)	Locate and find armed thieves	200 + guards
Apprehend thieves stealing dancers (1)	Dancers hired to perform at a weeding party were "stolen" by another group	40–50 guards
Visit by Tanzanian President (1)	Ward-level government asked SS to buy food for president; SS contributed 2 cows and 10 guards for greeting	40 + people in meetings; select group of guards
Mission to punish thieves in distant city (1)	Large mission to go to city of Mpanda to locate and punish thieves suspected of hiding there	100 + (?)
Meetings to punish SS leaders (3)	Ntemi in two incidents accused of stealing from SS	100–200 members at meetings
SS elections (numerous)	SS elect leaders by having voters line up behind candidates	200–300 members for some meetings
Ostracisms (3–4)	All SS members forbidden to interact with ostracized individuals	All SS members
Truck accident (1)	Overturned truck with rice was protected by SS guards from possible looters	20 + guards (?)
Guards search for stolen cattle (1)	Guards from different Tanzanian regions (300 + miles) cooperated with local SS	Guards unlikely to meet local SS again
SS letters arriving from distant SS chapters (numerous)	Letters with information about stolen cattle sent to local SS from other distant SS organizations	SS from many villages pass on letters
Enforcing prohibitions during cholera epidemic (1)	Village and ward authorities asked SS to guard checkpoints	SS guards from three villages
Search for lost man (1)	A man lost in the forest and was found by the SS	Numerous SS guards
Rapid incorporation of new leaders (1)	Ntemi from a distant northern village was immediately asked to be the Ntemi in Mirumba	SS of Mirumba

all Sukuma in the ward and beyond), even from their own kin and other individuals who depend on them. In one case, Sungusungu ostracized a Sukuma storeowner for adultery. Sukuma customers living in different villages obeyed the ostracism even though they depended on his products. In another ostracism case, all Sungusungu members were forbidden to interact with the offender. His family was not allowed to interact with him, and Paciotti was informed that he would be fined if he tried to interview him.

These and other cases in Table 1 illustrate that large numbers of individuals cooperate to control thieves and provide other prosocial services discussed in more detail below. To evaluate the mechanisms of cooperation, it is important to recognize that Sungusungu participants often cooperate with non-kin that they are unlikely to interact with in the future. For example, in contrast to the more sedentary Pimbwe and Fipa, the Sukuma are constantly on the move to find better pastures for grazing and cultivation (Galaty, 1988). As a result, the Sukuma are likely to have low levels of genetic affinity with other Sukuma in the area, as well as discount the likelihood of interacting with the same Sukuma individuals in the future (Holmes, 2003). In sum, although kinship and reciprocity are likely important mechanisms sustaining Sungusungu cooperation within segments of villages (Richerson & Boyd, 1998), such mechanisms likely work in concert with the institutional arrangements described above. Considering the theoretical models discussed above, these examples of Sungusungu interaction suggest that kinship and "weak" reciprocity mechanisms are unlikely to explain Sungusungu cooperation.

Hypothesis 1. Sanctions Provide Important Indirect Incentives to Cooperate.

Table 2 presents all of the cases heard by the Mirumba Sungusungu committee over a four-year period. The variety of cases illustrate that the Sungusungu are concerned with punishing thieves, as well as resolving debt conflicts, adultery cases, and other inter-personal disputes. Sungusungu members described debts and adultery cases as variants of thievery that cannot be tolerated. Many respondents described that by punishing debtors and adulterers, they are ensured that they will not themselves be victims of such individuals in the future. Thus, Sungusungu members recognize the direct benefits of their actions (e.g. living in a community free of thieves). In contrast, indirect incentives are the rewards and punishments (material or symbolic) produced by institutional sanctions that encourage individuals to contribute to the policing efforts of Sungusungu. In this section, we first consider the direct incentives to participate, and then illustrate the relative importance of indirect incentives.

Leaders and committee members take fewer risks and experience fewer costs than the rank-and-file. Leaders experience the opportunity costs of traveling to the

Table 2. Summary of Sungusungu (SS) Cases From the Village of Mirumba (all Cases from January 1997 Through February 2001).

Case/Event Type (*N*)	Ethnicity of Offender/Victim	*N*	Sanctions
Debt dispute (23)	Sukuma/Sukuma	4	Debt paid to plaintiff
	Non-Sukuma/Non-Sukuma	7	
	Sukuma/Non-Sukuma	7	
	Non-Sukuma/Sukuma	5	
Theft (6)	Sukuma/Sukuma	3	Return property and fine of one cow
	Non-Sukuma/Non-Sukuma	1	
	Sukuma/Non-Sukuma	1	
	Non-Sukuma/Sukuma	1	
Farming/Herding dispute (5)	Sukuma/Sukuma	3	Repay amount of maize livestock ate
	Non-Sukuma/Non-Sukuma	1	
	Sukuma/Non-Sukuma	1	
Adultery/Domestic (4)	Sukuma/Sukuma	3	Serious offence; Fines between 2 and 4 cows
	Non-Sukuma/Non-Sukuma	1	
	Sukuma/Non-Sukuma	1	
	Non-Sukuma/Sukuma	1	
Slander/Lying (4)	Sukuma/Sukuma	3	Serious offenses with 1–2 cow fine or 5000 shillings
	Sukuma/Sungusungu	1	
Bridewealth dispute (3)	Sukuma/Sukuma	3	Settlement on bridewealth, and variable fines
Resisting arrest (1)	Sukuma/Sungusungu	1	1 cow and 10,000 shillings. Ostracized due to late payment
Witchcraft accusation (1)	Sukuma/Sukuma	1	6,000 Shillings

village and time spent in meetings that usually last one or two hours.[6] Potential risks to leaders include possible retaliation from fined individuals. However, institutional rules limit this possibility. Since a large number of individuals participate in punishment and because most members legitimate the punishments issued by the Sungusungu authorities, it is unlikely that deviants will retaliate. In contrast to the leaders, rank-and-file members often perform potentially costly and risky duties such as apprehending thieves and looking for witnesses. These duties are dangerous because many thieves in Tanzania are armed. We heard a few reports of Sungusungu guards being injured or killed while performing their duties. In addition, many Sukuma are fearful that the police cooperate with thieves by lending them resources and guns (Bukurura, 1994). However, most respondents stated that witchcraft and

other special techniques are used to reduce the risks of catching armed thieves. For example, the Ntemi uses his knowledge of traditional medicines to make the bullets from thieves' guns turn into water, and the guards practice clever techniques to render dangerous thieves harmless.

Although costs and risks are substantial to varying degrees among leaders and the rank-and-file, both groups receive direct benefits for performing their duties. First, all participants in good standing can ask Sungusungu for assistance if they should require it. Such a right is important since many of the problems people experience involve debts and adultery – both disputes that require a plaintiff to go to the organizations and ask for help. In addition, all upstanding members can enjoy the feasts that result from organizational fines. These feasts provide large amounts of meat and beer, and many informants discussed how members (especially older men) yearn for these occasions. Overall, attending Sungusungu meetings is a good excuse to come to the village to drink beer and gossip with friends. Second, acting as an exceptional leader or performing risky duties as a guard are costly signals that others may not be able to fake. Thus, individuals may benefit from increases in their social status, which can later be translated into other benefits such as mating opportunities (see discussion below about costly signaling theory). It is possible that this is why 70% of survey respondents said that they would seek a higher rank in Sungusungu.

We have substantial evidence that in addition to direct benefits of participating in Sungusungu, indirect benefits (and costs) received through institutional sanctions are an important force maintaining the Sungusungu system. First, if direct benefits drive much of Sungusungu participation, we should expect to find a correlation between participation in Sungusungu and wealth measures such as number of cows one is at risk of loosing to thieves. However, Paciotti and Borgerhoff Mulder (2004) found that regardless of such individual-level factors, most Sukuma claim membership to the organizations and offer some assistance to promote the group's goals. Thus, high rates of participation are likely influenced by the group-level forces. For example, upon emergence, Sukuma "law" mandated all Sukuma (including women and children) to pledge their allegiance to the organization; those failing to swear their loyalties during initiation ceremonies were suspected to be thieves, and promptly punished. In our sample, we found that all of the surveyed Sukuma respondents said that they were Sungusungu members, most claimed to participate in the past year, and almost every respondent stated that with the exception of thieves, they have never met a Sukuma individual who does not participate in Sungusungu (Table 3). Thus, indirect incentives produced from the Sungusungu institution are likely an important force to maintain high levels of participation. It is unlikely that so many of the Sukuma would find it in their direct interest to participate, because once the organizations achieved enough

Table 3. Survey Questions and Responses From Sungusungu Members[a] of Mirumba Village.

N	Question	Response (%)
$N = 68$	Are you a member of Sungusungu?	Yes (100)
	Have you participated in Sungusungu this year?	Yes (93)
	Is it beneficial for Sungusungu to integrate other ethnic groups into the organization?	Yes (98)
	Are special techniques required to reduce the risks of Sungusungu activities?	Yes (96)
	In the future, will you seek a higher ranked position in Sungusungu?	Yes (70)
Sub-sample $N = 34$[b]	Are all ethnic Sukuma members of Sungusungu?	Yes (97)
	Have you ever heard of a Sukuma (other than a thief) who is not a Sungusungu participant?	Yes (6)
	Do you think Sungusungu could function effectively if only half of the population participated?	Yes (31)
	Do you think individuals with more wealth are more likely to participate in Sungusungu?	Yes (18)

[a] The sample included a number of individuals from different ranks: Ntemi (2), Mwenyeketi (1), Katibu (2), Commanders (5), Guards (17), Witch Doctor (1), Councilmen (24), General members (16). In addition, the sample included individuals from various ethnic groups: Sukuma (42), Fipa (10), Other (9), Pimbwe (7).

[b] These questions were added later in the interview process.

participants to deter thieves, "free-riders" could enjoy the benefits without costs and risks. More importantly, indirect incentives must play a strong role simply because sanctions are so strict and readily used in the Sungusungu system. For example, respondents were asked if Sungusungu could function effectively if only half the population participated; only a third of the respondents answered affirmatively, and in open discussion, many respondents discussed that free riding would never occur because members fear organizational fines. Most people discussed punishment: "The Sungusungu are very fierce, both to thieves and to their members."

Hypothesis 2. *Sungusungu* Cooperation is Influenced by "Strong Reciprocity" and Institutional Context.

As discussed above, Sungusungu provide highly prosocial services that are wide in scope. Assuming that Sukuma social institutions were the foundation to Sungusungu, we expected to find that in comparison to their Pimbwe neighbors, the Sukuma are more likely to be highly prosocial and to cooperate with ethnic members living in both near and distant locations. To evaluate this hypothesis, Paciotti and Hadley (2003) used the Ultimatum Game (UG) developed by

experimental economists (for details on these sorts of games see Camerer & Fehr, 2004). UG involves two anonymous players. The first player, the proposer, offers the recipient a portion, e, of a set amount of money, x. The recipient is then given the chance to accept or to reject the offer. A rejection of the offer leaves both players with nothing, whereas acceptance of the offer leaves the proposer with the sum initially proposed, $x - e$, and the recipient with e. We played the game with a sample of 20 Sukuma and 20 Pimbwe using 1000 Tanzania shillings (equivalent to one U.S. dollar and one day's wage in the study area). Two experimental treatments were used to measure the scope of institutions; half of the subjects from each ethnic group were randomly paired with an ethnic member "from their own village," and the other half with an ethnic member "from the neighboring village." The results support the hypothesis that the Sukuma have large-scale institutions that promote cooperation. In the within-village treatment Sukuma respondents proposed a mean of 610 shillings, and in the inter-village treatment, they proposed 520 shillings. In In contrast, Pimbwe players proposed less in both treatments in comparison to the Sukuma, yet there was also a significant effect of the treatment. Concerning the within-village treatment, Pimbwe proposed a mean of 500 shillings, and in the inter-village treatment, they proposed a mean 150 shillings. Finally, in contrast to individual-level variables (i.e. wealth, age, and sex), ethnicity explained a much greater proportion of variation in offer amount. This adds credibility to the hypothesis that social institutions (rather than aggregate demographic characteristic) are the most important factor.[7]

Previously unreported, we also played the Dictator Game with a sample of Sukuma and Pimbwe individuals. This game is similar to UG in that the proposer offers the recipient any portion of the money that they want. However, unlike UG, the recipient has no option to reject the offer; they simply receive any amount of money that the proposer "dictated" to send. The results support the idea that strong reciprocity is an important force among all the players, although even more so among the Sukuma participants. Playing the game with 1000 Tanzanian shillings, the mean amount of money kept by Sukuma ($N = 10$) was 500 shillings, and the mean amount kept by Pimbwe ($N = 18$) was close to 600 shillings (the differences were statistically significant, $p = 0.048$ with a one-tailed Mann-Whitney comparison).

Although individuals from each ethnic group likely have predispositions to behave as "strong reciprocators," the magnitude of prosocial behavior and scope of sacrifice are contingent on institutional rules (Richerson & Boyd, 1998, n.d.). All of the participants were given the same situation, yet their behavior seemed to be influenced by their ethnic-specific institutions that they brought with them into the game. Pimbwe were somewhat generous in UG, but mainly to people from their own village. In contrast, Sukuma social institutions promote "hyper-fair" offers

even to other Sukuma living in distant villages. One Sukuma player explained that his ethnic members share generously with all Sukuma because "it is disgraceful to act like a hyena and take too much" (Paciotti & Hadley, 2003).

Hypothesis 3. Sungusungu Limits Internal Corruption, and Provides Prosocial Services to the Community as a Whole.

We speculate that Sukuma social institutions in the distant past emerged at least partially though cultural group selection, and provided the institutional foundation for the emergence of Sungusungu (Henrich, 2003; Smith, 2003). Unfortunately, obtaining data to evaluate the importance of cultural group selection is difficult. However, if group-level processes have influenced Sungusungu, we should expect it to "function" as an adaptive system. The expected outcomes of such a system are institutional mechanisms to limit internal opportunism by selfish individuals, providing services to individuals with less power, and limiting free riding. We recognize that many MI theorists may react strongly to such claims in that they are reminiscent of traditional functional thinking that overestimated the ability for institutions to limit individuals engaging in self-interested strategies. For example, Smith (2003) criticizes the institutional perspective favored by CIT theorists (Richerson & Boyd, 1998) for overemphasizing the ability of institutions to control individual-level processes highlighted in the HBE paradigm. We agree somewhat with this critique, in that social institutions never completely resolve self-interested strategies. However, this is exactly why the Sungusungu invest so much effort in punishment. Individuals do have direct incentives to steal cattle or shirk on their Sungusungu duties, thus the organizations readily use sanctions to prevent such behaviors from breaking down the system.

Our fieldwork highlighted many examples of Sungusungu's ability, unlike the Tanzania state, to control organizational corruption, and provide services in a somewhat prosocial manner. We attended numerous events in which committee members and the general Sungusungu members accused and ousted high-level leaders for seemingly small rule violations (Paciotti, 2002, n.d.). In one case, the Ntemi gave a non-member some meat at a Sungusungu feast (later deemed as a form of thievery), and in another, an Ntemi used the cows in the Sungusungu bank for his own investments. In both cases, hundreds of lower ranked members, without fear of repercussions, criticized the leaders in an open forum. In sum, although Tanzania has one of the most corrupt governments in the world (Global Corruption Report, 2003), the Sungusungu have been successful in limited such behavior within their ranks.

The Sungusungu have also performed a number of public services in the study area benefiting both Sukuma and non-Sukuma communities. For example, after the emergence of a widespread cholera epidemic, Sungusungu agreed to the

requests made by district officials to close down the roads to prevent unauthorized individuals from entering or leaving the area. Informants report that Sungusungu quickly mobilized for these duties without accepting bribes, thus providing an effective public service to help prevent the spread of disease. Similarly, the Sungusungu in one village quickly mobilized to protect the cargo of a crashed truck to prevent looting, and when a man became lost in the forest, the Sungusungu organized a successful search party. In another case, the district government under guidance from division and ward officials, asked the Sungusungu to prepare a security force and parade for the visiting Tanzanian president. Each Sungusungu village was asked to donate money to provide food for the president and his accompanying staff. The village chapters held meetings to decide how they would acquire a cow to donate to the president, and who would be sent to welcome him at his speech. In the end, Sungusungu members were proud that their organizations successfully made arrangements for the president's visit.

DISCUSSION

Our data show that Sungusungu has a strong institutional component, and that predispositions toward "strong reciprocator" behavior are important forces influencing the Sungusungu. However, we acknowledge the importance of forces highlighted in the MI perspective, and consider plausible MI explanations accounting for Sungusungu cooperation. In addition, we highlight the relationship between Sungusungu and the Tanzanian state, and suggest that the state has played an important role in directing prosocial behavior among the Sungusungu organizations.

Methodological Individualism

Smith (2003) argues that higher payoffs from cooperative production (e.g. herding vs. farming) can create greater incentives to solve collective action problems. For example, it could be that Sukuma agro-pastoralists have historically experienced greater payoffs than other ethnic groups for creating social institutions to protect their cattle. In contrast, with a history of hunting and small-scale horticultural economies, the Pimbwe have not have received high payoffs for larger-scale institutions. Thus, we agree that aggregate individual-level forces such as household economics may have played a role in the emergence of Sukuma institutions. However, simply having a greater need for an institutional system does not explain what types of mechanisms will lead to its evolution. We have

argued that Sungusungu is an exceptional social system that provides many benefits across wide social scales. Thus, we suspect that group-level processes have been important in shaping the emergence of Sungusungu.

Costly signally theory provides another plausible micro-economic approach to understand Sungusungu cooperation; a Sungusungu member is likely motivated to punish criminals, or Sungusungu shirkers, to signal that he is capable of such costly behaviors (Gintis et al., 2001). However, we doubt that signaling theory on its own can be enough to explain large-scale cooperation. Henrich (2003) shows that signaling theory is hindered by the fact that costly signals allow selfish individuals to hone in on and exploit potential altruists. In addition, many other species engage in costly signals, but do not achieved large-scale cooperation. The second point is especially relevant to our data, because it leads us to question why the Sukuma support Sungusungu with costly signals but other ethnic groups do not. Why is it that so few Pimbwe men engage in Sungusungu signaling, when many of these young men face a shortage of food and resources needed to impress mates and allies? In addition, why do young men signal with prosocial Sungusungu enforcement rather than with deviant behavior such as cattle raiding? We posit that the cultural context of Sungusungu institutions influences how signally occurs. To see this, consider how most Sukuma respondents could easily explain the rules of Sungusungu, and most viewed Sungusungu as the main authority to deal with social problems. In contrast, many Pimbwe did not understand the rules of Sungusungu and the consequences of rule violations. In addition, many Pimbwe (possibly due to ethnic boundaries and associated conflict) do not view Sungusungu as a legitimate institution of social control (Paciotti & Borgerhoff Mulder, 2004). In sum, as shown by Gintis et al. (2001, p. 17), signaling mechanisms which create prosocial outcomes likely work best along with the cultural evolution of different institutions. Various cultural evolutionary histories supplying different notions of social control and trust between ethnic groups, explain why one ethnic group, the Sukuma, are readily able to signal to both members and non-members about their cooperative abilities to control deviants.

Preexisting Institutions and State Influence

Most Tanzanian ethnic groups have to rely on themselves for protection due to a corrupt and inefficient state justice system. Thus, it is unsurprising that the Sukuma have sought and found help among non-Sukuma ethnic members (Table 3), and the Tanzanian state (in recognizing the effectiveness of Sungusungu) has encouraged individuals from all ethnic groups to join the Sungusungu movement (Abrahams, 1998; Paciotti & Borgerhoff Mulder, 2004). However, Tanzanian ethnic groups

have diverse types of social institutions to deal with issues of social control. Thus, these forces provide a "natural experiment" to test the hypothesis that in contrast to other ethnic social institutions, Sukuma institutions are specially endowed to control crime with large-scale cooperative institutions.

In support of this, we find that other ethnic groups have not been as successful in creating their own Sungusungu. Although many Pimbwe and Fipa have joined the existing Sungusungu, inter-ethnic conflict motivated Pimbwe in one village to attempt to create their own Sungusungu separate from the Sukuma system. However, they were unsuccessful, and Pimbwe leaders explained to us that the Pimbwe were not prepared to sustain cooperation between clans and villages (Paciotti & Borgerhoff Mulder, 2004). Paciotti and Borgerhoff Mulder (2004) describe additional cases in which variation in social institutions likely influences the cooperative outcomes of Sungusungu. In one case, the state encouraged the development of Sungusungu among the Kuria ethnic group from northern Tanzania. This group is known for their extensive involvement in cattle rustling. Although the Kuria adopted Sungusungu, divisive clans in their society limited their effectiveness to sustain Sungusungu; the Kuria Sungusungu were unwilling to punish their own clan members suspected of thievery (Fleisher, 2000). Of course, we recognize the possibility that other non-cultural differences between the ethnic groups may explain these patterns (e.g. different economic strategies), but it seems quite plausible that cultural variation is important.

Although we have argued that Sukuma culture has a strong impact on Sungusungu outcomes, we acknowledge that the Tanzanian state does have an important relationship with the system. With a socialist history, the state has favorably received, albeit with some reservations, the emergence of Sungusungu by incorporating the system into the national justice system (Abrahams, 1998). Although the state provides no form of remuneration to the organizations, it has influenced Sungusungu by discouraging unfavorable behavior such as killing witches and suspected thieves, and encouraging them to aid in state functions such as tax collecting and enforcement of criminal behavior. In the study area, the local government plays an active role among village and ward-level Sungusungu chapters by attending meetings and elections. At one election, all ward and village government officials attended. They gave speeches stressing that Sungusungu is an organization for the use and benefit of all ethnic groups, and warned the organization to refrain from using violence to punish deviants. The leaders also commended the Sungusungu for their services, but made clear that they must follow government laws. Paciotti witnessed occasions in which the ward government leaders have forbidden the Sungusungu from certain behaviors such as punishing a suspect who was mentally ill. In addition, a ward official asked the Sungusungu to enforce a law that would forbid Sukuma herders from allowing their cattle to

walk on newly graded roads. Because this violates the interests of many Sukuma (they use the roads to move their cattle to pastures and auctions efficiently), it was impressive that he made some headway in gaining Sungusungu compliance to enforce such rules. Overall, state promotion of Sungusungu – with limits – has resulted in the emergence of a quasi-national justice system.

CONCLUSIONS

Although mainly qualitative, our data suggest that understanding Sukuma cooperation in Sungusungu requires one to incorporate social institutions in the analysis. The ethnographic data provide evidence that Sungusungu have a sophisticated set of rules that define roles in the organizations, and how people should be treated if they fail to perform their duties. Non-institutional theories focusing on the strategic interactions of individuals offer important mechanisms to explain many types of cooperation, but Sungusungu is a large-scale cooperative system that involves huge numbers of non-kin and strangers who interact on rare occasions with a low probability of future interactions. Thus, it is unlikely that Sungusungu can be understood with attention only to kinship and "weak" reciprocity mechanisms. In testing hypotheses produced by cultural inheritance theory, we have three tentative conclusions. First, the sanctions produced by institutional rules produce important indirect incentives to participate. Although many individuals likely participate for the direct benefits of protecting their property, rewards and punishments produced by institutional rules limit free-riding and ensure that a large fraction of the population participate in Sungusungu. Second, our experimental evidence suggests that both Pimbwe and Sukuma individuals are conditional cooperators (i.e. they share money in one-time anonymous interactions), but that the differing social institutions between these two groups explains why Sukuma are more prosocial than the Pimbwe, especially at larger social scales. These data explain why the Sukuma, in comparison to the Pimbwe, are better able to develop and maintain a social control system such as Sungusungu. Finally, concerning origins, we suspect that the Sungusungu institution may be founded upon preexisting institutions that evolved by cultural group selection. Consistent with this hypothesis, Sungusungu produce prosocial services, and the organizations are effective in limiting corruption and abuse by those in power.

Although we stress the importance of institutional forces, we acknowledge that micro-economic forces are also important in both emergence and maintenance of Sungusungu. Household economic strategies that vary between ethnic groups are individual-level forces that influence the development of institutions. In addition,

participation in risky behaviors such as Sungusungu enforcement is a costly signal that can elevate one's status, thus providing mating and other social benefits. These forces, however, operate with the parameters of social institutions, and some ethnic groups more than others (e.g. Sukuma) may have been endowed with institutions that provide prosocial services across wide social scales. In sum, the data presented here cannot confirm the exact importance of individual and group-level processes because obtaining quantitative data on payoffs in a common currency is a formidable challenge. The qualitative data, however, show that if a population of people know, trust, and are committed to a set of rules (e.g. the Sungusungu), they can provide important public goods in the same environment where people not knowing, not trusting, or not committed to these rules cannot. We add that further analyses of Sungusungu and similar institutions would be incomplete without specific attention to how institutional rules influence individual decisions to participate in the often costly and risky provisioning of public goods.

NOTES

1. The Sungusungu have been compared to vigilante organizations from the 19th century American West due to their emergence under a weak state (see Abrahams, 1998). However, the Sungusungu also arbitrate village disputes with sophisticated institutional rules, and have been legitimized (albeit with some reservations) by the Tanzanian state. In sum, the Sungusungu is really a quasi-national justice institution (Heald, 2002; Paciotti, 2002).

2. Scholars from MI perspectives often highlight the importance of kin selection to explain cooperative behavior, even though arguably such a mechanism involves group selection and altruistic motivations (Henrich, 2003). Although kin selection is an important mechanism to achieve cooperation among human and non-human groups, it is unlikely to explain cooperation at larger scales (Henrich, 2003).

3. Looking ahead to Table 2, a Sungusungu mission of 100 men traveling to a distant city to punish thieves cannot be readily rationalized by aggregate individual-level differences.

4. Individual-level forces such as costly signaling can also stabilize within-group variation. If cultural rules specify that individuals should signal *prosocial* behavior (in contrast to anti-social behavior such as violence), cultural group selection can operate on between-group variation to favor cooperative institutions (Gintis et al., 2001).

5. Paciotti initially conducted demographic research among Pimbwe and Sukuma, and subsequently asked permission to study the Sungusungu. After a few months of building trust, he was invited to join the Sungusungu and become a member of the Sungusungu council in the village of Mirumba. As a council member Paciotti was given the chance to understand the internal workings of the organization, while at the same time was expected to observe all of the rules and duties of a council member, and accept the punishments for violations.

6. The Sukuma live in dispersed households up to a few kilometers away from the central Pimbwe village where meetings often take place.

7. Paciotti and Hadley (2003) discuss the rejections made by Pimbwe and Sukuma. Overall, these data contradicted our initial expectation that Sukuma would reject low offers (only one person in the Sukuma sample rejected a 100-shilling offer). We interpret this finding as having to do with the collective nature of punishment in Sukuma society; individuals use authoritative institutions such as Sungusungu to punish deviants.

ACKNOWLEDGMENTS

Fieldwork was supported by the National Science Foundation (SBR-9817248). We are indebted to Monique Borgerhoff Mulder for introducing us to the Sungusungu and for the use of her demographic data. Ayubu Msago and Benedict Cosmas were especially helpful in solving both logistical and research problems. Peter Richerson and Bill Davis provided endless advice about theoretical and empirical issues throughout the paper. Finally, we are grateful to the Sungusungu members for allowing Paciotti to join Sungusungu and learn about how their justice system functions.

REFERENCES

Abrahams, R. (1967). The peoples of Greater Unyamwezi, Tanzania: Nyamwezi, Sukuma, Sumbwa, Kimbu, Konongo. In: International African Institute (Eds), *Ethnographic Survey of Africa. East Central Africa* (Vol. 95). London.

Abrahams, R. (1989). Law and order and the state in the Nyamwezi and Sukuma area of Tanzania. *Africa*, *59*, 356–370.

Abrahams, R. (1998). *Vigilant citizens: Vigilantism and the state*. Cambridge: Polity Press, Blackwell.

Acheson, J. (2002). Rational choice, culture change, and fisheries management in the gulf of Maine. *Research in Economic Anthropology*, *21*, 133–159.

Alvard, M., & Nolin, D. (2002). Rousseau's whale hunt? Coordination among big game hunters. *Current Anthropology*, *43*, 533–559.

Axelrod, R. (1986). An evolutionary approach to norms. *American Political Science Review*, *80*, 1095–1111.

Bates, R. (1994). Social dilemmas and rational individuals: An essay on the New Institutionalism. In: J. Acheson (Ed.), *Anthropology and Institutional Economics* (pp. 43–66). Lanham, MD: University Press of America.

Bowles, S. (1998). Endogenous preferences: The cultural consequences of markets and other economic institutions. *Journal of Economic Literature*, *36*, 75–111.

Bowles, S., & Gintis, H. (2003). The origins of human cooperation. In: P. Hammerstein (Ed.), *Genetic and Cultural Evolution of Cooperation* (pp. 429–443). Cambridge, MA: MIT Press.

Boyd, R., Gintis, H., Bowles, S., & Richerson, P. (2003). The evolution of altruistic punishment. *Proceedings of the National Academy of Sciences of the United States of America*, *100*, 3531–3535.

Boyd, R., & Richerson, P. (1985). *Culture and the evolutionary process*. Chicago: University of Chicago Press.

Boyd, R., & Richerson, P. (1989). The evolution of indirect reciprocity. *Social Networks*, *11*, 213–236.

Boyd, R., & Richerson, P. (1992). Punishment allows the evolution of cooperation (or anything else) in sizable groups. *Ethology and Sociobiology*, *13*, 171–195.

Bukurura, S. (1994). *Sungusungu: Vigilantes in West-Central Tanzania*. Ph.D. dissertation, Cambridge University.

Camerer, C., & Fehr, E. (2004). Measuring social norms and preferences using experimental games: A guide for social scientists. In: J. Henrich, R. Boyd, S. Bowles, C. Camerer, E. Fehr & H. Gintis (Eds), *Foundations in Human Sociality: Experiments and Ethnography From Fifteen Small-scale Societies* (pp. 55–95). Oxford: Oxford University Press.

Eggertsson, T. (1990). *Economic behavior and institutions*. Cambridge: Cambridge University Press.

Ellickson, R. (1991). *Order without law: How neighbors settle disputes*. Cambridge, MA: Harvard University Press.

Ensminger, J., & Knight, J. (1997). Changing social norms: Common property, bride wealth, and clan exogamy. *Current Anthropology*, *38*, 1–24.

Fehr, E., Fischbacher, U., & Gächter, S. (2002). Strong reciprocity, human cooperation and the enforcement of social norms. *Human Nature*, *13*, 1–25.

Fleisher, M. (2000). Sungusungu: State-sponsored village vigilante groups among the Kuria of Tanzania. *Africa*, *70*, 209–228.

Galaty, J. (1988). Pastoral and agro-pastoral migration in Tanzania: Factors of economy and demography in cultural perspective. In: J. Bennett & J. Bowen (Eds), *Production and Autonomy: Anthropological Studies and Critiques of Development* (pp.163–183). Lanham, University Press of America: Society for Economic Anthropology.

Gintis, H., Smith, E., & Bowles, S. (2001). Costly signaling and cooperation. *Journal of Theoretical Biology*, *213*, 103–119.

Global Corruption Report (2003). *Transparency international*. Berlin.

Hamilton, W. (1964). Genetic evolution of social behavior I, II. *Journal of Theoretical Biology*, *7*, 1–52.

Hangaya, M. (1989). The state and the peasantry in Tanzania: Lessons from Sungusungu/Basalama of Shinyanga, Masters Thesis, University of Dar es Salaam, Dares Salaam, Tanzania.

Heald, S. (2002, July). Domesticating leviathan: Sungusungu groups in Tanzania. Paper Presented at Crime in Eastern Africa: Past and present perspectives, Naivasha, Kenya.

Henrich, J. (2003). Cultural group selection, coevolutionary processes and large-scale cooperation. *Journal of Economic Behavior and Organization*, *53*, 3–35.

Henrich, J., & Boyd, R. (1998). The evolution of conformist transmission and the emergence of between-group differences. *Evolution and Human Behavior*, *19*, 215–241.

Henrich, J., & Boyd, R. (2001). Why people punish defectors: Weak conformist transmission can stabilize costly enforcement of norms in cooperative dilemmas. *Journal of Theoretical Biology*, *208*, 79–89.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Gintis, H., McElreath, R., & Fehr, E. (2001). In search of Homo economicus: Experiments in 15 Small-Scale Societies. *American Economic Review*, *91*, 73–79.

Hirschleifer, J. (1977). Economics from a biological viewpoint. *Journal of Law and Economics*, *20*, 1–52.

Holmes, C. (2003). Assessing the perceived utility of wood resources in a protected area of western Tanzania. *Biological Conservation*, *111*, 179–189.

Iliffe, J. (1979). *A modern history of Tanganyika*. Cambridge: Cambridge University Press.

Kelly, R. (1985). *The Nuer conquest*. Ann Arbor: University of Michigan Press.

Leimar, O., & Hammerstein, P. (2001). Evolution of cooperation through indirect reciprocity. *Proceedings of the Royal Society of London, Series B. Biological Sciences*, *268*, 745–753.

McElreath, R., Boyd, R., & Richerson, P. (2003). Shared norms and the evolution of ethnic markers. *Current Anthropology*, *44*, 122–129.

Nettle, D. (1997). On the status of methodological individualism. *Current Anthropology*, *38*, 283–286.

North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.

Nowak, M., & Sigmund, K. (1998). Evolution of indirect reciprocity by image scoring. *Nature*, *393*, 573–577.

Olson, M. (1965). *The logic of collective action*. Cambridge, MA: Harvard University Press.

Paciotti, B. (2002). *Cultural evolutionary theory and informal social control institutions: The Sungusungu of Tanzania and honor in the American South*. Ph.D. Dissertation, University of California, Davis, Davis.

Paciotti, B. (n.d.) *Sungusungu*: The role of pre-existing and evolving social institutions among Tanzanian vigilante organizations. *Human Organization* (in press).

Paciotti, B., & Borgerhoff Mulder, M. (2004). Sungusungu: The role of preexisting and evolving social institutions among Tanzanian vigilante organizations. *Human Organization*, *63*, 112–124.

Paciotti, B., & Hadley, C. (2003). The ultimatum game in southwestern Tanzania: Ethnic variation and institutional scope. *Current Anthropology*, *44*, 427–432.

Panchanathan, K., & Boyd, R. (2003). A tale of two defectors: The importance of standing for the evolution of indirect reciprocity. *Journal of Theoretical Biology*, *224*, 115–126.

Richerson, P., & Boyd, R. (1998). The evolution of human ultrasociality. In: I. Eibl-Eibesfeldt & F. Salter (Eds), *Indoctrinability, Ideology, and Warfare: Evolutionary Perspectives* (pp. 71–95). New York: Berghahn Books.

Richerson, P., & Boyd, R. (n.d.). *Not by genes alone: How culture transformed human evolution*. Chicago: University of Chicago Press. In Press.

Ruttan, L., & Borgerhoff Mulder, M. (1999). Are East African pastoralists truly conservationists? *Current Anthropology*, *40*, 621–652.

Smith, E. (2003). Human cooperation: Perspectives from behavioral ecology. In: P. Hammerstein (Ed.), *Genetic and Cultural Evolution of Cooperation* (pp. 401–427). Cambridge, MA: MIT Press.

Smith, E., & Bliege Bird, R. (n.d.). Costly signaling and prosocial behavior. In: S. Bowles, R. Boyd, E. Fehr & H. Gintis (Eds), *Strong Reciprocity: Roots of Cooperation and Exchange*. In press.

Sober, E., & Wilson, D. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.

Stark, R. (1997). *The rise of Christianity: How the obscure, marginal Jesus movement became the dominant religious force in the western world in a few centuries*. New York: Harper Collins.

Trivers, R. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, *46*, 35–57.

Willis, R. (1966). The Fipa and related peoples of south-west Tanzania and north-east Zambia. In: International African Institute (Eds), *Ethnographic Survey of Africa: East Central Africa* (Vol. 16). London.

Wilson, D. (2002). *Darwin's cathedral: Evolution, religion, and the nature of society*. Chicago: University of Chicago.

Pl. provide complete information for the ref. "Paciotti, B. (n.d.) and Richerson, P., & Boyd, R. (n.d.)"

Pl. provide complete year for the ref. "Smith, & Bliege Bird (n.d.)"