

The Roots of Human Sociality: An Ethno-Experimental Exploration of the Foundations of Economic Norms in 16 Small-Scale Societies

“All long-enduring political philosophies have recognized human nature to be complex mixtures of the pursuit of self-interest combined with the capability of acquiring internal norms of behavior and following enforced rules when understood and perceived to be legitimate. Our evolutionary heritage has hardwired us to be boundedly self-seeking at the same time that we are capable of learning heuristics and norms, such as reciprocity, that help achieve successful collective action.”

Elinor Ostrom (1998:2)

In all human societies, a wide range of social phenomena are governed by self-regulating institutions, or sets of norms, that prescribe both appropriate behaviors, and proper sanctions for inappropriate behavior. Such norms influence an enormous range of human activity, from marriage patterns and sexual inequality to political processes and market exchange. However, despite a fair amount of agreement that such institutions exist, extant theories struggle to explain the genesis and maintenance of the pro-social norms (e.g., standards of fairness, or rules for punishing norm violators) that form the bedrock of social interaction (Ensminger and Knight 1997). Both experimental (Bateson and Shaw 1991, Camerer 2002, Henrich 2000, Henrich *et al.* 2001, Kagel and Roth 1995, Kollock 1998, and Rabin 1998) and field data (Fiske 1991, Frank 1988, Kaplan and Hill 1985, Mueller 1989, Skinner and Slemrod 1985, and Smith 2001) from across the social sciences indicate that neither assumptions of narrow economic self-interest, nor evolutionary models based on kinship or reciprocity are sufficient to account for the observed patterns of human pro-sociality.

To probe the diversity of social norms and preferences across the human spectrum, in 1998 the MacArthur Foundation invited twelve experienced field anthropologists to pioneer the use of experimental economic methods in small-scale societies. Using bargaining and public good experiments involving real money (for examples, see below under Methods and the Appendix), our research team has contributed to understanding this puzzle by showing that 1) people from a diverse range of small-scale societies and ethnic groups are more altruistic and more willing to engage in costly punishment than most self-regarding economic and evolutionary models predict, 2) there is tremendous variation in this pro-sociality across social groups (Henrich *et al.* 2001 and Smith 2001) and 3) experimental measurements of pro-sociality are positively related to increasing market incorporation, socio-economic complexity, and the relative importance of local cooperative institutions.

In this second phase of our research, we propose to explore the foundations of social norms by experimentally measuring individuals' preferences/tastes for altruism (or fairness), direct punishment (willingness to punish norm violators), and third party punishment (willingness of third-party observers to pay a price to punish unfairness) across 16 small-scale societies. This new work adds both breadth and depth to our previous findings: breadth in the form of new experimental data from nine previously untested small-scale societies, and depth in the form of new experiments and improved methodological procedures.

Our interdisciplinary, ethno-experimental approach has a number of advantages over standard disciplinary projects. Methodologically, our approach combines rigorous experimental tools from economics with in-depth, contextually sensitive ethnographic methods from anthropology. Our international team of ethno-experimentalists are all experienced field workers, most having worked in their respective field sites for years. As experts in the local environment and culture, they are ideally suited to contextualize and interpret their experimental results. Second, unlike the situation in standard university-based experiments, our researchers

often have substantial databases on the game participants (that they continually augment), much of which is based on direct observation rather than self-report. This intimacy makes data on variables such as wealth and income more accurate than is typically the case in experimental work. Third, with data on actual economic behavior (e.g. patterns of sharing and reciprocity), we can examine the relationship between game behavior and real life—a critical but entirely unexplored concern in most experimental research. Fourth, our use of more representative samples (all adults and socio-economic categories) has substantial advantages over the limited samples used in most university-based work, both for testing a variety of theories, and for generalizing to the behavior of societies. New data from non-student populations in the U.S. suggests that students may, in fact, be quite poor representatives of the larger society (Burks *et al.* n.d., Ensminger, unpublished, and Smith 2001). And finally, the economic context of our populations permits us to use substantial stakes (typically every game will put one day's wage on the line) for less than the cost of standard stakes in industrialized nations. High monetary stakes are important for assuring that participants focus primarily on the games' economic incentives, and not on such things as “what the experimenter thinks” or “what's more fun.”

THEORETICAL OVERVIEW

One of the advantages of assembling such a large and diverse group of researchers is the variety of theoretical traditions and interests brought to the table. What binds our group more than anything is a commitment to building an interdisciplinary science of human behavior, an openness to other theoretical approaches, and a common respect for methodological rigor. Among us, we have scholars who have done their major theoretical and empirical work in the fields of evolutionary theory, psychological anthropology, rational choice, new institutional economics, development, and network analysis. Our previous experience has shown that this theoretical diversity inspires novel ideas, innovative empirical work, and theoretical development through the challenges that arise from the clash of paradigms. The discussion below showcases some of this theoretical diversity and, as was the case with our previous work, explains how our project can simultaneously contribute to disparate lines of research. For organizational purposes we have divided the theoretical section into two parts: 1) *Co-evolutionary Theory* examines how our project will contribute to theoretical work that explores the importance of social learning, cultural evolution, and culture-gene co-evolution on human behavior, and 2) *Bounded Rationality and Economic Preferences* explores how our work informs various lines of research that explore how human preferences and networks influence economic decision-making.

Co-evolutionary Theory

Formal models in both cultural anthropology and evolutionary economics suggest that preferences (e.g. altruism, fairness and tastes for punishment), often taken to be exogenous in economics and innate in evolutionary psychology, may evolve culturally. By relying on various forms of social learning to acquire preferences from other members of their social group, individuals can acquire the appropriate set of preferences and behaviors for that group. When aggregated over many individuals and interactions, such learning strategies lead to the evolution of different kinds of institutions or institutional forms (Boyd and Richerson 1985, Bowles 2000, and Henrich and Boyd 2001). To the degree that cooperative institutions afford economic success, the theory predicts that successful individuals in such institutions will get copied more often. Cooter and Eisenberg (2000) have similarly argued that fairness promotes efficiency through returns to cooperation in firms. This provides incentives for firms to socialize norms of fairness and for people in firms to change their character to be more fair-minded. Thus, we predict a relationship between pro-social preferences and experience with, or exposure to, existing institutions like markets or successful governance structures.

Cultural evolutionary models suggest that intra-group processes can lead to a variety of polymorphic equilibria that may be more or less pro-social—that is, cultural learning combined with social interaction may produce either cooperative or uncooperative groups that will resist change (Boyd and Richerson 1990, Henrich and Boyd 2001). At such stable equilibria, differences in individuals' strategies often result, not necessarily from individual differences such as wealth, education, etc., but from the nature of the interaction or transmission (e.g. from frequency-dependent payoffs or low fidelity learning). Which equilibria a group arrives at is influenced by stochastic, historic, and ecological factors (including contact with other groups) that make some groups more likely to land on pro-social (group beneficial) equilibria than other groups. Such formal models predict that inter-group differences in pro-sociality may be explained using group-level variables, while individual-level variables may show no corresponding relationship. Thus, these theoretical models hypothesize that group-level ecological and historical variables (e.g. market incorporation) will be able to account for larger portions of the variation in experimentally measured social behavior among groups, than the corresponding individual-level variables (e.g. an individual's cash cropping). That is, there will be true "group effects" (multiple stable cultural equilibria). Our previous empirical work is consistent with this hypothesis (Henrich *et al.* 2001), but additional data are required.

Cognitive anthropologists and psychologists have argued that evolutionary processes generated five different ontogenetic learning templates (mental models) that allow humans to rapidly learn and organize their social relationships without having to construct new mental models for every individual or social context—or individual-context interaction (Fiske 1991 and Haslam 1997). Fiske labels these mental models: Communal Sharing, Equality Matching, Authority Ranking, Market Pricing and Asocial, although they reappear throughout the social science literature in various guises. Among particular social groups, cultural and individual learning connects these templates with both specific individuals and/or particular contexts. If this cognitive-evolutionary approach is correct, players should approach our experimental games by looking for a correspondence between the game structure/context and one of these mental models. For example, Hoffman *et al.* (1994) found that calling the ultimatum game the "buyer seller" game moved offers toward greater self-interest.

Using structured interviews (based on instruments adapted from cognitive psychology) and in-depth understanding of the local culture and institutions, we will attempt to assess which of the hypothesized mental models is most likely to be activated by the game context for any given society. These interviews will be conducted with a separate population of subjects, so as not to contaminate the game subjects. Depending upon the modal mental model operative in a given society, we can generate distinct predictions about players' behavior in each of our experiments. For example, in Bargaining Games, proposers using the Equality Matching model should split the stakes 50/50, and responders would be inclined to reject non-50/50 offers. Yet, if the context activates a players' Asocial model, proposers should offer very low amounts and responders should accept any non-zero offer. Our prior research shows both of these behavioral patterns (depending on the group), but we lacked the specific cognitive tests to evaluate the data *vis-à-vis* this theory. Analytically, structural equation modeling at the group level will allow us to link exogenous institutional and cultural variables to economic preferences (game behavior) through the intervening nexus of social cognition (mental models).

Bounded Rationality and Economic Preferences

In an effort to address the puzzle of pro-sociality as manifested in economic experiments (Kagel and Roth 1995), economists are developing new utility theories that can explain what have appeared to be contradictory patterns of behavior (Bolton and Ockenfels 1999, Charness and Rabin 2000, Fehr and Schmidt 1998). These theories are rooted in the robust empirical findings generated by bargaining and public goods games played with university students. We will contribute to this line of research in the following ways. By systematically using the same

empirical tools, our research explores the robusticity of these empirical foundations across the human spectrum. Do these theories/preferences apply to humans as a species, or are they applicable only to people in certain places? By allowing us to analyze a fuller range of human variation, this work will assist us in separating the cultural evolutionary products of particular local histories from pan-human preferences (whether these be self-interested—Stigler and Becker 1977, or other regarding—Fehr and Gächter 2000). Detailed individual-level data will allow us to test theories that predict a relationship between game performance and individual-level variables (e.g. sex, education, age, income, work, and wealth), as well as to explore intra-individual temporal variation (how much variation is there in one person's behavior over time). Studying the interplay between economic behavior, incentives, and local context will allow us to illuminate the nature of human preferences: do people have generalized preferences for things like reciprocity and altruism that operate across all contexts (given the same payoffs), or do people have situationally specific rules, preferences, or mental models that operate (are cued) only in some contexts (even when the payoffs are clearly identical)? Our previous work has already contributed to this line of research (Ensminger 2000, Henrich 2000, Henrich *et al.* 2001, and Henrich *et al.* n.d.), so the present proposal aims to replicate and refine our prior work, as well as test some new predictions.

Another central form of pro-social behavior is trust. In this project we propose to pursue the relationship between social networks and social capital in the form of trust and trustworthiness. Social capital as a concept in the social sciences has been defined in various ways. One definition, which might be termed “social capital as opportunity,” views the amount of social capital an individual actor has as the degree to which he or she has the ability to bring together, or bridge, a wide range of other actors who are themselves not connected (Burt 1992, 1997, Johnson *et al.* 2001, Lin 1999, 2000a, 2000b, 2001 and Lin *et al.* 2001). Such a structural position may allow an individual to influence the flow of information and knowledge that leads to economic success and political advantage. In this case, actors with high social capital have low density and non-redundant network ties (an actor's contacts are themselves not connected to one another). This allows actors the freedom to exploit structural gaps or holes in the network (Burt 1992). This does not necessarily predict more self-interested behavior, as it may be impossible to maintain such a position if one abuses it. It may predict strategic talent, however, as such individuals need to have mental acuity to get where they are and to stay there. Whatever their preferences, we may expect them to be more adept at calculation.

Another general use, which we will label “social capital as security,” sees social capital as the degree to which an actor is embedded in a dense set of social relations—the denser an actor's relations, the higher their social capital (Coleman 1990, Portes and Sensenbrenner 1993). This use stands in stark contrast to the previous definition. Here density provides security for individual group members in that it protects them from potentially negative outside influences (e.g., out-group conflicts) and promotes a more certain social environment (i.e., social norms are clear). In addition to protection, such dense, cohesive networks foster cooperation and provide members with a sense of belonging and identity (Portes and Sensenbrenner 1993)—that is, they imbue actors with pro-social preferences. Some see this form of social capital, at both the individual and group level, as both reflecting and creating the degree of trust in a given society (Putnam 1993, 1996, 2000). But this form of social capital comes with a cost. Such dense, redundant social relations often entail various social obligations and restrictive norms (Portes and Landolt 1996).

These two definitions of social capital raise interesting behavioral questions. Under social capital as opportunity, if we hypothesize that “middlepersons” hold their positions largely due to their strategic skills, we should expect them to have better predictions about how others play the games. If they are also opportunists, we should expect them to make low offers in the dictator game. Alternatively, if they hold their positions largely because they are trustworthy, we should expect this to be evident in their behavior in the trust game as Player B's. Actors with

high social capital as security might be expected to be more trusting in their approach (as reflected in higher offers in the trust game and in public goods games). Similarly, societies with high social density should exhibit higher levels of trust overall. These two approaches also generate predictions about the variance we will find in intra-society distributions. In the sense of social capital as security, we expect to find greater consistency in offers around a single mode when social density is high and there are more normative constraints, but less consistency when it is low. Similarly, individuals who fill structural holes in the first definition may not be bound by local norms in the same way that others in a society are, thus we may find their behavior off the mode in a variety of games. One question we are particularly interested in asking in this research is whether there is any relationship between a person's position in the network and pro-social punishment behavior? For example, are those filling structural holes the sorts of individuals who can and are expected, to exert sanctioning behavior against others?

Finally, the data collected in this project will allow us to weigh in on an increasingly prominent debate in development circles. In a new book, Platteau (2000) builds upon the work of early modernization theorists such as Foster (1965), and argues that equity norms found in many small-scale societies in Africa and Latin America are the explanation for failed development. His reasoning is that redistribution in such societies suppresses individual incentives to produce because there is an implicit community "tax" on all surplus production. This is of course an old idea from anthropology, but it is undergoing a recent resurgence among development scholars. The data from our first round of experiments stand in stark contrast to this perspective, as it is the small-scale, low market-oriented societies that make the least equitable divisions in our bargaining experiments. In contrast, our highest levels of equitable behavior are found in the more market oriented and "developed" societies. Further replication of our earlier work will help us conclusively weigh in on this debate.

PRIOR EXPERIMENTAL RESULTS OF OUR RESEARCH TEAM

Building on the limited cross-cultural work previously done among university students in Israel, the Slovak Republic, Japan, Indonesia, and Hong Kong (Cameron 1999, Kachelmeier and Shehata 1997, Roth *et al.* 1991, and Yamagishi 1994), our original research team performed a mixture of Public Goods, Dictator, Ultimatum, and Trust Games in 15 small-scale societies (see brief game descriptions later in the text and detailed protocols in the Appendix). Most of these studies are compiled in Henrich *et al.* (n.d.), and synthesized in Henrich *et al.* (2001), although new field studies continue coming in. The most substantial comparative findings from our project can be summarized in six points. First, while our earlier results are similar to previous experimental findings in some respects, these results show much greater cross-cultural variability than prior research had indicated. Second, these results broaden and bolster the findings of previous experimental work in testing models of narrow economic self-interest. Such self-regarding models not only fail to explain the data from these 15 societies (as they had among university students), but they fail in new ways, and to varying degrees, in different places. Third, group-level differences in market integration and the importance of cooperative institutions can explain a substantial portion of the behavioral variation among societies. Our strongest linear regression finding shows market involvement and economic organization can account for more than 60% of the variation in pro-social behavior (both fairness and punishment) across the 15 societies. Fourth, unlike group-level variables, individual-level economic and demographic variables (age, sex, education, income, and household wealth) do not consistently explain any portion of the variation across the entire dataset, or within individual groups. Fifth, although group-level differences seem to account for much of the variation, quite different behavioral patterns do arise in populations living side-by-side or intermixing in the same environment. Sixth, experimentally observed behavioral patterns seem to reflect the economic life and history of the people from which they arise.

People do seem to bring their real lives, their institutions, and their culture into one-shot games (Hoffman *et al.* 1996).

Using the experience gained during our first project, we will build on and attempt to replicate our previous findings with both new experiments and improved protocols; we will also gather more rigorous measures of individual and group-level measures (such as market incorporation). Below, we begin by describing the demographic survey and the “Core Package” of experiments that will be performed in all 16 societies. This package is intended to provide comparative measures of altruism, direct punishment, and third-party punishment. In this section, we detail the individual level variables (sex, age, education, work, income, and wealth) and group-level measures (level of market integration and contributions to cooperative labor) that will be collected for analysis with the experimental data. We then detail four sets of supplemental experiments that will be performed among selected subsets of our total sample of societies. These supplemental experiments address a variety of theoretical and methodological issues, including an examination of trust and social networks, contextual or framing effects, experimenter bias, and intra-individual temporal variability. Following this, we briefly describe the sample of societies to be studied. Finally, we explain our research goals and sketch some of our analyses and plans for the dissemination of our results.

METHODS

We propose a three-game experimental package for use in all 16 societies. This Core Package is designed to measure altruism, direct punishment, and third-party punishment using these games: 1) the Dictator Game (DG), 2) the Strategy Method Ultimatum Game (SMUG), and 3) the Punishment Game (PG). Below we provide a basic description of each experiment and the kind of data it generates (the Appendix provides detailed protocols).

The three games described below will all be administered in a transparent fashion. All players receive the same description; all money is real and equal to one day’s wage in the local economy; no deception is involved; all games are one-shot. All players are anonymous to one another, in the sense that they do not know specifically with whom they are matched, although they will know that they are matched with a person or persons from the experimental group or local community. It will be obvious from the game setup that the experimenters will know players’ decisions (although this will not be explicitly stated). Our supplemental experiments, which are discussed in a later section, will incorporate “double blind” procedures (where even the experimenter does not know how specific individuals played), which are designed to test for any effect of the experimenters’ knowledge of individual decisions.

Core Experiment 1--Dictator Game (DG)

Procedure: Players A and B are allocated a sum of money. Player A decides how this sum is divided. He or she “dictates” how much money B receives and retains the remainder.

Intended Measurement and Analytical Interpretation: This measures pure altruism, or some notion of fairness. Purely self-interested individuals should keep all the money for themselves.

Core Experiment 2--Strategy Method Ultimatum Game (SMUG)

Procedure: Players A and B are allotted a sum of money. Player A must decide how to divide this sum between his or herself and Player B. Player B, before hearing the offer, must set an “acceptable offer range.” If Player A’s offer falls within this range, Player B receives the offer, and Player A gets the remainder. If A’s offer is outside this range, neither player receives anything (the money disappears). In most societies, this offer range will take the form of a minimum acceptable offer (Knez and Camerer 1995), although research from two competitive

gift-giving groups in Papua New Guinea (Tracer n.d.) indicates that some people will reject offers that are too large.

Intended Measurement and Analytical Interpretation: The SMUG provides two measurements. First, when Player B's behavior comes in the form of minimum acceptable offers, it can usually be interpreted as measuring how willing individuals are to punish others' unfairness at a cost to themselves. We call this *direct punishment*. Post-game interviews and focus groups (described later) will assist in assessing whether a particular SMUG is measuring direct punishment. When the acceptable offer range comes in other forms, such as accepting "offers between 30% and 60%," understanding what the two boundary points measure will depend on both post-game investigations and the field worker's ethnographic knowledge. The lower bound, for example, may represent a measure of direct punishment, while the upper bound may show a fear of indebtedness (Tracer n.d.). Second, Player A's offer measures a combination of preferences for fairness (or altruism) and fear of direct punishment. By combining these offer data with A's beliefs about what B's will do (see later), and/or the actual behavior of B's, indirect measures of altruism (or notions of fairness) can be derived. Further, these data can be used to calculate how accurate A's beliefs are about B's behavior.

Analysis of data from ultimatum (SMUG) and dictator game (DG) experiments: Subtracting DG offers from UG offers also yields the effect of direct punishment on offers, and partitions "fair behavior" into altruistic and punishment-induced components. Indirect measures obtained from the SMUG data alone and the direct measure provided by the DG yield comparative measures of altruism. Differences between these two measures may suggest a variety of explanations. For example, A's may have the wrong beliefs about what B's will do (which the SMUG may corroborate), or the DG and UG may cue different culturally acquired models of behavior that produce entirely unrelated sets of data, as Smith has suggested (2001). In other words, the DG could cue fairness (e.g. Equality Matching mental model), while the UG could cue strategic behavior (Market Pricing mental model)—make the lowest offer you can get away with.

Core Experiment 3--Punishment Game (PG)

Procedure: Players A and B are allotted a sum of money (e.g., \$10). Player A must determine the amount of money B receives, as in the dictator game (DG). Player C receives half the sum allotted to A and B (e.g., \$5) and also learns of Player A's division. C has the opportunity to pay from zero to \$5 to inflict punishment on A at 3 times his or her (C's) cost. So, if A gives only \$1 to B, C might pay \$2 to punish A, which subtracts \$6 from A's \$9. In the end, A leaves with \$3, B with \$1, and C with \$3 (Fischbacher and Fehr n.d.).

Intended Measurement and Analytical Interpretation: Player C's behavior in the punishment game measures an individual's willingness to inflict costly punishment on someone who has behaved "unfairly" in an exchange that does not directly affect the punisher—i.e., it measures their taste for third party punishment. Further, using Player A's behavior in combination with the dictator game data, we can derive measures of how much the possibility of third party punishment affects A's behavior. With enough data on C's behavior in the punishment game, we will be able to calculate what an "income maximizing" A would do (income maximizing individuals attempt to make the most money given the actual likelihood of punishment in the population), and compare this with A's actual behavior. Subtracting an income maximizing A's behavior from A's actual behavior yields an indirect measure of altruism, which can be compared to our prior measures of altruism. Eliciting A's beliefs about what C will likely do will allow us to compare A's beliefs with C's actual behavior, and assess the degree to which A's decisions result from mistaken beliefs about C.

Ethnographic Survey Data

Prior to running the actual experiments, we will collect the more extensive socio-economic data on individuals and households. Because many of these data are time consuming and sensitive to collect (especially individual income and household wealth), this can best be done in a more leisurely fashion than is afforded in most experimental settings. For researchers surveying entire villages, such surveys also furnish censuses from which representative samples can be drawn for the experiments. Income and wealth surveys will be tailored to the local resource base, with an effort to quantify all sources of productive capital in the wealth measures. Two measures will receive special attention, as they emerged as key variables in our last round of experiments: market integration and cooperative institutions.

Market Integration: Our previous work has suggested that group-level measures of market integration and the local importance of cooperation may be potent predictors of group-aggregated experimental behavior (Henrich *et al.* 2001). However, because our previous group-level measures were rather crude, we will endeavor to improve these. Market integration will be measured by a variety of methods to test for robustness. One measure will be the amount that each individual receives from wage labor, trade, cash cropping, or through any other contact with the market. A second measure will be based upon the percentage of daily food consumption that is purchased in the market. In the extreme case, pure subsistence producers living one hundred percent off their crops, herds, or hunting, will be recorded as having zero market integration. In most cases we will gather individual level measures of market integration, but where time does not permit, a random sample of people will be surveyed to create group-wide averages of these variables for cross-cultural comparisons.

Cooperative Institutions: Local cooperation will be measured using data on time spent in cooperative endeavors. We will gather individual level data on days per week spent in cooperative activities with non-close-kin (cooperative tasks involving kin more distant than half-sibs, both classificatory or by blood). Such tasks will include community projects such as water projects, canal cleaning, school maintenance, well digging, herding, forest clearing, work parties for weeding or harvesting, etc. Obviously, each ethnographer will have to adapt methods of acquiring this measure (e.g., in many societies this will vary by season).

Network Measures: Those who are participating in the sub-group analyzing the relationship between social networks, trust, and other strategic behavior, will attempt to capture entire village networks in an effort to create measures of network density and centrality. Such complete network analyses will also facilitate the identification of individuals occupying “structural holes” in the network. Prior to the date for the experiments, a complete network analysis of the village will be carried out with all adults who are eligible to play the games (adults over the age of 18). Three questions will be asked: “Tell me all the people with whom you interact most on a day to day basis.” “Tell me all of the people from whom you could borrow the equivalent of one day’s minimum wage with no collateral.” “Tell me all of the people to whom you would be willing to lend one day’s minimum wage with no collateral.”

Experimental Protocol

Below we describe our target experimental protocol. To fit these experiments to local situations, field researchers may need to modify the details. However, every effort will be made to minimize those modifications, and, whenever possible, to test (or control for) the effects of any modifications. All deviations will be recorded and entered into the master database.

We learned a great deal from our first round of experiments concerning protocols and methods that will both maximize controls across sites and minimize the possibility of local “contagion effects.” The latter is potentially a considerable problem in small communities where almost everyone knows one another. Games will be run with individuals who have not previously played any game, and preferably in villages where there has been no prior exposure to the games. Each game in the Core Package will be run on three successive days to minimize “talk” before the core experiments are finished. No individual will play more than one core game to avoid any learning effects that might run across games.

Our goal is to obtain a sample size of at least 30 pairs/trios for each game, meaning we need 60 people (A’s and B’s) for the ultimatum and dictator games, and 90 for the third party punishment games (A’s, B’s and C’s). Individuals will be randomly drawn from a census of all adults in the village over the age of 18. On a given morning, 30 people will be called for the dictator, the ultimatum, or the punishment game. These people will be gathered together in a public area—a school or a shade tree, and monitored by research assistants to prevent talking about the game, though at this point no one should have any notion of the specific rules. At this time, subjects will be reminded that all participation in the games is purely voluntary, and they are free to leave at any time. They will also be reminded that the games may take up to 3 hours and will involve completion of a short survey while they wait to play. During the waiting period, any demographic information that has not already been gathered will be collected: sex, age, education, income, work history, and household wealth. If data on market integration and cooperative work have not already been collected, these will be included. Research assistants will gather these data person-by-person.

One by one, people will be called in to play the game, which will be explained to them in a private area. Prior to actually playing the games, participants must correctly answer a set of hypothetical test questions. For example, in the ultimatum game, the researcher might ask something like, “Suppose A offers \$2 (of \$10) to B, and B set his minimum threshold at \$3. Does B know A’s offer when he decides his threshold? [Answer: no]. Does A know B’s minimum amount when he decides his offer? [Answer: no]. How much money will A receive? [Answer: 0]. How much money will B receive? [Answer: 0]. What if B had set his threshold at \$2? How much money would A receive? [Answer: \$8]. How much money would B receive? [Answer: \$2].” This testing process will be repeated until the respondent gives at least three sets of correct answers in a row. Game descriptions are available in the Appendix. After playing, participants will leave the experimental area, but will not be allowed to interact with participants still waiting to play. At the beginning of the game, it will be made clear that any discussion between waiting participants and those who have completed the game will cause the waiting individual to forfeit their opportunity to play. Those who are assigned the role of player A in the ultimatum game or the punishment game will be assigned a specified time to return, in order to find out if their offer was accepted.

This procedure will be repeated the same afternoon with the final set of 30 players for experiments 1 and 2. For the punishment game, an extra group of 30 people will be called to serve in the Player C role of punisher. Pay-offs will be scheduled to follow all of this play. All payments will be private.

Post-game interviews. After each player has completed the game, he or she will be asked, “What would this game make most people around here think of?” and, “Name this game: what is a good name for this game?” These questions will provide insight into how people perceive the games within their own local context, and how they might be “mapping” them onto common situations, mental models of social relations, or local institutions. Players will also be asked, “What would most people do” as Player A, B, and C (if applicable). Eliciting beliefs is critical for testing rational choice models that predict individuals will maximize utility based on their beliefs

(accurate or otherwise) about what most people will do. These questions will form a foundation for the in-depth ethnographic inquiries that will follow the experiments.

Once all of the games are completed, small focus groups will be set up to discuss the “meaning of the games,” the local interpretation of the results, what people are saying about the game (the “buzz”), what they think of its outcomes, and whether they would behave differently in the future. Focus groups will be composed to encourage participation, thus sex and large status differences will be avoided (where appropriate). These questions will provide valuable ethnographic insight into how people interpret the experiments, and what such games are actually measuring.

U.S. Comparative Experiments

In order to better connect our findings with the vast number of studies from industrialized societies and the literatures of experimental economics, economic sociology, and cognitive psychology, we intend to replicate all of our Core Package and experimental protocols with three U.S. populations—among non-students in rural Missouri and in the city of St. Louis, and among U.S. university students in Atlanta. One of the variables that we consider crucial to reproduce is the “small community” context that is consistent across all of our sites, but not typically found in laboratory studies. In Missouri, the small rural town is roughly comparable in size to some of the communities from our survey areas around the world. In St. Louis city the games will be run with people from neighborhood groups and organizations. Funding for the Missouri studies has already been procured by the co-PI (Jean Ensminger) from the Russell Sage Foundation and this work began in summer 2001. We will also run the Core Package and some supplemental experiments in Henrich’s experimental laboratory at Emory University, with students from the same campus organizations. These controls will allow us to connect our field results to the populations typically used by non-anthropologists.

Supplemental Experiments

In addition to the core experiments described above, which will be performed by all 16 researchers, sub-sets of our group will also coordinate to perform four sets of supplemental experiments. These supplemental experiments will 1) address theoretical questions dealing with trust and social networks, 2) examine framing effects created by manipulating the presentation of the games *vis-à-vis* the local culture, 3) estimate the effect of the experimenter’s knowledge of subjects’ decisions, and 4) assess the temporal, intra-individual replicability of game behavior (i.e. what happens if the same games are repeated with the same subjects).

Trust Games (TG)

The core experiments focus on measuring altruism and punishment, but there are several other dimensions to pro-sociality. To measure both trust and trustworthiness, Barr, Barrett, Ensminger, Henrich, Gwako, Johnson, Lesorogol, and Patton will use the trust game developed by Berg, Dickhaut, and McCabe (1995 and see Appendix) in conjunction with network analysis. In this game, both Player A and Player B are given an equal endowment. Player A is then given the opportunity to send any portion of his or her endowment to Player B, with the understanding that whatever is sent will be tripled by the experimenter and that Player B will then have the option of returning any portion of it to Player A. Results from this game will provide measures of both trust (Player A’s behavior) and trustworthiness (Player B’s behavior). As described above, these experiments will be especially interesting to examine in the context of data on social networks. In the post-game debriefing we will ask what the game reminds people of, and what name they would use to label the game. This contextualization should verify whether people conceptualize the game as a “trust” situation.

Contextual Manipulation (CTX)

Our prior research suggests that game performance may depend on participants making cognitive links between the games and existing institutions or practices (Pillutla and Chen 1999). Among the Orma (Ensminger 2000, n.d.), for example, players seemed to recognize some similarity between the Public Goods Game and the existing institutional form of fund raising for community development known as *harambee*. This may have contributed to the Orma's high proportion of full-cooperators (25%), and generally high mean contributions (58%). People may look for analogies between these abstract games and real life institutions. If the game appears sufficiently similar, individuals may use the corresponding institutional rules as anchors, or defaults, in their decision-making.

Given this possibility, we need to take control of the "context" and examine how manipulating the context *vis-à-vis* local cultural models, norms, and institutions affects behavior. Among Fijians, Tsimane, and Sursurunga, we propose to administer two versions of the SMUG and Public Goods Game. Following the general procedure laid out above, participants will enter the game area and face the same game (i.e., the same payoff structure) presented in two different contexts or scenarios. In one scenario, the game will be dressed-up to cue a particular institution (a set of shared behavioral rules) that prescribes pro-social behavior (equity or cooperation) in a social interaction. The other scenario will be framed either in the usual abstract context, or dressed up to resemble a local context that lacks pro-social norms.

For example, among the Yasewans of Fiji, both the SMUG and PGG can be framed merely by replacing the cash with Kava roots. Fijians explicitly distinguish (and recognize) two ways of thinking about exchange, "the way according to kinship" (the gift economy), and the "the way according to money" (the market economy). Although most Fijians participate in both spheres, they get very upset when these two spheres of exchange are confused or become intertwined. In most contexts within a village, friends and fellow villagers don't set prices, wages, or work standards. Conversely, in business contexts, family members and friends should not expect a better deal from their store-owning relatives (Toren 1999). In the gift economy, individuals are ranked by the status of their lineage and their own prestige, so gift exchange reflects an inherent inequity that pervades village life. Nevertheless, all gifts bring the giver prestige, and the more generous the gift the more prestige for the giver. In the market sphere, individuals are equals, with each trying to get the best deal for him or herself. These two ways of organizing exchange are symbolized by the two quintessential mediums of exchange: cash and Kava roots. Kava roots are used to make a mildly intoxicating (non-alcoholic) beverage that is the foundation for most social gathering in Fiji. People grow Kava in order to give it away, either in its root form or during social occasions as a communal drink. Interestingly, because of its tremendous importance in Fijian society, Kava can readily be converted to cash in the market place, and virtually everyone knows the price. Nevertheless, merely by switching from cash to the Kava-cash-equivalent, participants will likely be "cued" into deploying the cultural rules or norms associated with the gift exchange sphere. As compared to the cash version: Player B's in the SMUG should set lower acceptable thresholds (with zero as the mode) because the cultural rules of the gift-sphere specify that gifts must not be demanded using retributive threats; Player A's in both the SMUG and DG will tend to offer/give more, even yielding hyper-fair offers (offers > 50%), because the rules of gift-sphere specify generosity, and even great generosity (especially with Kava, which is produced solely for 'giving' or sharing). In the public goods game, players using Kava should make substantially higher contributions to the group, as compared with the cash version, with the mode at full cooperation (giving it all to the group). Games presented in both contexts will be followed up by extensive post-game interviews aimed at understanding precisely how individuals understood the games, and how they thought other members of the group understood the game. We will also identify the cognitive Fiske model used, and include a series of "matching games" that provide people with

financial incentives for accurately guessing what other people said about the game (e.g., what most people named it).

Double Blind Games (DBG):

Because our experiments are typically administered by individuals who may have more personal relationships with locals than experimenters in universities, the influence of experimenter bias must be examined. Double blind experiments have been developed in which subjects are assured that the experimenter will not know exactly how they played as individuals, although the experimenter will know the distribution of the data. Initial efforts using double-blind setups with the Mapuche of Chile and the Samburu of Kenya (Lesorogol's work) suggest that experimenter effects are small or non-existent. With the Sangu, Orma, Samburu, Maragoli, and Garifuna, we will perform both double- and single-blind dictator and one-shot Public Goods Games. Following our protocol above, participants will be gathered together and randomly assigned to treatment conditions in a transparent fashion (e.g. picking chips from a hat). See Bolton *et al.* (1998) and Hoffman *et al.* (1994) for double-blind games among university students; see Eckel and Grossman (1998) for gender effects in double-blind games.

Temporal Stability and Replicability (TSR)

No research that we know of has explored the temporal variability of individual behavior over long time periods. Will individuals change their game behavior if the game is played again, separated by months, or years? How much variability is there in one person's behavior? In other words, are behaviors such as altruism in the dictator game characteristics of certain "types of people," or are they situationally driven by specific individual circumstances? To explore this, Ensminger, Gurven, Lesorogol, and Tracer will repeat experiments with the same individuals, with plays separated by months or years. After their second play (but not on any subsequent plays), players will be asked to recall what they did on their first play and what happened. If their current play varies, they will be asked to explain why they have changed their preference.

OUR 16 SMALL-SCALE SOCIETIES

To explore the variability in social behavior across the human species, we selected a diverse array of 16 societies from across the globe (Table 1). Coming from 11 countries scattered across Asia, Africa, New Guinea, the Americas, and Oceania, our sample (double counting for mixed strategies) includes 5 groups of foragers, 6 groups of swidden horticulturalists, 4 groups of pastoralists, 3 groups of small-scale farmers, and 3 groups of market-based producers/wage laborers. Our foragers span a wide range of socio-political complexity and market integration, and show a diversity of cooperative institutions. In Tanzania, the Hadza's acephalous bands rely almost entirely on foraged foods (tubers, berries and game) and share large game widely. On isolated parts of Columbia's Caribbean coast, the Garifuna economy is based on fishing and gathering resources, many of which are exchanged for market goods. In the Russian Arctic, the Inupiaq combine their hunting and fishing with wage labor. In the Torricelli mountains of Papua New Guinea, the village-based Au and Gnau combine hunting and horticulture with a heavy reliance on foraging for sago palms, and exchange very little in the market. As in many Melanesian communities, redistribution gives prestige, and putting others in debt is a political tool used to gain status. Requests for goods must be granted, and fear of being indebted is a constant concern. Relying more heavily on swidden horticulture, the Quichua, Achuar, and Shuar of the Ecuadorian Amazon, the Sursurunga of New Ireland (Papua New Guinea), the Tsimane of the Bolivian Amazon, and the Yawasans of Fiji, all rely primarily on garden produce, and specifically on root crops (manioc, taro, and sweet potatoes) and bananas, which they supplement with hunting, gathering, and/or fishing. Despite these economic similarities, the organization of labor in these communities differs substantially. Both the Tsimane and the Ecuadorian groups (Shuar, Achuar, and Quichua) rely almost exclusively

on household labor, but the Ecuadorian groups also exploit a community-wide cooperative institution (*Mingas*). Meanwhile, in the South Pacific, the Sursurunga and the Yawasans rely more heavily on community-based production that is regulated by rigid hierarchies. Our pastoral populations—the Orma of Kenya, the Sangu of Tanzania, the Samburu of Kenya, and the Torguud of Mongolia—also show high variation, both within each society and across societies, in the degree to which they rely on subsistence production versus sale of stock. The small-scale farmers in our sample include the relatively poorer and less educated Sangu of Tanzania who practice extensive farming, and the highly concentrated and commercialized Maragoli of Kenya, with tiny farms, enormous population pressure, and high levels of education. In the infertile mountainous soils of north-central Mexico, the semi-nomadic Huichol live in widely scattered family hamlets, practicing swidden agriculture and animal husbandry. Many Huichol men migrate in the off-season in search of wage labor.

TABLE 1

Researcher	Group	Country	Economic Base	Experiments
Barr	Multi-ethnic	Ghana	Wage Labor	Core, TG
Barrett	Shuar	Ecuador	Horticulture-Foraging	Core, TG
Bolyanatz	Sursurunga	New Ireland	Horticulture	Core, CTX
Cardenas	Garifuna	Columbia	Fishing-Market Prod.	Core, DBG
de la Pena	Huichol	Mexico	Farming	Core
Ensminger	Orma	Kenya	Herding	Core, TG, TSR, DBG
Gil-White	Torguud & Kazaxs	Mongolia	Herding	Core
Gurven	Tsimane	Bolivia	Horticulture-Foraging	Core, CTX, TSR
Gwako	Maragoli	Kenya	Farming	Core, TG, DBG
Henrich	Yawasa	Fiji	Horticulture	Core, CTX, TG
Johnson	Inupiaq	Russia	Foraging & Wage Lab.	Core, TG
Marlowe	Hadza	Tanzania	Foraging	Core
McElreath	Sangu	Tanzania	Herding and Farming	Core, DBG
Lesorogol	Samburu	Kenya	Herding	Core, TG, TSR, DBG
Patton	Achuar & Quichua	Ecuador	Horticulture	Core, TG
Tracer	Au & Gnau	Papua New Guinea	Horticulture-Foraging	Core, TSR

RESEARCH GOALS AND QUESTIONS

The overall objectives of this research are to replicate our earlier work, broaden the research by including new sites and new experiments, tighten the data collection methods across sites, and extend the research with new predictions as outlined above. Below we suggest related questions that we will address.

Question Addressed by Core Experiments

1. How much variation is there in tastes for altruism, direct punishment, and third-party punishment? What is the variation within groups and between groups?
2. Can any of this variation be explained by individual-level economic or demographic variables? Why is there more individual variation in some groups than in others (Henrich *et al.* n.d.)?
3. Data suggest (Ensminger n.d. and Henrich *et al.* n.d.) that market integration may contribute to explaining equity-preferring behavior both in bargaining games and in the real world. Is this result replicable with new societies and do we find evidence of both inter- and intra-societal variation in offers by degree of market integration?
4. Can the group-level variation be explained by the presence of local cooperative institutions, markets, socio-political power structures or other group-level variables? Are these group-level effects merely products of aggregated individual variation, or are they

true group effects? As mentioned in the theory section, multi-level, cultural evolutionary game theory predicts true group effects, while most rational choice approaches do not.

5. How much of the apparent pro-social fairness in bargaining games results from direct punishment or third-party punishment? How much is pure altruism?
6. How accurate are people's expressed beliefs about what others will do in the game, and do these beliefs influence game decisions? How much variation is there within, and across groups, in beliefs about what other group members will do in the game. What individual and group level variables predict belief accuracy? Cognitive approaches predict that subjects who relate the games to similar real world contexts (e.g., institutions, mental models) will show high degrees of correspondence (high predictive accuracy).
7. How much variation is there in the accuracy of the experiments as measuring devices for these preferences? Do the DG and SMUG measures of altruism correspond?

Questions Opened by Supplemental Experiments

1. How much do trust and trustworthiness vary among individuals and groups? Can individual-level variables, like placement in social networks, explain these differences? Does the level of socio-political complexity, market integration, or network density, predict levels of trust and trustworthiness?
2. Do the trust and trustworthiness of groups co-vary? That is, do player B's tend to respond to player A's trust with trustworthiness?
3. Are individuals' beliefs about the trust and trustworthiness of other members of their group accurate? Do any of our individual variables (e.g. network centrality, market participation) or group variables (e.g. network density, market integration) predict this accuracy measure?
4. How important is the contextual interpretation of the game by the subject? Does connecting the games with local institutional forms or shared cultural models have consequences for individual performance? How strong are these effects? Cognitive approaches (Fiske 1991 and Shore 1996) predict they should be extremely important, while most rational choice models predict little or no effect.
5. Do decisions in experiments result from dispositional differences among individuals and groups or from differences in contextually cued rules about how to behave in specific circumstances that vary from group to group, and from situation to situation? That is, are some individuals or groups generally more fair-minded or pro-social than others, across contexts? Or, do individuals and groups move relative to one another as contexts change?
6. How much intra-individual temporal variation is there? Does this vary among groups? Can either individual or group-level variables account for any of the variation in intra-individual temporal variation? Do people's explanations of the variance point to a larger roll for "situational" circumstances such as dire economic need, rather than player "type" (self-interested versus other-regarding) in explaining offers?
7. How much does the experimenters' knowledge of players' behavior influence players' behavior?

POST FIELD WORK ANALYSIS AND DISSEMINATION

After all researchers return from the field, we will hold a small conference attended by our researchers and a distinguished collection of senior social scientists. Each researcher will be required to deliver and present a completed paper summarizing his or her findings. In these papers, each researcher will perform a number of standard calculations and analyses on their basic Core Data Package. These will include a series of regression analyses of A, B, and C's

behavior (where appropriate) using economic and demographic variables that everyone collected (age, sex, education, income, work, market integration, and household wealth) and standardized graphical presentations of the data for easy comparisons. Beyond this, researchers will customize their analysis and discussion, depending on their sites and particular theoretical interests. In addition, each researcher will deliver an Excel data file containing his or her experimental data (for the Core Package), as well as the standard individual-level data used in their regressions. Researchers will be supplied with a formatted Excel file prior to leaving for the field to ensure uniform data collection. Variations from the standard protocol will also be meticulously recorded for each site and game and coded in the master database to check for effects. The P.I.s will also analyze the entire dataset of behavioral measures using the same individual-level demographic variables and the group-level measures of market integration, cooperative institutions, and socio-economic complexity. The P.I.s will look for methodological explanations for cross-group effects, such as the effect of game and village order effects that could lead to pollution of populations, effects associated with deviations from the set protocol, etc. Once compiled, the master dataset will form the foundation of at least one summary paper intended for journal publication. The project papers will also form the foundation of at least one edited volume. Everything will be made available on our project website. A second conference will be scheduled approximately one year after our first one. At this conference, we will discuss new empirical and analytical findings, lessons, and new directions for our third round. Caltech has agreed to donate the services of one full-time graduate student to assist in the data management, analysis, and conference coordination for all three years of the grant.

As our research team has nearly completed this process once, interested readers are directed to the website (see webuser.bus.umich.edu/henrich/gameproject.htm). Our previous work is forthcoming in an edited volume (Henrich *et al.* n.d.), and summaries of our first project have been, or will be, presented at the American Economic Association (2001 and 2002), Human Behavior and Evolution Society (1999), American Anthropological Association (1999 and 2001), and the International Society for the Study of New Institutional Economics (1999 and 2001). Furthermore, popular summaries of our findings have been reported in *New Scientist*, *Facts* and *Nature* magazines, on BBC radio, and in German, English and French newspapers.

CONCLUSION

Inquiries into foundations of human sociality have perhaps the longest history of any research question in the human sciences (Hobbes 1958, Darwin 1874, Durkheim 1958, Marx 1975, Smith 1937, and Weber 1968). Every social science discipline is founded on some assumptions about the nature of human sociality. Adam Smith rooted human sociality in self-interested decision-making (with instincts to truck and barter), while Durkheim and Weber laid a foundation for sociology and anthropology on the essential “collectiveness” of the species. In this light, we hope to contribute to the construction of new models of human behavior and the integration of the social sciences by laying a systematic empirical foundation that takes into account the dual nature of human inheritance (genes and culture), and the importance of the social environments generated by different institutional forms.

Although our work is primarily of theoretical interest, our findings may contribute both directly and indirectly to the study of economic development, globalization and policy intervention. First, all models of economic development, often implicitly, make assumptions without empirical basis about the nature of human sociality and economic preferences. Our work may contribute to such models by providing not only a firm empirical foundation for making appropriate assumptions about human cooperation, but may yield some observable variables that will allow development practitioners to predict how preferences will vary among individuals and social groups.

Reference List

1. Bateson, D. and L. Shaw (1991). Evidence for Altruism: Toward a Pluralism of Prosocial Motives. Psychological Inquiry, 2(2):107-122.
2. Berg, J., J. Dickhaut, and K. McCabe (1995). Trust, Reciprocity, and Social History. Games and Economic Behavior, 10:122-142.
3. Bolton, G., E. Katok and R. Zwick (1998). Dictator game giving: Rules of fairness versus acts of kindness. International Journal of Game Theory, 27:269-299.
4. Bolton, G., and A. Ockenfels (1999). A Theory of Equity, Reciprocity and Competition. American Economic Review, 90(1):166-194.
5. Bowles, S. (2000). Individual Interactions, Group Conflicts and the Evolution of Preferences. In S. Durlauf and P. Young (eds.), Social Dynamics. Washington D.C.: Brookings Institution.
6. Boyd, R., and P.J. Richerson (1985). Culture and the Evolutionary Process. Chicago, IL: University of Chicago Press.
7. Boyd, R., and P.J. Richerson (1990). Group Selection Among Alternative Evolutionarily Stable Strategies. J. Theor. Biol., 145:331-342.
8. Burks, S., G. Carpenter, J. Carpenter, and E. Verhoogen (n.d.). High Stakes Bargaining with Non-Students. Unpublished manuscript.
9. Burt, R. (1992). Structural Holes. Cambridge, MA: Harvard University Press.
10. Burt, R. (1997). The contingent value of social capital. Administrative Science Quarterly, 42:339-365.
11. Camerer, C. (2002). Behavioral Game Theory: Experiments on Strategic Interaction. Princeton University Press. In Press.
12. Cameron, L. (1999). Raising the Stakes in the Ultimatum Game: Experimental Evidence from Indonesia. Economic Inquiry, 37(1):47-59.
13. Charness, G., and M. Rabin (2000). Social Preferences: Some Simple Tests of a New Model. <http://emlab.berkeley.edu/users/rabin/simple.pdf>
14. Coleman, J. (1990). Foundations of Social Theory. Cambridge, MA: Harvard University Press.
15. Cooter, R. and M. Eisenberg. (2000). Fairness, Character, and Efficiency in Firms. UC Berkeley Public Law and Legal Theory Working Paper No. 55.
16. Darwin, C. (1874). The descent of man, and selection in relation to sex. New York: Hurst and Company.
17. Durkheim, E. (1958). Professional Ethnics and Civic Moral Codes. Glencoe, IL: Free Press.

18. Eckel, C.C. and P.J. Grossman (1998). Are Women Less Selfish than Men?: Evidence from Dictator Experiments. The Economic Journal, 108(May):726-735.
19. Ensminger, J. (2000). Experimental Economics in the Bush: How Institutions Matter. In Institutions and Organizations, Northampton, MA: Edward Elgar.
20. Ensminger, J. (n.d.). Market Integration and Fairness: Evidence from Ultimatum, Dictator, and Public Goods Experiments in East Africa. In J. Henrich, R. Boyd, S. Bowles, C. Camerer, H. Gintis, R. McElreath, and E. Fehr (eds.) Cooperation, Reciprocity and Punishment: Experiments in 15 Small-Scale Societies. Under review at Princeton University Press.
21. Ensminger, J. and J. Knight (1997). Changing Social Norms: Common Property, Bridewealth, and Clan Exogamy. Current Anthropology, 38(1):1-24.
22. Fehr, E., and S. Gächter (2000). Cooperation and Punishment in Public Goods Experiments. American Economic Review, 90(4):980-995.
23. Fehr, E., and K. Schmidt (1998). A Theory of Fairness, Competition, and Cooperation.
24. Fischbacher, U., and E. Fehr (n.d.). Third Party Punishment. Unpublished manuscript.
25. Fiske, A. (1991). Structures of Social Life. New York: Free Press.
26. Foster, G. (1965). Peasant Society and the Image of Limited Good. American Anthropologist, 67:293-315.
27. Frank, R. (1988). Passions within Reason: The strategic role of the emotions. New York: W. W. Norton and Company.
28. Haslam, N. (1997). Four grammars for primates social relations. In J. Simpson and D. Kenrick (eds.), Evolutionary Social Psychology. Hillsdale, NJ: Erlbaum.
29. Henrich, J. (2000). Does Culture Matter in Economic Behavior: Ultimatum Game Bargaining Among the Machiguenga. American Economic Review, 90(4):973-980.
30. Henrich, J. (n.d.). Cultural group selection and coevolutionary processes explain human prosociality and large-scale cooperation. <http://webuser.bus.umich.edu/henrich/coopgs.pdf>
31. Henrich, J., R. Boyd, S. Bowles, C. Camerer, H. Gintis, R. McElreath and E. Fehr (2001). In search of Homo economicus: Experiments in 15 Small-Scale Societies. American Economic Review, 91(2):73-79.
32. Henrich, J., and R. Boyd (2001). Why People Punish Defectors: Weak Conformist Transmission can Stabilize Costly Enforcement of Norms in Cooperative Dilemmas. Journal of Theoretical Biology, 208:79-89.
33. Henrich, J., R. Boyd, S. Bowles, H. Gintis, and E. Fehr. (2000). Reciprocity, Cooperation and Punishment: Experiments in 15 small-scale societies.
34. Henrich, J., R. Boyd, S. Bowles, C. Camerer, H. Gintis, R. McElreath, and E. Fehr (eds.). (n.d.). Cooperation, Reciprocity and Punishment: Experiments in 15 Small-Scale

Societies. Under review at Princeton University Press.

35. Hobbes, T. (1958). Leviathan: Parts I and II. Indianapolis: Bobbs-Merrill.
36. Hoffman, E., K. McCabe, K. Shachat, and V. Smith (1994). Preferences, Property Rights, and Anonymity in Bargaining Games. Game and Economic Behavior, 7:346-380.
37. Hoffman, E., K. McCabe, and V.L. Smith (1996). Social Distance and Other-Regarding Behavior in Dictator Games. The American Economic Review, 86(3):653-660.
38. Johnson, J.C., G. Dutton, and M.K. Orbach (2001). Political Capital as Social Capital. A paper presented at the International Social Network Conference, Budapest, Hungary, April.
39. Kachelmeier, S., and M. Shehata (1997). Internal auditing and voluntary cooperation in firms: a cross-cultural experiment. The Accounting Review, 72(3):407-431.
40. Kagel, J., and A. Roth (1995). The Handbook of Experimental Economics. Princeton: Princeton University Press.
41. Kaplan, H., and K. Hill (1985). Food Sharing Among Ache Foragers: tests of explanatory hypotheses. Current Anthropology, 26:223-245.
42. Knez, J. Marc, and C. Camerer (1995). Outside Options and Social Comparison in Three-Player Ultimatum Game Experiment. Games and Economic Behavior, 10:65-94.
43. Kollock, P. (1998). Social Dilemmas: The Anatomy of Cooperation. Annual Review of Sociology, 24:183-214.
44. Lin, N. (1999). Building a Network Theory of Social Capital. Connections, 22(1):28-5.
45. Lin, N. (2000a). Inequality in Social Capital. Contemporary Sociology, 29:6.
46. Lin, N. (2000b). Social Capital: A Theory of Social Structure and Action. London: Cambridge University Press.
47. Lin, N., K. Cook, and R. Burt (2001). Social Capital: Theory and Research. New York: Aldine de Gruyter.
48. Marx, K. (1975). Early Writings: Karl Marx. New York: Vintage.
49. Mueller, D. (1989). Public Choice II. Cambridge: Cambridge University Press.
50. Ostrom, E. (1998). A Behavioral Approach to the Rational Choice Theory of Collective Action: Presidential Address, American Political Science Association, 1997. American Political Science Review, 92(1):1-22.
51. Pillutla, M. M., and X.-P. Chen (1999). Social Norms and Cooperation in Social Dilemmas: The Effects of Context and Feedback. Organizational Behavior and Human Decision Processes, 78(2):81-103.
52. Platteau, J-P. (2000). Institutions, Social Norms, and Economic Development. Harwood

Academic Publications.

53. Portes, A. and J. Sensenbrenner (1993). Embeddedness and Immigration: notes on the social determinants of economic action. American Journal of Sociology, 98:1320-50.
54. Portes, A. and P. Landolt (1996). The Downside of Social Capital. The American Prospect, 26:18-21, 94.
55. Putnam, R. (1993). Making Democracy Work: Civic Traditions in Modern Italy. Princeton, New Jersey: Princeton University Press.
56. Putnam, R. (1996). The Strange Disappearance of Civic America. The American Prospect, 24:34-43.
57. Putnam, R. (2000). Bowling Alone: the collapse and revisal of American Community. New York: Simon and Schuster.
58. Rabin, M. (1998). Psychology and Economics. Journal of Economic Literature, XXXVI:11-46.
59. Roth, A. E., V. Prasnikar, M. Okuno-Fujiwara, and S. Zamir (1991). Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh and Tokyo: An Experimental Study. American Economic Review, 81(5):1068-95.
60. Shore, B. (1996). Culture in Mind: Cognition, Culture and the Problem of Meaning. New York: Oxford University Press.
61. Skinner, J., and J. Slemrod (1985). An Economic Perspective on Tax Evasion. National Tax Journal, 38:345-53.
62. Smith, A. (1937). The Wealth of Nations. New York: Modern Library.
63. Smith, N. (2001). Ethnicity, Reciprocity, Reputation and Punishment: an ethnoexperimental study of cooperation among the Chaldeans and Hmong of Detroit, Michigan. Unpublished doctoral dissertation, University of California Los Angeles.
64. Stigler, G.J. and G.S. Becker (1977). De Gustibus Non Est Disputandum. The American Economic Review, 67(2):76-90.
65. Toren, C. (1999). Mind, Materiality and History: Explorations in Fijian ethnography. London: Routledge Press.
66. Tracer, D. (n.d.). Market Integration, Reciprocity and Fairness in Rural Papua New Guinea: Results from a Two-Village Ultimatum Game Experiment. In J. Henrich, R. Boyd, S. Bowles, C. Camerer, H. Gintis, R. McElreath, and E. Fehr (eds.) Cooperation, Reciprocity and Punishment: Experiments in 15 Small-Scale Societies. Under review at Princeton University Press.
67. Weber, M. (1968). Economy and Society. New York: Bedminster.
68. Yamagishi, T., and M. Yamagishi (1994). Trust and Commitment in the United States and Japan. Motivation Emotion, 18(2):129-166.