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# The Role of Culture in Evolutionary Theories of Human Cooperation

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**Abstract:** Evolutionarily-minded scholars working on the most puzzling aspects of human cooperation—one-shot, anonymous interactions among non-kin where reputational information is not available—can be roughly divided into two camps. In the first, researchers argue for the existence of evolved capacities for genuinely altruistic human cooperation, and in their models emphasize the role of intergroup competition and selection, as well as group norms and markers of membership that reduce intragroup variability. Researchers in the second camp explain cooperation in terms of individual-level decision-making facilitated by evolved cognitive mechanisms associated with well-established self- and kin-maximization models, as well as by ‘misfires’ that may result from these mechanisms interacting with novel environments. This essay argues that the manner in which culture provides information that de-anonymizes intragroup strangers suggests that neither evolved capacities for genuine altruism nor widespread misfires are necessary to account for anonymous, one-shot cooperation.

**Keywords:** altruistic cooperation, canonical models of cooperation, cultural de-anonymization, statuses and roles, misfire hypotheses

## 1 Introduction

Human cooperation has occupied the attention of evolutionarily-minded scholars since Darwin, and it is currently the focus of research in many disciplines. Although we cooperate in many relatively uncontroversial ways (Mathew 2015), we also often engage in costly, unrecompensed cooperative interactions with non-kin strangers. Examples range from small kindnesses like opening doors and giving directions to donating blood, aiding the ill or hurt, paying taxes, contributing to charity, and investing in large-scale communal projects. We also often engage in costly punishment of non-cooperators. This behavior appears unique to humans and

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is difficult to explain via traditional social science or evolutionary theory, as self- and kin-maximizing strategies should promote a tendency to avoid or defect from such exchanges. And yet, because this type of interaction is the cornerstone of the large-scale societal systems that have typified the human condition over several thousand years, how it can be understood in evolutionary terms is an important issue that spurs a great deal of theoretical debate.

The evolutionary literature on cooperation is voluminous and wide-ranging (for overviews, see Amici 2015; Cronk/Leech 2013; Laland/Brown 2011; Raihini/Bshary 2015; West/El Mouden/Gardner 2011). For the present purposes, two main approaches can be identified that address the behavior, their differences centering on how altruism, or the sacrifice of somatic or reproductive resources for the benefit of others, can evolve. In traditional neo-Darwinian thought, altruism can only be explained (or, more properly, explained away as ultimately selfish) under certain conditions. These are the widely accepted, ‘canonical’ models of cooperation: mutualism (where rewards are only obtained through joint action), kin selection (where genes underlying sacrifice for genetic relatives are passed on by those obtaining the benefits), direct and indirect (third party) reciprocity (where sacrifice is later repaid), and costly signaling (where ‘wastefully’ expending resources signals qualities that attract greater rewards) (Burnham 2016; Henrich/Henrich 2006). Each is an avenue through which somatic or reproductive sacrifice yields sufficiently reliable later benefits that evolved capacities associated with it can persist via natural selection in populations. Thus, many researchers (here grouped as ND, for neo-Darwinians) argue that all human cooperation should be explicable under one or more of these models, even if as the misfiring of evolved cognition associated with them in novel environments (Raihani/Bshary 2015). However, to a second group of researchers (AC, for altruistic cooperation), genuinely altruistic cooperation does exist and, because canonical models cannot explain it, requires a unique explanation that involves some combination of group selection and cultural evolution. To many ND adherents, support for AC theory is critically flawed by its reliance on context-less experiments and societal conditions that occasion misfires of evolved psychological mechanisms. In turn, to many AC researchers, ND theory fails because misfires cannot sufficiently account for the widespread anonymous cooperation that takes place in large-scale societal contexts.

This paper contributes to the debate by discussing an underexplored property of culture: its ability, particularly through social statuses and roles, to provide fine-grained contextual information that helps otherwise anonymous strangers in large-scale societies make cooperation-related self- or kin-interested decisions. This property of culture, commonly discussed in traditional social science theory but less so in evolutionary contexts, suggests that both evolved capacities for genuine

altruism and widespread misfires are unnecessary to account for anonymous, one-shot cooperation. The paper begins by summarizing AC and ND theories as related to puzzling cooperation, including their support and criticisms. It then focuses on the role that culture is described as playing in both theories, and introduces the third, ‘de-anonymizing’ role argued for here. Support for this view is provided from existing data on extended kin networks, fictive kinship assignments, and occupational prestige. Finally, the strengths and weaknesses of the argument are discussed, along with suggestions for targeted research to test it.

## 2 Altruistic Cooperation Theories (AC)

Proponents of AC theories (e.g., Bowles/Gintis 2011; Boyd/Richerson 2009; Henrich/Henrich 2006; Henrich/Muthukrishna 2021; Richerson/Henrich 2012) argue that altruistic cooperation or ‘strong reciprocity’—costly, unrecompensed behavior to reward cooperators or punish non-cooperators (Vromen 2017)—is an important and ubiquitous aspect of human behavior. Because it often occurs for the benefit of anonymous strangers in one-shot contexts where reputation is not a factor, it cannot be explained via the neo-Darwinian canonical models. Instead, its explanation must be some form of dual inheritance of genetic and cultural information, or gene/culture coevolution. Essential to this explanation are the concepts of cultural evolution and group selection: The interaction of culture and genes at the group level results in the selection and reproduction of both groups and their traits, including a genetically-underwritten ‘prosocial psychology’ (Henrich/Henrich 2006, 239) that includes dispositions to engage in altruistic cooperation.

Key to the AC argument are norms, or what people believe they and others should and will do. Norms become reified at the social group level in institutions (Richerson/Henrich 2012, 40). Social groups that adhere to more cooperative norms over time outcompete those following less cooperative ones, resulting in the evolution of the norms themselves (via cultural selection) and of tendencies associated with how we learn, internalize, and adopt them, including tendencies to be strong reciprocators (via genetic selection). ‘Tribal instincts’ (Richerson/Henrich 2012) and an ‘ethnic psychology’ (Henrich/Henrich 2006) evolve as well, as the more individuals identify with the group, often by sharing material and behavioral identity markers, the more altruistically cooperative they will be.

The AC position, then, arguably describes a form of niche construction (Odling Smee/Laland/Feldman 2003) in which the cultural evolution of cooperative norms and institutions modifies the environment so that increasingly prosocial behaviors can be genetically selected (Gintis 2011; Matthews et al. 2014). The degree to which

AC researchers emphasize the role of cultural evolution varies but, uncontestedly, the end results are genetically selected ‘prosocial motivations’ (Bowles/Gintis 2011, 1) or derived ‘social instincts’ (Boyd/Richerson 2009, 3286) that include inclinations to cooperate altruistically. As André and Morin put it, the goal of AC researchers is “to understand how different transmission modes may or may not change the selective pressure upon *biological altruism*” (2011, 2533, original emphasis).

Support for AC theory is found in four areas. In many experimental games (‘prisoner’s dilemma,’ ‘dictator,’ and others), participants cooperate with or punish anonymous players at higher levels than predicted by self-maximization models (e.g., Engel 2011; Fehr/Fischbacher/Gächter 2002; Johnson/Mislin 2011). Although less numerous, field experiments have produced similar results (e.g., Fehr/Leibbrandt 2011; Rustagi/Engel/Kosfeld 2010), and some ethnographic work suggests similar patterns (e.g., Mathew/Boyd 2011). Finally, simulations have established that strong reciprocity could arise under conditions predicted by various models (e.g., Bowles/Gintis 2004; Boyd/Gintis/Bowles 2010).

However, AC’s reliance on group selection is questioned by some (e.g., Baumann/Boyer 2015; Pinker 2012), as is the concept of cultural evolution (Fracchia/Lewontin 1999; Mesoudi 2016). Further, theories of gene-culture coevolution, while theoretically well developed, do not have a great deal of unambiguous empirical support, save for diet-related examples related to lactose tolerance, the shift from raw to cooked food, etc. (Laland/Brown 2011, 186-193; Wrangham 2009). More specifically, norms, posited to be stabilized at the group level, appear to in fact change rapidly, and even very brief exposure to them influences outcomes of cooperation games (e.g., Bicchieri/Mercier 2014; Peysakhovich/Rand 2016; Zhou/Liu/Ho 2015). While intergroup normative variability might be evidence of competition and selection (Henrich et al. 2006), within- and between-group dynamics appear at least as likely to be more consistent with complicated, self-interested agency than with stable, between group competition (Tooby/Cosmides 2010; 2016; Young 2003). Norm strength too appears to vary cross-culturally as related to ecological, historical, and other factors implausibly associated with evolutionary processes and group competition and selection (e.g., Talhelm/English 2020).

Finally, many researchers object that experimental support for AC is flawed, in the field because self-interest cannot be ruled out (Fehr/Schurtenberger 2018, 459), and in the laboratory because the use of anonymous participants and other artificial conditions does not capture natural behavior (Cronk/Leech 2013, 41-44; Guala and associated commentaries 2012; Price 2008).

### 3 Neo-Darwinian Theories (ND)

Researchers in this camp generally agree that hominin evolution in small, predominantly kin-based groups gave rise to cooperation-related adaptive cognition. As a result, various context-influenced cognitive biases, along with coercion, manipulation, and misfires, should explain even what AC researchers consider genuinely altruistic cooperation (e.g., Burnham/Johnson 2005; Guala 2012; Hoffman/McCabe/Smith 1998; Raihani/Bshary 2015; Tooby/Cosmides/Price 2006).

These researchers therefore explore contextual variables associated with the canonical models of cooperation-related cognition. One is the degree to which potential cooperators are related, as we are biased to favor individuals with whom we share close genetic relationships (Hamilton 1964). Similarly, reciprocal cooperation is informed by the nature of past interactions (Trivers 1971). Indirect reciprocity means important contextual information that relates to reputation and observation by third parties (Nowak/Sigmund 2005). In the case of costly signaling, where self-advertising can result in somatic or reproductive benefits, the nature, quality, and costs of signals come into play (Smith/Bliege Bird 2005). Other contextual variables include friendships (e.g. Tooby/Cosmides 1996), power relations (Glowacki/von Rueden 2015), the nature and quality of resources (Kaplan et al. 2012), and the completeness and timing of available information (Ellers/van der Pool 2010; Karlsson/Rowlett 2020). All of these variables influence cooperation-related decisions as related to risk-pooling, reciprocal exchanges, costly sacrifice for kin, avoidance or punishment of non-cooperators, and so forth.

However, our adaptive cognitive biases cannot directly account for genuinely altruistic cooperation and punishment. For that, ND researchers argue that in some contexts cues that evolved in association with cognitive mechanisms may lead to erroneous or manipulated altruistic ‘misfires.’ For example, because human ancestral history involved repeated encounters among specific individuals, we may be biased to initially cooperate even with strangers, which would explain why we often cooperate instead of defecting in one-shot, anonymous experiments (Delton et al. 2011; Hagen/Hammerstein 2006; Raihani/Bshary 2015). Similarly, evolved cognition around reputation may cause us to cooperate rather than defect when we think we are being observed, even if we are not, or are only by people with no opportunity to affect us reputationally (Rogers/Ternovski/Yoeli 2016). Thus large-scale societal living (as well as many laboratory experiments used to support AC models) are fundamentally different from the environments in which we evolved cooperation-related cognition, and what looks like genuinely altruistic cooperation is the product of this mismatch (Raihani/Bshary 2015). The ND position has the advantage of relying on well-explored models in humans and other species. Further,

results from experimental games that include contextual information provided to participants sometimes support its predictions (e.g., Burton-Chellew/West 2013; Haley/Fessler 2005). Other kinds of experiments establish how cues can produce misfires related to indirect reciprocity (Bateson/Nettle/Roberts 2006), kin selection (Oates/Wilson 2002), costly signaling (Sisco/Weber 2019), and the other canonical models.

However, AC researchers object that these kinds of misfires, which they sometimes lump together and describe as the ‘big mistake’ hypothesis (e.g., Boyd/Richerson, 2005), are not sufficient to explain the large-scale cooperative enterprises that characterize human social life over the last several thousand years. And, as Gintis (2011) argues, if a misfire hypothesis is correct, participants in games shouldn’t distinguish between one-shot and repeated interactions or adjust their levels of cooperation according to costs and benefits as they do. Further, some studies suggest that anonymity does not in fact affect experiment results (e.g., Barmetter/Fehr/Zehnder 2011).

Another important objection is to the ND assumption that ancestrally humans lived in small, related groups, and so that our prosocial cognition evolved in that context (Mathew 2015). AC researchers instead argue that, based on demographics of contemporary foragers, early human groups were sufficiently large and unrelated to involve frequent interactions among non-kin strangers (e.g., Bird et al. 2019; Hill et al. 2011). AC researchers therefore often date selective pressures for strong reciprocity to as far back as 60 to 100 thousand years ago (Richerson/Boyd 2001; also Henrich/Henrich 2006, 241).

## 4 AC and ND Views of the Role of Culture in Human Cooperation

The summaries above are necessarily simplified, and there is a great deal of variability between (and even within) arguments in AC and ND camps. Nevertheless, there are important differences in how the two camps view the role of culture in cooperation. Further, both views tend to underemphasize aspects of culture which help explain how anonymous strangers can make informed cooperation-related decisions, even in large-scale societies, and which suggest the lack of a puzzle that requires either widespread misfires or evolved altruistic cooperation to be explained.

AC researchers define culture as socially transmitted information. Comprised of “opinions, beliefs, and attitudes, habits of thought, language, artistic styles, tools and technology, and social rules and political institutions,” it is acknowledged to be

“crucial for understanding human behavior” (Richerson/Boyd 2005, 4). However, researchers tend to limit discussion of culture to norms and in-group affiliative markers, that is, aspects of it that facilitate population-level homogenization and intergroup rather than intragroup variability. While norms may vary widely in content and almost any trait can mark group affiliation, what is most important is that norm adherence and identity markers distinguish groups and facilitate bonding with members and suspicion of outsiders.

Thus, in Boyd and Richerson’s evolutionary scenario (2009), by around 100 thousand years ago “societies are based upon in-group cooperation wherein groups of a few hundred to a few thousand people are symbolically marked by language, ritual practices, dress and the like” (3286). Evolving tribal instincts “support identification and cooperation in large groups, [and] are often at odds with selfishness, nepotism and face-to-face reciprocity” (3287). Tomasello et al. (2012), in their posited second stage of ‘group mindedness’ in the evolution of human cooperation, describe “cultural conventions, norms, and institutions (all characterized by collective intentionality), with knowledge of a specific set of these marking individuals as members of a particular cultural group” (673). And Bowles and Gintis’s (2011, 1) “moral sentiments” associated with “groups of individuals who were predisposed to cooperate” (also Fehr/Gächter 2002) similarly focus on group homogeneity.

ND researchers also define culture as information transmitted in group contexts. It consists of “mental representations, public representations, problem-solving skills, and behavioral routines that become widespread in populations and give rise to within-group similarity and between group differences” (Cosmides 2016; see also Tooby/Cosmides 1992). However, researchers tend to focus on intragroup variability and the contextual information culture can provide about individual familial relationships, reputations, subsistence and reproductive strategies, and so forth. Heterogeneity is key: individuals differ, and cooperation strategies must differ as a result.

ND researchers also focus on how culture relates to cues associated with cooperative decision-making mechanisms and, in particular, on how cultural cues might inform errors and manipulation. For example, cross-culturally many religious, military, and terrorist organizations, irrespective of ideology, appear to similarly manipulate human kinship-recognition cues in order to reinforce altruistic commitment on the part of their recruits (Qirko 2013). While the cues may be cultural, such as uniforms or kin terms, their effect is tied to the evolution of the cognitive mechanisms associated with canonical models. Thus, just as we are prepared to detect and fear ancestral dangers like snakes and heights but not more dangerous threats like cars (e.g. Öhman/Mineka 2001), many cultural traits, as novel, have little to do with our evolved cognition and are not typically relevant to ND analyses.

In sum, AC theories, in emphasizing intergroup cultural variation and patterning, tend to underexplore intragroup variation in cooperative decision-making. ND theories, on the other hand, by focusing on direct (or directly reputational) individual experience and related cues, do not sufficiently address ubiquitous, one-shot cooperative interactions in large-scale societies among anonymous, non-kin strangers.

## 5 The De-Anonymizing Property of Culture

The view of the role of culture in human cooperation proposed here focuses on the fact that institutions provide more information than is typically taken into account in either AC or ND theories. AC researchers define norms (or, in social science literature, ‘values’) as “socially shared ideas about what is good, right, and desirable” (Roberston 1987, 64). These researchers also view institutions as standardized “packages of social norms that interlock to govern some domain of life, such as marriage or exchange” (Henrich/Muthukrishna 2021, 5). However, institutions are more than that: they are “clusters of values, *statuses*, *roles* and *groups* that develop around basic needs of society” (Robertson 1987, 93, emphasis added). Status positions individuals in a social structure, and roles are not only expected behavior patterns but behavioral and personality characteristics seen to be associated with statuses. Both, along with their myriad markers, provide detailed information about intra-group variability even in anonymous, one-shot contexts. Even in the simplest forager societies, individuals are de-anonymized by their occupying a number of intragroup statuses and playing many roles. And as social groups grow larger, culture formalizes statuses and roles in increasingly complex and refined ways.

One example of such intragroup statuses are age-sets, which in many tribes mark life stages and are associated with specific tasks, rituals, and identity markers (e.g., Lienard 2014). Military sodalities, such as the Dog Soldiers and other Plains Indian pan-tribal associations, are another (e.g., Moore 1974). In both cases, statuses not only facilitate group cooperation and punishment, but also provide detailed information about individuals who may be personally and reputationally unknown to both in- and out-group members. The more complex the social group, the greater number of statuses and roles that will identify those who belong to it, and more individuals will occupy multiple statuses at once. Culture ensures, in other words, that there are no, or few, ‘perfect strangers,’ even in one-shot encounters. Would-be cooperators need not have evolved tendencies to cooperate with group members, as they can identify and assess cultural information



about them as individuals, even when strangers, to inform cooperative decisions. Large-scale societies are not novel environments with respect to providing context for individual-level cooperative calculations—they simply provide more of it indirectly as a consequence of increased size and complexity. Thus, because of this de-anonymization property of culture, there is no reason to expect that ubiquitous misfires are an inevitable consequence of the ND position. While, as in any cue-based heuristic, errors and manipulation will certainly occur due to incomplete information, miscommunication, or intentional manipulation (Haselton/Nettle/Murray 2016), cultural information allows individuals to generally make accurate cooperative decisions related to mutualism, reciprocity, and other models about strangers *as if* these individuals were in fact known, directly or reputationally. Further, this property of culture suggests it is unlikely that there were strong selective pressures in ancestral groups for the evolution of altruistic dispositions. If these groups were large and complex enough to necessitate altruism beyond that explained directly by canonical models, as AC researchers argue, then they were also large and complex enough to possess sufficient intragroup variability in statuses and roles to obviate the need for the evolution of genuinely altruistic cooperation.

## 6 Theoretical Support

Anthropology and other social sciences have been exploring how statuses relate to human social organization for a long time, and several early concepts are still relevant to understanding culture's role in de-anonymizing strangers. Durkheim, in arguing that society is a 'superorganic' entity that must be studied on its own terms, emphasized the importance of social facts. These are concepts and expectations that arise not from individual responses and preferences, but from the community that socializes each of its members. No individual perfectly exhibits them, but social facts influence the behavior of all group members. "When I fulfill my obligations as brother, husband, or citizen, when I execute my contracts, I perform duties which are defined externally to myself and my acts, in law and in custom." (Durkheim 1982, 50)

Social facts resemble the cooperative social norms that AC researchers argue are internalized by group members, but they encompass much more intragroup variation. Social facts apply to behavior of the "brother, husband, or citizen . . ." but also to that of the banker, musician, or religious specialist, as well as to members of different generational, gender and other demographic subgroups. Further, there are observable material and behavioral markers associated with these 'facts.'

They therefore provide information to and about would-be cooperators at a level of specificity beyond the group norms and identity markers emphasized by AC theorists.

Radcliffe-Brown's distinction between the individual (as a biological organism) and the person further captures the degree to which statuses and roles can de-anonymize strangers. To him a person is "a complex of social relationships" inhabiting a particular place in a social structure at a particular point in time, and which can change in a person's lifespan (Radcliffe-Brown 1940, 5). Here again, the complex bundle of social relations that make individuals 'persons' provides contextual information, even among strangers, that can be used for cooperative calculations.

More recently, expectations states theory as developed by Berger and others (e.g., Berger/Cohen/Zeldich 1972) explores how competence, credibility, and influence may be attributed to individuals in group contexts not only as a result of direct knowledge of their skills and experience, but on the basis of status beliefs—that is, expectations associated with widely held beliefs about race, gender and other dimensions of difference (Ridgeway 2001). Here too, the relevance of status to cooperation-related decision-making is clear.

Among evolutionists, a view of culture as formalizing interdependencies comes closest to the de-anonymization argument proposed here. Many cases of apparent altruism can be explained by interdependence, or the dependence of an individual's fitness on that of another's (Roberts 2005). Interdependencies allow altruists to benefit by helping others, as long as "costs are outweighed by the altruist's stake in the recipient's benefits" (901). As Daniel Dennett puts it, humans are good at "making things to think with" (1996, 134). This often results in cultural products, such as marking systems and computing devices like the abacus, calculator, and computer. But the point relates to social relationships as well. Cultural statuses and roles are also 'things to think with,' and a means by which interdependencies are automatized. We are not usually thinking about cooperation when we go to work, or to the bank, church, or army. Culture, by storing information about our complex interdependencies and associated strategies, is in a sense doing the thinking for us. Cronk et al. (2019) illustrate this when they show that close kin relations in the major kinship systems correlate with typical levels of interdependence among members.

However, while according to this view culture automates cooperative decision-making, the de-anonymization argument is that culture stores information we can use to make strategic cooperative decisions, even about individual strangers. We must still do the thinking. This is clear when one considers how individuals occupy many statuses, and play many roles, simultaneously and situationally. Each social person is unique, and so requires individual-level strategic attention

from would-be cooperators. Culture cannot adequately provide a shorthand for all that is involved.

In short, ND theory emphasizes direct or indirect knowledge about individuals that can occasion misfires among strangers, while AC emphasizes group-level altruistic predispositions and associated conformity to norms. Statuses and roles don't provide specific individual-level information, as ND mechanisms would require, nor are they the cooperative norms to which groups conform that are key to AC models. Instead, statuses and roles provide variable intragroup information that permits assessments of strangers as individuals. Morin (2014), in reviewing AC theory and other potential causes of genuinely altruistic behavior, notes that it is unlikely to be frequent, as humans assess whatever information is available to try make skeptical, discriminating, and self-interested choices. Statuses and roles are simply an additional source of information to that end.

## 7 Empirical Support

Perception and behavior related to kinship networks, fictive kinship, and occupational statuses suggest that people in fact use status and role information to de-anonymize strangers in order to facilitate cooperation.

### 7.1 Extended kinship networks

As many ethnographers note, people spend a great deal of time and energy locating strangers in extended kin networks. Yomut Turkmen of Central Asia

... know their recent genealogy—at least five to seven generations—very well, although they often conceal knowledge of the fifth and sixth generations to avoid becoming embroiled in more distant blood feuds. When two strangers first meet, they inquire about each others' descent group to establish their relationship to each other. When households that are not closely related camp together in the same *oba* [a group of households sharing a territory], a tenuous kinship tie is often discovered ... (Wood 1994; also Irons 1975)

Among the Igbo of Nigeria, as reported by Okeke, “when two strangers meet in a village, one of the first duties is to sort out how they may be related to each other and having discovered how the kinship system applies to them, they behave to each other according to the accepted behaviour set down by the society” (2020, 128). Among Somalis, “[w]hen strangers meet, the normal procedure is for them to ask each other their pedigrees and for these to be traced until a point of reference which is mutually significant is reached ... What is important is that the question ‘Who

are you?’ is answered in genealogical terms and behaviour is, broadly speaking, adjusted accordingly.” (Lewis 1998, 53) Nuosu genealogies can be recounted to thirty generations by laypersons, and sixty generations by priests, the information used to establish clan identity and relationships (Harrell 2001, 91).

Locating strangers in kin networks involves neither simple in-group/outgroup normative evaluations nor responses to kin-recognition cues associated with inclusive fitness cognitive mechanisms. Instead, relationships are rationally calculated, often painstakingly. However, genetically remote as the identified relationships will often be, because kinship is associated with social expectations, obligations, and consequences, establishing kin relationships in this way facilitates productive cooperative interactions even among otherwise complete unknowns.

## 7.2 Fictive kinship assignments

Fictive kinship refers specifically to individuals understood not to be genuinely related by societally recognized criteria (Qirko 2011). Nevertheless, fictive kin assignments are never random, and often have material and reproductive consequences. Godparenting, for example, in many societies is associated with specific financial obligations (e.g., Foster 1953). Namesaking often provides opportunities for children to more easily receive support from even potentially unrelated adults (e.g., Johnson/McAndrew/Harris 1991). And, as among the Yanomamo, manipulating kin categories can facilitate reproductive opportunities (Chagnon 1998). But fictive kinship can also be assigned to strangers in order to facilitate cooperation. Ethnographers often discuss this happening to themselves, as Shyrock notes about his relations with his Jordanian Bedouin hosts: “I was treated like a son and brother, although I was known to be neither; my wife, Sally, was taken into the house of the brother of the man who acted as my local father, which meant we were a patrilineal parallel cousin marriage.” (Shyrock 2013)

Barnett was similarly accepted as an older brother by one of his Palauan informants: “He treated me as such and I was so accepted by other residents of Ngarard. This was neither as false nor as difficult as it might be in other societies because the establishment of fictive kinships is a Palauan custom. It gave me a place in their social system ...” (1970, 30)

In C. W. M. Hart’s account of life with the Tiwi (1970), he notes that although establishing kin connections with Australian bands was essential, he could find no way ‘in’ until a woman called him ‘son’ in requesting tobacco and he replied using the term ‘mother.’ From then on, the woman’s sons called him ‘brother’ and other group members called him by the appropriate reciprocal kin term, describing him to strangers by listing his kinship ties. While Hart felt the group assigned him

kinship to avoid stressors in daily interactions, when his clan relatives had to make a difficult decision about the fate of the woman he called mother, he was consulted as if he were a legitimate son—clearly they took the obligations associated with his status seriously.

The practice of assigning fictive kinship to ethnographers is a good example of pragmatic, if not manipulative, means through which individuals can create a context for cooperative relations. It is all too easy for patron/client relationships to form, both in economic and social terms, between well-off ethnographers and subsistence-level informants. Fictive kin assignments help foster more reciprocal interactions. Kaufmann and Rabodoarimiadana say Malagasy villagers who adopt ethnographers are sending a message: “I am treating you as an offspring; you have to treat me as a parent” (2003, 188). Manyoni (1983) notes that fictive kinship is not a matter of ethnographers being legitimately accepted in a group, but a way to address their disturbingly ambiguous presence in it. As Beals notes about Gopalpur villagers with whom he lived, “they would not let us remain as strangers” (1970, 45).

### 7.3 Occupational prestige

There are also many non-kin institutional statuses and roles in social groups, as well as associated markers in language, clothing, consumer goods, art, etc., that provide intragroup contextual information that can be assessed to make self-maximizing, cooperative decisions involving even anonymous strangers. One good example is occupational status, as it is clear that people often infer contextual information from what others do for a living (e.g., Ganzeboom/Graaf/Treiman 1992). While some of the correlates with occupational prestige relate directly to the nature of the work or the income it typically generates, others range much further into the areas of character and personality. For example, in several studies, a leading correlate with occupations is the degree to which those in them are “regarded as desirable to associate with” (Garbin/Bates 1966). ‘Moral worthiness,’ ‘honesty,’ and ‘ethical standards’ are similarly often associated with occupations, with, for example, nurses typically ranking near the top and car dealers at the bottom of lists (Jones/Saad 2019; MacKinnon/Langford 1994). And, while some occupational rankings are relatively stable, others vary over time (e.g., ‘glamorous’ flight attendants in the 1950s versus today), and by demographics—for example, Americans vary by generation in their views of athlete as a prestigious occupation (e.g., Pollack 2014). Further, many occupations have strong ‘cultures’ marked by recognizable behaviors and cultural artifacts (Trice 1993). Occupations therefore provide a measure of not only income and skills but habits and character—contextual information that

can be used in strategizing about cooperation with strangers even if meeting them only once.

## 8 Discussion

Sociologist Stuart Hall describes people as ‘readers’ of race, and argues that to invoke ‘obvious’ phenotypic differences between races, and what they ‘obviously’ mean about the people who embody them, in fact requires the use of ‘territories of knowledge’ obtained through stories, images, jokes, conventional wisdom, religion, and science (Jally 1997). This paper argues that members of social groups are readers of (and communicators about) all manner of social difference, its content shaped by local circumstance, and that we use vast territories of cultural knowledge to inform our cooperative interactions with strangers. Culture provides the information humans need to make cooperative decisions in accordance with the canonical models even in one-shot exchanges in large networks of strangers. Information about known individuals, while certainly used when available, is not indispensable, and evolved prosocial dispositions to cooperate altruistically are not necessary.

AC researchers might object that the de-anonymization argument simply describes the dynamics of norm development and conformity. They might be correct if individuals were assigned uniform status as members of social groups. But there are myriad differences among group members, many of which can be inferred through cultural information about their statuses and behavior. Assessing this information for cooperation-related decisions is an individual-level strategy that is quite different from the monolithic norm adherence of AC theory.

ND researchers, meanwhile, might argue that de-anonymization is exactly their view of context and how it informs (or misinforms) cooperative decisions. However, the models and contexts they usually call upon for explanations relate to direct and indirect knowledge of specific individuals—for example, identifying who is kin or who has a good reputation. Statuses and roles inform individual-level decisions, but are not in themselves about specific individuals. Further, cue domains as traditionally related to canonical models are co-evolved with the cognitive mechanisms they inform. We react to kin-recognition cues, or to being observed, or to costly displays of resources or physical attributes, because of their association with kin selection, indirect reciprocity, and costly signaling, all of which typically involve repeated encounters. But culture permits us to read a vast number of additional (and often non-costly) cues that provide cooperation-related information about strangers even in one-shot contexts. We are surely not wired to pay attention to

different occupations and demographic statuses, much less to accents, musical preferences, clothing styles, and all the rest of what comprises cultural information, yet we can and do so to inform cooperation-related decisions. Culture expands that which can inform canonical processes and still lead to self-interested, strategic outcomes associated with canonical cognitive models.

One of the reasons debates concerning human cooperation remain so vigorous is the difficulty in effectively testing the various theories proposed to explain it. It is difficult to establish if and when people are actually behaving adaptively, a particularly important test of AC models. Because of their simplicity and artificiality, laboratory and even field experiments may involve too few variables to capture natural conditions, and yet field settings, while they provide detailed descriptions, are usually too complex to effectively control (Wiessner 2005, 136). Further, ND models, focused as they are on posited evolved psychological adaptations, do not explore or require information about whether we are behaving adaptively in any particular context (Brown/Richerson 2014).

Nevertheless, there are several profitable avenues through which the role of cultural de-anonymization in cooperative contexts may be explored. For example, notwithstanding the sophisticated intragroup dynamics posited here, there is little doubt about the rapidity and facility with which we, often unconsciously, characterize individuals as in- or out-group members (e.g., Krebs/Denton 1997; Masuda/Fu 2015). Research establishes that out-groups are typically perceived as more homogeneous than in-groups, although there are competing theories as to why (e.g., Judd/Park 1988). Perceptions of heterogeneity in in-groups run counter to AC predictions about norm internalization and identity markers, and are more consistent with a model of individual level decision-making. Therefore, more targeted research exploring how status, role, and other cultural information can influence perceptions of in-group heterogeneity could prove productive.

Also, just as in/out group identity processes can lead to fear, hostility, and violence, or “the worst attributes of human societies” (Laland/Brown 2011, 182), the process of ‘reading’ or de-anonymizing others can lead to prejudices, stereotypes, discrimination, and xenophobia. From an evolutionary standpoint, cultural information that helps distinguish strangers with respect to cooperation only has to be generally right—like with any other evolved, cue-based system. Research suggests that in spite of inaccurate generalizing, stereotyping is useful in predicting individual behavior (e.g., Jussim et al. 2009; Nance 2016). This supports the de-anonymization view. However, more specific work that targets how stereotypes are used for cooperative decision-making is needed.

Most obviously, laboratory experiments can more systematically manipulate contextual variables to explore their potential effects. As noted, experimental games that add contextual information do influence levels of altruistic cooperation

(Ferguson/Corr 2012). But a different sort of contextualization, involving not only past interactions and in/out group affiliations but more nuanced information about intragroup statuses and roles should be instructive. Research on framing suggests likely results. For example, levels of cooperation among anonymous participants increase if experiments are labelled as ‘Community’ rather than ‘Wall Street’ games (Ross/Ward 1996), and if framed as concerning a ‘shared social event’ rather than a ‘joint investment fund’ (Pillutla/Chen 1999). AC researchers use these kinds of studies to argue that because different norms lead to different results, participants must assess which norms might apply (Richerson/Hendrich 2012, 46). However, there is more than normative information provided in these experiments. As Ross and Ward put it, the power of the frame in evoking real world scenarios is clear, but “further research will be required to determine exactly why the particular label attached to the game exert[s] so large an effect” (1996, 108).

Finally, how contextual information about individual strangers influences cooperation needs to be further explored. Gonzalez and Loureira (2014) look at criteria associated with loan success, and find that lenders use the age and attractiveness of unknown borrowers relative to their own to make decisions. Looking more in depth at what other interrelated criteria apply, and how they are identified, should also be informative. What might happen in games when anonymous participants are identified as bankers versus buskers versus police officers, for example, or by vocabulary choice, neighborhood, and clothing? Results may be depressing in terms what they reveal about how we unduly generalize and stereotype, but they will likely support the view that culture de-anonymizes strangers in ways that will influence cooperation.

## 9 Conclusion

“Nothing about norms and institutions makes sense except in the light of evolution,” write Richerson and Henrich (2012, 67). This view, fundamental to the contention that humans have evolved strong reciprocity via group selection, is hard to reconcile with what we know about social life. The development of norms and institutions is certainly related to increasingly large numbers of people who must be organized so that they may obtain the benefits of staying together, but this is a tenuous, complicated, non-directional, and often short-lived enterprise, as archaeology and history amply show. Norms can be arbitrarily adopted or abandoned, and social groups can rise or fall as a result. Neo-Darwinians appear to be on safer ground when they argue instead that we have evolved complex cognition to make adaptive cooperative decisions, even if we sometimes fail to do so. This



paper makes the case that cultural information related to intra-group variation is sufficient to explain how adaptive (for the most part) cooperative decision-making can take place even in one-shot, anonymous contexts. This is a view of the role of culture in cooperation that falls somewhere between that of direct and cue-based information about specific resources and individuals on the one hand and norms and identity markers operating at the group level along evolved prosocial dispositions on the other. Ultimately, it supports an expanded ND model of self- and kin-maximizing cognition. This does not mean norms aren't important—clearly, they can vary across groups and all manner of subgroups, sometimes show enduring stability, and differentially influence behavior. However, norms and in- out-group markers are but two sources of information and impetus for cooperation, even in anonymous contexts. Given the amount of cultural information that can be read and assessed in cooperative decision-making, evolved tendencies to favor group members at unrecoverable expense are not necessary to explain the patterns we see.

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