SOCIAL EVOLUTION FORUM

Human Cooperation is a Complex Problem with Many Possible Solutions: Perhaps All of Them Are True!

Peter J. Richerson
University of California, Davis

Recent debates on the SEF and in Steven Pinker's Edge essay *The false allure of group selection*, and commentaries thereupon, seem to underplay one of the most important points about human societies, the interaction of, and often synergy between two major structural principles for organizing cooperation in human societies. I think that everyone agrees that human societies are unusual in having extensive cooperation between people who are not closely related genetically. Even our kinship systems are unusually extended compared to other primates, as Bernard Chapais and Sarah Hrdy have pointed out. People differ partly in how they want to think about the problem, especially whether to use the language and models of direct and indirect fitness effects or multi-level selection. Language and modeling framework aside, I think that there are issues of substance involved that derive ultimately from the complexity and diversity of human social systems.

The two major structural principles organizing human societies are individualistic personal ties and group membership. Kinship, friendship, and personal and reputational knowledge about other individuals play important roles in human social life. Human groups are more or less strongly institutionalized. That is, they have a rule bound set of rights and duties that apply more or less equally to every member. Groups are marked by distinctive dialects and languages, stylistic variation in dress and many other artifacts, forms of ritual observance, and the like. They typically have names. Only a few individuals' status as members or non-members is ambiguous, such as recent immigrants. Groups often engage in highly organized collective activities such as warfare, corporate economic activity, and governance.

Many, but by no means all, human groups are what the entomologist Mark Moffett calls "anonymous societies." They have this feature in common with the advanced eusocial insects. A honeybee colony is far too large for every

Corresponding author's e-mail: pjricherson@ucdavis.edu

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member to know every other member. Each colony has a colony recognition odor and if a fellow bee has the same odor, it is treated as a colony mate. If it has a different odor, it is treated as an intruder. In the case of 'supercolonial' species, such as the pest Argentine ant, the supercolony has a huge number of queens and many small nests interconnected by trails of migrating individuals. In Argentina the supercolonies are hectares in size and the relatedness between workers within colonies is near zero. Gene flow between the supercolonies is small and genetic variation between them is large, suggesting that selection at the level of supercolonies is significant. In human groups symbolic markers such as dress, dialect, and ritual serve much the same function as colony recognition odors. The scope of institutions is frequently defined by belonging to a symbolically marked group. Egyptian Copts are monogamous but Egyptian Muslim men are permitted multiple wives.

Complexity arises because groups bound by personal ties are embedded within symbolically marked groups and sometimes cross-cut them. Every symbolically marked group includes families, bands, and other small face-to-face groups where reputations matter and where retaliation for transgressions is painful and personal. Diversity arises in part from the fact that societies differ in how rights and duties are assigned. In some societies, rights and duties are assigned largely on the basis of one's location in face-to-face organizations. In the classic Polynesian ranked lineage system, rights and duties flow from one's position in strict relation to one's genealogical distance from the line of eldest sons tracing their ancestry to the chief male of the pioneering lineage that settled the island. Unilineal descent systems like the Polynesian one link even very distantly related people by the personal metaphor of kinship. By contrast, in the Polynesian's Papuan neighbors on New Guinea and nearby islands typically all male members of a tribe have equal rights to seek influence and economic wealth based on their membership in the group.

My suggestion here is that both of these structural principles operate in human societies but to very different degrees in different cases. In particular, no societies lack individualistic face to face processes. As Kim Hill and colleagues recently noted, all the quantitatively well studied hunting and gathering groups have large social networks rich in non-kin of whom they have at least some personal knowledge. Social rules (norms in the jargon of psychologists, institutions in that of sociologists) governing those relationships are ubiquitous. In some societies, social interactions are almost entirely limited to personal ties. In others, membership in the group by itself permits cooperation between people who don't know one another personally.

Take an ethnographic example, the Turkana, a tribal people of northern Kenya numbering about one million. As related by Sarah Mathew, the Turkana regularly engage in quite dangerous *ad hoc* parties of hundreds cattle raiders

recruited from many sections of the tribe. No prospective participant can know the personal reputation of all or even most of the participants in large raids. If you are a Turkana and you are asking me to participate in some dangerous activity that might require me to be altruistic, I might be willing to participate because I know the Turkana rules about such activities and trust that participating strangers will 'watch my back' as I am expected to watch theirs. Successful raiders gain booty in the form of animals that are supposed to be shared equitably among all raiders. The Turkana as a whole benefit from raiding because it drives away competing groups that counter-raid the Turkana. In the event, various kinds of cheating are not uncommon, but they are harshly punished by the miscreants own tribal section mates, so personal ties have an important role in the system. The Turkana raiding recruit has justifiable faith in Turkana *institutions* that ensure that most of his fellow raiders will follow the rules or be punished by their own buddies. Thus, many Turkana are willing to join such raids even though the death rate is about 2% on any given raid and many others suffer terrible wounds. The shirkers and cheaters on fair division of loot from raids bear the scars of their punishment as well.

Knowing that most Turkana subscribe to the same rules means that on a cattle raid Turkana don't have to know other men's reputations—only that they are fellow Turkana—to join a raid. The Turkana belong to an anonymous society that uses the Turkana ethnicity as a substitute for individual reputations when organizing large scale raids. The Turkana are without much formal political leadership or political inequality so there is no question of Turkana warriors being coerced into participation in raids by higher authority.

In 19th and 20th centuries nation states, beginning with France in the revolutionary period, began to deliberately use a common language and a common culture of citizenship to raise mass armies, something that class divisions made impossible in early modern Europe. Frenchmen flocked to the Tricolor as anti-revolutionary armies invaded France to restore the monarchy. The spirit of the French Revolution was eventually undermined by Napoleon's dictatorship, military arrogance, and catastrophic defeats, but it is hard to doubt that millions of Frenchmen, Englishmen, Prussians, Austrians, Russians, and Spaniards died for their countries between 1792 and 1814. Subsequently the idea of creating anonymous nationalist supercolonies spread to most of the world creating on the positive side wealthy liberal societies with a rule of law and on the negative side the horrors of World War II and the shivering terror of living under the threat of nuclear Armageddon.

The key thing is that it is often relatively easy to launch collective enterprises of thousands or millions of participants based on an allegiance to and trust of institutions ***if***, and it is a big ***if***, they can reasonably trust that their fellow Turkana, French, English, Prussians, Russians, Mongols, Chinese,

Muslims, Romans, Americans, etc., have each other's backs just because they are anonymous members of the same group. The point is that many human societies have anonymous institutions. You can be verified as a member by symbolic markers and thereafter accorded rights and duties due to all members. Of course all societies have other institutions that do require personal relationships to function. You become a member of a family by birth, marriage or adoption as a specific individual. You become a member of a street gang by building a personal reputation with existing gang members and undergoing a specific initiation ritual. If you betray the gang you may be cast out or killed by specific gang members who know you transgressed.

These two principles of social organization go back a long way in human evolutionary history to judge from the diversity of institutional forms anthropologists have observed in living hunter gatherers. In a forthcoming book, my colleague at Davis Robert Bettinger argues that in the Western North America most societies had a mixture of both principles, but some greatly emphasized one or the other. In the sedentary fishing societies of the Northwest Coast rights and duties were almost entirely defined by where you stood in a ranked kinship system. In the Shoshone of the Great Basin resources were scarce and scattered. People moved about in small family bands exploiting these resources for most of the year. In winter several families would camp together to socialize and conduct cooperative activities like rabbit drives. Their far-ranging search for food and other resources often meant that unrelated and unknown families would join these winter camps. Anyone who spoke Shoshone or the language of an allied tribe was welcome. Leaders of cooperative ventures were chosen on an *ad hoc* basis. This worked because everyone conformed to a common set of institutions. For example, unusually among hunter-gatherers, gathered, hunted, and manufactured products were considered private property. Newcomers or visitors to a camp had no right to hospitality. It was strictly a family's decision to part with their resources. Perhaps such a rule was necessary, lest some families in this highly mobile, substantially anonymous, system adopt a strategy of moving to mooch instead of moving to foraging for their own resources. An offshoot of the Shoshone, the Comanche, took advantage of horse mobility to form a powerful raiding and trading system on the Southern Plains that one historian describes as an empire. Comanche institutions were scarcely different from those of the Great Basin Shoshone despite the fact that they operated cooperative ventures on a much larger scale than was possible in the low-density, horse poor Great Basin.

Today, there is equally large variation in the use of the two principles. Most of us live in nation-states where a number of important rights, duties, and resources come to us by virtue of our citizenship. The clerk in the Social Security office knows nothing of our personal kinship status or reputation. She treats us entirely on the basis of our citizenship and impersonal rules that

define our rights to resources. Almost all of us live in more intimate groups such as families, neighborhoods, professional associations, sports teams, and the like where we are known as individuals and succeed by earning reputations and responding to criticism and material incentives from family, friends, and colleagues. The value of citizenship is very small in some places relative to kinship and reputation. In his 1958 classic *The Moral Basis of a Backward Society*, Edward Banfield describes a town in Southern Italy where trust outside the orbit of the nuclear family is very low. Government officials are corrupt. Businessmen cheat their customers and suppliers if they can. Diego Gambetta in his classic book on the Western Sicilian Mafia, describes a very similar society. The basic function of the Mafia in its home villages and towns is private protection services. The state has historically provided poor business law services. Two businessmen don't know each other sufficiently intimately to trust one another want to do a deal. They are each under the protection of a Mafioso who has a local reputation for giving his word and acting violently, if necessary, when his word is disrespected. The businessmen bring their Mafiosi to their negotiating meeting. They witness the negotiations and when the final agreement is reached the Mafiosi agree they understand the deal and each promises that if either businessman welches on the deal his protector will stand aside and let the aggrieved party's protector enforce a fair resolution. By breaking kneecaps or even murder if necessary. Such private protection based on personal reputations is better for business than nothing, but has many disadvantages. Private protectors often run protection rackets. They often infiltrate whatever legitimate organizations that exist, such as state courts, and corrupt them. They run or protect illegal and unsavory businesses.

Robert Putnam and his colleagues describe the very different experiences of Northern and Southern Italy after many central government functions were federalized in the 1970s. The Northern provinces were generally able to produce highly functional local governments while the Southern provinces were much less successful. Their explanation is that the Southern Italy was ruled by various empires in the Medieval and early modern times who exploited the peasantry and provided few government services. Government "service," such as it was, was an exploitative patronage system, controlled by narrow elites in distant capitals. After the fall of Rome, the northern part of Italy was at the mercy of barbarian invaders. Towns and cities organized their own oft-successful defenses, leading to a strong tradition of city self-governance. A large fraction of the city population was politically active. Social institutions favoring volunteering and creating common projects are strong in the North and weak in the South. Note that the North of Italy is today quite rich and the South quite poor. The wealth of nations is highly dependent on their degree of public virtue among the citizenry, the degree to which strong

institutions function to provide benefits to most members of society even in anonymous interactions.

Peter Turchin has been much interested in the waxing and waning of communal solidarity throughout history. Turchin borrows the Arabic term *asabiyya* for the sense of group consciousness and shared purpose that is necessary for large, anonymous groups to accomplish great things. The term was popularized by the great North African Medieval geographer Ibn Khaldun. Turchin finds that asabiyya is often forged in long term conflicts between culturally very different groups. For example, solidarity of the people who started the Venetian Republic was first forged by a mixture of mainland people fleeing to a small archipelago in a lagoon just off the coast of Northeastern Italy. They found that they could use the strategic nature of the islands to defend themselves against raiders with scant naval experience. As their military skills and collective confidence grew, they found that they could defend the islands against quite determined and sophisticated assaults. At the same time they found that the location of their city was ideal to build a trade empire that gave them access to the valuable trade goods from the Orient. The oligarchic republican institutions of Venice were replicated in the cities of the empire under a *Podesta* appointed by Venice in lieu of the elected *Doge* in Venice herself. Protecting this empire required a relatively large navy of oared galleys manned by citizen seamen. Asabiyya was maintained by ensuring that the disenfranchised classes participated in the prosperity brought by trade, by elaborate political institutions that militated against dictatorial Doges and elite conflict and corruption, and by lavish investments in public architecture, art, and ceremony. The elite also paid punishing special taxes during the periodic military emergencies and natural disasters. Even lowly Venetians appreciated living in a city that was rich, safe, and fun, and fought with unusual energy and enthusiasm on behalf of their city. The asabiyya began to drain out of Venice in the 15th century. The Turks seized Constantinople which had been a reliable Venetian ally until its final end and was the key to its oriental trade. Portuguese, Spanish, and later Dutch and English, voyagers pioneered sea routes to the Orient, undercutting the expensive caravan traffic that supplied Venice's most lucrative trade. Venice had to surrender without a fight when Napoleon invaded Northern Italy to fight the Austrian enemies of the French Republic. But we have already seen that Northern Italy today retains a considerable legacy of asabiyya formed in its proud city-states in the turbulent early Medieval times and sustained by their ability to produce wealth and municipal grandeur.

Turchin's general hypothesis is that asabiyya of societies is at risk when population growth or some other shock increases competition between elites and commoners and often among elites as well. For example, for the last few decades in the United States, elites have made out very well but the incomes of

middle and working class people have stagnated, partly because large populations of people in formerly very poor countries became sufficiently well-educated to compete for basic manufacturing jobs. At the same time intra-elite conflict in the form of increasingly polarized partisan politics drives down confidence in government to the point that the US Congress only outscores Fidel Castro by a few points in American opinion polls. If such a situation persists long enough, as in Southern Italy, the asabiyya of a society can entirely drain away.

I believe that few people would disagree that these two structural principles exist. Evolutionary social scientists do disagree about the processes that give rise to them. Although I find it hard to discern exactly what every protagonist's position is on every issue in the debate, I think the plausible hypotheses boil down to these:

The indirect reciprocity hypothesis. Richard Alexander proposed in 1987 that the mechanism of reciprocity that works to sustain cooperation between pairs of unrelated individuals can be extended far larger groups if 3rd parties can observe the results of pairwise interactions. By such means observers can learn who is likely to be a good candidate for future exchanges. Given language, observation and personal experiences about people can be communicated efficiently to others. In the small societies of the past, perhaps every person's behavioral dispositions were known to every other person. If there are benefits to cooperation, indirect reciprocity would evolve because anyone who chose to defect would earn a reputation for doing so and all other members of the community would refuse to cooperate with the reputed defector. In modern societies, cooperative dispositions evolved for life in face to face groups might misfire, generating the behavior seen in anonymous societies. There seems little doubt that indirect reciprocity is important, but many doubt that it is a sufficient stand-alone mechanism to sustain cooperation except in quite small groups, and perhaps not even in them.

The institutional choice hypothesis. At least anonymous societies have important systems of public rules (institutions) that define the rights and duties of individuals and individuals often adhere to these rules. Theorists point out that repeated games have many equilibria, some "efficient" (produce large returns to participating members) and others that are "inefficient" (produce small or even negative returns). Thus, enforcing contracts via a private system like the Mafia is inefficient compared to an honest public legal system. Humans are smart, and we can use language to discuss alternative institutional forms and deliberately select more efficient equilibria for society's many interlocking games. Steven Pinker and many economists (see Bowles and Gintis, Ch. 5) favor this mechanism for explaining institutions. Doubters, such as Bowles and Gintis, point out that in fact institutions evolve. Even when

we deliberately design institutions we generally do so incrementally. Attempts to design institutions by top down means frequently fail and ones shaped by tradition often work very well, as Elinor Ostrom argued. Successful 'revolutions,' like that of the US stick pretty close to traditional institutions, and more extreme ones (Russia and China) often evolve back toward traditional models. For example in recent years the Chinese government has begun to try to exert "soft power" around the globe by establishing not Mao Institutes but Confucius Institutes to teach Chinese language and culture. The Chinese Communist Party has evolved into a conservative bureaucracy with advancement in theory by merit, not unlike the traditional Mandarin system.

A genetic tribal level selection hypothesis. Darwin proposed a tribal level selection hypothesis in the *Descent of Man*. Not knowing anything about genes it has to be read as ambiguous regarding the inheritance system it acts on. However a good many evolutionary biologists (e.g. William Hamilton) over the years have observed that human societies look like you might predict a group selected society to look. Warfare, especially as conducted by high asabiyya societies, looks like an efficient mechanism for selection for prosocial innate predispositions like empathy and patriotism. The application of metaphors of kinship to fellow tribal scale group members is often cited as evidence in favor of this hypothesis. The problem with this hypothesis is the low genetic variation between neighboring human groups. Since human cooperation has nothing like the specialized reproductive castes of social insects, our societies are characterized by reproductive competition among most of the cooperators.

A cultural institutional selection hypothesis. Some of us have argued that cultural variation is a more likely target of tribal scale selection than genes. As Charles Perreault has recently documented, cultural evolution is considerably faster than genetic evolution. Isolated cultural groups will diverge faster than genetic groups. According to Adrian Bell's analysis, cultural variation between neighbor human societies measured by responses to opinion polls is considerably higher that genetic differences estimated from classic genetic markers. Things like language differences slow the rate of spread of institutions which are in any case hard for outsiders to observe. The incentives built into institutions damp down individual differences while stabilizing between-group differences. It is easy to point to examples of how this process might have worked. Take Roman law. The success of the Roman Republic is partly attributed to its legal system. The Roman Empire, including the Greek-speaking Eastern Empire continued its use. The Catholic Church preserved it in the West after the fall of the Western Empire. When the Medieval revival of state polities in the West began, Church Canon Law and surviving classical legal texts heavily influenced law codes that Medieval kings promulgated. Its

influence persists in modern European law codes. Apparently Islamic law has many Roman elements picked up, along with much other Classical knowledge, from the Greeks by the Arab Muslims. An institution that works tends to cause its host society to expand, the institution to be retained in successor societies, and other societies to borrow it.

Two coevolutionary hypotheses. In the *Descent* Darwin was interested in explaining 'moral progress.' He divided the evolution of societies with a greater and greater scope for cooperation into 'primeval' and 'civilized' phases. The first was dominated by natural selection shaping the social 'instincts' and the second by the social instincts acting to shape habits, customs, and traditions, often, but by no means always, in ways he counted as moral progress (increasing the scope of cooperation and eliminating such evils as slavery). Many modern ideas are similar to this in structure. For example, Charles Lumsden and Edward Wilson in 1981 in *Genes, Mind, and Culture* argued that genetically transmitted "epigenetic rules" evolve to shape cultural evolution in fitness enhancing ways. Cultural evolutionists use the term 'biases' for rules inherited either genetically or culturally that shape subsequent decisions to adopt or neglect cultural variants. Selection on genes will thus tend to act to favor psychological predispositions that favor genetic fitness. This is the first form of coevolution. The second reverses the causal arrow. If selection also acts on cultural variation, say group selection on primitive institutions, then social selection derived from such institutions may favor genes that can conform to cultural rules. Maciej Chudek and Joe Henrich have recently argued that children seem adapted to learn norms easily and early in life, as if following cultural norms is an innate predisposition formed by culture led gene-culture coevolution.

The naked ape hypothesis. Humans are descended from apes that cooperate on a much smaller scale than humans normally do. Nevertheless, human behavior is not infrequently selfish and domineering. It is easy to imagine that selection at the individual and kin group scale remains important in humans. No one but your kin look out all that avidly for your reproductive success and even they have conflicts of interest. Mechanisms favoring large-scale cooperation have no simple path to create selfless altruistic automatons like the individual cells of the body. Individuals are too variable. Individuals will fall under selection on their genes, and perhaps on their cultural variants, for a certain irreducible minimum of looking out for number one. If too much self-sacrifice is demanded over too long a period of time, people's morale will eventually shatter. In war and in natural disasters, we often see initial willing self-sacrifice eventually give way to fatigue and cynicism if the event is too prolonged. We also see an irreducible minimum of dominance seeking and other forms selfishness; we use both reputation based and formal institutions

like laws to control such behavior, but when social control becomes excessively intolerant of common human foibles we often rebel against that as well.

These are competing evolutionary processes but not mutually exclusive. In fact they could all play a role in explaining human cooperation in a sort of grand concatenation of forces. Compound hypotheses are common. Robert Boyd and I have proposed a "Tribal Social Instincts" coevolutionary hypothesis to try to account for the underlying mechanisms for the evolution of cooperation in the first place and to help account for its variation. It is closely parallel to Darwin's argument in *The Descent of Man* but it begins with the observations that cultural variation is better able to maintain group level variation than genes and that much human competition is between organized cultural groups that are only trivially different genetically. Once simple social rules evolved culturally, they could exert social selection on genotypes within groups (where most of the genetic variation is) favoring a more prosocial innate human social psychology. For example, deviants who don't follow prevailing norms may suffer losses of status and material success. This may make them unattractive mates, recruiting sexual selection to favor any genetic propensities for conformity to norms. Cultural evolution also supports the evolution of symbolic markers that define groups and inhibit the free flow of ideas from group to group. Repeated rounds of gene-culture coevolution would have resulted in the evolution of the emotions of sympathy, patriotism and the like (see Jonathan Haidt for an inventory of the social emotions). Once prosocial emotions like sympathy and patriotism evolved, they would act as a sort of moral hidden hand. All else equal, people will prefer the sorts of institutions that obtained in Venice at her height and attempt to change ones that create institutions like those that obtain in Southern Italy. We assume that the naked ape hypothesis is important to explain our antisocial behaviors.

In Boyd's and my picture of the world, in small-scale societies people may generally be able to get what they want in their own society, but small-scale societies are prey to intertribal anarchy, especially when population densities are high and wars logistically easy to conduct. Under conditions of anarchy, people may well think that having a powerful paramount chief, or some similar institution, to keep peace is acceptable. But political power tends to abused, and competition for elite roles leads to dynastic wars. Power to do good things on behalf of the community versus power for self-aggrandizement is a difficult circle to square. Long-continued abuses of power can lead to norms that no one but close family members can be trusted, as in Banfield's argument about Southern Italy. Asabiyya approaches zero in such cases. Given that basic social norms are learned early by children from family members, if larger scale institutions are truly dysfunctional, selfish elites' attempts to use political and religious propaganda to counteract family socialization to distrust elites will be

difficult. Asabiyya is hard to create because low trust in large scale institutions makes it very hard to break the cycle of cynicism leading to corruption, sustaining cynicism. On the other hand, if large scale institutions are working well, parents' pride and faith in the basic fairness and rightness of the social order will lead to spontaneous socialization for patriotism and spontaneous acts of punishment against those who don't behave patriotically. Early in World War I, many English women undertook to hand shaming white feathers to young men who seemed healthy enough to serve in the Army but were not in uniform. Later, the wasteful use of such volunteers in trench warfare led to a strong popular reaction against the leadership of the army. In World War II (WWII), it was axiomatic that the British officers would be quite careful in their use of soldiers. In the churches or squares of English villages there is always a monument to the dead, usually for both wars on the same monument. The WWII list is always much shorter than the WWI list even though WWII was a longer war and a greater existential threat to Britain than WWI. The leadership of Britain reacted strongly to the threat to British asabiyya generated by the horrific wastage of trench warfare and acted to preserve it in the next war. High asabiyya is often resilient and often survives repeated disasters, but it is not infinitely resilient, repeated insults eventually creating what Turchin calls asabiyya "black holes."

Many other compound hypotheses can be constructed. For example, the sociologist Gary Runciman suggests that the indirect reciprocity hypothesis is sufficient to explain the social life of hunter-gatherers but that group selection acting on institutional variation became important as complex societies evolved in the Holocene. Sam Bowles and Herb Gintis argue that cultural anti-dominance strategies leading to egalitarian hunting and gathering bands reduced intra-band fitness differentials allowing selection to fall on genetic differences between bands.

Sarah Mathew and coauthors argue that human *small-scale* cooperation is unusually elaborate compared to that in other social vertebrates. Even in the simplest hunter-gatherers like the Shoshone humans have a relatively elaborate division of labor based on age and sex. Humans cooperate in pairs and small groups in economic exchanges ranging from household common pot to long distance trade, in warfare and in leisure pursuits. While it is tempting to think that such small-scale cooperation is adequately explained by kin selection and direct reciprocity, this cooperation is often as thoroughly institutionalized as anonymous interactions. Marriage is an example. The great majority of societies have a system of rules that men and women are expected to obey for the purpose of mating and reproduction. Institutions of marriage differ substantially from society to society, and are only open to limited negotiation within societies. Most societies in the ethnographic record permit men to have multiple wives, a substantial minority permit only one wife, and a

tiny minority permits women to have multiple husbands. Third parties in effect act as guarantors of marriage by aiding those who follow the customary marriage contract and sanctioning those that reproduce outside of wedlock or fail to cooperate in expected domestic economic activities. If reciprocity and inclusive fitness are sufficient to explain behavior at the level of the family, why is marriage nearly universally institutionalized? Mathew suggests that cultural group selection favors institutions that create stronger small-scale as well as stronger large-scale cooperation. Societies with stronger marriages will, all else equal, produce stronger societies. At the same time, personal ties between social leaders, such as elite intermarriages and presidential visits, are diplomatic staples. Here we see how cultural group selection might synergistically reinforce the more orthodox mechanisms of inclusive fitness and reciprocity.

The sharpest divide between evolutionary students of human social behavior is between what I think of as Strict Neo-Darwinians and Expanded Synthesis Evolutionists. Strict Neo-Darwinians argue that genes are the only entities that truly evolve. Selection on genes is *the* ultimate cause of all adaptations. Culture, to the extent that it exists at all, is merely a proximate mechanism resting on an ultimate genetic foundation. Quite aside from humans, advances in developmental biology suggest to Expanded Syntheses Evolutionists that epigenetic factors play an important creative role in the evolutionary process. Kevin Laland and Expanded Synthesis colleagues argue that several well understood developmental processes, including human culture, defy Ernst Mayr's rigid distinction between proximate and ultimate causes. The way I think about it, if selection in humans falls on culturally transmitted institutional differences (or any other cultural differences), then culture is at least in part on ultimate side of the dichotomy anyway. Strict Neo-Darwinians think that all the Expanded Synthesis talk is muddle-headed nonsense. Expanded Synthesis folks can be equally rude about the Strict Neo-Darwinians' fanciful evasions of the striking evidence for the existence of culture and similar phenomena.

Debates over the causes of human cooperation are hard to resolve because of the complexity and diversity of human societies and because of the potential complexity and diversity of the evolutionary processes involved. The task is to estimate the strengths of all the plausible forces that might act on human social behavior. This has not yet been attempted on any living human population, and reconstructing the forces that acted on the Pleistocene populations from which we originated is an even harder problem. It is an interesting fact that when evidentiary light we can throw on a problem is dim, even scientists tend to resort to rhetorical heat instead.

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