

Civilizing Cooperation: Paul Seabright and the Company of Strangers

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Abstract Paul Seabright is the first to clearly identify a major puzzle about human social evolution: the expansion of cooperation in the more complex societies of the Holocene. Identifying that problem is a major achievement, but in this paper I give a somewhat different account of the nature of the problem and a somewhat different account of the social world of Pleistocene foragers. So, we agree that there is a problem, but not on its nature or solution.

Keywords Cooperation · Holocene · Origins of farming · Origins of hierarchy · Pleistocene

The New World of the Holocene

Around 6 million years ago, our ancestors' lineage diverged from the lineage leading to the living chimp species. Those earliest hominins probably had social abilities somewhat similar to those of the living great apes. If so, they were social animals with some ability to cooperate; they had some capacity to learn from others by observing their actions; they could, to some degree, recognize the cognitive and emotional states of their fellows, not just anticipate their behaviors; they understood the social and familial relations between fellow members of their group, and they had some ability to

communicate. In brief, they lived in social worlds, though probably in rather small social worlds. While there are many uncertainties, the first hominins probably lived in groups of 50 or so; perhaps smaller (Dunbar 2001).

However, compared to the social worlds of their descendants of 6 million years later, their social lives were impoverished (Foley and Lahr 2003; Foley and Gamble 2009). While they could learn from others, observational social learning did not play a central role in their cognitive development; nor was social learning mediated and enhanced by teaching. Cooperation was constrained by both cognitive and motivational factors. Coordination was hampered by limited abilities to communicate: chimps mostly signal their emotions and their desires; they do not trade information very much. Coordination was also hampered by limits on the capacity to represent multi-stage plans with distinct roles for different agents (Tomasello 2009). Motivational factors were also relevant. If they were like chimps, they were impulsive (Hrdy 2009), and they did not find collective action intrinsically rewarding (Warneken and Tomasello 2009). Since trust is built by and through successful cooperation, low levels of cooperation both cause, and are caused by, low levels of trust. Finally, while these first hominins lived in groups, and recognized those with whom they lived, almost certainly they did not identify with the groups with whom they lived.

Understanding these transitions from great ape-like social and economic lives to a human social world has been a major project in archaeology and paleoanthropology, and rightly so. But this project has often been conceived of in a way that masks a second, perhaps equally puzzling social transition. For archaeologists and anthropologists have often focused on the evolutionary origins of "behavioral modernity" or "behaviorally modern humans." By about 60,000 years ago, human groups seem to have acquired most of the distinctive

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characteristics of the forager societies known from the ethnographic record. By then, there seem to be archaeological signatures of the capacity to innovate, and to retain innovations, for the human toolkit had become diverse and specialized. By then, our ancestors showed the capacity to regularly and reliably plan individually and to coordinate with others, for example, in crossing sea barriers to colonize Australia. By then, human social life had become mediated by symbolic communication, not just through the use of language but in the use of public, physical symbols in their social interactions with one another. There is no clear evidence of music, religion, or social and moral norms in these social worlds. But very likely, that is an imperfection of the historical record rather than a genuine cognitive and culture difference between human groups of 60,000 years ago and more recent humans (McBrearty and Brooks 2000; Henshilwood and Marean 2003; Hiscock and O’Conner 2006; Nowell 2010; Sterelny 2011).

Explaining the origins of behavioral modernity is challenging. First: there is the problem of interpreting the physical record. How much weight should we place on rare finds; for example, a single find of ancient Neanderthal shell-based decorations (d’Errico and Stringer 2011)? When, for example, should we treat the failure to find signs of hearths, burnt bone, and the like as evidence that a group had no control over fire (Wrangham 2009)? The origins of some very basic features of human social life—language, the use of fire, male contributions to child support—remain radically uncertain. Second: there is an apparent mismatch between hominin morphological evolution and speciation patterns on the one hand, and cultural and technological change on the other. The appearance and disappearance of the Acheulian handaxe culture seems not to be correlated with the appearance and disappearance of any specific hominin species, or with any distinctive change in hominin morphology. Behaviorally modern human cultures seem to appear much later than our species: *sapiens*’ origins seem to be about 200,000 years ago. Finally, characterizing behavioral modernity is itself contentious: for example, recent theorists, very controversially, have given special importance to the establishment of public symbols of identity and difference, as these are taken as marks both of cognitive and of cultural sophistication (Nowell 2010).

Given these challenges, it is no surprise that the origins of behavioral modernity have claimed an immense amount of theoretical attention. But there is a further enormous transition in human social life. The Pleistocene was climatically very challenging: short-term variability, with serious changes over time scales of a decade, existed on top of an overall pattern of intense glacial–interglacial cycling. About 10,000 years ago, the Pleistocene gave way to the Holocene: both warmer and more stable. Between the onset of the Holocene and perhaps 5,000 years ago, human social life changed again (Richerson and Boyd 2001; Mithen 2003;

Richerson in press). Most humans came to live in a world very different from that of the Pleistocene. Human life became sedentary rather than mobile, and was based on farming rather than foraging. With the establishment of towns, cities, and states, social worlds became much larger and much less intimate. The division of labor became much more elaborate, with trade and exchange becoming a routine feature of everyday life. The vertical complexity of social life increased, as social groups began to include not just individuals and families but cross-cutting institutions: guilds, churches, military and state institutions. Social life became much more hierarchical. Forager societies were egalitarian, without formal rank or authority, and with muted differences in wealth. Not so, the sedentary societies of the Holocene (Kaplan et al. 2009). Ultimately, for many, the character of social learning changed, with literacy and the establishment of formal educational institutions. Ten thousand years ago, the typical human lived in a small, egalitarian, structurally simple forager band. By two thousand years ago, the typical human lived in a state, subject to formal political authority. Many lived in or near towns and cities, connected to a market economy, depending for some of the essentials of life on trade and exchange. For many, life in an intimate world had been replaced by life in a state and an economy. Arguably, this revolution is as fundamental, and is as demanding of new motivational and cognitive resources, as the establishment of behaviorally modern human social worlds. One great virtue of *The Company of Strangers* is that Paul Seabright (PS henceforth) sees clearly how fundamental and how puzzling this transition is. In this work, PS sets himself two explanatory projects: one is to explain the origins of the market economy, initially on local or regional scales; ultimately, of course, becoming a global system. The second is to explore its stability conditions. I shall focus on the first of these projects.

Strong Reciprocation in Intimate Worlds

PS begins from the idea that humans are cognitively and temperamentally adapted to intimate world cooperation. It is true the ecology of small foraging groups would have rewarded cooperation: profits were available from collective defense; joint hunting and scavenging; niche partitioning by age and gender; cooperation in childcare. There was a long shadow of the future, and a good deal of freedom of association, so agents can often choose partners for collective enterprises. Also, the gains to be had from cheating now would often be dwarfed by the potential profits from a good reputation. Small foraging communities are informationally transparent: the local group knows who is reliable, and who is not.

This analysis is complemented by a significant tradition in experimental economics that seems to show that humans

are often default cooperators, but not unconditional cooperators (though for a skeptical alternative, see Binmore 2006; Ross 2006). These experiments probe agent strategies in public goods games, trust games, prisoner's dilemmas, ultimatum games, and the like. In many of these, agents are placed in contexts in which they can cooperate to everyone's benefit, but in which they would maximize their own personal return by not cooperating. Agents often enter such contexts disposed to cooperate if they expect others to, and they often do expect others to, especially when agents can communicate, even in very minimal ways. Being prepared to cooperate does not depend on cooperation being economically optimal for the agent. But it is far from unconditional. Readiness to cooperate coexists with the strategy of withdrawing cooperation if others fail to cooperate. In many, it seems to coexist with a desire to actively and at some cost punish cooperation failure, even in circumstances in which punishment yields no future profit to compensate for its costs. In the jargon of experimental economics, humans are strong reciprocators (Fehr and Fischbacher 2004; Gintis 2006; Gintis et al. 2008).

PS suggests that these experimental results are supported by the natural history of human social life. A host of ordinary human interactions are premised on norms and mutual expectations of fair dealing. Each time you hail a taxi, each time a taxi stops for you, each of you acts on the assumption of fair dealing from the other. While these assumptions occasionally fail everywhere, and while they cannot be safely made in the dark alleys of the world, it is surprising how rarely they fail. Moreover, though policing violation is important, PS points out that policing cannot explain the robustness of fair dealing, both because surveillance is not nearly as pervasive as it would need to be, and because the expectation of effective policing is itself an expectation of fair dealing.

Stranger Danger

The Holocene saw an increasing trend of human lives lived in less intimate worlds, culminating in the social worlds of large-scale states and cities. How did minds, customs, and social technologies adapted to intimate worlds support cooperation in these larger worlds. One problem is trust. The profit of cooperation to an agent depends on others. That is true even when there is no temptation to defect, when the problem is uncertainty over others' plans and capacities. The stag hunt models interactions in which all parties are better off cooperating if others do. But it can still be rational to go it alone, for cooperation pays only if it is part of coordinated collective action. If I suspect others will fail to match their behavior to mine, I would be rational to depend on my own powers (Skyrms 2003).

Coordination failure is unlikely in intimate forager settings. Forager parties are typically quite small, with practiced communication channels, experience of working together, and with reliable assessment of one another's capacities (Boehm 1999). As the number of others who must act in concert with me increases, as the need for specialization increases, as the tolerance of error decreases, as my knowledge of the capacities and character of my partners falls, as coordination must be maintained over time and space, it becomes harder to trust that others will get it right (Calcott 2008). The trust problem is much exacerbated once we add in the problems of defection and expropriation. The threats of coordination failure and defection are much greater as we move from intimate worlds. Strangers and near-strangers have no stake in maintaining good relations with you. Intimates do, and know how to.

As PS sees it, this analysis understates the problem of establishing cooperation in less intimate worlds. The intimate-world minds and customs of the Pleistocene were positively primed *against* cooperation with strangers. Sam Bowles has recently developed the idea that the psychology of strong reciprocation evolved by selection on groups for intergroup conflict, not because it paid at the individual level within groups. While not committing to Bowles' group selection model, PS is sympathetic to the picture of Pleistocene social life Bowles paints—one of intergroup suspicion and conflict. Humans established networks of cooperation, ultimately including strangers and near-strangers, *despite* an evolutionary history of violence and suspicion. That is the puzzle:

after the end of the last ice age, one of the most aggressive and elusive bandit species in the entire animal kingdom began to settle down.... Like the chimpanzee it was violent, mobile, intensely suspicious of strangers, and used to hunting and fighting in bands composed mainly of close relatives. (p. 3)

On this view of the Pleistocene, the prospects for Holocene cooperation were not good. The recent history of humans coopted a default primate (perhaps default mammalian) propensity for violence, and channeled it into intergroup suspicion and competition. The default was ancient, driven by competition, especially male competition for access to females. For “two unrelated individuals are rivals, both for resources and ... for the sexual favours of females” (p. 57). PS thinks that this default is intensified in primate lineages.

There are good reasons to think not only that natural selection has favoured a tendency to kill other members of the same species but also that the coincidence of murderousness and intelligence is not an accident. On the contrary, the selection for murderousness and

the selection for intelligence are mutually reinforcing.
(p. 56)

Bowles takes this general model of males primed for violence, and adds the socio-ecology of chimps and their capacity for coalition formation, to build a picture of the evolution of endemic intergroup hostility. Chimps live in stable territories, and while females can migrate between groups, males treat one another with hostility. Indeed, there is opportunistic but lethal violence between groups, when a lone male of one group is seen and targeted by a multi-male party from a neighboring group. So neighbors are a threat, and given that, it is advantageous to pick off neighboring males, when it is safe to do so; that requires about a 3:1 ratio.

In the face of this long history of suspicion, there is no single mechanism or adaptive breakthrough that explains the expansion of cooperation to larger social worlds. But PS adds a new concept, “tunnel vision,” to go with “adaptive illusion,” “fast and frugal heuristics,” and “ecological rationality.” Humans are not, and could not be, the fully informed ideal reasoners of normative decision theory. No controversy here, but there is a developing school of thought that these limits are not a bug, a failure to be deplored and ameliorated. Rather, they are a feature. They make it possible for us to reach adaptive outcomes that are unavailable to the ideally rational agent (Gigerenzer and Selten 2001; Wilson 2002; Joyce 2006). PS argues that large-scale cooperation depends on fortunate imperfections, on tunnel vision. This is a mix of cognitive dispositions that includes a default acceptance of local customs; buying into systems of symbolic identification that treat strangers as if they were kin, creating honorary kin; retaining focus on immediate plans and projects, even though those projects can miscarry because of events the agent can neither control nor predict. This aspect of tunnel vision becomes especially important as local systems become regional systems, for that puts agents at risk from events beyond their horizon of estimation. Tunnel vision protects such agents from being paralyzed by uncertainty.

With a modicum of initial good luck (a trader willing to take a chance at the next village), these dispositions can tip a situation from suspicion to cautious interaction; speaking with the right accent, connecting genealogies, observing the same taboos might tip the balance between being treated as an insider rather than an outsider. Then, if larger-world cooperation does establish, the plasticity of human cognitive and emotional response can stabilize it: successful habits are self-reinforcing; this is itself part of tunnel vision. Psychological mechanisms of the kind PS highlights are very likely crucial to Holocene cooperation. But in my view, *The Company of Strangers* somewhat misidentifies the problem of large world cooperation; it

does so, because its picture of the Pleistocene is one-dimensional.

The Brutal Pleistocene?

The picture of Pleistocene life painted by PS and Bowles is too bleak, both in its view of individual interaction, and of the intercommunal world. Think first of interactions amongst individuals. It is not true that the default effect of the death of a same-sex member of my group is to elevate my fitness. For the benefits of reduced competition for resources do not automatically flow to me. They are as likely to flow to other males. To the extent I reduce competitive squeeze in committing murder, I am providing a public good for the other males, and that is a fitness cost. Second: killing is always risky. Physical combat (especially if there are weapons involved) always involves serious risks, even if one attacker is far superior to the other. Finally, in many contexts, others are resources as well as competitors, and that takes us back to chimps and their relations of hostility to neighbors. For given the importance of others in resisting incursion and securing territory, killing a male of one’s own group sacrifices an important ally.

So I do not think violence is a default—an especially salient default in intelligent primates. Moreover, I do not think chimp raiding is a good model of Pleistocene forager interactions. Raymond Kelly (2005) points out that the chimp model gets the cost-benefit picture wrong. Weapons introduce risk to hostile intergroup interaction, just as they do to hostile within-group interaction. For at least the last 400,000 years, humans have made and used spears. A three-on-one attack by chimp males on a lone chimp may be risk-free for the coalition, but it would not be risk-free for human attackers. Moreover, while chimps do not track, ambush, or stalk, foragers do. So an incursion—a raiding patrol—into hostile territory risks serious trouble. These risks are especially evident when we take into account the importance of local knowledge of terrain, and the fact that human hunters can call on aid from their allies. These are likely to be close and are likely to respond quickly, vigorously, and dangerously. Even for larger groups, a decision to raid involves real risk. Moreover, there are important peace dividends. Kelly points out that male chimps, very prudently, tend to avoid the border zones between their own territory and adjacent ones. That imposes a real tax on hostility: territory is exploited less efficiently. Perhaps most importantly, good relations with neighbors help manage the risks imposed by a fluctuating environment, allowing access to resources and support in the face of local catastrophe (Ambrose 2010; Richerson in press). Maintaining relations of mutual support is not free or automatic; rather, it requires consistent investment. But

for foragers in marginal and fluctuating habitats, it is likely to be an important survival mechanism. Neighbors are potentially sources of aid, not just threats and targets.

These considerations undermine the idea that the Pleistocene was characterized by high rates of intergroup violence. There is (it is true) archaeological evidence of high rates of violent death. But much of this is from late Pleistocene and Holocene sites. The transition to, and spread of, farming did indeed result in much elevated rates of intergroup violence. Populations are more sedentary; they are larger, more hierarchically structured, and under greater resource pressure. Moreover, farmers make poor neighbors for foragers, degrading forager habit in many ways (O'Connell 2006). Further, as Bowles and his colleagues note themselves, it is not easy to distinguish the results of cross-community violence from within-community violence. This is no minor detail. As PS has noted, cultures without top-down mechanisms of command and control are prone to very high homicide rates (Seabright 2010). So while the late Pleistocene and early Holocene were very troubled times, we should not project that deep into the Pleistocene. Tellingly, Dale Guthrie (2005) suspects that much Pleistocene art is the work of adolescent males, and in many ways, it does reflect the testosterone-fuelled obsessions of such artists. But in contrast with more recent art, there is almost no representation of human conflict from the Pleistocene. Sometimes absence is evidence. If the Pleistocene world was one in which raiding was rife, surely we would expect young men to project their fantasies of success and acclamation onto cave walls, along with the usual vulvas and penises, of which there are plenty.

Of course, violence, both within groups and between groups, is one form of human interaction. We are capable of conditional violence, and not just as a result of developmental pathology. But I very much doubt that a hair-trigger readiness for such violence was the Pleistocene default. Rather, relations between groups were probably variable and contingent through the Pleistocene. Given human capacities for organization, resentment, and violence, almost certainly, raiding and war was one way human groups interacted with their neighbors. That became increasingly salient in the late Pleistocene and Holocene, as population sizes grew, and as foragers and farmers, with their very divergent interests, were forced to interact. But I doubt that it was anything like the modal mode of interaction through the Middle Stone Age, nor in the slow and patchy transition to behaviorally modern cultures.

Cooperation in a Farming World

PS is right to see the establishment of large-world social life, with its increasing specialization and division of labor

as profoundly puzzling. He locates that puzzle in a mismatch between our evolved psychological mechanisms of cooperation—minds adapted to trusting insiders and mistrusting outsiders—and a larger social environment. The solution he proposes in part depends on cultural innovations that work around these mechanisms, by badging outsiders as insiders; it depends in part on the plasticity of our evolved cognitive mechanisms: defaults to suspicion and violence can be tuned down, defaults to cooperation tuned up. It depends partly on learning just to ignore the causal importance of outsiders' decisions to one's own life. I locate the puzzle differently, in the changing incentive structure of human cooperation. The Pleistocene–Holocene transition was a transition from a foraging-based world to an economy based on farming (plus horticulture and husbandry); to understand the transition, we need to understand how and why farming established and spread, and we need to understand the consequences of that spread. A comprehensive account of early farming is obviously far beyond the scope of this discussion, so instead, I confine myself to two transition problems.

The first is risk management. Compared to life as a forager, early farming, and early specialization, seem to have been extraordinarily risky ways of making a living. Think first of the problems facing the origins of specialization on a local scale. PS has emphasized the importance of market size to a predictable demand for goods and services. There might be enough demand to support a specialist firekeeper,¹ stone knapper, or blacksmith, if demand was even. But the smaller the community, the more there will be stochastic peaks and troughs. Early specialization—specialization before there were regional economic systems—would have been risky for this alone. But not so risky as early farming, which truly was a gambler's life style (Winterhalder and Kennett 2009). Farming requires a long gap between investment—preparing the land and planting crops—and profit. Much can go wrong in those months: weather, other humans, animals can all rob farmers of their profits. These risks are accentuated by the loss of mobility; they are accentuated by the shift from reliance on many resources to a reliance on few, which increases farmers' exposure; they are accentuated by declining systems of mutual support²; they are accentuated by farmer's reliance on storage, which is itself a risk magnet. Stored food was vulnerable to spoilage, to assault by pests, to theft and pillage. These risks would all have

¹ Haim Ofek has argued that fire-keeping was the first specialist trade, and that it was a Pleistocene specialization (Ofek 2001).

² In pre-market societies, foods sourced from plants are less likely to be shared than food sourced from animals. Gathered resources are consumed by the family that gathers them, and in the normative universe of such pre-state societies, farming seems to have been seen as an extension of gathering rather than hunting (Gurven 2004).

been at their greatest in the earliest days of reliance on farming: they are somewhat lessened by the development of regional systems (reducing the threat from neighbors); by improving knowledge and technology; and by accumulating investment (soils can be improved over generations by drainage and irrigation, removing stones, fertilization; storage can be made drier and more rat-proof; and so on). Given how hard an early farmer's life was, compared to life as a forager, and given how risky it was, the establishment and invasion of this way of living is truly puzzling.

The Holocene is not just the origin of cooperation with strangers. Critically, it is also the origin of hierarchy. Social worlds became much less equal (Bowles et al. 2010; Shenk et al. 2010; Smith et al. 2010a, 2010b, 2010c). The reciprocation-&-retaliation-based psychology of cooperation evolved amongst Pleistocene foragers because such cooperation was adaptive in these worlds, as those worlds were intimate, hence informationally transparent, and also because they were equal. As a consequence, the profits of collective action were not expropriated by more powerful elites: the lazy may have got a little more than they earned, but there was no danger of the social surplus being monopolized by a small cadre of leaders. Farming worlds are very far from equal: indeed, there is a case to be made that early farming states are the least equal societies in human history. The most important resource in a farming world is high-quality, fertile land; and property norms allow land to be accumulated at a generation and inherited across generations; so generational change tends to intensify inequality. Moreover, much of the labor demanded by farming (clearing land, weeding, guarding crops against pests) is low skilled, and hence farmed labor can be coerced labor. De-skilling makes pronounced inequality possible (Kaplan et al. 2009). Slave labor has historically been important in farming economies, but not in foraging economies: foragers have to be skilled, mobile, autonomous decision makers, and often they must be armed as well. Such agents do not make tractable slaves.

In contrast to PS, then, I think the Holocene puzzle is the persistence of cooperation and collective action in hierarchical early farming worlds. The social contract seems to have survived despite the decline in equality, intimacy, and transparency. Why cooperate, in a world in which much of the profit of collective action is expropriated by elites? Of course, even in a hierarchical world, cooperation for those low in the social hierarchy can be the least bad option. It is clear why the slaves in pharaoh's Egypt cooperated in constructing the pyramids. Coercion made this their best choice out of a terrible set of options. But in many places, there were hundreds, sometimes thousands, of years of transition, between the establishment of farming societies with very significant social inequality, and the establishment of states,

with their mechanisms of surveillance and coercion (Bogucki 1999; Dubreuil 2010). So there is a second transition problem: explaining the long coexistence of (a) a continued social contract, with collective action, cooperation, and respect for social norms (including property norms); (b) unequal returns from collective action; (c) minimal, inefficient elite-controlled mechanisms of social control; (d) a human psychology that is acutely aware of, and aversive to, others doing better.

There is a genuine puzzle here. The late Pleistocene-early Holocene transition to farming was robust; farming seems to have multiple origins (Cohen 2009). Yet it seems as if it ought to be fragile to both objective risk and resentment of inequality and exploitation. We can see some elements of the solution. PS's tunnel vision is one. The cultural technology of marking outsiders and elites as if they were intimates and equals allows the psychology of in-group identity to drive cooperative action, even though it is no longer adaptive. Group selection may well be important too; groups that sleep-walked into norms coopting commoner cooperation with elites survived. PS's and Bowles' grim picture of Pleistocene intergroup hostility probably does apply to the early Holocene: farming red in tooth and claw. Perhaps that environment of village against village and valley against valley also tipped the balance in favor of respecting the local social contract even when you were getting a lousy deal: the lousy deal was still better than being overrun by the bastards in the next valley. In a world of intense local suspicion, cooperating with unequal returns may have been the best of a poor set of options. But how these ingredients combine to explain the robust, multiple origin and spread of farming, inequality, and large world cooperation remains unclear. While the origin of farming itself has been a major and controversial topic in archaeology, the survival of the social contract through this transition has not been. One great achievement of *The Company of Strangers* is giving this problem its due.

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