



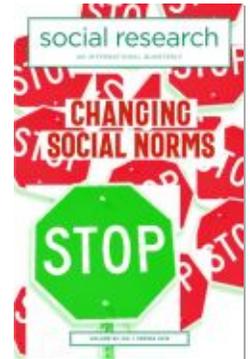
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Norms in the Evolution of Social Order

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Michael Hechter

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NORMS OCCUPY A CRUCIAL PLACE IN THEORIES OF SOCIAL ORDER. IN THIS ARTICLE, I discuss some of the contributions and limits of norms with respect to the evolution of social order. The problem of social order—that is, the attainment of cooperation among large numbers of individuals—is fundamental to disciplines ranging from evolutionary biology to economics, psychology, political science, sociology, and anthropology. No one can adequately represent the various approaches to this problem that are taken in all these disciplines. In what follows, I sketch out and assess what I consider to be the main explanations currently at play.

THE PROBLEM OF SOCIAL ORDER

Social order holds to the extent that the actions of multiple individuals within a system generate collectively beneficial outcomes (Hechter and Horne 2009). The distinction between individuals—however these are defined—and those of the systems they comprise can be made for all forms of life. Given this distinction, the possibility that individual action may compromise, if not wholly undermine, order in the entire system cannot be ignored. Conflict between individual parts and the whole arises across multiple domains and levels of organization. In multicellular life forms, cancer cells sometimes emerge and threaten the organism's survival (Aktipis et al. 2015). Among some honeybees and wasps, female workers can attempt to reproduce, but successful reproduction by workers, rather than the queen, can destabilize the entire colony (Foster and Ratnieks 2001). Among humans, the

free-rider problem is one of the key obstacles to collective action (Olson 1965).¹

The tension between the part and the whole has long been a central concern of theorists of social order, at least since the time of Plato. E. O. Wilson (1975) held that the conditions under which individuals sacrifice their own fitness to promote that of others is the fundamental problem of sociobiology. Talcott Parsons (1937) considered the attainment of social order to be the most important sociological problem. Elinor Ostrom (2007) regarded the theory of collective action as the central problem of political science. The evolution of cooperation has also intrigued anthropologists, social psychologists, and economists. If opportunistic behavior can threaten the survival of collectives across all life forms, then all viable collectives must have some means of discouraging it.

There are two basic modern approaches to understanding the evolution of social order among large numbers of individuals. The first approach, popular among evolutionary biologists and some social scientists, emphasizes self-organization (Anzola, Barbrook-Johnson, and Cano 2016) and employs invisible-hand explanations (Nozick 1974). In this view, cooperation emerges spontaneously and unintentionally among self-interested individuals *in the absence of centralized direction and control*. By contrast, the second view argues that social order is produced by establishing a collective *enforcement mechanism* to deter opportunistic behavior.

INVISIBLE-HAND THEORIES OF SOCIAL ORDER

The most dramatic example of spontaneous, self-organizing order found in nature is the immune system. This system has evolved to attack noncooperative alien invaders *within* individual organisms. But immunity can also be found *between individuals*. Thus, individuals in ant societies systematically attack destructive parasites and dispose of infected ants in their midst, all in the absence of any central directives (Cremer, Armitage, and Schmid-Hempel 2007). The highest level of social order in the animal kingdom is found not in humans but in the

social insects. Indeed, among some ant species, individual foragers are highly self-sacrificing, suffering a death rate of 6 percent per hour when they hunt for food (Hölldobler and Wilson 2009). Some primates use policing to deter free riding (Flack et al. 2006; Langergraber et al. 2017), and general deterrence theory is a lodestar of much research in criminology (Matsueda, Kreager, and Huizinga 2006).

Since large-scale self-organized cooperation exists in the animal kingdom, this fact has posed a great explanatory challenge to evolutionary biologists. They regard the attainment of social order as puzzling because, as Charles Darwin (1874, chap. 5) appreciated long ago, evolution would seem to favor the survival of self-interested individuals rather than altruists who sacrifice their own resources to help others. This led Darwin to believe that self-interested individuals would not engage in cooperative behavior. In this view, the existence of social order is puzzling, to say the least.

Today's evolutionary biologists assume that all acting units, whether genes or organisms, seek to maximize their reproductive fitness—that is, the number of their surviving offspring (or copies, in the case of genes). Their preferred solution to the problem of cooperation—inclusive fitness theory (Hamilton 1964)—asserts that individuals will engage in cooperative (altruistic) behavior only to the extent that the beneficiaries are close relatives who share a high proportion of their own genes. In this way cooperative behavior can be essentially understood to be self-interested.

Whereas inclusive fitness is regarded as the principal cause of cooperation among close relatives, reciprocal altruism (Trivers 1971) plays a similar role in accounting for cooperation among small numbers of non-kin. These theories are widely accepted by analysts of nonhuman groups (West, El Mouden, and Gardner 2011; West, Griffin, and Gardner 2007). Evolutionary biologists invariably advert to invisible-hand explanations of cooperation, because there is no evidence of central control and very little of prosocial behavior in most animal societies (however, see de Waal 1996).

In social science, rational choice theorists have been the most prominent advocates of invisible-hand explanations of social order. Unlike biologists, they do not assume that individuals seek to maximize their inclusive fitness. Instead, they rely on expected utility theory to explain individual behavior (Dawes 1988). In this view, individuals seek to maximize their utility—often assumed, following Machiavelli and Hobbes, to consist in their own individual well-being—by consciously calculating the expected benefits and costs of prospective courses of action, and choosing the alternative that will most efficiently attain their most preferred outcome. Although there is nothing at all in this theory about the content of utility, to generate behavioral predictions some specific content must be assumed *ex ante*. Many analyses therefore assume that utility is maximized by self-interested action.

The claim that invisible-hand explanations can account for social order in large groups of unrelated people largely hinges on the evolution of social norms (Hechter and Opp 2001), or some minimal set of rules of the game (North 1990). This is even true for writers like Hayek (1973), whose discussion of the market order also relies on a substrate of collectively accepted rules (see Vanberg 1994). Whereas the general equilibrium (Walrasian) models of the market order that once dominated mainstream economics have no recourse to norms, they have been falling out of favor in the discipline for at least a decade (Cedrini and Fontana 2017; Greif and Kingston 2011; Bowles and Gintis 2000).

Social norms provide the cement of society—exerting a grip on the mind—by fostering prosocial rather than opportunistic behavior (Young 2015; Axelrod 1986; Bowles and Gintis 2011; Elster 1989a). Moreover, some norms operate quite behind the backs of actors, who comply with them instinctively and unknowingly (Garfinkel 1967; Goffman 1963). Typically, rational choice theorists contend that norms arise to enable the actors in given situations to cooperate with one another to forestall and mitigate negative externalities (Coleman 1990).

One of the most colorful examples of this is the emergence of the live-and-let-live system in WWI trench warfare (Axelrod 1984). Even though the German and French troops that were dug into their opposing trenches were ordered to attack one another, they instead independently developed routines (by employing the strategy of tit-for-tat) that led to their cooperation in maintaining a peaceful equilibrium. Although Robert Axelrod presents this example to illustrate how tit-for-tat can lead to favorable outcomes for large numbers of participants, the situation best resembles a two-person rather than an n -person game, where each side is treated as an individual. As such, it has no obvious implications for the evolution of cooperation among large groups of people. Other examples concern the emergence of social control and property rights among individuals in lawless and stateless situations (Umbeck 1981; Demsetz 1967; Ellickson 1991; Anderson 1999).

Social norms, however, cannot do all the heavy lifting that invisible-hand theorists demand of them to account for large-scale social order. To explain why, it is necessary to distinguish conventional from prosocial, sometimes referred to as moral, norms. Conventions arise to allow people to attain mutual advantage. For this reason, they are *self-reinforcing*, and therefore can be the products of spontaneous self-organization (Lewis 1969). Conventions often arise when many individuals cannot collectively decide on one of any number of potential coordination outcomes. If they ever happen to coordinate on doing things in one specific way, that fact is a signal to each that they could also expect coordination to occur the next time they face the same situation. Since no one has anything to gain from challenging their prior choice, they suppose that the prior choice is a strong enough signal for everyone to act on it. Once a convention is achieved in some ongoing or repeated context, it persists because it is self-reinforcing. The canonical example of a conventional norm is the rule that individuals all drive on the same side of the street. The specific choice they make is entirely arbitrary: in the United States one drives on the right, in the United Kingdom on the left side of the street.

Although this outcome happens to be enforced by the state, even without state enforcement everyone would still comply with the rules of the road because noncompliance is pretty much a recipe for disaster.

There is an important theory in social science that large-scale cooperation emerges in a spontaneous and largely unplanned fashion. First enunciated by David Hume (Hardin 2007) and, more recently, by Austrian economists—especially Friedrich von Hayek (Vanberg 1994; Bowles, Kirman, and Sethi 2017)—it holds that large-scale cooperation emerges from conventions. On Russell Hardin’s (2007, 89–224) compelling reading of Hume,

The power of a government is derived from the fact that we almost all acquiesce in its actions and policies most of the time. A sufficient reason for us to do so is that almost all others acquiesce, so that *their coordination gives the government extraordinary power* to go after the occasional miscreant. For the most part, we the citizens know very little about what our government is doing and yet we acquiesce. The fact that almost all of us do so *makes it in the interest* of almost all of us to do so.... We are coordinating on not acting individually, which entails not acting collectively against the government.... Hume supposes that social order at the scale of a very small society is not problematic. But when we move to the large-scale at which citizens do not all know each other, indeed at which citizens know very few of their fellow citizens, spontaneous social order regulated by iterated interaction and communal norms can no longer work. Hume’s conventional account suggests that a successful political regime is grounded in a dual coordination, first of those in the government to coordinate on their governing rules and second of the citizenry to coordinate on obedience or acquiescence to the governors.... So why did government work at all in such conditions? If government did not bother me, I didn’t

need to bother with government.... The state and the communities could sustain conventions that were communal norms of cooperation and order through internally organized spontaneous sanctions.... As the government grew and society became increasingly connected, there had to be conventions on a much larger scale. These conventions have their force from the extreme difficulty individuals or even groups would face in going against them. Small-group sanctions of miscreant members do not work when the group is so large as to make members anonymous.... It is not necessary to “create” a government or to turn power over to it. Government just happens, as a convention, by evolutionary development from one state of affairs to another.²

In addition to endogenizing enforcement norms, the invisible-hand theory of human social order also has ethical advantages, since it imposes minimal restrictions on individual freedom.

Although this is an elegant theory, alas it is flawed. Outcomes that emerge from *collective action* do not occur simply by aggregating individual behavior to secure mutual advantage. To illustrate, Kenneth Arrow’s (1963) impossibility theorem demonstrates that when voters have three or more distinct options, no ranked order voting system can convert the ranked preferences of individuals into a collective ranking. Thomas Schelling’s (1978, chap. 4) model of residential segregation shows that racially mixed neighborhoods made up of people with only a slight preference for having neighbors of their own race can rather quickly become entirely racially segregated. Finally, the prisoner’s dilemma game reveals that individuals who want to attain a beneficial collective good often are doomed to settle for an outcome that none of them prefers (Poundstone 1992). In large groups, collective action dilemmas can only be resolved by institutions—like the state—that enforce specific norms and rules of the game. This leads us to institutional theories.

INSTITUTIONAL THEORIES OF SOCIAL ORDER

Making the state the solution of a coordination problem is much too easy an explanation of social order. For the vast bulk of human history, humans lived in small groups whose social order was not due to hierarchical control (Hechter 1987; Ostrom 1990). Coordination conventions have built-in self-reinforcing mechanisms that give everybody a strong incentive to comply because they are built on mutual advantage. By contrast, the state must rely heavily on its *control capacity*: its ability to monitor behavior and call down severe sanctions on those who break its laws or fail to pay its taxes. Brian Barry (2010, 388–89) hits the nail on the head:

The idea that states are solutions to coordination problems is implausible. Nobody sheds blood over the time zone, the rule of the road, or the system of weights and measures, even if they arrive at some degree of disagreement. Political power is only at the extreme margins concerned with coordination problems such as these. Control of the government enables those who hold it to enrich themselves corruptly (or in accordance to corrupt laws they have created), to channel costs and benefits to some regions and ethnic groups and away from others, and so on. Especially where other means of enrichment are scant this power is worth fighting for.

The invisible-hand theory of social order is inadequate for at least two reasons. In the first place, the emergence of control capacity is highly problematic in large groups because monitoring costs rapidly escalate with group size (Boyd and Richerson 1988). Proposed solutions to this problem rely on a relatively small number of structural factors—typically affecting the capacity to detect actor types and to monitor and sanction participants (Hechter 1987; Milinski, Semmann, and Krambeck 2002; McElreath 2003; Horne 2009; Gürer, Irlenbusch, and Rockenbach 2006).

In the second place, as the Arrow and Schelling analyses reveal, collective action involves *interdependent* as opposed to independent actions. Independent actions reflect individual preferences and are not influenced by the actions of others. For example, an individual rowing a boat alone can row where she chooses. In contrast, interdependent actions are connected to the actions of others, with feedback loops between individual and group behaviors (Young 2015). When multiple people are rowing a boat, an individual cannot necessarily row in the direction she wants, but must work together with other rowers. Since social order requires coordination and cooperation among multiple actors, it often involves interdependent behaviors.

For these reasons, large-scale cooperation by humans can only be attained by establishing authoritative political institutions that specialize in rule enforcement—most importantly, but not exclusively, the state (Powers, van Schaik, and Lehmann 2016). A related point was made, in historical terms, by Karl Polanyi (1943) in his newly relevant broadside against laissez faire economic policies in nineteenth-century Britain. Despite their contention that humans have developed “tribal instincts” that facilitate social order through cultural evolution, Peter Richerson and Joe Henrich (2009) acknowledge that “effective actions at a particular location require an ethnographic study of how the local institutions function, and are sustained. Existing theoretical models can guide inquiry. The key is to figure out how the sanctioning system works.”

The crucial weakness of norms as a foundation for social order has become palpable in the wake of the 2016 American election:

Trump’s flouting of norms was the siren song of his candidacy, and it has become a defining feature of his presidency. Along the way, he has exposed flaws in the structure of American governance that haven’t surfaced in modern times, mainly because no other president has probed them. Norms seemed like enough to keep a president from using his office for self-enrichment, until Trump declared “the

president can't have a conflict of interest" and delighted that being elected had made his brand "hotter." It seemed to go without saying that a president would not rail against the independent judiciary, call the press the "enemy of the people," attack an investigation ordered by his own Justice Department, blurt Israeli intelligence secrets to Russia or ask his cabinet to fawn over him on TV. But arguments that begin "it goes without saying" are easy to skewer. (Bazelon 2017)

Unlike laws, which can be enforced by a central authority—namely, the state—social norms are not legally enforceable. Although the origin of the state is one of the oldest questions in intellectual history, it is highly contested, perhaps even more than many other social science problems (Hall and Taylor 1996; Feinman 2017; Alesina and Giuliano 2015; Knight and Sened 1995).

Nonetheless, several suggestive starting points have been proposed. Building on evolutionary theory, social order should be easier to attain among more *genetically related* populations than diverse ones, since relatedness increases the scope for cooperative behavior. In this view, genetically diverse groups ought to require greater central control than their more homogeneous counterparts. Indeed, genome-wide association studies have provided new evidence that genetically diverse ethnic groups developed more hierarchical—that is, autocratic—political institutions than homogeneous ones, and that this difference in institutional structure has persisted into modern times (Galor and Klemp 2017).

Another set of solutions directly connects individual motivations with the larger collective. For example, Ara Norenzayan (2013) argues that certain *religions*—those that involve "big gods," such as Christianity, Judaism, and Islam—provide the threat of punishment that motivates people to comply (see also Purzycki et al. 2017). The gods in these religions are all-knowing and all-powerful. They know when people have broken the rules and can punish accordingly. Be-

belief in a supreme god can provide a credible threat of monitoring and sanctioning at relatively low cost. Thus, groups with religious institutions that foster belief in big gods do not need to take on the additional task of monitoring and sanctioning all their members. And groups that have big gods tend to grow because they can produce collective goods more successfully than other groups. All in all, groups that developed religions that for whatever idiosyncratic reasons fostered prosocial behavior unintentionally would outcompete those whose religions were less effective in doing so (Atran and Henrich 2010).³ Once they become established, authoritative social institutions—like religions and states—can also affect the preferences of individuals who become subject to them; for instance, by fostering prosocial motivations (Steinmo 2008; Siroky, Mueller, and Hechter 2017; Hechter and Kanazawa 1993; Hall and Taylor 1996).

A third approach focuses on *reputation* that flows through social network ties. Individuals in the same small solidary community can easily be aware of one another's reputations. People have reason to behave well to maintain good reputations and future beneficial interactions. But in larger groups—in which individuals may interact with each other only once, if at all—it is costlier to obtain such information. It is also difficult to sanction people if one has no access to them. Reputation systems work when groups can solve these problems—to make information about others' prior behavior publicly available—and encourage individuals to sanction bad actors. Before the advent of the modern states, some communities developed ingenious institutions that did just that (Milgrom, North, and Weingast 1990; Greif 2004). Now technology facilitates the sharing of information. Online exchange sites such as eBay make it easy for participants in online exchanges to report bad actions with very little effort, thus reducing the likelihood that uncooperative individuals will attract future exchanges (Diekmann et al. 2014). Institutions that facilitate access to reputational information can increase social order, but these, too, need to be explained.

Finally, a promising solution relies on a process analogous to *crystallization*, in which small solidary groups nest within larger groups (Hechter 1987; Ostrom 1990; Hechter and Kanazawa 1993; Richerson and Henrich 2009). Such multiunit groups can arise from intergroup exchange or competition (Coser 1956; Wilson and Wilson 2007; Puurtinen and Mappes 2009; Kesebir 2012). Some empirical examples include the establishment of the Venetian state after A.D. 600 (Barzel 2002, 273–75); the development of the Sovereign Military Order of Malta (the Knights of Malta), which created a state from its eight constituent *langues* (Sire 1994); the growth of the University of Oxford from its independent colleges; the birth of the Old Swiss Confederacy; the evolution of the Articles of Confederation of the United States; and—in our own times—the rise of the European Union.

Since it is easy to explain how small groups of unrelated individuals can attain cooperation, the crystallization mechanism treats these small groups *as if they were individuals* and, using the same logic that accounts for cooperation in small groups, applies it to *groups of groups*. The resulting larger, multiunit group may be able to generate more cooperation than its constituent small groups as an emergent effect. Avner Greif's (2006) analysis of contractual compliance in medieval times in the absence of state authority implicitly relies on this kind of logic, for the enforcement mechanism in his story owes to the ethnic solidarity of particular groups of traders.

The costs of monitoring and sanctioning that arise in large groups decrease substantially because the subunits do much of the work to control individuals, and the larger unit simply deals with conflicts across groups. While such explanations reduce monitoring costs, they also require an explanation for the development of institutions that manage these cross-group relationships.

REVISING ASSUMPTIONS OF RATIONALITY AND SELF INTEREST

Whereas there is little quarrel with interest-maximizing assumptions in biology—at least when interest is defined in terms of reproductive

fitness—the parallel assumption in the social sciences has come under withering attack. Most American sociologists regard rational choice theory as a dead letter; instead, they have turned their attention to perspectives such as field theory (Martin 2003) and pragmatism (Gross 2009). Although rational choice has prospered in political science, Ostrom (1990), who once proposed a rather simple theory of collective action, more recently suggested that the problem is too complex to be understood in terms of *any* existing theory (Ostrom 2007, 203). Most surprising of all, even economics—the most self-consciously theoretical of all the social sciences—is moving away from its core theory, rational choice (Cedrini and Fontana 2017; Hamermesh 2013).⁴

Pride of place in this successful debunking enterprise clearly lies with psychologists. National Public Radio has a recurring program segment on social science hosted by Shankar Vedantam, but its title—“The Hidden Brain”—tells you everything you need to know about its take on social science: it’s all based on psychology. And the rapidly growing field of behavioral economics has aimed to enrich economics with insights from cognitive psychology (Heukelom 2014). At the end of a long and thoughtful essay on the emergence of norms, Jon Elster (1989b, 115) is dissatisfied with all the theories then on offer. An early proponent of behavioral economics, he speculates that the most fruitful approach will be psychological.

I do not believe that self-interest provides the full explanation for adherence to norms. There must be some further explanation, X, of why norms exist. I have discussed various candidates for X, and found them wanting. I have no positive account of my own to offer. In particular, I have no suggestion as to how norms emerge and disappear. I suggest, however, that a good research strategy might be to investigate the role of *emotions* in maintaining social norms. Also, the often-ignored phenomena of *envy* and *honor* might repay further study. Finally, the *psychological theory of conformism* should be brought to bear on the subject. (my emphases)

Moral psychologists argue that moral norms—emphasizing honesty, empathy, and other prosocial values—have evolved uniquely in humans, and that they ultimately can explain the attainment of social order. The urge to cooperate has been shown to be inborn in human babies, in contrast to chimpanzees (Tomasello 2009). Cognitive psychologists and behavioral economists have proposed modifications to two key assumptions of rational choice theory: first, that most individual behavior is the product of rational calculation, and second, that individuals are primarily self-interested.

One set of critiques identifies failures in rationality. In a trove of clever experiments, Daniel Kahneman, Amos Tversky, and their associates have revealed the empirical inadequacy of expected utility theory. Like Herbert Simon (1965) before him, Kahneman (2011, 411) suggests that expected utility theory imposes far too much cost on individual decisionmakers. Whereas Simon pointed to cognitive complexity as responsible for nonrational satisficing behavior, Kahneman suggests that the villain isn't so much complexity as a vast human tendency toward cognitive laziness.

Other research in cognitive psychology similarly shows that people use “fast and frugal” heuristics to help them make decisions (Gigerenzer and Goldstein 1996). The core finding of research by cognitive psychologists—and their application by behavioral economists—is that individual decisions are driven by emotions and other factors that are missing in action in expected utility theory. For example, emotions can help to account for the sustainability of social institutions, and the sources of the sentiments that bind states together (Lawler, Thye, and Yoon 2009). At the same time, social commitments have both instrumental and emotional roots. Instrumental motives lead people to engage in joint activities, and these joint activities generate positive emotions that increase the salience of group ties and social commitments. All told, most of the factors that actually affect individual decisionmaking should not matter to a rational actor. The implications of this revision in behavioral assumptions for the evolution of social order are uncertain, however.

This is not true for the second kind of revision. There is a view, often attributed to Socrates, that doing good is in the collective interest. Social theorists have long taken the view that social order is fostered among populations of altruistic, empathetic, and otherwise prosocial individuals, and discouraged among populations of self-interested actors. Some theorists hold that gene-culture coevolution has endowed us with preferences that go beyond the self-regarding concerns emphasized in traditional economic and biological theory, and with a social epistemology that facilitates the sharing of intentionality across minds. Gene-culture coevolution is responsible for the salience of such other-regarding values as a taste for cooperation, fairness and retribution, the capacity to empathize, and the ability to value such character virtues as honesty, hard work, piety, and loyalty (Gintis 2011).

Conventions arise from aggregating the decisions of multiple individual actors. In contrast to conventions, moral norms imply a sense of *oughtness*. The demands of morality are *imposed* on us externally; we are *obligated* to comply with moral norms *regardless* of our preferences and desires. Can moral psychology (Haidt 2012) account for large-scale social order? Moral psychology suggests that social order evolves as morally congruent social networks expand (Stanford 2017). To the degree that a group is composed of prosocial actors, it would appear that social order could be attained with less enforcement.

There is a good deal of evidence that some individuals actually are motivated to contribute to their groups by acting prosocially instead of opportunistically. In situations where one would expect rational self-interested individuals to free ride, a substantial number cooperate instead (Rabin 2006). For example, across one-shot prisoner's dilemma games, in which one would expect no cooperation from self-interested actors, people actually cooperate about 30 percent to 50 percent of the time (Jones 2008; Shafir and Tversky 1992; List 2006). Similarly, in social dilemmas involving small groups, people also cooperate—although in repeated games without punishment, cooperation declines over time (Fehr and Schmidt 1999, Sally 1995). Further,

some people are willing to punish others at a cost to themselves—if other group members are generally cooperating. Such conditional cooperators make up between 40 percent and 60 percent of the population (Fehr and Gintis 2007). Another 40 percent to 60 percent are thought to be purely self-interested, and another 20 percent fit neither category.

Prosocial value orientations can mute the conflict between the individual and the collective, if not eliminate it altogether (Esser and Kronenberg 2015; Lindenberg 2015). Evidently, altruistic values, regardless of their strength and universality, are not sufficient to eliminate the problem of cooperation because this would require people with prosocial values to agree about what's in the interest of the corporate unit. There is little warrant to think this is generally true. Think about the Cuban missile crisis: even though all the key members of Kennedy's inner circle wanted the missiles out of Cuba, they had strong conflicts about how to best attain their shared goal. These conflicts could only be resolved because Kennedy alone had the power to make the final decision (Allison and Zelikow 1999). This suggests that in the absence of hierarchy, the attainment of the consensus required for cooperation is highly problematic (Simpson and Willer 2015).

More fundamentally, however, the moral psychology explanation founders on a logical error known as *the fallacy of composition* (Hardin 2007; Levine 2012). In the language of complexity science, such a view ignores the phenomenon of *emergence* (English 2017, 45–84). This fallacy often occurs when individual choices are aggregated, or scaled up, to the collective level. It comes into play whenever we implicitly assume that the attributes of an entity are the attributes of its constituent elements. Thus far, research based on psychological assumptions has focused primarily on explaining *independent behaviors in large groups* (Bruch and Feinberg 2017).

Some collective outcomes indeed *do* occur by aggregating individual choices. These include patterns of investment in retirement accounts (Thaler 2015) and voting (Baldassarri 2013). Behavioral

economics has experienced its greatest triumphs in such situations (Thaler and Sunstein 2009; Thaler 2015). According to its proponents, psychological nudges informed by cognitive psychology have the strongest effects when “the program designers have good reason to believe that a portion of the population will benefit by making some change in their behavior ... the target population must agree that a change is desirable ... [and] it is possible to make the change with one nearly costless action” (Thaler 2015, 341). Nudges, then, are most effective when individuals already have good reason to do what they are being nudged to do. Unfortunately, the challenge in producing social order is that individuals may have very good reasons *not* to behave in ways that contribute to the collective good. Thus, research on behavioral nudges may be very useful for explaining individual independent actions, but the implication of such nudges for explaining social order writ large is unclear.

Whereas behavioral economics helps to explain outcomes based on the simple aggregation of individual actions, social order principally results from *interdependent* behavior. Individuals are strongly affected by their interactions with others. If social selection can foster the evolution of moral norms in small, homogeneous groups, it seems unlikely to scale up to account for social order in large, heterogeneous societies.

CONCLUSION

Social norms are deeply implicated in the evolution of social order. When they discourage free riding and opportunism, they make order more attainable by reducing the costs of collective enforcement. A great deal is understood about how such norms can evolve in small groups, where they tend to be self-reinforcing. Nevertheless, social norms cannot entirely substitute for institutions of collective enforcement in large groups of unrelated individuals. This is the fatal flaw in invisible-hand theories of social order. Moreover, the recent popularity of cognitive psychology in some segments of the social science community has not led to adequate theories either, since

psychological explanations of social order fall foul of the fallacy of composition. Individual preferences do not automatically scale up to collective outcomes. There is still little reason to quarrel with Richard Dawkins's (1989, 3–4) conclusion that if we want to build a society in which individuals cooperate generously and unselfishly towards a common good, then we must rely on socialization institutions.

Of course, psychologists and behavioral economists have never claimed to offer theories of social order. For the most part they have been content to unravel the determinants of individual behavior—a daunting task in and of itself. True, they have succeeded in analyzing some collective outcomes—those that arise from the aggregation of independent individual behavior. Nonetheless, the outcomes that result from collective action—foremost among them, the evolution of collective enforcement institutions like the state—cannot be understood merely by aggregating the behavior of individuals, however prosocial they may be. Perhaps behavioral economists will begin to address this key issue in the future (see Gintis and Helbing 2015 and the associated commentary). For the moment, progress in understanding social order hinges on further developing the institutional approach.

The present situation calls to mind a longstanding disjunction in physics. The rise of quantum mechanics—which deals with phenomena at the smallest scale—overthrew the assumptions behind classical (Newtonian) mechanics. Yet when biologists study genetics and civil engineers design skyscrapers, bridges, railroads, aircraft, and other large real-world structures, they rely on the principles of classical mechanics and pay little heed to quantum mechanisms.⁵ There is no accounting for the future, however; it is possible that someday quantum theory will become indispensable to solving these kinds of problems.

Much the same can be said about the application of psychology in the social sciences. If psychologists are akin to particle physicists in their focus on small-scale phenomena, then social scientists who aim to solve the problem of social order—and who have relied on

traditional self-interested motivational assumptions in their attempts to do so—are more like geneticists and civil engineers in this respect.

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NOTES

1. Some ant workers may be too lazy to help promote the colony's welfare; thus a modicum of free riding may actually produce better outcomes for the colony (Hasegawa et al. 2016). Similarly, all large human communities probably tolerate low levels of free riding, although there appear to be few empirical studies of the issue (see, however, Kalyvas and Kocher 2007).
2. For a relevant experimental study, see Centola and Baronchelli (2015). See also Cronk and Leech (2013) for an anthropological view. For more formal applications of invisible-hand logic to the evolution of the state, see Singh, Greif, and Bates (2002) and Greif and Kingston (2011). A quasi-institutional variant of this theory suggests that such conventions can facilitate agreement about a set of constitutional rules that set up subsequent rules of the game (Buchanan and Tullock 1965; Rawls 1971). Both Buchanan/Tullock and Rawls assume that the constitutional agreement is unanimous, unlike the institutional theories discussed later in this essay that are based on power asymmetry and hence are anything but unanimous.
3. This kind of argument is similar in form to that famously used by Max Weber in *The Protestant Ethic and the Spirit of Capitalism* (Weber 1958), although Weber sought to explain the effect of an arbitrary religious doctrine (predestination) on capital accumulation rather than cooperation.

4. Note this observation that Angus Deaton made more than a decade ago: “Price theory is certainly no longer our comparative advantage. It is not that it cannot be applied to a wide range of topics, as Gary Becker and others have repeatedly shown. But if current graduate students know anything of price theory, it would have had to have been self-taught, because it is no longer on the curriculum in the ‘best’ American departments. The advantage that economists have, if advantage it is, is their data handling skills (most social sciences are far from comfortable with millions of observations, to say the least), as well as their well-developed armory of econometric techniques. If the typical thesis of the eighties was an elaborate piece of price theory estimated by non-linear maximum likelihood on a very small number of observations, *the typical thesis of today uses little or no theory, much simpler econometrics, and hundreds of thousands of observations ... The extent to which data can effectively be substituted for theory is clearly a topic that is being actively explored, at least empirically*” (Deaton 2007; my emphases).
5. This is not to deny that other scientists—chemists, electrical engineers, materials and computer scientists, among others—may make good use of quantum mechanics.

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