



Why managers need an evolutionary theory of organizations

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Introduction

Most observers have agreed that the theory of human behavior derived from the assumption of selfish rationality is inadequate to describe human behavior and human organizations (Rousseau et al., 1998). The issue is what other approach to theory building will provide an adequate theoretical toolkit for human behavior. We argue in this essay that evolutionary theory is the proper foundation for the human sciences, particularly a theory that includes an account of cultural evolution. This theory shows how the limited but real altruistic tendencies of humans arose by tribal-scale group selection on cultural norms followed by coevolutionary responses on the part of our genes. Our tribal social instincts in turn act as a moral hidden hand that makes human organizations possible. We introduce this theory and describe some implications of it for strategy and organization. In effect, managers want to control the cultural evolution of organizations so as to make them perform better. Understanding the tribal roots of our social instincts and the dynamic properties of cultural evolution should lead to a better understanding of the potentials of humans to create functional organizations and to a better understanding of how organizations can become dysfunctional and fail. We hope to strike up a dialog with *SO!*'s readers about the applications of cultural evolutionary theory.

A challenge to management and management science

Recent developments in experimental economics show that the traditional economists' assumption that humans are selfish rationalists is wrong, and wrong in ways that are important to organizational theory and management (Fehr and Fischbacher, 2003; Henrich et al., 2004). Humans are prone to fair and

altruistic behavior, although the extent to which they behave in nice ways varies both individually and culturally. A reasonable cross-disciplinary consensus exists on the important role that trust, for example, plays in the behavior of human organizations (Rousseau et al., 1998). Orlitzky et al.'s (2003) meta-analysis of studies of corporate social and environmental responsibility suggests that companies that formally pursue such policies actually make more profit than ones that restrict formal accounting to financial matters. Such findings, combined with recent examples of managerial misfeasance in the business community, have sparked a spirited reaction to the dominance of economic theory in management education (Ferraro et al., 2005; Ghoshal, 2005). Perhaps the selfish rationality of economic theory seeps into boardroom behavior in unintended ways.

In this essay, we consider what contribution a theory of cultural evolution might make to understanding human propensities to form organizations based on trust and cooperation rather than on egoistic competition. By culture we mean everything that people acquire from other people by teaching and imitation – language, attitudes, skills, values, preferences and social institutions. The ongoing evolution of modern organizations and the societies they serve hardly involves genes at all. Rather, it involves technical innovations and new social arrangements, much as human evolution has for the past 50,000 years or more, ever since modern humans evolved from the last of our ancient ancestors. In a word, the human adventure is an exercise in cultural evolution. Cultural change is today studied primarily by historians and anthropologists, most of whom are uninterested in formal theory and quantitative data. The most theoretically ambitious social science, economics, has mostly dealt in models without an explicit temporal dimension, a serious defect, as Nelson and Winter (1982) cogently argued long ago. This is changing fast. Cultural evolutionists, borrowing tools from biology, have built a considerable toolkit of models. Some economists have discovered evolutionary theory and have begun to consider cultural diversity in time and space. The discoveries of experimental economics confirm some of the most important predictions of cultural evolutionary theory. The outlines of a synthetic evolutionary social science now exist (Bowles, 2003; Fehr and Fischbacher, 2003; Richerson and Boyd, 2005).

The theory of cultural evolution

Organic evolutionists began to use mathematical models to investigate the properties of evolution in the first quarter of the 20th century. The aim of the effort was to take the micro-scale properties of individuals and genes, scale them up to a population of individuals and deduce the long-run evolutionary consequences of the assumed micro-level processes. Empiricists have a handle on both the micro-scale processes and the long-run results, but not on what happens over many generations in between. Moreover, human intuition is not

very good at envisioning the behavior of populations over long spans of time. Hence mathematics proved an invaluable aid.

Beginning with the pioneering work of Cavalli-Sforza and Feldman (1981) in the early 1970s, these methods were adapted to study cultural evolution. The problem is somewhat the same as organic evolution. People acquire information from others by learning and teaching. Cultural transmission is imperfect, so the transmission is not always exact. People invent new cultural variants, making culture a system for the inheritance of acquired variation. People also pick and choose the cultural variants they adopt and use, processes that are not possible in the genetic system (although in the case of sexual selection individuals may choose mates with the objective of getting good genes for their offspring). Social scientists know a fair amount about such things, enough to build reasonable mathematical representations of the micro-level processes of cultural evolution. The theory is of the form

$$P_{t+1} = P_t + \text{effects of forces}$$

where p measures something interesting about the culture of a population, for example the fraction of employees who are earnest workers. Teaching and imitation, all else equal, tend to replicate culture. The fraction of workers in a culture who are earnest tends to remain similar from generation to generation. Earnest workers model earnest behavior for others to imitate and try to teach earnestness to new employees. Likewise slackers. Typically, several processes we call forces will act simultaneously to change culture over time. For example, management may find it difficult to discover and sanction slacking. Earnest workers may experiment with slacking and find that there are seldom any adverse consequences. Hence, some earnest employees may become slackers. New employees may observe that some people slack and some work hard. They may tend to prefer the easier path. At the same time, firms with a high frequency of slackers will tend to fail while those with many earnest workers may prosper. Prosperous firms will have the opportunity to socialize many more new workers than those that fail prematurely. The overall quality of the economy's workforce in the long run will be determined by the balance of forces favoring slacking compared with those favoring earnestness. Theorists are interested in the abstract properties of such evolutionary models. Empiricists are interested in finding the models that best describe actual evolving systems. Real world practitioners are interested in predicting the outcomes of policies that might improve or harm the quality of a firm's or an economy's workforce.

Our own interest (Boyd and Richerson, 1985; Richerson and Boyd, 2005) has been to use such models to answer a series of substantive questions. We have been interested in the adaptive costs and benefits of culture, the rates of different kinds of cultural evolution, the evolution of symbolic systems and the role of culture in the evolution of cooperation. Each of these areas has potential applications to management and management science (Baum and McKelvey, 1999).

Selfish rationality versus the moral hidden hand

Hard-nosed commentators influenced by neoclassic economic theory typically advise that business forces people to focus on the bottom line. They then advance the hidden hand argument from Adam Smith to justify the bottom-line focus as leading to virtue in the end. Market forces left to themselves will ensure through the hidden hand that everyone's selfish actions will in fact benefit society as a whole. *The Economist* (2005) stoutly defended this view against the charge by prominent business scholars that advice to businessmen based too literally on theory derived from assumptions of selfish rationality is destructive of business ethics (Ferraro et al., 2005; Ghoshal, 2005).

Although many business leaders know better, much management science derives from the economists' conventional view that human beings are fundamentally selfish by nature. Managers must control employees' behavior by creating incentives that align each individual's behavior with the goals of the firm. The benign hidden hand that is supposed to guarantee that market incentives to businesses align businesses' behavior with social virtue is assumed not to work at all within the firm. A top-down management system must plan strategy, monitor behavior and create incentives to make a business prosper. But why should the hidden hand work so well at one level and fail so miserably at another?

The paradoxical advice business receives based on the selfish rationality view neglects fundamentally important considerations, as businesspeople know from experience. For example, we all observe cultural differences in different business organizations and see that some of these differences profoundly affect how businesses function and how successful they are. We believe that the selfish rationality view is downright dangerous because it recommends strategies that are dysfunctional. Economists tend to overestimate the extent to which the market's hidden hand functions in the macroeconomy of the marketplace and underestimate the role of what we will call the moral hidden hand in the microeconomy of the firm.

Cultural evolution and the moral hidden hand

The discoveries of the cultural evolutionists have two important legs. First, we now have a much deeper insight into human nature than was possible in the absence of an understanding of cultural evolution. Humans have evolved a social psychology that mixes a strong element of cooperative dispositions, deriving from group selection on cultural variation, with an equally strong selfish element deriving from more ancient primate dispositions. We are imperfect and often reluctant, but often very effective, cooperators. People are contingent cooperators. Few will continue cooperating when others do not. Second, the effectiveness of our cooperation is not just a product of our social psychology; rather, our social psychology creates evolutionary forces that build cultural

systems of morality and convention that in turn make possible sophisticated systems of cooperation such as businesses. Individuals are not really that rational. We depend upon cultural evolution to generate social institutions over many generations that are more rational than individuals by themselves can ever hope to be. Conditional cooperation and the existence of social rules, to which we more or less readily conform, constitute the moral hidden hand. One can depend on most people, most of the time, to be spontaneously helpful and honest – even to strangers. Just as no corps of central planners needs to work out the details of how a market economy is to operate, so no central authority needs to comprehensively supervise the day-to-day interactions of a human community to ensure that we all take account of one another's needs and behave decently and honestly.

Humans: tribespeople by nature

The evolution of humans from primate ancestors involved the evolution of sympathy, loyalty and pride in one's contribution to the group. These qualities originally supported simple tribes in which food was shared, territory defended and rules enforced without any top-down leadership. Just as companies today with too many employees who look out for themselves tend to lose in competition with ones where more look out for the welfare of the firm, tribes with good rules and enough people willing to follow them triumphed over more chimpanzee-like tribes as human nature gradually diverged from that of our ape ancestors. Evolutionists call this mechanism group selection. Modern cultural evolutionary theory and much evidence are consistent with the same basic idea (Richerson et al., 2003). Group selection happens to operate much more effectively on cultural variation than genetic variation, explaining why human patterns of cooperation are so unusual.

Co-evolution of genes and culture to create our unique human nature

The cultural and genetic elements of our social psychology interacted over the long run of human evolution from our ape ancestors. In the end, we became the unique creatures we are, capable of enormous collective enterprises because of our ability to cooperate and trust conditionally, yet beset by conflicts on scales from the interpersonal to the international. On the practical side, cultural evolutionary science sketches the nature of the human raw material and the kinds of evolutionary tradeoffs that beset the design of organizations. It points to the levers that the managers have over the social institutions of firms so as to engender as much cooperation and as little conflict as is possible given our complex social proclivities. The advice that flows from the science of cultural evolution is as hard as any you will get from economists. It paints a rather softer picture of people's willingness to cooperate but emphasizes that our raw propensities are useless without well-functioning institutions. Our main claim both

for cultural evolutionary theory and its advice to managers is greater realism compared with other approaches to management based on social sciences.

Empathy and the moral hidden hand

Our theory has a back-to-the-future aspect. Adam Smith and Charles Darwin both made empathy the cornerstone of their theories of virtue. They observed that without the other-regarding virtue of sympathy, the social life that humans enjoy today would not be possible, much less reforms aimed at improving our social life. Darwin gave sympathy and related everyday virtues an important evolutionary role in favoring good social rules and providing the basis for rejecting flawed ones. Market forces certainly do exert important hidden hand effects, but the effects of everyday virtues are equally pervasive and nearly as hidden, in the sense that formal legal institutions and formal policies and procedures represent only a small part of their effect. Informal rules and everyday virtues affect our behavior in a multitude of unforced, unplanned ways. Formal law is costly and cumbersome, and is most often invoked when custom and everyday virtue fail in some way.

Smith's and Darwin's old insights are buttressed by modern theoretical and empirical studies that show how far human behavior deviates from the neo-classic economist's selfish rational assumption. For example, an important component of the moral hidden hand is the fact that many people will altruistically punish cheaters in social games (Fehr and Gächter, 2002). Given such results, we should not be surprised that businesses attending to their social and environmental responsibilities, conservatively speaking, make no less money than the average business and in many cases seem to make more money than ones that focus ruthlessly on the bottom line (Orlitzky et al., 2003).

Businesses are complex cooperative systems that function best when the moral hidden hand is operating most freely. A business full of high-morale cooperators will tend to earn the firm respectable profits and still have plenty of spare energy to help people and the environment. The firm that focuses excessively on the bottom line may find that it has inadvertently handicapped the moral hidden hand by encouraging employees to focus selfishly on their personal bottom lines, which might include diverting the firm's resources for their own gain by focusing on personal agendas, padding expense accounts, pilfering the supply cabinet, running up sales commissions by making expensive promises to customers, and by the many other ways that selfish employees can exploit the organization. Most economists are surprised by findings, such as Orlitzky et al.'s (2003) (as they are by many of the cultural-evolutionary findings that underpin our analysis). Economists have been trained to expect a trade-off to exist between a firm's profitability and any special attention it pays to social or environmental concerns rather than the synergy between these goals predicted by cultural evolution (and supported by laboratory experiments). Economics students, incidentally, are more resistant to the moral hidden hand in

the laboratory than other students and have trouble making cooperation work. Having imbibed the selfish rational assumption, they are handicapped in running the model businesses we set up in the laboratory. Economics, we should add, is changing very rapidly because some of the most elegant support for the moral hidden hand has come from the studies of pioneering experimental economists brought up in the neoclassical tradition (Guth et al., 1982).

It is not in the most profitable nursing homes that the staff beats up the residents. It is not the most profitable factories that turn out unreliable products, waste energy, or have disaffected employees. Rather, firms in which most people take pride in their craft, treat each other, their customers and other important outsiders fairly, are loyal to the firm and discourage co-workers from taking advantage of the firm are those that prosper. Our argument turns on the source of these virtuous actions. If the virtues that lead people to cooperate to earn profits are rather closely related to the virtues that cause people to value virtuous actions in other spheres, then businesses that encourage these general virtues will both prosper financially and succeed by other measures as well.

Tribal human nature, work-arounds and organizational management

The understanding that human nature is fundamentally tribal is what we believe evolutionary social science brings to the applied field of management. Business is made possible, but not easy, through a tribal human nature that is conditionally cooperative. Given the right culturally transmitted rules and enough of our peers willing to honor them, most of us are also willing to honor them. Businesses succeed when they are organized to recruit the group favoring the tribal impulses that most of us have, but they also have to work against the fact that businesses face a more constrained job than tribes. Tribes worked only for their members' benefit, whereas businesses have a broad array of stakeholders to satisfy – customers, suppliers, owners, lenders, neighbors and regulators. Complex societies use grants of power and other devices such as work-arounds to control inter-tribal anarchy in the interests of domestic tranquility and an efficient division of labor. But work-arounds often lead to management problems, like the abuses of power for selfish ends (Richerson and Boyd, 1999). Successful management is thus substantially the art of using work-arounds to tap the moral hidden hand while at the same time minimizing their inherent vices.

Leading a business as opposed to training chimpanzees

To see why the prosocial elements of our social psychology and cultural rules are so important, imagine the management costs in a firm that had to treat every employee as a rational selfish maximizer of personal satisfactions. Such employees would have to be very carefully monitored in order to reward and punish them so that they act in the firm's best interest as well as their own. Even if

these costs were not exorbitant, why would selfish, rational managers ever take the trouble to exert such effort? A sole proprietor is motivated to be an ultimate policeman for such a system of hierarchical controls, but most corporations have dispersed ownership and fairly autonomous management because the number of people a single person can comprehensively monitor is very small. One reason that market economies work so well compared with command economies is that central planners have an impossible computational task, one that price signals in a market solve very efficiently without much central direction.

The moral hidden hand similarly reduces the need to monitor and sanction so as to make large, efficient organizations possible. Most people, most of the time, come to work, do their job, and are civil and supportive of the organization, all with very little management. The moral hidden hand favors informal customs and formal rules that routinize good behavior. Managers have important roles as leaders, motivators and, yes, punishers, but their tasks would be impossible if people were not highly unusual animals subject to the moral hidden hand. The organization leader's task is possible because most people will work earnestly and follow rules even when they are lightly monitored and could easily shirk, so long as they believe that the organization is doing the right things. When an organization's culture falters and fails to support the moral hidden hand, it risks bankruptcy. Businesses and other organizations fail at substantial rates, to be replaced by startups and spin-offs. Group selection on organizations remains an active force.

Biologists know societies composed of selfish individualists well, since they are common in nature. Our chimpanzee relatives are excellent examples. They are a much closer approximation to the economist's ideal rational selfish agent than humans. We must have been such creatures before the evolution of the moral hidden hand. Even though dominant chimpanzees are willing to punish, they can barely coerce any cooperation from their troopmates. Chimpanzees raised as children by human surrogate parents remain impossibly selfish and willful, and cannot become functioning members of a human family. The chimpanzees that perform on television and in the movies have their canine teeth removed but even so, handlers risk severe bites. Their trainers must use comprehensive training schedules often said to include considerable severe physical punishment. The 'smiles' you often see filmed are fear grimaces caused by the trainers' off-camera threats. Chimpanzee troops in the wild, unsurprisingly, produce practically nothing that a businessperson would recognize as business. Chimpanzees have no division of labor; males produce no surpluses to contribute to the raising of their offspring, much less to larger-scale collective enterprises; the ill receive no help; they do not trade with neighboring troops. Cooperative ventures are largely restricted to groups of close kin. The most famous examples of kin cooperation in chimpanzees are the bands of three or four close male relatives that form stealthy raiding parties bent on catching and murdering isolated males of competing groups.

Without the moral hidden hand, a business leader would be like a chimpanzee trainer, only able to coerce a tiny amount of useful behavior out of smart, stubbornly selfish individualists at a high cost. In such a world, where would business leaders interested in that kind of task come from? Without the moral hidden hand, human society would mirror our ancestral ape society in which no large-scale cooperative enterprise were possible. Indeed, the way human behavior has coevolved through fast changing culture and the much slower changing genes to accord with the moral hidden hand is quite impressive when one considers that 98 percent or more of our genetic makeup is identical to that of the chimps.

Implications for researchers in strategic organization

Cultural evolutionary theory offers a fruitful foundation for new research in strategic organization. It suggests new theory-driven, testable hypotheses on how to manage organizations for improved returns on financial, human and natural capital. Here are some examples of hypotheses that flow from the cultural evolutionary framework.

- Understand your organization's culture. Most of what an organization is and does is a function of the skills that individuals have and the norms and rules individuals use to deal with each other. Much of importance is transmitted informally. Leaders can only hope to have a limited impact upon an organization's culture, and they generally have to function within and through the existing cultural norms.
- Manage a business as a tribe. Create tribal identities. Manage the tribe for the benefit of its members to the extent consistent with its larger missions and responsibilities to society as a whole.
- Manage with prestige rather than power. Leading from prestige is usually less costly and more effective than leading with power. When power is used it will be effective when used for legitimate reasons; otherwise it will lead to costly resistance.
- Respect cultural diversity in your organization. Employees from diverse groups will be loyal members of respectful organizations. Cultural diversity tends to bring a useful diversity of skills and experience.
- Monitoring and punishment are necessary to deter and control the damaging deviance of a few serious, often very clever, malefactors. Excessive monitoring and punishment easily lead to poor morale and low-grade professionalism on the part of the majority of good members of an organization. Monitoring and punishment are an organization leader's most delicate balancing act.

These ideas can certainly be found in the existing management literature, and they resonate with much practical wisdom. What cultural evolution offers

is a theory-based justification for a much less individualistic picture of human behavior than has heretofore been common either in economics or most evolutionary social science. It also offers a progressive program of empirical research to test hypotheses such as those above. We hope that *SO*'s readers will become active participants in this project.

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