Managing the Evolution of Business Cultures

Why Socially Responsible Businesses Prosper and Related Puzzles

Outline of a Book and Associated Workshop

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Executive Summary

The objective of our book is to help corporate leaders make strategic, tactical, and operational decisions based on sound science. Using the theory of bio-cultural evolution as a tool, we provide a framework within which executives can understand the processes by which corporate cultures evolve to accomplish their objectives. Evolutionary tools provide a way to examine the processes of socioeconomic change and the phenomenon of human cooperation. These topics are of fundamental importance for organizational management, yet the heretofore most powerful theory of human behavior—rational choice theory from neoclassical economics—treats them poorly. The evolutionary theory explains why human nature is the complex mixture of selfishness and altruism that we observe in the laboratory and in real life. The altruistic element of human nature generates a moral hidden hand that is the main motor for the evolution of the cultural rules that we actually use to operate complex human organizations. The management of organizations is mainly a matter of ensuring that the moral hidden hand functions in the face of individual and organizational complexities that tend to frustrate its action. We will examine corporations as "superorganisms" that are similar in some important ways to the tribes in which our ancestors lived. Humans are adapted to live in tribes. Business organizations that mimic tribes, but at the same time creatively work around their limitations, function best. One of the most important results of the theory of cultural evolution and related empirical work is the support that it provides for the concept of socially responsible business. Contrary to rational choice theory, evolutionary investigations suggest that profits should be positively, not negatively, correlated with social responsibility and environmental friendliness. Emerging evidence from the study of socially responsible businesses finds that they do indeed perform better financially than businesses that make no special effort to be responsible to these non-traditional bottom lines. We review the emerging science and draw from it seven applied principles, each generating several strategies managers can use to improve the performance of their organizations.

About the Author-Instructors

Dr. Peter J. Richerson is Professor of Environmental Science and Policy at the University of California-Davis. He is one of the major figures in the development of the theory of cultural evolution. His first book with Robert Boyd in 1985, *Culture and the Evolutionary Process,* is a classic in the field. The authors were awarded the Staley Prize by the School of American Research for a major contribution to the human sciences in 1989. Dr. Richerson and Boyd have two recent books. *Not By Genes Alone: How Culture Transformed Human Evolution* (University of Chicago Press, 2005) is an accessible introduction to the field. See reviews of this book in *Nature* (23/30 December 2004, pp. 951-2) and on the amazon.com web site. *The Origin and Evolution of Cultures* (Oxford University Press, 2005) is a recently published anthology of their papers and book chapters. Dr. Richerson has edited three other books and is the author of over 200 journal articles, book chapters, book reviews, and technical reports. He is former president of the Society for Human Ecology and is currently the treasurer of the Society for Human Behavior and Evolution, and he has organized the annual meetings of both societies. He has been a Guggenheim Fellow and a visiting professor at the University of California—Berkeley, Duke University, the University of Bielefeld (Germany), and Exeter University (England). He has given invited talks to scholarly audiences in the US, Germany, Hungary, Austria, Spain, England, Australia, and Japan in the last two years alone. Trained as an aquatic ecologist, he has also conducted National Science Foundation and Environmental Protection Agency-funded research on the ecology of lakes, including large-scale applied studies in which he managed teams and interacted with local, state, and federal government agencies and private companies. The National Sciene Foundation currently supports his work on cultural evolution. A species of fish from Lake Titicaca was dubbed *Orestias richersoni* in recognition of his pioneering work on that high-altitude lake in the Andes. The Board of Supervisors of Lake County, California, recognized his applied-science service with a Proclamation of Commendation. Dr. Richerson is a habitat restorationist and a history buff. For more information, consult his web site:
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Dr. Dwight Collins is President of Colbridge & Company, which provides consulting and training services in strategic planning, sustainable business, and supply chain design & optimization (www.colbridgeandco.com). In addition, he has taught Operations Management and Industrial Ecology at the Bainbridge Island Graduate Institute (www.bgiedu.org) and the Presidio World College (www.presidioworldcollege.org). Dr. Collins directs the Collins Family Foundation (www.collinsff.org), whose goal is to contribute to and provide leadership in

making our human presence on Earth sustainable. The Foundation organizes retreats and conferences, e.g., *Profitable Sustainability: The Future of Business* (http://www.nbis.org/conference/PDF/NBISProgramFinal.pdf), co-sponsored with the Seattle based Network for Business Innovation and Sustainability (NBIS) and the Seattle based Future 500. Dr. Collins is a member of INFORMS (Institute for Operations Research and Management Science), the INFORMS Practice Section Advisory Council, and the INFORMS Roundtable. Previous to founding Colbridge & Company, Dr. Collins held positions as Director of Aspen Technology's Strategic Planning Practice, Director of the Semiconductor Industry Practice at Chesapeake Decision Sciences, Inc., Senior Project Manager at Exxon Corporation, Senior Consultant at the Logistics Management Institute (LMI) (a Washington, D.C. think tank), and Captain in the US Air Force. Dr. Collins earned a BS degree in Engineering Physics, and MS and Ph.D. degrees in Operations Research with a minor in Managerial Economics, all from Cornell University. He currently lives in Basking Ridge, NJ and spends his spare time biking, hiking, practicing yoga, gardening, traveling, and doing projects with his children.

Dr. Russell M. Genet, an astronomer, is Director of the Orion Observatory (www.orionobservatory.org). The Orion Observatory studies the light variations in eclipsing binary stars due to large starspots and the exchange of mass between the stars, and it is also studying Cepheid variable stars, which are used for determining distances in the cosmos. Besides his astronomical observations, Dr. Genet works on cosmic evolution—the grand synthesis of physical, biological, and cultural evolution. His 1997 book *The Chimpanzees Who Would Be Ants* explored humanity's place in the cosmos, our evolution, and four potential futures. Currently he is putting the finishing touches on two other books: *Humanity* and *Giordano Bruno's Cosmic Hypothesis.* Besides his work at the Orion Institute, Dr. Genet teaches short courses at California Polytechnic State University on Life in the Universe, Astronomy at the Telescope, and so forth. Dr. Genet, whose undergraduate degree is in electrical engineering, started his career as, quite literally, a rocket scientist, developing rocket guidance systems in the early days of the space age. Working with Dr. Collins in the 1970s, he pioneered the first life cycle cost models of major systems. Dr. Genet founded the Fairborn Observatory in 1979 and, with Louis Boyd, pioneered the development of robotic telescopes—remote mountaintop automated systems that observed during the wee hours while the astronomers who used the telescopes from around the planet got a good night's sleep. Dr. Genet is the author or editor of over a dozen books on astronomy, robotics, and cosmic evolution, has written numerous papers in these areas, and has organized over a dozen conferences on these topics. His work on robotic telescopes was featured in a one-hour PBS documentary, *The Perfect Stargazer.* Dr. Genet was the 51st President of the Astronomical Society of the Pacific and is a member of the American Astronomical

Society, the International Astronomical Union, and the American Association for the Advancement of Science. He lives with his wife (and secret childhood sweetheart), Cheryl, at Santa Margarita Lake, not far from San Luis Obispo on California's central coast. In his spare time he hikes, kayaks, and flies airplanes.

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Why Managers Need Evolutionary Theory of Organizations

A Challenge to Business

Capitalism and its allies, science and technology, have created the most dynamic social systems the planet has ever seen—mostly for the better, although few deny that there are also significant problems. However, few also deny that the modern competitors to capitalism--communism and democratic socialism--are simply less able to provide people with the kind of life that they want. Capitalism's success so far puts a great deal of pressure on business organizations. If people are going to continue to perceive that life is getting better, not worse, it is up to businesses to recognize and fulfill the social and environmental responsibilities that are incumbent upon them as society's leaders. History has selected business entrepreneurs to lead the evolution of human societies to an adventurous but uncertain future.

A Matter of Cultural Evolution

This evolution will hardly involve genes at all. Rather, it will involve technical innovations and new social arrangements, much as human evolution has for the 50,000 years or more since modern humans evolved from the last of our archaic ancestors. In a word, the human adventure is an exercise in *cultural* evolution. The science of cultural evolution has advanced enormously in the last 30 years. We know enough to begin to think about an applied science of cultural evolution. Currently, the most influential applied social science is economics. The findings of cultural evolutionists depart markedly from neoclassical economics in critical respects, and their implications for management science are equally novel.

Selfish rationality and the hidden hand

Hard-nosed commentators influenced by 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. (See *The Economist*, January 20, 2005.)

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. Somehow, 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 at the micro scale and that fail to do justice to the active leadership role that business has at the macro level. 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 absent an understanding of cultural evolution. Humans evolved a social psychology that mixes a strong element of cooperative dispositions with an equally strong selfish element. We are imperfect and often reluctant, but effective, cooperators. People are also contingent cooperators. Few will continue cooperating when others are 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 like businesses. Individuals are not really that rational. Rather, we depend upon cultural evolution to generate rules over many generations that are more rational than individuals by themselves can hope to be. Conditional cooperation and the existence of social rules to which we 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.

Genes and culture coevolved 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 yet beset by conflicts from the interpersonal to the international scale. On the practical side, 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 manager has 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. Our advice is as hard-nosed as any you will get from economists. It paints a rather softer picture of people on the micro side and a bit harsher one on the macro side. But our main claim both for the theory and the advice is greater realism compared to competing sources of advice based on better science.

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. Neither Smith nor Darwin was a Social Darwinist! 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. The 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 insight is buttressed by modern theoretical and empirical studies that show how far human behavior deviates from the selfish rational assumption expects due to the role empathy and other virtuous social instincts play in human behavior. For example, an important component of the moral hidden hand is the fact that many people will altruistically punish cheaters in social games. Given such results, we should not surprised that businesses attending to their social and environmental responsibilities actually make more money than ones that focus ruthlessly on the bottom line (Orlitzky et al. Organization Studies 24, pp. 404-441, 2003). Businesses are complex cooperative systems and will function best when the moral hidden hand is operating most freely. A business full of high morale cooperators will tend to earn the firm a lot of money and have plenty of good energy to spare helping 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. Most economists are surprised by such findings (as they are by many of the findings

that underpin our analysis). They expect a *tradeoff* 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 quite resistant to the moral hidden hand in the laboratory 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 experimental economists brought up in the neo-classical tradition.

It isn't in the most profitable nursing homes that the staff beats up the residents. It isn't the most profitable factories that turn out unreliable products, waste energy, or have the most disaffected employees. Rather, firms in which most people take pride in their craft; treat each other, customers, and other important outsiders fairly; are loyal to the company; and discourage peers and superiors as well as subordinates who take advantage of the company are the firms 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.

Leading a business versus training chimpanzees

To see why the prosocial elements of our social psychology and cultural rules are so important, imagine the management costs in a company 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 company's best interest as well as their own. Even if these costs are not exorbitant, why would selfish, rational managers 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 quite dispersed ownership because the number of people a single person can comprehensively monitor is very few. One reason that market economies work so well compared to command economies is that central planners have an impossible computational task, one that price signals in a market solve very efficiently without central direction. Human social systems are also based on a moral hidden hand, one powered by sympathy and its cousins and the cultural rules they favor. 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 needed. The moral hidden hand favors informal customs and formal rules that routinize good behavior, thus contributing directly to good corporate performance. Managers have important roles as leaders, motivators

and, yes, punishers, but their tasks would be impossible if people weren't highly unusual animals subject to the moral hidden hand. The business 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, at least!

Evolutionists commonly study societies composed of selfish individualists. 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 hardly 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 and, 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 do not participate in the raising of their offspring; the ill receive no help. 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, the business leader would be like a chimpanzee trainer, 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 was possible.

Humans: Tribespeople by nature

The evolution of humans from such ancestors involved the evolution of sympathy, loyalty, pride in one's contribution to the group, and related social emotions. These qualities originally supported simple tribes in which food was shared, territory defended, and rules enforced without any top-down leadership. 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. Most humans are not saints, but only a few are rationally selfish, and these individuals are described as sociopaths.

Tribal human nature and organizational management

The new 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, by 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 recruit the group favoring tribal impulses that most of us have, but they also have to work against the fact that businesses have a more constrained job than tribes. Tribes worked only for their members, whereas businesses have customers, suppliers, owners, lenders, neighbors, and regulators to satisfy.

A Theory of Cultural Evolution

A small tribe of scientists—biologists, economists, anthropologists, psychologists, mathematicians, and others—have spent the last 30 years developing the theory of cultural evolution. The theory begins with the simple observation that human beings learn about how the world works, how to make things, and how to manage our social affairs from other people. In this, we are different from all other animals. We and all other animals inherit our genes from our parents, but humans inherit so much more than genes, both from our parents and from the other people with whom we come in contact. This transmission of ideas, practices, social rules, language, rituals, and many other elements is an inheritance system similar to the inheritance system that provides us with our genes. And just as Darwinian analysis has provided so much insight into the ways a species' *genetic* endowment changes over time, it can provide insight into the way a population's *cultural* endowment changes over time. Cultures and living things evolve in similar ways.

Genetic versus cultural evolution

The most important difference between cultural and biological evolution is that biological evolution is mostly driven by natural selection. Cultural evolution is driven by natural selection too, but also by the *decisions* that humans make about which bits of culture to learn and remember and which bits to forget, abandon or just never notice. Sci-fi scenarios of genetic engineering aside, humans are stuck with the genes they got when their parents' egg and sperm fused, but a child can reject or abandon many elements of its parents' culture. As adults we can actively seek the knowledge and know-how that helps us thrive.

For example, managers routinely adapt to changing business environments by working to invent new practices and replicate innovations that have worked for others. They recruit highly trained scientists, technologists, and managers who have

learned the latest things in school. Managers even lure away experienced people from other businesses. They read the relevant literature and study competitors' methods and products. Entrepreneurs with perhaps better ideas start new firms. Investors may back them. Human effort drives cultural innovation much more rapidly than the random genetic mutations and slow process of natural selection cause change in biological evolution. This is an evolutionary system, so inevitably, only some of the variation can survive. Businesses fail, ideas are forgotten, technology is abandoned, occupations become irrelevant, and, in the extreme case, those who are closely attached to failed cultural notions physically perish.

Implications for managers

Cultural evolutionary theory succeeds in bringing together partially successful ideas about human nature so that we can construct a more complete story. It acknowledges that humans sometimes behave in a cold-hearted, rational way but takes account of the inescapable fact that we very often do not. Humans are concerned about social rules and social status, and sometimes we are profoundly generous. Cultural evolutionary theory analyzes how cultural diversity arises and provides explanations for the conflicts that are endemic to human social life. Smith and Darwin were right about empathy, but cultural evolutionary theory also explains why, despite empathy, human organizations are conflict-ridden and flawed in other ways.

The implication of cultural evolutionary theory for managers is revolutionary. Having a proper theory of human evolution that comprises both our genetic and cultural inheritance provides the opportunity to understand the processes of cultural change from first principles. This revolutionary theory identifies the levers of control and characterizes the inescapable tradeoffs involved in purposive cultural evolution. Many of the results of cultural evolutionary analysis are consistent with common sense and reflect the fact that humans usually make decisions that make sense to other humans. The conclusions are seldom the same, however, as analyses based on the rational choice theory that has informed so much applied economics and thus the academic advice to corporate leaders in the business community. Humans simply do not always make rational decisions, especially not *selfish* rational decisions. Up to now, management science has attempted to make use of findings from psychology, sociology, and other disciplines that describe how humans actually behave but have not found a way to get them to sit comfortably with the rational choice paradigm. Cultural evolutionary theory pulls them under one reasonably compact explanatory umbrella. We think it makes sense, and you'll be able to judge if it makes sense to you. In this book we focus on the implications for corporate managers of the cultural evolutionary theory of social organization.

How Human Societies Evolved

Human societies as superorganisms

You can usefully think of human social organizations as crude superorganisms. Biologically speaking, humans are apes. Science journalists constantly remind us that our genes are almost identical to those of chimpanzees. Yet compared to chimps, we are amazingly successful. A few hundred thousand of them scrabble around in their small, fractious communities in remote African rainforests while several billion of us live in large societies all over the planet. Those of us living in reasonably functional societies have enough to eat and don't really expect to be raped or beaten up by our neighbors. Among the animals, the species most analogous to humans are not other apes but advanced social insects like ants, bees, and termites composed in some cases of millions or billions of individuals working together as one superorganism. The difference is that, for all their spectacular accomplishments, human societies are crude compared to other superorganisms. They harbor a lot of discontent and conflict while hives, anthills, and termite mounds run relatively smoothly. Despite the crudity of our societies, they are highly effective, partly because we deploy such sophisticated technology and partly because we harness conflict to productive ends. Individuals compete to serve the company better than others and markets, by Smith's hidden hand, successfully harness the competition between firms to socially useful ends

Between the tiny unruly societies of our ancestors and modern metropolitan hives, humans lived for perhaps 250,000 years in autonomous egalitarian tribes of a few hundred to a few thousand individuals. Human social psychology is composed of two elements: ancient social instincts that evolved over tens of millions of years in ape societies, and uniquely human social instincts acquired by our ancestors who thrived in tribes over the last few hundred thousand years. Within these tribes, our ancestors worked together to build up the expertise to make a living and raise their young in almost all of Earth's habitats. Only about 10,000 years ago did farming and 5,000 years ago did city-dwellers start to become part of human adaptive strategy. But humans thrived doing both. Today the ancient and tribal instincts are the raw material out of which cultural evolution builds huge cities and complex corporate enterprises.

Explaining good and evil

Throughout human history, philosophers, theologians, and storytellers have found a number of ways of describing and explaining humanity's dual nature—yin and yang, good and evil, and so on. In cultural evolutionary terms, the fundamental

problem is the inevitable result of having two sets of social instincts. The ancient apish social instincts demand a certain selfishness and preoccupation with the success of one's own family while the tribal social instincts support a measure of selfless altruism and spontaneous loyalty to those we identify as being "one of us." This inherent conflict does not allow perfect social harmony, as utopians discover to their dismay, but we strive for better-than-apish societies and usually manage to avoid violent anarchy. At the same time, our loyalty to our groups often leads to a failure to empathize with other groups, quickly giving rise to conflicts between groups, another source of much evil in the world.

Building complex societies

We really can create large-scale social systems that engender cooperation, coordination, and a division of labor. We really can live in giant societies in which a good proportion of the population is reasonably happy a good proportion of the time. The culturally transmitted social rules we inherit generally do an adequate job of reconciling the ancient and tribal social instincts. For example, all successful societies make special provisions for family life. Utopian experiments that neglect to do so are short-lived. Such social achievements occur when we successfully tap the prosocial aspects of the tribal social instincts and manage to work around their limitations. Although organizations work best when they resemble tribes, the loyalties we feel are often quite narrow, and the solidarity we feel with "people like us" easily leads to conflict with "people like them." Human societies can only be crude superorganisms because both the ancient and the tribal instincts engender a division of loyalties. Humans feel obligations as fathers and mothers; as members of a business, church, and neighborhood; to a nation; and perhaps to humanity as a whole. Communist attempts to create a selfless Soviet citizen foundered on the bedrock of self-interest and family. Communist attempts to produce unfeigned internationalists foundered on the reef of ethnocentrism. Yet the utopians *are* right in the sense that humanity's many problems can only be managed by institutional innovations that constrain individual selfishness and too-narrow loyalties to fractious groups. We know that societies have grown in scope and sophistication over the last ten thousand years because they have been able to manage these problems on an ever-increasing scale. Cultural evolutionary analysis furnishes the tools to develop a tough-minded, practical program for positive change that works *with* the grain of human nature and not against it.

Tribal Minds in Global Villages

Similarities between businesses and tribes

Businesses are typically tribal-scale social units. In fact, businesses and similar units are the cultural successors of tribes. Empires and nations developed once economic productivity reached a level that could sustain the overhead of running such huge supra-tribal groups, but they aren't the same as tribes. Human social instincts don't really predispose us to feel we are a meaningful part of such a huge social system. A well-managed business or even a department within a large business is much more like a tribe, and the manager's job has essential features in common with that of the ancestral tribal leader. Individual selfishness and nepotism have to be finessed to create economic enterprises of an efficient scale. When enterprises become too big or communication systems falter, then employees no longer feel part of an organization in which everyone knows or can know everyone else, and the tribal social instincts stop working for the group as a whole. Cliques, factions, and quasi-ethnic conflicts emerge. Good managers instinctively tap tribal-scale loyalties to make their divisions work as units while maintaining a commitment to the larger organization's goals. We draw many practical lessons from the parallels between the tasks of the business leader and that of the ancient tribal chief.

Differences between businesses and tribes

The big difference between the tribe and the business, between the executive and the chief, is that the complex societies of the last five thousand years have linked an ever-increasing number and diversity of tribal-scale units into larger functional wholes. Ancient chiefs had to manage relations with other tribes, to be sure, but this function has increased in importance and complexity in modern social systems. Modern social institutions work around the limits of the tribal instincts in the interest of suppressing the anarchic, often brutal conflicts between tribes. This has made it possible to build nations, empires, and multi-national businesses of truly revolutionary economic power. But tribal sentiments still warp these institutions in a host of ways that concern business leaders every day. For example, over the last couple of hundred years, tribe-like feelings of patriotism have bound together the citizens of many nation-states. This has resulted in systems that, on the one hand, allow huge advances in the scale of intrastate economic activity but, on the other hand, lead to a troublesome degree of violent conflict and economic rivalry *between* states. Meanwhile, tribal and sectarian conflict tears apart "failed states" like Yugoslavia, entangling businesses in messy and morally awkward situations.

The Tools of Cultural Evolutionary Analysis

Cultural evolutionary analysis is practically useful because it forges a connection between the individual psychological predispositions of individuals and the macro-level institutions in which human individuals are always embedded. Cultural evolutionary analysis presents a clear picture of function and dysfunction that puts analytical tools in the hands of those who need to manage change. The sources of conflict and the inevitable and inescapable tradeoffs are plain to see.

Limitations of rational choice and market hidden hand explanations

Competing rational-choice, free-market explanations have extreme difficulty accounting for function and dysfunction in human social systems. If people are rational and selfish, cooperative ventures should be impossible unless rewards and punishments are constructed hidden-hand style to channel selfishness in constructive ways. If such a hidden hand is perfect, humans would spontaneously cooperate perfectly. In theory and in fact, market failures of many types are endemic to social life; witness the fact that few animals can cooperate at all in large-scale enterprises. Another way to get cooperation under pure rational choice is for leaders to arrange rewards and punishments to induce people to cooperate for selfish reasons. But in a world where only selfish people exist, who is going to play the role of the unselfish Leviathan who arranges the rewards and punishments? We have already noted that even if an unselfish Leviathan existed, she would face the impossible information-processing task that Soviet central planners faced when they failed to rely on the hidden hand of markets.

The concept of a selfless ultimate leader is what philosopher Daniel Dennett calls an explanatory "skyhook." It would be a great device if it were possible, but it isn't. In fact, rulers are often little better than thieves. Witness the kleptocratic states of Africa, the crony capitalism of Southeast Asia, the nomenklatura elites of the Soviet countries, the buccaneering CEOs that enrich themselves at the expense of employees and stockholders, and the robber barons of medieval Europe. In fact, rational choice/free market theory is a simplified utopian theory not unlike communism and socialism. While capitalism has triumphed over these ideologies by its productive prowess and its celebration of the market hidden hand, it has no answer for the chronic problems of social conflict. Witness, for example, the explosion of violent fundamentalism, or the need for environmental sustainability. A principled alternative is necessary, one that gives due weight to the moral hidden hand.

The applied promise of cultural evolutionary theory

Cultural evolutionary theory gives us a useful synthetic explanation of the sources of these dysfunctions and of how an animal with such a limited set of prosocial predispositions can construct states and multi-national businesses that function reasonably well. No scientific product is ever the last word, but cultural evolutionary theory is the *latest* word!

The topics we cover include leading, monitoring, punishing and rewarding, and managing of the quasi-ethnic elements of the business-as-tribe. Leadership is especially tricky because leaders must function both as charismatic mobilizers of their fellow tribespeople and as the executors of the demands of superiors and other outsiders. Leadership is often, even normally, abused in modern social systems relative to a psychology rich with expectations of fairness, individual autonomy, and a basically egalitarian social order. Yet monitoring, punishing, and rewarding are essential to make human social systems work. A minority of humans will behave with selfless heroism if the situation seems to demand it. Another minority behave just as selfish rationality predicts. But the majority of people in any given situation are conditional cooperators. Given encouragement, they cooperate; given none, they fall victims to selfish exploiters and respond by ceasing to cooperate. Cooperation readily emerges spontaneously in small- and medium-sized groups without any sort of formal leadership. Punishment of defectors is not even necessary in the short run, nor is anything but the most informal leadership.

Managing such groups is tricky, however. The spontaneous cooperation that arises in small- and medium-sized groups is necessary for them to function well, but it easily evolves in directions incompatible with the larger organization's goals. How do managers lead such spontaneous cooperation in the right direction without either destroying it altogether or finding that the cooperation is, at worst, organized to subvert their leadership? People are prone to develop symbolic markers of every level of social and cultural difference imaginable. Sharing a bit of jargon or a common interest in a sports team may draw office workers together, contributing to a highly desirable sense of work comradeship from the individual's point of view and an esprit that smooths everyday business activities. Businesses properly put much effort into encouraging workplace comradeship. However, the line between healthy workplace comradeship and a quasi-ethnic inwardness leading to poor communication at best and destructive feuding at worst is neither easy to define nor easy to manage once defined.

Limitations of applied science

The function of applied science is to deliver the best tools that theory has to offer to real-world practitioners. We offer this book with a certain pride associated with the

recent accomplishments of our discipline. Much has been learned, and much of what has been learned has intriguing, even obvious, applications. At the same time, we approach this phase of our research with a great deal of humility. The real world is complex beyond the comprehension of any existing theory, perhaps of any possible theory. As the great evolutionary biologist J.S.B. Haldane remarked, "The world is not only queerer than we suppose, it is queerer than we *can* suppose." Also, this book is aimed at managers, some of whom will have a great deal of practical experience. We believe that the best applied science is a dialog with experienced practitioners.

Some of what we say will strike you as obvious; everyone with experience knows that. This information is valuable for us because it constitutes a successful test of theory even if it is of no use to practitioners. Other things we suggest may be intriguing to you, but only half right or underdeveloped. Still other things may be plain wrong. All three of these results are useful to us as they suggest new avenues of research. In recompense for this valuable feedback from you, we earnestly hope that at least some portion of what we have to offer is new, surprising, and applicable. Ecosystem managers recently invented the concept of "adaptive management" that is very much in the spirit of our enterprise. Every science-based recommendation to management is in the nature of a scientific hypothesis. We expect them to be at best incomplete and at worst disastrous. In a proper partnership between science and practice, the results of the success or the failure of a recommendation are incorporated into the ongoing revision of the applied and basic science.

Cultural Evolution: A New Science

History

The reason that the theory of cultural evolution did not begin to develop until the last few decades is interesting. Darwin's own concern with humans was deep and early. He could see that the failure to account for this one supremely interesting species with his theory left a gap through which all manner of objections would flow. His notebooks contained many references to the problems raised by humans well before the publication of the *Origin of Species* in 1859. At the end of the *Origin* he wrote his famous teaser: "Psychology will be based on a new foundation [… and] light will be thrown on the origins of man and his history." Still, Darwin hoped not to have to do the complex and controversial human case himself. He encouraged three of his close collaborators, Huxley, Wallace, and Lyell, to undertake the evolutionary theory of humans, offering them his accumulated notes by way of assistance. But he was disappointed for various reasons. In the end, he wrote the

Descent of Man and Selection in Relation to Sex himself in 1871. *Descent* is a sophisticated book written in Darwin's clear and easy style. It's a good read even today. All that has been accomplished in evolutionary theory and applied to culture since 1975 could have taken off directly from Darwin's foundation. He even approvingly cited Edward Tylor's then-new technical term "culture."

Darwin's work did have a big impact on the emerging human sciences in the years leading up to the turn of the twentieth century. William James and James Mark Baldwin in psychology and Thorstein Veblen in economics are among his most prominent followers. Nevertheless, because of a series of accidents, the Darwinian theory of *cultural* evolution was dropped from the agenda of the several social sciences that established themselves in the years after 1900. Part of the problem was that the champions of the Darwinian approach were few at the turn of the century. James left psychology for philosophy just at the time when academic psychologists were forcefully divorcing themselves from philosophy. Baldwin, a professor at Johns Hopkins, the first American university to offer a Ph.D., was arrested in a Baltimore house of prostitution and had to resign his post. Veblen's career was troubled by an affair with a married woman. The community of social scientists in those critical days was small, and such accidents diminished the Darwinian project. Also, although no serious scholar by 1900 doubted the *fact* of evolution, Darwin's work spawned a host of competing theories about the *motors* of evolution. Darwin's own proposals were not especially influential at the critical time. In biology, the excitement surrounding the rediscovery of Mendel's ideas on heredity seemed to many to imply that Darwin's version of evolution was mistaken. Not until the 1920s did evolutionary biologists begin to reconcile Mendel and Darwin, sparking the famous Synthesis that put evolutionary biology on the path of progress that continues to the present.

The evolution of the social sciences

At the same time, scholars in the emerging social sciences made two fateful decisions. First, they divorced social science from biology. Often, this move was defended as merely an expedient division of labor, but, in the nature of any social division, it rapidly developed a quasi-ethnic status. You either belonged to the biological or the social science tribe, and relations between the two were (and largely still are) cool and distant. Second, the various social sciences effectually divorced each other too, leading to more quasi-ethnic distinctions. Psychology became a different discipline from anthropology, sociology, economics, or political science.

During the twentieth century, biology, if anything, became less balkanized as discoveries in genetics, physiology, biochemistry, and cell biology showed how much biology such disparate organisms as plants, animals, and bacteria shared.

And, importantly, the biologists had an evolutionary umbrella. They never lost sight of the fact that biological phenomena have physical and chemical foundations. Many Nobelists in physiology and medicine have been physicists and chemists by training. Disciplinary "ethnocentrism" is harmless enough and even useful in small doses. Disciplines need to motivate tribal-scale altruism to get meetings organized, journals run, and granting agencies mobilized.

But for pathological reasons that are still not fully understood, the social sciences evolved into a number of disciplines rather isolated from one another and from biology. In undergraduate education, all biology majors have to take a common first-year course (and faculty have to take their turns teaching it). They also have to take first-year chemistry, physics, and mathematics. Social scientists get by with their own first-year anthropology, sociology, political science, and economics courses. No chemistry, no physics, no biology. Not even a Human Behavior 1 that synthesizes the social sciences, much less a plain Humans 1 that puts the biology in too. Not necessarily any psychology for the anthropologists or economics for the sociologist. This isn't just a straightforward division of labor. To someone with a biology background, it's a scandal. Humans are only one (biological) species, after all!

Evolution in the social sciences

Of course, the *fact* of cultural evolution wasn't lost on twentieth century social scientists. Science arose in a time of quickening social and technical change and was a key component of those changes. Historians and historically-minded social scientists from other disciplines increasingly documented the details of cultural change over the past few millennia. Archaeologists and paleoanthropologists developed increasingly high-resolution pictures of change at longer time scales. Ethnographers studied living hunter-gatherers and other simple societies that roughly represented waypoints on the evolutionary trajectory revealed by archaeologists. By now, the descriptive account of what happened in the course of the evolution of culture-capable humans and in the course of cultural evolution is fairly well known, although many puzzles and controversies remain.

Nevertheless, the *theory* of cultural evolution long remained very primitive by the standards of evolutionary biology. Consider this historical irony: Darwin's own theory included ample room for the "inheritance of acquired variation." That is, he thought that behavior patterns and physical features acquired during the lifetime of an individual by processes such as learning or physical exercise could be passed on to offspring. Today we know that such processes are essentially absent in the genetic system of inheritance. Knowing nothing of genetics, Darwin's intuitions about inheritance were schooled by *cultural* inheritance. Teaching and imitation, the basic

elements of cultural inheritance, are familiar to everyone, much less to an acute natural historian like Darwin whose work included a detailed "sketch on an infant," a pioneering developmental study of one of his own children. You can *teach* your kids things you've learned in the school of hard knocks, and they might *imitate* your exercise regimen. Darwin, often accused of biologizing culture, could be more accurately characterized as culturizing biology. After the rediscovery of Mendel's laws at the turn of the twentieth century, biologists had a long project to strip the Lamarckian element out of Darwin, put genetics in, and thus properly biologize biology. In the meantime, Darwin's famously erroneous belief in the inheritance of acquired variation (erroneous from the biologist's point of view, at any rate) had the effect of lowering the status of his whole theory just at the point when his influence was also waning in the emerging social sciences. Biologists began to revive evolutionary theory after a couple of decades of confusion. A landmark paper by R. A. Fisher in 1918 marks the beginning of the Neo-Darwinian Synthesis of Darwin and Mendel. Darwin's original theory required less modification to apply to culture than to apply to genes, yet he is known best as a biologist and his influence in the formation of the social sciences was exceedingly thin until the last third of the twentieth century.

The nature versus nurture disaster

The biologists, for their part, tended to take genes a bit too seriously in the case of humans. Genetic determinism became an issue, one to which those interested in culture, particularly anthropologists, quite properly objected. Disastrously, however, anthropologists became enamored with the idea that culture was "superorganic," meaning in practice that genes and biology could be ignored in pursuit of an understanding of culture. Certainly, much good work was done under this umbrella. Nevertheless, to any sensible observer, the idea that genes and culture both play large roles in human behavior is obvious. The superorganicists were right that culture, rather than genes, accounts for the lion's share of human evolution, but this is not the same thing as saying that genes are irrelevant. Still, allowing that genes are important is not to say that culture isn't! The complexity of the interaction between these two influences on human behavior is equally obvious. Consider just the complexity of the brain that manages an individual's cultural repertoire. Despite this, twentieth century debates were locked in the thrall of the nature-nurture dichotomy, as if you had to cheer for one team or the other. The ethnocentrism of the disciplines, as pioneering cultural evolutionist Donald Campbell termed it, put the proper study of gene-culture interactions in limbo.

Serious study of cultural evolutionary processes begins

Advances in the evolutionary theory of behavior in the 1960s led to a new wave of interest in human behavior. At the forefront was E.O. Wilson's 1975 book

Sociobiology: A New Synthesis. Wilson's own ideas remained partly ensnared in the nature-nurture debate. Wilson considers himself a genetic determinist despite granting culture a large role in human behavior. A little before Wilson's classic, Campbell began applying Darwinian ideas to the evolution of culture, including the evolution of science itself. Lucca Cavalli-Sforza and Marc Feldman introduced the idea of applying to culture the style of mathematical formalism used by population geneticists. Among other virtues of this formalism, it easily incorporated genes and culture in the same system of equations so that we could investigate the coevolution of genes and culture. The aim became to get the relationship between genes and culture right, giving each its proper due in a unified theory well verified by empirical data.

Since 1975, Darwinian cultural evolutionists have been building this coevolutionary theory in which genes and culture each play their appropriate role in explaining human behavior. Cavalli-Sforza and Feldman's book in 1981 and Boyd and Richerson's in 1985 elaborated between them the formal theory in fair detail, and subsequent work by these four and an expanding number of other colleagues has continued the development of Darwinian cultural evolutionary theory.

Empirical studies of cultural evolutionary processes

Before the mid-1990s, only a slow trickle of empirical studies testing the mathematical formalism of cultural evolutionary theory emerged. The theorists mostly depended on the extant literature in the social sciences to inspire models and test them. Many of the magnificent literatures in the social sciences are more than adequate to support much theory development. Economic history, linguistics, the diffusion of innovations, paleoanthropology, ethnography, and psychology have all been brought to bear on the development of a reasonably realistic family of models. Nevertheless, empirical studies targeted more directly on testing the implications of the theory are obviously necessary, and a number of mainly young investigators have developed empirical research programs since the mid-1990s. For example, Richerson and his young colleagues at Davis have developed a lab to study microevolution in laboratory societies composed of student participants.

From our perspective, twentieth century nature-nurture controversies were a theoretical wander in the wilderness. But for the accidents of history, the work we did in the last quarter of the twentieth century could easily have been done by our grandfathers in the first quarter. This itself is an illustration of the extent to which cultural evolution is partly a blind, fumbling, natural process of "descent with modification." Although cultural evolution is very fast compared to genetic evolution, it is not instantaneous; cultural evolution is only partly directed by human decisions, and human decision-making is far from omniscient! A blind

variation and a selective retention element in the evolution of cultural evolutionary theory are unmistakable.

Ongoing debates

Surprisingly, many social scientists, as well as some evolutionary biologists, remain skeptical that we need a theory of cultural evolution. In the social sciences, the most ambitious theoretical system is the rational choice theory of economists. One can easily incorporate culture into rational choice, for example by allowing preferences to be culturally determined, but most economists and those influenced by economists neglect it in practice. Rational choice theory becomes a theory of naked human nature confronting an environment and making omniscient, selfish rational decisions about how to behave, even though it could be made much more realistic. Evolutionary biologists interested in human behavior are allergic to human exceptionalism. Most human sociobiologists want to be able to apply the highly developed gene-based theory to humans with minimal modification. Evolutionary biologists do have an account of how human nature ought to evolve. By combining this evolutionary theory with economics, the naked-human-nature theorists have produced an impressive theory of *non-human* behavior. In our view, this theory is not so much wrong as seriously incomplete. It works quite well to explain chimpanzee behavior but can't explain why human behavior differs so much from that of other apes. Managing human social organizations is a substantially different project from managing the troops of other primates, as we have already mentioned.

Basics of Cultural Evolution

The importance of culture in accounting for human behavioral variation

The first point to make in building upon the rational choice/human sociobiology foundation is to observe that the bulk of human behavior is based upon cultural traditions, not rational decisions. Individual people do not invent calculus, decide on their marriage contract, invent their own language, follow idiosyncratic tastes in entertainment, or design their own college majors. They *mostly* accept traditions current among their parents and other cultural models. Fads in entertainment are partly a product of advertising and partly a product of peer-to-peer cultural transmission. Many cultural traditions are quite durable. For example farmers in the Midwest with German forebearers farm quite differently than their Anglo-American neighbors. In the long run, the same human nature in the same environment *may* converge on a common behavior, but lag times are at least many generations.

The evidence is also quite compelling that humans have much more cultural

variation than any other animal. Humans are a big exception in this dimension, as commonsense observation suggests. Dogs, cats, and language-trained chimpanzees simply do not sop up culture the way children do. Language-trained chimps learn at most a few hundred words with great effort; children learn a few tens of thousands of words with little effort per word. Evolutionists and rational choice theorists have to allow at least minimal amendments to their theory to accommodate human culture. Most will even acknowledge this need in principle, but in practice see little need to do so. Indeed, a minimalist and boring concept of culture is quite self-consistent so long as you are prepared to ignore the *evolutionary* properties of culture. Culture mainly impacts human behavior via its evolutionary properties.

A Darwinian Theory of cultural evolution

Commonsense observation tells us that culture changes through time. Nevertheless naked-human-nature theorists often argue that cultural evolution is utterly different from organic evolution. Human individuals, they suggest, create cultural variations out of whole cloth, and other individuals decide what variants to adopt. A symphony by Brahms was written by Brahms; it did not evolve slowly over many generations. And a Brahms symphony remains in a culture so long as musicians decide to perform it and classic music lovers choose to listen to the performances. Isn't this utterly un-Darwinian evolution? Isn't the heavy lifting here being done by composers' minds and, ultimately, by the evolutionary processes that shaped the genes that shape the minds of humans? Well, that *seems* reasonable if you focus on any one symphony, but just shift the frame of analysis up from a particular symphony to the tradition of symphonic music. Now we see a pattern of slow emergence of a tradition of classical music in the West, composer by composer, instrument by instrument, and conductor by conductor. We see the audience for such music spread from nation to nation in the West and then to countries like Japan. In the last two centuries we see elements of classical music recombine with elements of African music among Black Americans, creating an evolving kaleidoscope of folk and popular music that spread back to White and, eventually, global audiences. At present, younger audiences are deserting classical music for competing popular music. The innovative fringe of the symphonic tradition has moved off in a highly academic direction that few classical music fans appreciate. Soon, perhaps, classical music will no longer be a living tradition. Historians of language, technology, social institutions, and other forms of art report rather similar evolutionary patterns.

Donald Campbell boiled the generic Darwinian model down to the slogan "blind variation and selective retention." When considering culture rather than genes, we have to amend the bare-bones model in a seemingly slight but in fact very important way, allowing that variation is not quite blind and that selective processes include

human decisions about which cultural variants to teach and imitate. Imagine a human nature whose highly fallible rationality is marginally better than chance in acquiring cultural traditions. Imagine that we can exercise a bit of bias in favor of some as opposed to other traditions. Imagine that we can sometimes modify, usually only slightly modify, what we learn in adaptive ways. Many individual choices and results of experience will be tantamount to random variation, but not all. Rational choice, but often unselfish choice, becomes a marginal process that helps drive cultural evolution but leaves the Darwinian "descent with modification" pattern intact. This picture fits the psychological data showing that humans are far from omniscient rationalist and are often unselfish. It squares with the historical data that shows that cultural traditions evolve more or less gradually. It squares with data showing that humans, but not any other animal, are very accurate imitators and willing to teach and to learn from teachers. Even very rapid bits of cultural evolution, such as the spread of highly desirable innovations via peer-to-peer transmission, show the Darwinian pattern. Mathematical modeling of the cultural evolutionary system shows that it differs logically from genetic evolution in several important ways deriving from the impact of decision-making as an evolutionary force while it preserves the Darwinian core of descent with modification. Since Darwin formulated his theory assuming the existence of inheritance of acquired variation that surely does exist in cultural evolution, our theory is really more Darwinian than the contemporary theory of genetic evolution.

Why is culture rare and recent*?*

Perhaps the greatest evolutionary puzzle in the field of cultural evolution is accounting for culture's rarity. Humans have used the flexibility and speed of cultural evolution to become the earth's dominant organism. Theoretical studies show that even quite weak decision-making forces, when added to the bare-bones blind variation and natural-selective retention system, create a very powerful adaptive system. A *smidgen* of rational choice is all it takes to get culture rumbling forward in largely adaptive directions. We do, however, have to pay high costs for this system in the form of a long juvenile period devoted to learning (taking time other species use attending to reproduction) and a very expensive brain. Enormous brains are very costly because nervous tissue has a high rate of metabolism compared to most other tissues. Other costs include birth difficulties, the potential for developmental abnormalities, and the risk of injury. Nevertheless, other complex, costly, killer adaptations all evolved long ago and usually in more than one lineage. By "killer adaptations" we mean adaptations that are generally useful across a wide swath of environments. Camera-style eyes are a classic example. They evolved hundreds of millions of years ago in the vertebrates and independently in the ancestor of the octopus and squid. Animals possessing them dominate the world, and most members of the descendant lineages still have them. Yet, because of

their high cost, they rapidly disappear when non-functional, as in the blind cave fishes.

Accounting for a killer adaptation of such recent and restricted vintage is a challenge. Most commentators assume that culture is just so complex that it took hundreds of millions of years of slow, steady progress to achieve it. Perhaps, but that doesn't square with the evidence that quite ancient creatures, like dinosaurs, were complex in practically every way that we are with the exception of their small brains.

Evolution of culture driven by climate deterioration

A slow, steady evolution of intelligence also doesn't square with the evidence that many other mammalian lineages have seen rapid increases in brain size just in the last couple of million years. Something big has apparently happened very recently (on the evolutionary time scale) to make big brains a killer adaptation. Apparently, throughout most of the earth's history the costs of having big brains generally and culture specifically simply outweighed the benefits. All really ancient mammals had small brains, just like their dinosaur contemporaries. The pattern in our own lineage is replicated in many others; apes did start with unusually large brains, and our own species happens to have outrun even the other apes. In the last few million years, especially the last two million years, the earth has fallen into an increasingly variable climate regime best known by the dramatic expansion and contraction of the glaciers at high latitudes. Evidence produced by paleoclimatologists in the last decade has revealed that climate fluctuation affects the whole globe, not just polar environments, and that the historical climates of the present interglacial (the last 10,000 years) are quite atypically quiet. Glacial climates have huge fluctuations with time scales of a thousand years and less. Earlier interglacials seem to have been brief spikes of warmth, not many-millennia plateaus like the present one.

Such fluctuations are exactly what mathematical models of a costly capacity for culture require for such a capacity to evolve! Cultural traditions can change a lot more in a thousand years than gene-based adaptations can. Our upright posture left our hands free to make tools; biggish ape brains preadapted us to learn culture and apply effective decision-making. An already high degree of sociality easily led to more sophisticated social systems. By 40,000 years ago, modern humans spread to the whole of the Old World and became by far the most common ape that ever lived. When climates stabilized 10,000 years ago, agricultural innovations began almost immediately in West Asia, leading to the first urban societies in the same region 5,000 years ago. The rest is literally history; the first urban societies were the first literate societies. This account is at least a plausible solution to the riddle of the recent evolution of complex culture in our particular ape lineage.

Cultural maladaptations

The cultural inheritance system in its contemporary form only evolved perhaps 100,000 years ago. It is a sprawling, untidy concoction compared to genes. The opportunities for maladaptive cultural variants to evolve are many and arise from specific features of the cultural system, including from elements of the system that make it so highly adaptive. As in the case of genetic maladaptations, cultural maladaptations often neatly highlight the properties of the inheritance system. They are caused by inescapable evolutionary tradeoffs. For example, mathematical models show that restricting cultural inheritance to only one's biological parents is needlessly conservative. Given an opportunity to use even a weak decision-making bias to influence what you learn from others, you should shop more broadly than among your parents for good ideas. But shopping widely incurs a risk, much like sexual promiscuity does. As Richard Dawkins argued in his book *The Selfish Gene*, "memes" transmitted non-parentally can evolve infectious and pathological properties. (Dawkins defined memes as the units of cultural variation analogous to the gene. The meme idea is controversial because just how much culture resembles genes is still unclear. We will use the term "cultural variant" for distinguishable bits of cultural variation. A cultural variant is any imitatable or teachable bit of culture that can be distinguished from other bits, like the preference to put olive oil on bread instead of butter.)

Several mechanisms by which cultural pathologies can evolve have now been studied. So long as we are restricted to weak and imperfect biases, some selfish cultural pathogens are bound to get caught up with the good ideas. The spread of heroin addiction is a classic example. The addiction is transmitted among friends. An addict is "infectious" mainly early in the course of the addiction while the euphoria of the high is strong but the debilitating long-term consequences of addiction are not yet apparent. Our culture-managing psychology seems to have evolved to balance the risks and opportunities of acquiring ideas from non-parents, paying the penalty of an occasional a selfish cultural variant penalty for the privilege of shopping widely for adaptations. Parents of kids in daycare or in school notice that a succession of infections and bad habits caught from other kids flow home along with their children. We call this the *built for speed, not for comfort* effect. Human culture, evolved originally to cope with the exceedingly variable Pleistocene environment, is calibrated for rapid evolution at the price of tolerating an uncomfortably large number of selfish memes. Modern societies have compounded the risk by greatly increasing the amount of non-parental transmission compared to parental. School, residential mobility, peer culture, and the mass media expose us to a plethora of good ideas, but also to a Pandora's Box of dangerous ones.

Gene-culture coevolution

The speed, not comfort effect implies that the genes that influence how the cultural evolutionary system works were tuned in the course of evolution to the properties of the cultural evolutionary system they made possible. The kinds of decisions people make about which cultural variants to adopt would certainly have been a focus of selection on genes as our capacity for culture evolved. For example, parents are strong role models for young children but their relative effect weakens toward adulthood. We get our basic values from our parents before we become susceptible to the influence of non-parents, granting us some degree of cultural immunity to cultural pathogens. Imagine the chaos that would ensue if children became teenagers at five or six. This is essentially what happens in other apes with much less culture to manage and hence many fewer cultural pathologies to worry about. The gene-culture coevolution idea was explored in some depth by Charles Lumsden and Edward O. Wilson in their pioneering 1981 book *Genes, Mind, and Culture: The Coevolutionary Process*. The human mind must surely have evolved to manage culture. Given a certain important attribute of the cultural system, like how conservatively kids stick to imitating Mom and Dad, kids that vary in this dimension will end up on average with a certain number of good ideas and a certain number of harmful selfish memes. Those who are too conservative will get too few good ideas, and those not conservative enough will get too many selfish memes. Natural selection will favor the genes that optimize genetic fitness, an imitation psychology that is just right. If the environment changes, say by becoming more variable, selective pressures will shift, favoring less conservative but faster and more selfish meme-plagued systems. On another dimension, selection may also favor a bigger, more costly brain to improve decision-making so as to select from available ideas in a more discriminating fashion. This, at a cost, will speed up cultural evolution and cut the number of selfish memes in circulation. This simple model roughly describes the transition from smaller-brained, mid-Pleistocene humans with very slowly changing cultures to our direct late-Pleistocene ancestors with big brains and rapidly changing cultures. Increases in climate variation at around 1 million years ago and at around 400,000 years ago are plausible candidates to have driven this shift.

The Chimpanzees Who Would Be Ants: The Tribal Social Instincts Hypothesis

The strangest aspects of human behavior from the evolutionary biologists' point of view are those that drive our incredibly effective social systems. The evolution of behaviors that help others is quite difficult to understand. Very convincing experiments have shown human social psychology to include altruistic elements

that could never evolve under standard biological models that only assume genetic inheritance. Clearly, these behaviors are extensively shaped by culturally transmitted social rules, what sociologists call "institutions." But the relative ease with which human children pick up such institutions, compared to chimpanzees raised by humans as if they were children, shows that the prosocial aspects of our social psychology have genetic influences as well. Children are more agreeable than chimpanzees and much more imitative. Our human pattern of large-scale cooperation, coordination, and division of labor is quite unique. Although we have evolved an immense diversity of social systems in the last 50,000 years, they are all different from the ancestral ape system in these regards.

Human social life: A major evolutionary puzzle

To see how dramatic this difference is and how hard it is to explain, consider again our closest relatives, the chimpanzees. Chimpanzees live in small societies structured by kinship, small-scale alliances with long-term partners, and dominance hierarchies. No division of labor exists. Contrast this pattern with hunter-gatherer tribes, the cultural-evolutionary ancestor societies operated by people who were, genetically, fully modern. Chimpanzee troops are about the same size as typical hunter-gatherer bands. However, human bands are incorporated into societies typically composed of ten or so bands that speak the same dialect, have generally peaceful relations, participate in common ceremonies, and aid each other in emergencies, such as predatory raids by other tribes. Bands are fluid entities and individual families often move from one to another whereas tribes often have well-marked boundaries, often linguistic boundaries. In small-scale societies, the people who interact routinely in the some society usually share a language or at least a dialect. Women generally work to provide resources directly to their families whereas men typically specialize in risky but potentially high-payoff activities, classically big-game hunting. Other rudiments of a division of labor exist in the form of craft and ritual experts. Hence, trade within tribes is extensive. Trade and political alliances *between* tribes are also common. Dominance is muted. Adults dominate children and men women, but the linear dominance hierarchies so prevalent in other primates (A dominates B, A and B dominate C, and so on down to the lowliest member of the troop) are nearly absent. The impulse to dominate, which certainly exists in humans, is curbed by coalitions of those who would otherwise be dominated. Individuals mostly seek status by striving for prestige rather than for power. That is, people seek to contribute positively by being expert, wise, productive, or generous. Others follow the lead of the prestigious but are exceedingly resistant to any commands that would impinge upon their individual autonomy.

Individuals have a finely honed sense of fairness that denies anyone special

privileges. The quest for prestige and the resistance to dominance are perhaps best illustrated by the widespread sharing of the meat of big game. Customs do vary widely, but something like the following is commonly reported in ethnographies. The successful hunter and his partners fetch a kill back to camp. They do not brag about their exploits. The carcass may by custom belong to someone other than the hunter; for example, the man whose arrow killed the animal might be a specialist craftsman or an exchange partner. This person or someone other than the hunter is often in charge of dividing the carcass following rather formal rules. The hunter and his partners in some societies are not even allowed a special share. Not infrequently, the rules enjoin equal division with everyone in camp or something tantamount to it.

This pattern of egalitarian sharing of meat seems to be an adaptation to the high risk of pursuing large game with simple weapons. A solitary hunter has a small chance of killing a large animal on any given day or even on any given week. And if he does kill one, he and his family can only eat a small fraction of the kill before it spoils. Solitary human hunters would have to concentrate on low-risk hunting strategies to cope with this problem. On the other hand, large game is a valuable source of calories, protein, and fat to support big brains and healthy offspring. Human maximum reproductive rates are twice those of chimpanzees despite the need to support more dependent babies in addition our more costly brain. By pooling their risk, a band of hunters can manage to eat lots of meat on a reasonably regular basis. And so it seems with collective defense (or offense for that matter), aid in subsistence emergencies, and access to a large pool of diverse experts. The size of tribes is limited by the low population density of most hunter-gatherers. In some African cattle-keeping tribes, as many as ten thousand people can be knit together by the bonds of custom and led by prestige.

Human societies versus social insect societies

Such social systems have a decidedly ant-like cast. Ants and the other advanced social insects deploy cooperation, coordination, and a division of labor to build and defend nests, transport bulky food items, subdue large prey, construct underground gardens, and collectively rear the brood produced by the reproductives. Indeed, so large and complex are some ant colonies that they bear comparison not just to hunter-gatherers but to agricultural city-states. Ants, like humans, evolved only once and are one of the most successful animals, measured by mass per unit area, in many habitats. Leaf-cutter ants harvest leaves in the New World's tropical forests and ferment them to usable food in sophisticated subterranean fungus gardens using essentially domesticated strains of fungus. These ants are the most important herbivores in the forest.

In the peculiar case of, the colonies of invasive Argentinean ants in California and in the Mediterranean Basin, ant societies bear an uncanny resemblance to some utopian concepts of human societies. These infestations were apparently initiated by one or a few founder colonies and have such a low variation in colony recognition odors that no ant can recognize those from another colony as foreign. Hence, individuals wander from colony to colony and colonies split and merge without any resistance. In essence, the whole infestation, composed of uncounted millions of colonies and billions of individuals, is a single megasociety as large in geographical scale as many human nations.

Special cases like the Argentinean ants aside, ants and chimpanzees do share an important feature. Their societies are substantially built upon cooperation between close genetic relatives. For example, ants and chimpanzees both conduct brutal wars with neighboring groups. In the case of chimpanzees, small parties of related males in one group conduct collective lethal raids targeted on solitary foraging males of their neighbors, apparently with the objective of seizing the resources and the females of their victims. Ant wars include massive attacks by one colony against the other. Ant societies are much larger than chimpanzee societies because of the superfecundity of ant queens. Queens produce thousands of eggs a day over a multi-year lifetime, creating a vast colony of sisters. Chimpanzee females have much lower fecundity, a few offspring in a lifetime. Hence, the number of close relatives available to form a chimpanzee society is quite few. One mammal, the African naked mole rat, forms insect-like colonies based on the ability of rodent females to have multiple large litters of pups at short intervals. Mole rat colonies can grow to a few hundred individuals.

Altruism toward relatives can evolve

The theoretical work of William D. Hamilton in 1964 gave evolutionary biologists an excellent hypothesis to explain the chimpanzee and ant data. Altruistic cooperation between relatives can evolve because relatives share genes at above chance. If I'm a good guy, I can gamble that my relative also has good-guy genes to the extent that we have recent ancestors in common. A full sibling shares half his or her genes with you. If you can help a sibling have more than two offspring at a cost of one to you, you should help your sib rather than have the kid yourself. Amazingly, Hamilton's logic holds even if practically everyone in the population is a good guy. Any small number of bad guys scattered throughout the population will take advantage of anyone who is an indiscriminate altruist. Only by knowing that someone is a relative can you do the calculation that will avoid giving bad guys a differential boost that will eventually make them common.

Note that Hamilton's theory predicts niceness will be massively undersupplied in

nature. It is mainly a theory of maladaptation with a small slice of adaptation thrown in. If we could trust everyone to reciprocate when we are in need, we should help everyone that we can help whenever the benefits exceed the costs. But Hamilton's theory predicts that altruism's benefits have to be discounted by the degree of relatedness. Even in the favorable case of siblings, benefits have to be double the costs for fitness to break even. The vast majority of the potential benefits of cooperation have to be foregone because organisms can't trust that recipients of altruism are other altruists rather than parasitic cheaters. And so it seems to be. Across great swathes of animal cooperation from ants to chimpanzees, "kin selection" seems to explain the bulk of cooperation we see. Argentinean ants are a spectacular exception, but their megacolonies will probably unwind as mutation slowly increases the variation in colony recognition odors. In Argentina, Argentinean ants do form relatively small colonies that are mutually hostile like other ants. Argentinean ants outside their homeland are terrible pests because always-cooperative-never-fight pest strains have a twofold reproductive rate advantage over normal colonies, allowing them to extirpate all competing ants and to swarm into the houses of Californians and Italians in much the same way that humans have swarmed across the globe in recent millennia.

Cultural group selection in humans

Humans acquired their swarming capacity by some means other than the superfecundity of ordinary ants or the loss of colony recognition odors of the Argentinean ants. We certainly do cooperate preferentially with relatives, but on top of that, we readily cooperate with non-relatives. How did we do it? We and our colleagues believe that the best current explanation is a process called *cultural group selection* plus some supplementary processes that lean on cultural group selection.

In principle, natural section can act on any level of biological organization. Considering humans, Darwin speculated in the *Descent of Man* that

> It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over other men of the same tribe, yet that an increase in the number of well-endowed men and an advancement in the standard of morality will certainly give an immense advantage to one tribe over another. A tribe including many members who, from possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, were always ready to aid one another, and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection.

Theorists have shown that his logic is sound enough as far as it goes. The rub is that *genetic* variation between groups is very hard to maintain. Human tribal conflict illustrates the general problem very well. Intertribal marriage frequencies are fairly

high, tending, over the medium run, to erase genetic differences between groups. Add to this the fact that violent intergroup conflict is seldom genocidally lethal. Rather, losers flee to other groups. Not infrequently, the victors incorporate captured women and children—sometimes whole families and bands—into their own group. The results are plain to see in studies of human genetic variation. Gradients of variation are very gentle across the landscape, and only exceptionally are neighboring tribes genetically distinctive. The Spanish conquest in America is illustrative. Here, the groups in conflict were originally rather distinctive, but massive intermarriage immediately created Mestizo populations that reduced the genetic variation between Spanish and Indian to practically nothing within a few generations in many areas. Humans are not good candidates to support group selection via genetic variation. Conflict between tribes provides *selection* aplenty, but acts on little or no *genetic variation* and hence cannot generate an evolutionary response to that selection.

Cultural transmission makes a big difference in this picture. Several processes permit cultural variation between groups to resist the destruction of intergroup variation much more effectively than genetic variation does. The best-studied process is *conformist bias*. Models (and some data) suggest that using the commonness of a cultural variant as an index of its desirability is very effective under a wide variety of conditions. When in Rome, do as the Romans do. Suppose that losers of a tribal fight are likely to have less patriotism or courage compared to victors. As our allies or distant kin, they show up on our doorstep requesting shelter from their enemies. We are obligated to take them in. If their slack ways are due to genes, intermarriage with them will tend to dilute our more rigorous ones. However, if their slack ways are cultural traits, they will be a minority in our group and conformity will discriminate against them. Studies of conflict among simple societies in New Guinea--a place where warfare ended only just before professional anthropologists arrived--are quite consistent with the cultural group selection hypothesis, as are many other kinds of data.

Imagine that in ancestral, primitively cultural populations a little bit of cultural group selection operated over significant periods of time. The cultural rules that evolved would have favored nice folk and penalized bad ones. Any genes that contributed to niceness or nastiness would have undergone selection by coevolution. In effect, culture set up moral environments that favored nice behavior, and to the extent that any genetic variation for niceness and nastiness existed, it would come under indirect selection.

The role of monitoring and punishment

Systems of moral rules that sanction bad behavior and reward good behavior would

have been the sharp edge of the coevolutionary process. The theory of punishment is tolerably well developed. If altruism includes the willingness to punish those who behave badly at a cost to oneself, altruism gains a potentially powerful tool. In a world of chimpanzee-like hardened sociopaths, an altruistic punisher is wasting her time. The bad guys are too numerous and too stubborn. But suppose cultural group selection has built up a fair cadre of people who are at least guardedly altruistic and not too stubborn in responding to traditional moral rules. This is the cusp of the transition from chimpanzee-style kin-based sociality to the human pattern of extensive cooperation with non-kin. In this environment, a taste for altruistic punishment can spread like wildfire. Even when punishers are still rare, they can in effect coerce cooperation from a band of reluctant cooperators. As they become more common, many hands share any necessary punishment and the threat of punishment has a deterrent effect on bad behavior.

Punishment's potential defect is that it can stabilize any rule when common, even rules that are antiquated or dysfunctional for other reasons (not to mention the empirical examples of the use of organized coercion for exploitative purposes, which are poorly studied theoretically). Group selection appears to be necessary to cull out dysfunctional punishment systems, so punishment is not a stand-alone explanation for human cooperation.

The best studies of cooperation in small-scale societies suggest that monitoring and punishment systems are a component of all successful cooperative institutions. Our own and others' experiments find among our student participants an appreciable frequency of devious sociopaths. We present our participants with tricky problems cleverly designed so that a group of selfish rationalists would fail utterly to earn the significant sums of money we are willing to pay for cooperation. Nevertheless, many groups succeed in earning most of the money we offer by using such tactics as gentle persuasion. However, the groups that had the bad luck to include a sociopath often lose most of their money to a honey-tongued exploiter. Unchecked, such individuals destroy trust and unwind cooperation. Monitoring and punishment seem to be the only defenses against the increase of such strategies.

Rewarding

Rewarding is not yet well understood theoretically. Existing arguments suggest that rewarding will be much less favored by selection than punishment because reward has an anti-deterrent effect. If many people are prepared to punish, no one will misbehave, so the preparation gleans ample good behavior for free. Rewarding is the opposite. The more good behavior you induce with rewards, the more costly rewards you must be prepared to shell out. In defiance of this logic, our experimental participants often organize cooperation with kind words and material

rewards and are reluctant to use punishment until they experience the depredation of a sociopath. Many ethnographic accounts run along the same lines. People give gifts and praise with some enthusiasm and reserve punishment for the rare hard cases. Perhaps mutual rewarding is also essentially costless because at the end of the year in a community of nice people, everyone gets as much as they give. The commonest form of punishment seems to be verbal scolding, which should have no impact on the hardened rational strategist that theory predicts will undermine cooperation. But scolding does threaten harder punishments, and when necessary threats are eventually backed up by action

While much work remains to be done, our tentative conclusion is that successful social institutions are largely based on the assumption that most people are basically nice and can be induced to cooperate by rewards and moral suasion. At the same time, provision has to be made for a not-insignificant minority that plays approximately the role assigned them by selfish rational actor theory. These individuals have to be punished, coerced, ostracized, or even killed lest they undermine the tenuous trust that otherwise makes basically nice, but also guarded, people willing to cooperate. In functional communities, a minority of especially altruistic rewarders and punishers (call them leaders) induce cooperative behavior from a majority who together coerce decent behavior on the part of the minority of individuals with sociopathic inclinations. In failed communities, this coalition breaks down. In the real nightmare cases, moralistic punishers and sociopaths form a sick coalition to enslave the basically nice majority. Dictatorships, police states, corrupt kleptocracies, and slave empires seem to us to be built on an ugly combination of idealism and cynical corruption as in King Leopold's Congo, Nazi Germany, the USSR, and Baathist Iraq. Individuals like Herman Goering, Hitler's corrupt second-in-command, come to mind. Hypocrisy is a common and nasty human vice. Some people find it easy to speak idealistically but act exploitatively. Perhaps they even sincerely believe what they speak but have a well-rehearsed justification for the exploitation. Thomas Jefferson wrote that "all men are created equal" in the Declaration of Independence, but he owned slaves. We admit that the empiricism behind this theory is so far best developed in fiction (consider the classic Western film *High Noon*) and that the modeling is no better. We ask you if it fits your experience.

The role of symbols in social life

Human groups are marked off by symbolic means. Language, dress, rituals and ceremonies, and styles of decorative and utilitarian objects all typically differ from tribe to tribe. These are our colony recognition odors. Symbols of group membership trigger powerful emotions in humans and affect our judgments in a host of ways. Experimental psychologists have studied the operation of social identity in some

detail. Among many interesting findings, they've shown that people are prone to punish ingroup miscreants more severely than outgroup miscreants even though we tend to discriminate against outgroup members just because they are outgroup members. When an outgroup becomes salient in the laboratory, groups will shift from a moderate leader to a more extreme one who has the effect of exaggerating the differences between the groups. Rivalries between completely artificial symbolically marked groups are so easy to set up in the laboratory that researchers have to take care they don't get out of hand.

Theoretical models suggest, surprisingly, that the symbolic marking of groups cannot have arisen in the first instance to engender cooperation. The trouble with displaying a signal that you are an altruist is that deceptive villains will show the same signal, the better to exploit your good nature. Symbolic marking can arise for other reasons, however. For example, no one has an interest in imitating someone who lives in a different environment that demands a different style of life and a different social organization than one's own. Symbolic markers can readily evolve to aid people in identifying those who likely carry cultural variants not adapted to their local environment. This mechanism is hugely important. Hunter-gatherers spread out across the whole face of the terrestrial world with the exception of Antarctica and remote islands. They had to adapt to a bewildering variety of environments and did so in a bewildering variety of ways. Ecologically, human groups comprise different species, and indeed, tribes have been called "cultural pseudospecies." Biological species arise for the same reason. So long as a population's adaptation to a new environment is being compromised by a flow of genes from populations adapted to other environments, adaptations to local environments cannot be perfected. Barriers to mating and thus the evolution of a new species solve this problem. The cultural pseudospecies analog of mating isolation is a splendid mechanism because it is often regulated in a much more sensitive way than complete isolation or none. Human groups find it very easy to acquire obviously adaptive ideas from their allies and even from their enemies. A general bias against imitating people from other symbolically marked groups operates against a background of other biases. For example, humans tend to harbor a fascination with novel gadgets and gear. People will try out new gadgets and gear and, if they are useful, adopt them readily without apprehension about their sources. The Plains Indian tribes rapidly adopted horses, guns, iron pots, and steel knives from Europeans and a number of social innovations from each other even while maintaining many distinct tribal customs.

Symbolic marking is also useful to protect groups from mismatched strategies in games of coordination. One of the most important problems societies face is solving games of coordination. On what day shall the weekly market be? What signal should visitors use to announce their arrival? What conventions signal approval and

disapproval? Friendliness and distance? What is the actual polite time to arrive for a six o'clock dinner invitation? Interactions with foreigners teach us that every society has a different solution to multitudinous problems of this sort. Unlike cooperation, solutions to problems of coordination are self-reinforcing. Alternate solutions to games of pure coordination are equally good in the abstract, but it's important to do what everyone else does. It makes no difference whether we drive on the left or right side of the road; all that matters is that we all agree on the same rule. We are all better off if we conform to local custom. But the number of coordination problems is large and learning all the solutions is slow. The best rule of thumb is just to interact mainly with your own kind and confine interactions with those in other groups to a sphere like a market where the rules are few and easy to learn.

As for the ecological case, theoretical models show that the problem of coordination readily supports the evolution of symbolic marking of cultural pseudospecies. Of course, once pseudospecies come to exist, they limit the flow of ideas between groups. Pseudospecies barriers thus reinforce conformity and other mechanisms that generate and preserve cultural differences between groups and make cultural group selection more potent.

A coevolutionary scenario

Now imagine a time, perhaps 300,000 years ago, in Africa when all the cultural evolutionary mechanisms described above existed in rudimentary form. Most likely, the cultural norms demanding cooperation, supporting reward and punishment, and marking off the group only stretched the envelope of biological kinship a tiny bit. Members of this proto-tribe treated cousins as siblings based upon culturally transmitted moral norms. Individuals with genetic dispositions tolerating this stretch would suffer less punishment and enjoy more rewards than individuals who attempted to stick to W.D. Hamilton's rules. The kin group with this marginal increase in patriotism, fidelity, obedience, courage, sympathy, readiness to aid one another and to sacrifice themselves for the common good would be victorious over most other, less extended kin groups, to paraphrase Darwin. Once almost everyone's genes were adjusted to this new regime, selection on culture could favor an extension of the moral norms to second cousins.

After something like a quarter of a million years of this culture-led coevolutionary circuit, tribes evolved, supported by Darwin's list of social instincts. By 50,000 years ago in Africa, symbolic artifacts of the kind that support symbolic marking of tribes today appear in the archaeological record. Humans with social instincts and social systems identical to those of living hunter-gatherers now existed. Hamilton's rules were being violated to the extent that people cooperated with essentially unrelated members of a social group on the scale of a small ant colony. We are the

chimpanzees who became ants, albeit by a rather different evolutionary mechanism than the one by which primitively social protoants evolved into ants. Just about at this moment of final modernization, anatomically and culturally modern humans swept out of Africa and began replacing the archaic descendants of the earlier *Homo erectus* exodus from Africa.

We call this scenario the *tribal social instincts hypothesis*. It is a straightforward modernization of Darwin's original proposal. Many evolutionary social scientists think it is heretical because of the central role it gives cultural group selection. Many non-evolutionary social scientists object to the idea that humans have social instincts at all. And it could be wrong, or at least incomplete. It is, however, the best-supported proposal on the table.

Complex Societies: The Work-Around Hypothesis

In the last 5,000 years, beginning in the Mesopotamian city states, societies of a more complex cast began to evolve. Formal leadership with institutionalized forms of power arose. The division of labor came to support full-time artisans. Religious institutions became formalized and full-time priests elaborated complex symbolic systems. Monumental architecture reflected the scale of the new social systems and their now highly inegalitarian system of power relationships. Over the last five millennia such systems have continued to grow, defeating and often incorporating tribal formations along the way. Slowly, institutions and technology evolved to support great agrarian empires like Rome and China. None of these systems have proven particularly stable. History records the coming and going of myriad dynasties and empires. Variations between the several great culture areas where "civilizations" evolved—Europe, West Asia, Africa, India, East Asia, North and South America—were appreciable. But an overall trend is unmistakable under the randomness of history. On the whole, larger and more productive systems have replaced smaller and less productive ones.

Why states succeed

States succeed by providing solutions to many problems. They solve the problems caused by intertribal anarchy (including security from intertribal wars), protection from predatory criminal bands, access to large markets, and (sometimes) social insurance services. Classically, most states were either small, such as the Greek or Italian city-states, or, if large, were empires. City-states are small enough that tribe-like loyalties and informal institutions still play a major role in regulating social life. Empires are large polities that incorporate many tribes or tribe-like constituents. Typically, empires are multi-ethnic and permit tribal-scale entities to perform many

functions, especially welfare functions. The empire co-opts the elites of its constituent ethnic units but does not expect popular enthusiasm for the empire. The Ottoman and Austro-Hungarian empires were classic examples. The USSR was also an empire.

Tribes remain important today

Modern nation-states are, *in textbook theory*, quite different from classic empires. In the pure case, they are based upon one ethnic group and expect all citizens to exhibit spontaneous, tribe-like commitment to the national polity—patriotism. Politics in the ideal case is restricted to elections in which each citizen is an independent voter. After elections, those elected are to faithfully serve the citizens' interests as expressed in their votes. The revolutionary patriotism in the French after 1789 and the massive, high-morale armies that French patriotism made possible demonstrated the power of this new political form. A few modern societies, especially small ones, approximate the pure type. Most large nations are polyethnic and culturally diverse in other ways, such as regionally, even if rooted in a large dominant ethnicity. The United States and post-USSR Russia are examples. In all modern states, politics involves contests between organized interest groups that typically represent tribal-scale constituencies. The major parties are coalitions of interest groups. Individuals' votes are much influenced by the propaganda of interest groups, and the interest groups are heavily involved in extra-electoral, extra-party political activities. Thus, modern societies are not as different from classic empires as the textbook model of the nation-state imagines. A diverse array of tribal-scale units mediate between the citizen and the state. Work organizations are among the most important of these.

These truly ant-scale societies have occurred so recently and have evolved so rapidly that no appreciable genetic evolution can be demonstrated. Complex societies are almost wholly, if not entirely, a product of cultural evolution. Still, the institutions of complex societies are based upon using and finessing the tribal social instincts. Our ancient ape social instincts are still important, of course; witness nepotism. In many cases, the fit between the tribal social instincts and the institutions of complex societies is quite rough. Tribes were egalitarian, and tribespeople retained ample personal autonomy to pursue their own and their families' goals. Complex societies can only operate with a certain amount of command and control that often limits personal autonomy rather strictly. Conscript military service is an extreme but common example. Those in key positions in the command, control, and ritual hierarchies (often the same as when kings style themselves gods) always divert a generous share, not infrequently an obscene share, of the common social product to their own benefit. The egalitarian impulses and the sense of fairness built into our social instincts rebels at this. Large social systems both use and become victims of symbolically marked subgroups of a tribal scale. The spontaneous esprit that arises

within tribal-scale social units often makes them function much better than they otherwise would. The quasi-tribal nature of military units like Britain's legendary territorial regiments is an example. "Corporate culture" has the status of a buzzword pointing to the same phenomenon in business. Classes, castes, and sects of a bewildering variety evolve within complex societies, partly spontaneously, partly with the support and encouragement of formal authorities.

On the other hand, every symbolically marked subgroup is a candidate to evolve into a subversive competitor for power. Liberal democracies are committed to float upon a turbulent sea of such groups using rules widely supported as legitimate to regulate the conduct of tribes, such as the employment of fair votes to determine which groups get to operate the levers of power. This strategy is frequently challenged by illiberal parties, selfish elites, would-be military dictators, and ideological extremists. The classic empires and dynasties faced attacks by competitors seeking the status of ruling elite, popular revolt against coercive taxation and corvée labor demands, resistance to attempts to enforce religious conformity, and attempts of tribes and ethnic groups to gain autonomy at the expense of the empire. Business organizations are forever entangled in the yeasty froth of politics either as political agents in their own right or because they are organized under the umbrella of an ethnic group, elite status, religious minority, military formation, or some other multi-purpose unit with a role in politics. To whatever extent businesses create a center of wealth, they attract predators and must enter politics to arrange protection from such depredations.

The workarounds hypothesis

We term the several means by which the institutions of complex societies use the prosocial power of social instincts and finesse their limitations *workarounds*. Correspondingly, the *workarounds hypothesis* is the proposal that complex societies are built around tribal-scale units that actually function very much like ancient tribes. Business corporations, religious congregations, cities and towns, government offices and bureaus, Indian castes, and similar units have a distinctly tribal ethos, as diverse as they are in function and as different as they are from ancestral tribes. If you will, successful human organizations evolve to simulate tribes because people are happiest and most productive when they feel they are living in a social system that fits their tribal predispositions.

The big difference between modern and ancestral tribes (we'll use the word *tribe* in this way, dropping the implied quotes, for convenience) is that our ancestral tribes were autonomous political units. Their behavior was constrained by neighboring tribes, of course, but only as an external force. Inter-tribal affairs were foreign affairs. Complex societies web their constituent tribes together with an array of laws,

contracts, customs, and lines of authority. The tradeoff—and this is the most important tradeoff in the evolution of complex societies—is that too little tribal autonomy risks the benefits from a healthy tribal ethos, but too much tribal autonomy risks the function the tribe fulfills in the society-wide division of labor. Management is, as much as anything, pressing the frontier against this tradeoff as hard as possible and coping with the inevitable imperfections of whatever solution is devised.

Supporting evidence

We believe that the tribal social instincts and workarounds hypotheses are supported by a mass of evidence, some of which we will marshal in the book. For example, laboratory experiments by psychologists, political scientists, and experimental economists have decisively rejected the idea that most humans are selfish actors, finding instead the collection of behaviors we call the moral hidden hand. Every component is covered by a model or models that attest to its logical plausibility (rewarding excepted, and we're working on that). The main competing proposals all have more serious empirical and theoretical flaws. The theory as a whole is systemic and comprehensive, whereas many competitors are unconnected attempts to deal with problems piecemeal. But we do take it for granted that cultural evolutionary theory is certainly incomplete and likely flawed in other ways. Given that science is always provisional, so must applied science be. But we think the foundation is tolerably firm, firm enough to support action in the adaptive management spirit.

Practical Lessons For Business Management

Introduction

In this section we draw seven basic lessons from cultural evolutionary theory and apply them to business practice. In the spirit of applied science always being provisional, we expect them to engender debate, and we expect that advancing theory, advancing applied science, and practical experience will cause us to refine and revise them. We have produced the present preliminary document in the hopes of getting comments in advance of writing a book and are highly desirous of your comments.

Under each main heading we have re-stated the principles as applied rather than basic science and have derived a series of strategies from these practical principles. Readers, especially of this early draft, should think of them as hypotheses to be

tested. Which theoretical arguments, scientific data, or practical experiences accord with them and which conflict? We want to set up an ongoing dialog between cultural evolutionists, scientists, and applied scientists of other persuasions and especially between scientists of all types and managers. Applied science is only applicable to the extent that managers understand it, trust it (guardedly), and thus are prepared to use it.

Manage Your Organization's Cultural Capital

Practical principles

Cultural capital is probably the largest capital stock most companies possess and in no company is it small. By cultural capital we mean the sum total of the useful ideas, techniques, and practices that an organization can pass down through time by teaching and imitation. It might also include drawings, manuals, perhaps special machines, patterns, and so forth. It includes much of what is usually discussed under the heading of human and social capital. It does not include things like the personal genius of a founding entrepreneur, the unique wizardry of a company's best technologist, the accumulated but perishable knowledge of an executive secretary, or the chemistry between a particular CEO and his or her CFO. Of course, wise training and mentoring may manage to codify and transmit what would otherwise remain personal knowledge and relationships. Building, protecting, and transmitting cultural capital is expensive and should be the focus of much management effort. Modern technical and social evolution is very fast paced. Even so, change is step-by-step, and much of today's change rests on what has come before. New problems may not be solved for some time. Many employees may have to learn a technique or idea before it has its intended impact.

Maintaining a sound organizational culture is as costly and risky as accumulating any capital stock. Small organizations are at risk of losing key people. Both large and small organizations are at the mercy of evolutionary trends in the larger society, for example trends in education that fail to produce the amounts and forms of human capital needed, forcing costly on-the-job training. No organization even has its own cultural evolution wholly under its control. Think of the strains the increased participation and ambition of women in the work force put upon business organizations. If rationality governed the response to this change, businesses would have adjusted effortlessly to women in the workplace. In fact, deeply held chauvinist norms and social conventions of many sorts have had to change to accommodate the increased role of women in the workplace. Evolutionists use the metaphor of the Red Queen from *Alice in Wonderland* who explained to Alice how she had to keep running just to stay in the same place. Like physical capital, cultural capital wears out and becomes outmoded.

Strategies

Imitating others is usually the best policy.

Not only do you not want to reinvent the wheel, you probably couldn't if you wanted to. Think of the craftsmanship of an old-fashioned wheelwright. Could you make a decent iron-tired wagon wheel? American folk culture includes a lot of individualist cant that sometimes distracts us from how much we depend upon the knowledge of others. Culture is a system for rapid adaptation (compared to genes) using technology and social organization. Acquiring culture is a partial *substitute* for thinking for yourself. Thinking for yourself is costly and error prone. In the case of complex technology or social customs, no one person could possibly reinvent, say, the internal combustion engine or modern calculus. Thus, we gain complex cultural adaptations almost for free by imitating one another.

Individuals and organizations can invest in innovative cultural capital at a cost.

Imitating *completely* blindly is usually not quite the best approach. Imitate selectively whenever you can. Individuals can use simple indices like prestige and conformity as easy but somewhat selective ways to learn. So can organizations. What the majority of firms are doing and what the best are doing is something to keep tabs on. Why do most California farms, including the most successful with the most advanced labor practices, depend heavily on Hispanic labor rather than on, say, Anglo college kids attracted by the romance of rural life? Use such strategies when they are appropriate.

More informative strategies should be used when they are likely to be cost effective. We can also exert effort or spend money to learn selectively or invent for ourselves. At one end of the spectrum, organizations can employ expensive research and development departments to create new products. In the highly formalized case, the costs, benefits, and risks of innovation are usually reasonably obvious. But even here overconfidence is often a problem. Many decisions to invest in cultural capital seem simple, are made intuitively, and are prone to miscalculation and overconfidence. In fact, almost all innovation decisions are costly and risky compared to accepting traditional practice. Successful innovation can gain one great advantage, but its most common outcome is failure. Large innovations may have great payoffs if successful, but they are the most likely to fail. Competitors may easily imitate successful innovators, leaving the original innovator with few advantages. The most innovative firms may or may not be able to recoup their R&D costs or to survive the risks of trying to invent the future. Less innovative firms that wait for a little natural selection to winnow the innovations may recoup much of the benefits of innovation.

By all means invest in inventing or selectively borrowing new cultural capital, but do so wisely.

Strategize about the level at which innovation is funded.

When innovation is sub-optimal in an industry because individual firms cannot recoup their costs, a case exists for collective, perhaps public, funding of R&D. Thus, basic research is an acknowledged function of governments because the practical benefits are likely to be diffuse and difficult to patent. Commodity groups in agriculture tax themselves to support commodity-specific research. The German synthetic dye industry exploded in the nineteenth century because business leaders in that country, but not in Britain or the US, collaborated to encourage that state funds be expended on chemistry education and basic research. The many industry-university synergies in the modern US follow this model.

Encourage individuals who innovate successfully.

Many people have good ideas, some of them quite humble but nonetheless important. An innovative janitor might cut maintenance costs appreciably. The optimal amount of individual learning effort from the *organization's* point of view is generally higher than from the *individual's* point of view. Individuals, when deciding whether to invest effort in innovating, are liable to take into account disproportionately the personal benefits of a successful innovation. But if the innovation can spread to a whole company via imitation or teaching, the payoff to the company for a successful innovation will be many times the value to a single individual. A successful innovation benefits not only the inventor—the garbage collected in record time by an innovative janitor—but everyone else who acquires the innovation as it spreads throughout a company and beyond. Also, the risks of innovations failing are high, which may deter risk-averse individuals from innovative activities. Thus, innovation is a form of altruism and should be recognized and rewarded accordingly. A large business that has the opportunity to average over many successful and failed innovations can bear risk more easily than individuals can. Just as patents exist to enable the formal R&D efforts of businesses to be rewarded, so too should more informal individual efforts to learn and innovate be rewarded in order to motivate individuals to innovate in the company's collective best interest. An organization's culture is liable to adapt slowly and poorly unless the organization actively supports the innovative activities of individuals and overcomes the tendency of individuals to expend effort only to satisfy their private ambitions. Of course, this is especially true in organizations that have to or want to evolve rapidly. Such firms will have to tolerate the cost of more innovation, including the cost of failure. A group of organizations that shares a culture replicates this problem. In the limit, a company feels compelled to make "bet the company" decisions to pursue a promising innovation. An alternative is to organize a group of

firms to undertake R&D that is too costly and too risky for one company. Trade associations often support research for this reason.

Hire well and look after new employees.

A newly hired employee looks to expert peers, trainers, supervisors, and informal leaders to learn the ropes. Most will conform to prevailing practices without much thought or resistance. These simple social learning strategies are often quite cost effective but have complex side effects. Conformity somewhat retards the rate of adaptation to changed environments and, if you are seeking new blood, can work against you. Every employee hired with the hope of bringing new skills is also a threat to bring unwanted habits, such as a cynical attitude toward organizational goals. Hence, training programs may be very important to ensure that a company's culture is transmitted. Learning social mores and attitudes is just as important, perhaps more important, than learning technical aspects of jobs. External hires at high levels in the company may be necessary or desirable, perhaps even in order to add cultural capital in one form or another. But the risks are correspondingly large.

Allow for Ancient Social Instincts

Practical principles

People have a deep need for personal autonomy and to raise and care for their families. People are not and never were simple cogs in tribal machines. People are quite variable in their motivations to work on behalf of their tribes. Even the same people will differ at different times. Other animals are much more selfish and nepotistic than humans, but even in our species, the tribal instincts were laid down on top of these more ancient instincts. Conflicting loyalties are built into human nature.

Humans play diverse strategies in social games, guided by individual advantage but also by fairness, equality, and altruism. At one end of the spectrum of human behavior is saintly altruism in which we do the "right thing," whatever that might be according to our lights, whatever the personal cost. At the other end is pathological egoism in which we seek individual advantage and march to our own drummer, no matter what the cost to our fellows. The mass of people are not consistently at one pole or the other but are *reluctant*, *contingent* cooperators who play *mixed strategies.* Many of us will not fully cooperate unless everyone else will. This can make cooperation hard to start even among people who would cooperate once cooperation becomes the norm. Most of us would like to do well by doing good, although few of us have the talent, energy, or discipline to approach the saintly or super-achievement extremes. And if we did, we would have to sacrifice

family, health, hobbies, and entertainment. We will usually cooperate to the best of our abilities if we are reasonably certain others will do the same. But we also resist the usually excessive demands of multiple organizations and we economize on our scarce time and energy by taking an occasional holiday from the strict path of virtue. People call in sick in order to take care of family responsibilities. We are tempted to shade our tax deductions in our favor and let the IRS call us if they care to. We free-ride on the earnest people who organize the soccer club, the neighborhood watch, the office party, and the like. Some people do a lot more free-riding than others. The really earnest person tends to get victimized by being loaded with responsibilities and cares and may burn out. Contrary to the arguments of scholarly and folk individualism, *human* organizations are founded not only on a large dose of fairness and altruism but also on the tolerance of common human weakness.

Culturally transmitted social rules amplify our weakly prosocial instincts, sometimes to make highly functional organizations, but sometimes to permit highly dysfunctional ones. Our vices as well as our virtues can act to bias the evolution of culture. Tolerating human frailties, foibles, and private lives is not the same thing as allowing them to dominate the evolution of an organization's culture.

Strategies

Be realistic—neither cynical nor romantic—about human social motivations.

Managers need to plan for and cope with basic human needs and human frailties. Managers need to respect the autonomy of individuals and cope with their devotion to family and other pursuits outside the business context. Individual differences are a fact of life.

Be alert to what sorts of biases are shaping your organization's cultural evolution.

The main management technique for influencing the evolution of an organization is formal policy. But informal customs will change as well, partly as a positive response to policy changes, but also partly as a resistance to change. Customs may evolve under the influence of human frailties rather than human virtues. Misguided policies can provoke a culture of resistance that can be quite destructive. Prestigious individuals with bad habits may attract imitators. Some of the trends in the evolution of an organization's culture may be rather slow, difficult to detect, and difficult to reverse after they have become well entrenched.

Manage a Business as a Tribe

Practical principles

Humans by nature live in tribes, as we have seen. Thus, people have evolved a deep need to live in a tribe. The behavior of other animals, *but not of humans*, is well described by rational choice theory. Other animals are mainly selfish or only nepotistic. Humans lived in cooperative organizations composed of hundreds to thousands of members for perhaps the last quarter of a million years. Humans thus evolved under a tribal social regime. To the extent that a business resembles a tribe, it will tend to function better because people will find it easy and natural to function in such an organization, although a business can't be exactly like a tribe.

Due to a long history of life in medium-sized social units, people have tribal social instincts. These are genetically based aspects of our social psychology that predispose individuals to act altruistically, at least to fellow members of their tribe, and to follow rules of behavior unique to their tribe, reward others who follow the rules, and punish those who don't. People's identities as individuals are bound up with their status as members of tribal-scale organizations. In our pursuit of happiness, we give loyalty to tribes, but we also demand support from them. Businesses benefit hugely from this tendency because tribal loyalties flow rather naturally into these organizations where we spend so much of our waking life. A spontaneous, uncoerced regard for the success of the organization saves crippling monitoring costs. On the other hand, failing to tap such impulses or allowing them to flow to organizations that would harm the business leads to severe problems.

Modern organizations are the complex descendants and functional "work-alikes" of tribes. Modern "tribes" differ from ancestral tribes in many ways. Our modern organizations are not autonomous but are webbed together by the rule of law and by loyalties to crosscutting tribe-like units such as nations, religions, voluntary organizations, and professional societies. We often change "tribes," as when we leave one company for another. Some modern, tribe-like social organizations, such as nations underpinned by patriotic feelings, are very large.

Strategies

Create tribal identities.

Ancestral tribespeople typically displayed symbols of group belonging and often invested considerable time and wealth in their production and use. Elaborate tribal rituals were common. Major modern industries, such as the style industry and professional sports, tap this feature of our social psychology. The symbols and rituals of belonging are powerful prosocial motivators, as the practices of many

companies show. As a stand-alone strategy, developing corporate symbols of belonging and encouraging hostility to outgroups in the interest of internal loyalty is liable to be treated as a hollow gesture. But in combination with other strategies for building a strong organization, symbolic activities will have a multiplier effect. For example, the *feelings* of trust and respect generated in symbolic activities tend to spill over into everyday business. In good cultures, people may spontaneously evolve identities that deserve management support.

Recreate the ethos of a tribe to the extent possible.

The ancestral tribe was an all-purpose social unit. It controlled a territory, provided defense against human predators, and took care of the sick, elderly, and unlucky. It organized festivals and rituals. Firms today are not expected to provide the same comprehensive services, but they often provide health insurance and pensions, and not infrequently they are the center of a person's social life. Much of a person's self-esteem and recognition by others comes from their work environment. Failure to attend to the tribal ethos that naturally attaches to business will lead to pathology. For example, if a business' corporate culture focuses too tightly on the financial bottom line, then employees are liable to focus tightly on what's in it for them, to the detriment of a tribal ethos. A business that has a selfish purpose promotes the concept of selfishness, quite possibly to the detriment of the cooperation necessary to make the firm function to earn money in the first place. Sleazy businesses tend to attract sleazy employees. To the extent that valuing the social and environmental bottom lines induces cooperatively inclined people to join a business, the high level of cooperative endeavor will spill over into the financial bottom line. Employees will look forward to coming to work. They will believe in the organization. They will not feel that their non-work values conflict with their work values. They will be less inclined to pilfer the supply cabinet, pad their expense accounts, malinger, or defect to a competing firm.

Manage tribal identities carefully lest this potential asset become a liability.

People tend to be generous and altruistic toward fellow tribespeople and much more guarded or even hostile to outsiders. The tribal instincts include a readiness to recognize and symbolize organizational boundaries, which often marks the limits of solutions to dilemmas of cooperation and particular solutions to problems of coordination. So far, so good; this element of tribalism is frequently adaptive. The rub is, people can be "ethnocentric" on almost any dimension of social difference—gender, race, national origin, locality, company, profession. Esprit is, on the whole, good for an organization. Loyalty to and self-sacrifice for the organization are essential building blocks of their esprit.

On the other hand, symbolic marking of ingroup-outgroup differences is so rapid

and unconscious that quite maladaptive cliquishness often arises spontaneously within organizations. Important constituencies of the business like customers, suppliers, shareholders, and regulators may be treated as hostile outgroups. Divisions in the larger society are often imported into an organization. For example, race or gender discrimination may lead to high esprit in a traditionally dominant subgroup, classically White males, even as they lead to low morale on the part of minorities and women—not to mention costly lawsuits. Ancient tribes often included considerable hierarchical structure: families, genders, clans, subtribes, tribes, and tribal complexes. People have long been able to manage modest amounts of cultural complexity. Modern societies have a more complex and less neatly organized set of hierarchical and cross-cutting identities. Ideally, individuals have a specific role to play in each of the tribes they belong to, and these roles create minimal conflict.

The reality is often quite different. Very commonly, large businesses have to cope with divisions or local plants or offices whose internal loyalties conflict with serving the goals of the firm as a whole. People's loyalty to country or to abstract principles of law may tempt them (often quite properly) to blow the whistle on wrongdoing while strong loyalties to the smaller organization may conceal corruption and malfeasance until major scandal breaks. On the other hand, ingroup liking does not result in outgroup disliking in some mechanical way that has to sum to zero. Tribes may interact in a quite friendly way with their allies and neighbors even while maintaining ingroup distinctiveness and pride. An important role of leaders is to help ingroup members understand which outgroups deserve respect and which are enemies. And even in the case of enemies, you generally have to reach some *modus vivendi* or risk destructive conflict. Formal attention to an organization's social responsibility to multiple stakeholders probably has a positive impact on financial success in part because it reduces a company's tendency to evolve an insular culture.

Do not believe in your own propaganda, or at least don't expect others to believe it.

The self-justifying ideologies that organizations develop serve two functions. One is to help promote the internal solidarity of the organization. The other is to persuade outside constituencies of the value and morality of the organization. These functions conflict. The internal function encourages exaggerated belief systems that seem cartoonish or even threatening to outsiders, but persuasive messages created with outsiders in mind are usually too bland to rally the troops. One of the important functions of leaders is to know the difference. You have to believe two conflicting things at the same time and switch between them as the occasion demands. Politicians are frequently stigmatized for "not sticking to their principles." But politicians are only adjusting to this inevitable conflict. In the real world, both

internal and external stories usually have mythical elements. When dealing with the real world is important, you have to wear your "principles" lightly. Note that this is not an argument for wearing the principles of our common humanity lightly, just a heads-up that the parochial "principles" of our particular organizations have mythical elements that serve us poorly in certain circumstances.

Use Power and Prestige Appropriately—Don't Confuse Them

Practical principles

Power is a ubiquitous element of leadership in the management of complex societies. Outside stakeholders consolidate their power over an organization and elect or appoint representatives to coerce the behavior of members of the organization. The shareholders hire a CEO and activist groups mobilize regulatory bureaucracies. The voters elect a government to supervise the bureaucracy. A complex society works to the extent that its constituent organizations function for the common good. Power is necessary to prevent inter-tribal anarchy. For example, shareholders have to have the power to extract profits from a firm or they will not be motivated to invest. Legislators will grant bureaucracies the power to prohibit behavior that's not in the interest of the larger society, such as the formation of cartels and monopolies that can extract high profits by market domination. However necessary, the exercise of power is frequently abused and is typically resented even when it's not abused. In tribal societies, people had little power over others. We are adapted, if anything, to resent power and to cooperate to frustrate it.

Prestige was and is an effective way to reward leaders while limiting their power. It is a major element of the moral hidden hand Prestige is the status followers grant to leaders who are wise, generous, skillful, and prosocial. Leaders do expend extra effort and must be compensated for that effort if individuals are to be attracted to the role. Prestige earns leaders respect, deference, and an uncoerced extra share of material rewards. In traditional tribes, especially small ones where leadership functions were few, leaders were very circumspect about claiming any symbolic or material rewards. The same tends to be true in small modern face-to-face organizations lacking external sources of power. As the function of leaders proliferates in more complex societies, pure prestige becomes an inadequate way to compensate leaders and, aided by complex societies' growing dependence on power, leaders become elites garnering and perhaps even earning disproportionately high material rewards. Still, elected officials, judges, and college professors work hard for relatively modest compensation. So too do many major business leaders.

Prestige is closely related to trust. It creates a bond between the grantor and the grantee. Trust is a very efficient solution to the dilemma of cooperation. To the extent that trust exists and is seldom violated, cooperation occurs with minimal monitoring and enforcement costs.

Strategies

Do not imagine that power can do more work than it really can.

The leadership of tribes, especially those of the simpler sort, was based almost entirely upon prestige. Chiefs had little power to compel their followers to do anything. The disaffected could vote with their feet and join another band or even another tribe. If the malcontents were many, they would combine to overthrow a chief—by force if necessary. No matter the physical prowess of one man; the ability of the many to cooperate against him strictly limited the value of power. Even those who are trapped find effective ways to resist power. Slaves can contrive to be slow, stupid, and sickly. In modern societies, employees, stockholders, and customers have the power to exit abusive situations or curb the aims of a CEO. Power is circumscribed by laws and traditions. The resentment of power not accompanied by the protections of prestige leads to passive or even active resistance. If the boss is a tyrant, malingering has a ready excuse when the opportunity arises. Tyrannical control runs high monitoring costs if the dominated have any way to conceal misbehavior. Fear may make people unwilling to innovate, at least to innovate on the company's behalf. In the dysfunctional Soviet societies, which were always prepared to use power ruthlessly, the slogan became, "They pretend to pay us; we pretend to work."

Recognize that power is tricky to manage.

Institutions tend to evolve to channel aspirations to power in prosocial directions. In well-functioning societies, these institutions succeed fairly well, human frailties notwithstanding. However, power can easily be turned to selfish advantage. Devious miscreants seek to filter into positions of power for predatory purposes. Power holders tend to form tribal cliques that easily evolve ethnocentric rationales justifying the abuse of power. Greedy CEOs, mafiosi, warlords, and entrenched ruling elites often succeed in aggrandizing themselves over long periods of time. To the extent that they succeed, however, they usually preside over sick societies or sick parts of societies. Corrupt CEOs frequently preside over the failure of their businesses. The "all-powerful" Communist Party of the USSR presided over a low-morale, low-productivity economy. The crimes of the clever and powerful are at least as great a threat to social functionality as those of the common thief or drug addict. In the long run, abusive systems of power tend to fall to revolts and conquest, sometimes in a very costly, messy fashion.

Manage people with prestige, not power.

Prestige offers scope for leadership and is much less prone to selfish abuse. Group selection acted on tribes to favor the most successful *tribe*. While people hate to be dominated by those who use power for personal benefit, they do not mind being led by those that they feel are knowledgeable, generous, competent, courageous, and loyal to the organization. In our ancestral societies, counter-dominance coalitions ensured that such attributes were the only reliable route to influence and extraordinary social rewards. People will spontaneously grant prestige to leaders who put the organization first, but they will resist power deployed for personal gain. "Charisma" is *not* a personal quality so much as the willingness and ability to act in one way or another to benefit the organization *as the members of the organization see it.* Power generally flows from outside the organization into the hands of leaders, whereas prestige is granted from below. Prestige evaporates rapidly if perceptions change. In business organizations, as opposed to ancestral tribes, charisma is a problem as well as a resource if charismatic leaders cannot balance loyalty to the smaller-scale unit with responsibilities to the larger organization.

Recognize, work with, and try to improve the prestige institutions of your organization.

Even organizations with abundant power-based leadership, such as armies, depend upon prestige to function. So strong are the rewards of prestige that the elites frequently trade power for prestige. Hence, we have the charitable foundations of the wealthy and the willingness of elected officials, judges, and civil servants to serve for relatively modest salaries. Many of the institutional innovations that will make your organization function better are likely to involve substituting prestige for power. Most able people enjoy prestige more than power, and most of their followers would rather grant them prestige than power. A triple-bottom-line business environment can provide more opportunities for granting prestige to leaders simply by providing the social and environmental bottom lines as measures of value. Prestige tends to be granted either for prosocial reasons or because someone has more knowledge or talent than normal, and to the extent we measure that performance, the prestige will flow to the leaders that steward all three bottom lines. External stakeholders will tend to grant prestige to socially responsible businesses. Prestige earns trust, which in turn reduces monitoring costs borne by both the external stakeholders and the business itself.

Balance power and charisma in the chain of command.

Even in large tribes, leadership sometimes involved considerable use of power by leaders. Polynesians, for example, had hereditary chiefs with supernaturally sanctioned power. That is, rather than relying entirely upon the charismatic influence of informal prestigious leaders, they evolved formal offices. Formal leaders can appeal to norms of obedience, if only the obedience of fellow members of their conquering band, to enforce commands and thus have the power to use coercive sanctions to enforce obedience to their orders.

Nevertheless, power and coercion unleavened by charisma will generate costly resistance on the part of subordinate groups and individuals. Unless a large organization can find a way to endow leaders up and down the chain of command with a respectable amount of prestige, the organization will operate at a considerable, perhaps fatal handicap. Too much dependence on power excites resistance and crushes the productive creativity of tribal-scale units. Too much influence of local prestige at lower levels tends to cause subordinate leaders to favor the autonomy of their unit with respect to the larger organization's goals. Leaders who favor more autonomy will be more popular with their local constituency. The effort to balance power and charisma is constrained by tight tradeoffs and by the fact that our social psychology is not particularly well adapted to large organizations. The workarounds by which we make large organizations work are cumbersome. Here, a leader's wisdom is tested.

Remember that Institutions Are Diverse and Subtle

Practical principles

Modern organizations are highly dependent upon legitimate institutions. The rule of law (and of the policy and procedures manual) is an important class of workarounds. Most people are easily persuaded in principle that law is a good solution to the problem of intertribal anarchy. Modern societies function by closely controlling inter-organizational anarchy. As members of any particular organization, we resent the limits that laws and customs place on our collective tribal autonomy as much as we resent the limits that organizations place on our individual autonomy. Yet we know that the alternatives—crony capitalism, warlordism, and failed states—are generally worse. Reforms that make controls on organizational autonomy more efficient are also generally possible. Market mechanisms are the classic example. Competitive markets encourage a productive quasi-anarchy and, by freeing the productive tribes, make the economy highly dynamic. Of course, trying to make market capitalism work without sound business law is very difficult. If the legal system enforces contracts and prevents monopolistic collusion, then otherwise highly autonomous producers and consumers can interact very efficiently. Similarly,

aggregating political power via honest elections limits abuses, maintains social trust, and fosters the creation of a sound legal regime. Failed states, bad laws in even the best states, the limited scope of law in most historical states, and the weakness of international law today are evidence that the creation of legitimate legal systems is not easy or automatic.

Strategies

Obey the law.

So obvious; yet every day's news has plenty of examples of failures to heed this simple stricture. In societies and situations in which the rule of law is weak, this dictum becomes hard to follow. Indeed, even in the best-governed societies, the rule of law is imperfect and expediency may demand violations of laws. This is a slippery slope, as rationales for working around laws tend to get more elaborate and more self-serving with every use. Perhaps the best question to ask in situations where the law as it stands seems to need circumventing is, what would a better law demand of you if it existed? Various stakeholders, such as NGOs interested in justice in poorly governed states, are liable to at least try to hold you to such a standard. Since the evidence shows that businesses that hold themselves to a high standard fare well in the marketplace compared to those that don't, the excuses for tolerating lower standards are thin.

Obey local customs.

Informal solutions to dilemmas of cooperation often work as well or better than legal ones. Ancient tribes functioned well with little else. East Asian societies to this day appear to depend upon informal customs more than do Western Europeans. In any situation where the rule of law is weak, such informed rules are likely to be your only friend. The rule of law itself is based on respect for prosocial rules, a deeper social institution that is not itself a law. In any case, contracts are expensive to write and enforce and are often excessively rigid. Lawyers are expensive. Professionalism, tipping, accurate gossip, neighborly courtesy, and common truth-telling are customs that are lightly, if at all, subject to legal sanctions and are extremely important to everyday life in complex societies. Respect is also due these informal products of the moral hidden hand. Understanding and using them is important. What happens when local customs and laws conflict? Sometimes laws are evil, and the same is sometimes true of local customs.

You will sometimes be forced to consult your basic moral compass, judge laws and customs by it, and act as best you can. Petty bribery in some poor countries may be nearly as innocent as tipping in a restaurant. Societies in which kinship ties are strong and extended will inevitably tend toward nepotism. At one extreme, judging

the customs of others by your own standards is an obnoxious form of ethnocentrism. On the other hand, the tolerance shown for major abuses has clearly handicapped the development of many countries where kleptocracy, tyranny, and crony capitalism have dominated the business environment. Empathy for the victims of these systems surely demands leadership, not conformity. Ask the basic questions. Are significant numbers of people being seriously harmed by the practice? What would your spouse, clergyman, mother, and lawyer say about the practice? How embarrassing would it be if you or your company's behavior became public? Remember that ready rationalizations make for slippery slopes.

Respect cultural diversity.

People of different cultures think quite differently from one another. For example, those of us from Anglo-Saxon cultures are at the extremes of individualism. Most continental Europeans are distinctly more collectivist, and East Asians really do think about society and the natural world in ways that are markedly different from ours. At the same time though, we share a common humanity. We can learn to enjoy cultural diversity, not hate and fear it. People from different cultures often turn up disproportionately in different slices of the division of labor. Psychologists find that individualists and collectivists are differentially susceptible to different cognitive errors. An organization may function best when these propensities combine and offset one another. Cultural diversity is potentially a plus for businesses, not just a negative to be managed. People who are aware of the foibles of their own culture and who are sensitive to the differences in others' worldviews are valuable in multi-ethnic workplaces and the other points of ethnic contact that are so common in our global economy. If you have a lot of contact with another ethnic group, there is no substitute for learning its language, reading some history and anthropology, or studying its religion or philosophy. What you do not understand and respect you may indeed have grounds to fear.

Respect Inevitable Tradeoffs, Compromises, and Conflicts

Practical principles

The evolution of organizations that function in the context of complex societies often involves practices that conflict with social instincts. Modern societies function to the extent that they use the prosocial elements of the tribal social instincts but finesse their original limitation to rather small-scale societies. We call the cultural devices we use to accomplish these tricks "workarounds." Ancient tribes had no legitimate function but preserving the welfare of their members. Modern organizations have responsibilities to other stakeholders. These lead to new conflicts not just between the more and less cooperative social instincts of individuals but also between the

social rules of different organizations. In extreme cases, deeply felt grievances lead to the evolution of organizations specializing in the overthrow of the existing social order. More commonly, individual happiness and morale are degraded by rules that represent the will of remote stakeholder organizations. Organizations engage in costly contests to influence the rules to their parochial advantage, leading to laws and contracts that no one likes. The rule-making government bureaucracy limits the autonomy of business organizations in ways that vex us even when we know that the rules they administer are necessary or at least inevitable. Individuals who belong to more than one organization (most of us belong to several) will often be subject to conflicting demands. Cross-cutting loyalties weaken our commitment to any given tribal-scale organization, but at some cost of psychic conflict. Usually, leaders are members of their organizations at two levels. They are the chiefs of their divisions while being members of a group of division chiefs. Loyalty to lone level frequently, even normally, conflicts with loyalty to the other. By a large number of such workarounds, we make complex societies work, but at the cost of considerable "political overhead."

A business must thus be sensitive to many stakeholders. As important as it is for tribal-scale organizations not be too autonomous, these cannot do their jobs without the requisite amount of autonomy. Politically liberal systems tend to err on the side of the autonomy of private organizations and individuals. An elaborate legal and regulatory system defines rights and duties and allocates power to further the common interest, at least in principle. Contracts are written. Informal and customary norms of good and proper behavior are at least as important as formal law. All of the rules, formal and informal, are contested and evolving. For example, an industry that has successfully lobbied for certain legislation may well find that a coalition of interest groups feels that the resulting law violates informal rules of good citizenship, fair play, or environmental responsibility. They will not take a particular law as the last word. As informal norms or other laws evolve, a long-standing law can come under critical scrutiny. At the same time, every tribal-scale entity evolves an ideology that justifies its customary behavior in terms of conformance to laws and the "higher," informal norms of correct behavior. All of this is a recipe for prolonged, bitter, costly conflict. A business' interest in good relations with customers, suppliers, its own employees, and its principal regulators is obvious and yet the tendency for tribe-like autonomy to evolve often handicaps relations with key stakeholders. Relations with competitors and downright enemies such as zealous activist organizations often lead to highly emotional conflicts, transgressing the bounds of common sense and fair play, and to the consequent potential for costly, pyrrhic wars of attrition. Wise leaders undertake strategies to navigate a complex, conflict-ridden environment with a minimum of lost contests but also with a minimum of pyrrhic victories.

The trickiest management problem is solving dilemmas of cooperation at the inter-organizational level. The ethnocentrism of organizations tends to lead to anarchy at the inter-organizational level. In the worst cases, of he task ending off anarchy falls entirely upon the shoulders of *ad hoc* negotiators. Leaders with vision, energy and prestige can sometimes succeed in overcoming such anarchy, and their efforts are often the models upon which more durable cultural rules are based. Great cultural heroes are drawn from this population, testimony to how valuable, but rare and difficult, this task is.

Leaders of modern organizations are caught in the middle. Unlike tribes, modern organizations are responsible to extra-organizational constituencies—shareholders, regulatory agencies, suppliers and customers, and public interest organizations. Managers must solve conflicts between these constituencies. They must represent outside interests to the members of their organization, while representing the interests of their organization to outsiders.

Strategies

Expect to manage tradeoffs and conflicts.

Cultural evolutionary theory tells us what wise people already know. One-dimensional utopian proposals always run afoul of conflicting human impulses. Complete tribal autonomy, for example, can be won only at the price of inter-tribal anarchy. The most biggest important drawback of ancestral societies was intertribal anarchy. Warfare was common if not routine, and the security of life was low. Extra-tribal stakeholders in modern societies will hold organizations responsible for fulfilling their role in the larger social system, curbing the autonomy of the modern analog of the tribe.

Recognize that leaders have to be tough sometimes.

Cultural rules work partly with and partly against social instincts. The human predilections to imitate and to be cooperative are the basic motors of social evolution. Since people's social instincts are evolved compromises in the first place, cultural rules can often successfully override any given instinct—human frailty accounting for a certain frequency of failure. The human genius for flexible social organization has led to relatively weak, but relatively prosocial, instincts. Humans are prepared to sacrifice and compromise their principles in pursuit of organizations that work reasonably well. Leaders often have to represent the larger interest of the group and overcome resistance from individuals. Often you just have to make sure that reluctant individuals understand what they should do. Leading by example is another good policy. In the final analysis, leaders sometimes have to make tough decisions, like whether to fire people who are chronic under- or mis-performers.

Others will look to you to act as a moralistic punisher when the situation demands it. Conflicts between leaders and lower-level people require the most sensitive handling. Leaders at any level are caught between their loyalty to their own subordinates and their loyalty to the larger organization. Good leaders represent the concerns of their tribe or tribelet to leaders up the chain of command as well as conveying direction to subordinates. You need to earn the respect of your subordinates and your superiors. In the nature of a social system built by work-arounds, this is not an easy task. If you do this hard job well, you will earn your pay.

Be a reformer.

Reforms are almost always possible. Tribespeople often operated successful inter-tribal alliances that managed inter-tribal anarchy rather well. Complex societies at their best solve many problems that even the sophisticated inter-tribal alliance cannot. We have even made some respectable advances in managing international anarchy, though much remains to be done. It is utopian to expect to reduce political overhead in organizations of any scale to zero, but we can realistically hope to make political services more efficient. Cultural rules that violate any instinct set in motion a counterforce that tends to cause the rule to evolve into one more compatible with that instinct. Highly aberrant rules will feel the most pressure for change. Systems of rules that fit the social instincts well will lead to the happiest people with the least pressure for change, but no perfect balance is ever obtained. Some things always feel wrong—at least to some people—so nothing change is unceasing even when not consistently going anywhere. Good leaders are always alert to the potential of changing the rules. Simple changes of informal rules may be entirely within a manager's power. Other changes may take a little genius for memo writing and committee work to bring off. Important reforms often require high-caliber statesmanship. Reforming a truly dysfunctional culture often seems impossible. Proud and once-mighty companies fail. Pick your battles carefully!

Cultivate strategic alliances.

Since no organization is truly autonomous, it is important to have friends and correct relations with competitors and adversaries. Competitors that cannot form alliances to lobby on behalf of their industry are at a disadvantage. Organizations that cannot rely upon the support of their employees, their suppliers, and their customers are likewise at a disadvantage. Recognizing that in any social system, conflict is inevitable, wise managers remember that an organization can never have too few enemies or too many friends. Typically, large-scale alliances are necessary to influence the regulatory and legislative agendas of government, for example.

Exert influence by prestige, not power.
Organizations accrue prestige in much the same way individuals do. Just as the exercise of power generates resistance within a group, so too the exercise of power tends to lead to resistance and conflict in inter-organizational politics. Corporations correctly place great value on their reputations for this reason. They often neglect to remember, however, that how you treat your opponents is a sterner test of statesmanship than how you treat your friends. How you treat the powerless is sternest test of all. Encouraging employees to participate in neutral forums is an example of a way to build and maintain prestige. Having employees who participate actively in their professional associations and in the political life of their communities builds an organization's prestige. Encouraging your visionaries to communicate with their fellows in forums where your organization's policy may be unpopular puts a human face on the organization.

Manage a large business like an empire or a segment of an empire.
Organizations larger in scale than a tribe depend upon ever more sophisticated workarounds to function at all. Historically, such systems were frequently built by military conquest, and many failed to outlive the conqueror by more than a generation or two. Modern corporations are not dissimilar. Some grow to large size, but even the largest often shrink or fail within a few generations. Business empires put together by overly aggressive purchases of other companies driven by a CEO's ego are often ephemeral. Nevertheless, well-organized large-scale social systems can usually out compete smaller-scale ones. "Economies of scale" exist as economists put it. The competitive struggle to survive and grow is often intense. If we analogize the many sorts of small-scale organizations in modern societies to tribes to the extent we already have, analogizing the nation-state to an empire is an obvious step. All large-scale political systems are an umbrella under which many tribal-scale units operate, and hence, all are empire-like in important ways. A large firm with several divisions and perhaps several overseas divisions is as internally diverse as many nations. The politics of empires, historically, were turbulent. Modern states have improved the situation, but it is an evolution, not a revolution. Patriotism at the national scale is typically much stronger in modern nation-states than in the empires they replaced. This strengthens national institutions at the expense of the tribe, mostly a highly desirable outcome although one prone to over-centralization and abuse of national power in conflicts with other nations.

Monitor, Reward, and Punish. A Leader's Most Delicate Jobs

Practical principles

The hardest part of getting any society up and running is solving dilemmas of

cooperation. Individuals and organizations that cooperate with others risk being taken advantage of. If an employee expends a significant effort working out a more efficient procedure to accomplish her job, the whole organization and all its stakeholders may benefit, perhaps substantially. Yet the employee in a badly run organization may not be compensated, or even thanked, for the effort. She may even be fired for making her job no longer necessary. Most animal societies solve these dilemmas at quite small scales, if at all. Humans are much more successful in the lab and in the field. Being a member of an organization that successfully solves dilemmas of cooperation often pays all organization members handsomely. Anarchy is generally costly. Markets are a special case of *carefully managed* anarchy. In markets, cooperation (usually called *collusion* in this context) is forbidden so as to make the competitive market hidden hand works better. This example reminds us that if others solve a dilemma of cooperation, our organization may become a victim of better-organized competitors or predators. People often cooperate at one level in order to predate on benefits produced by higher-level cooperation. Tribal plunderers, mafias, special-interest groups, and monopolistic cabals are classic examples. Monitoring, rewarding and punishing are critical to the success of human societies.

Monitoring and sanctions are absolutely necessary because a significant minority of people play selfish strategies. A few people always feel tempted to take advantage. Human communities function in large part because moralistic punishment protects communities from hardened egoists. Just as the market hidden hand requires anti-monopoly rules, so too does the moral hidden hand have to be institutionalized to control serious defectors. A few percent of laboratory research participants are deceptive cheaters. If a few take advantage more will follow. Basically good people exposed to unpunished bad behavior will invent elaborate justifications for selfish behavior and believe them. "Everyone does it." Indeed, if very many people are cheating, the payoffs to cooperation cease and only the truly saintly will persist in good behavior. Ideally, people know who is cheating and who is performing heroically for the common cause. Ideally, rewards flow to the heroes, and ideally those tempted to cheat are deterred from acting on the temptation because they are secure in the knowledge that incorrigibles will be caught and punished. We agree that those who violate the rules of the community are to be punished, and that those who cooperate themselves but tolerate others' defections are also behaving badly. A major role of leaders is to act as moral altruists who carry the burden of controlling the excessively egoistic and protecting the best performers for the group.

In the real world, knowledge is imperfect and leaders often act imperfectly on the knowledge they have. In the worst cases, leaders misappropriate the power to reward and punish for their own selfish advantage. Great business scandals are born. Of such situations many people are inclined to punish bad behavior, operating

on the basis of commonly accepted moral rules. But the hardened, devious, and powerful among the cheats and thieves require the costly efforts of leaders to discover and sanction. Moral leaders often emerge unexpectedly. Subordinate whistle-blowers often bring down the misbehaving high and mighty. The impulse to punish miscreants, even at great risk to self-interest, is a deep part of our psychology. Those who would abuse power can't forget this fact. Thus, abusive political regimes have to be brutally repressive. Repression is part of the package, not a mindless afterthought.

Well-designed monitoring, reward, and punishment systems have a very carefully graded system of carrots and sticks. Verbal rewards are used to reassure basically good people that they are valued members of the team. Occasional mild defections are simply silently noted. Chronic minor transgressions receive mild verbal sanctions. Eventually, confirmed, habitual miscreants receive extreme sanctions, such as termination of employment. Reliance on specialist punishers is limited because these figures, such as police, are often in a position to abuse their power. To the extent that most people behave as moralistic punishers of others transgressions, neither ordinary cheats and thieves nor corruptible specialist punishers have much room to maneuver.

Strategies

Manage by reward, not punishment whenever possible.

People enjoy rewards and they hate punishment. Reward boosts the prestige of your good people. It builds a system of prestige that people will compete to enjoy. Most people rise to the standard implied by a reward even when supervisors cannot easily measure their performance. Reward natural leaders that emerge in an organization by earning their own respect rather than acquiring it by promotion from above. It is much better that the official and informal prestige systems mesh well. Not all valued employees are candidates for promotion or even for pay raises. Simple expressions of thanks for favors and gratitude for work well done are important. But beware of rewarding for personal loyalty as opposed to service in the pursuit of a larger organizational goal. Unscrupulous people use the power of reward to create cliques devoted to their own aggrandizement. Those left out will deeply resent such schemes.

Respect personal autonomy, but punish habitual cheats.

Our tribal ancestors lived in conflict-ridden societies, popular myths notwithstanding. Among other things, responsibilities to one's family often conflicted with duties to the tribe. Natural selection on genes favors individual and family selfishness even as cultural group selection favors loyalty to organizations.

Every organization has to adjudicate such conflicts. At the same time, the commonest form of abuse of the organization by selfish individuals is petty chiseling and slacking. If too many people are getting away with such behavior, not only is the organization damaged directly, but morale plummets and average people begin to withhold their own cooperation on behalf of the group. Human beings have evolved in such a way as to make this problem insoluble in general. Managers must strike a balance between necessary tolerance for individuals' needs, desires, and foibles and defense of the organization. Evidence suggests that emphasizing respect for individuals while dealing firmly and courageously with habitual cheats is the best strategy.

Monitoring and sanctions should be handled with great care to bring along cautious cooperators without violating their sense of fairness and equality. The tasks of moralistic punishment are quite delicate. No one is perfect, but punishing everyone is costly to the punishers and damaging to the morale of commonplace good people. Good people resent even conspicuous monitoring as an implication that they are bad people. Excessively zealous punishment leads to brutality, chronic suspicion and anxiety, and the corruption of leaders. Erroneous punishment does costly damage to trust. On the other hand, excessive tolerance of chronic cheats and thieves leads to recruitment to the ranks of the bad, to widespread cynicism on the part of the better sorts, and to the breakdown of trust cooperation. As more people need to be punished, the costs of punishment escalate and rule-bound order collapses. The moral hidden hand ceases to function. Any leader becomes preferable to none, and unscrupulous risk-takers vie successfully for the role. If possible, the person being punished should be judged worthy of that punishment by the boss and by the punishee's peers and subordinates. The tough case is when the autonomy of a subordinate unit must be curbed in the interest of the larger organization. Necessary punishment is sometimes very unpopular.

Look to reform outdated rules requiring punishment for trivial and irrelevant behavior.

A major pathology of moralistic punishment is that it can sustain detrimental practices as well as functional ones. Commonly, rules are maintained by social sanctions long after their functional rationale has disappeared. We have all experienced the attempts of officious people to enforce antiquated rules. Just as commonly, people from dominant social groups attempt to force other groups to conform to their customs and usages. Ethnic and racial discrimination is in large part fueled by the offense caused by trivial differences in accent, religious observance, dress, and demeanor. Indeed, resistance to domination often takes the form of the deliberate cultivation of behaviors that dominants find offensive. At the same time, such forms of resistance have the effect of justifying stereotypes and

increasing social conflict. Those with the power to punish trivial deviation from their own customs often do so. Since you want to do as little punishing as possible because of its high costs, removing silly rules is important part of the ongoing evolution of a high-functioning organization. When the rules concerned are customs of domination and resistance brought into an organization from the larger society, such reform takes real leadership.

Rewards and punishments should be backed up by legitimate institutions.

Rules normally exist to guide reward and punishment, both explicit rules and informal customs. Behind all of these stand basic moral precepts. If you find yourself tempted to reward and punish in violation of established institutions, worry. The situation, the organization, or your behavior is probably bad. Of course, in bad situations even a good person will be tempted by expedience. Worry also if informal and formal institutions conflict. Some such conflict is inevitable, but too much is a cause for concern. Once again, large conflicts in this domain test the courage and wisdom of leaders.

Glossary Of Terms

Acquired variation - variation in the cultural information acquired by one person vis-à-vis the next person. This information can be inherited by those one teaches or who imitate one.
Blind variation – that variation that arises from random processes, such as genetic mutation and its cultural analog.
Coevolution – in biology, when two different species affect each others evolution; predators drive the evolution of more fleet prey and more fleet prey drive the evolution of faster predators. In cultural evolution, by analogy, the evolutionary interactions between the cultural and genetic evolutionary sub-systems.
Conformist bias – using the commonness of a cultural variant as an index of its suitability for adoption. Since many forces tend to make the commonest variant the best variant, this is a good, cheap rule of thumb for biasing the acquisition of cultural variants.
Contingent cooperators – those who will not cooperate unless others also cooperate and/or unless they are likely to be punished for not cooperating.
Cultural inheritance system – in humans, the teaching and imitation by which we acquire a large repertoire of mostly useful ideas about how to behave. Highly developed in our species but present in rudimentary form in many species.
Cultural variant – A measurably distinct idea, skill, moral rule, word meaning, etc. that can be acquired by others via teaching or imitation. For example the corporate law of two countries could be broken down into a large number of cultural variants, some identical to each other, some slightly different, some substantially different, some missing from one code but present in the other.
Dilemmas of cooperation – Usually exemplified by the famous Prisoner's Dilemma game. Two players are confronted by two choices, cooperate or defect. If both players cooperate, they jointly make more than if they defect, but each player individually does better if they defect, no matter what the other does. Two rational selfish players cannot solve the dilemma of cooperation, at least not straightforwardly; the also-famous Nash Equilibrium is joint defection. Many other games have similar dilemmas. In fact, in simple laboratory experiments, about half of student subjects play cooperatively. In more complex experiments people deploy a variety of strategies such as altruistic punishment. People are in fact able to solve dilemmas of cooperation in the lab and in the real world due ultimately to the moral hidden hand.
Ethnocentrism – the tendency to evaluate other groups according to the values and standards of one's own ethnic group, especially with the conviction that one's own

ethnic group is superior to the other groups.
Ethnography – The study of people from societies other than one's own. A major component of the work of anthropologists.
Evolutionary biology – the study of organic evolution. A highly developed science but one that focuses mainly on the evolution of genes.
Genetic inheritance – the system, first described scientifically by Mendel, by which heritable variation is transmitted from parents to offspring by DNA molecules.
Hamilton's rule – The idea that natural selection can favor self-sacrifice among relatives so long as the benefits in the cost-benefit ratio of the self-sacrificial act are discounted by relatedness.
Killer adaptation – an adaptation that gives an organism an overwhelming advantage over species with which it competes but which lack the adaptation.
Kleptocracy – political regime in which leaders and their immediate supporters siphon away a hugely disproportionate share of national income.
Memes – cultural variants defined in terms of their hypothesized similarity to genes.
Mendel's laws – the basic rules of genetic inheritance described first by the Austrian monk Gregor Mendel.
Nomenklatura – the Soviet elite selected for executive positions in the government by the Communist Party.
Paleoanthropology – the study of extinct members of the genus *Homo sapiens.* As opposed to archaeology, which is devoted to the study of the material remains of our own species.
Problems of coordination – social problems whose solutions lack a dilemma of cooperation. The solution to games of coordination is self-reinforcing once achieved, though not necessarily easy to find from scratch. Which side of the road to drive on is a simple example. Left and right are equally good solutions, and once everyone is on the same side, self-interested rationalists are not tempted to violate the rule. The definition of words is a more complex example. Mostly, we need to agree on the definitions of words but the demands of poetry and convenience often cause definitions be stretched.
Prosocial behavior– acts that benefit the social group.
Reluctant cooperators – Humans do not automatically act prosocially. However, we tend to have the expectation that rules exist promote altruism and solve dilemmas of cooperation. Typically we expect some monitoring and sanctioning system to exist to ensure that defection is controlled. Most humans will behave prosocially if they trust that others are cooperating too.
Selective retention – a generalized version of natural selection. Many processes can act like selection in causing evolution by culling heritable variation, especially in cultural evolution. For example, humans often observe two or more alternative

ways of accomplishing some common task and choose to adopt the one that seems best according to any number of decision-making rules.
Selfish meme – a cultural variant that is adapted to favor its own reproduction even at the expense of its human host.
Sociobiology – the evolutionary study of the biological determinants of social behavior. In the context of human behavior the more or less complete dominance of the genetic system of inheritance over the cultural is often assumed or argued. Sociobiology is often conflated with doctrines of genetic determinism, mainly by its critics. Most human sociobiologists maintain that behavioral differences derive from environmental differences, not genetic differences.
Theory of rational choice – an individual, when interacting with other individuals in his or her vicinity, will make decisions based on his or her judgment of which outcome will best serve his or her personal interest. A conventional assumption of microeconomic and game theoretic analysis. While hardly anyone thinks it is literally true, the intuitions and policy recommendations of economists and other social scientists that use economic models as a theoretical foundation are much colored by the assumptions of both rationality and selfishness.