

## HOW HARDWIRED IS HUMAN BEHAVIOR?

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**Abstract:** Over the past several years, evolutionary psychology as a discipline has gathered both momentum and respect. Evolutionary psychology, in identifying the aspects of human behavior that are inborn and universal, can explain some familiar patterns. It sheds light on why people behave in ways that do not appear to be beneficial to themselves or to their businesses. In this article, the author examines evolutionary psychology. He looks at Darwin's concept of natural selection and the managerial implications of evolutionary psychology, which include organizational design, hierarchy, and leadership. He observes that the message for managers is perhaps that it makes sense sometimes to challenge human nature and ask questions such as Am I being overly optimistic? or Am I demanding too much of a certain manager? Taken together, the research of evolutionary psychology on group size and hierarchy helps a manager to think anew about teams, and suggests that companies can maintain an egalitarian ethos of power only under certain conditions. The implications for leadership are, first, the most important attribute for leadership is the desire to lead. Second, the theory of inborn personality does not mean that all people with genes for dominance make good leaders. Third and finally, if you are born with personality traits that don't immediately lend themselves to leadership does not mean that you cannot be a leader.

Time and time again managers have tried to eliminate hierarchies, politics, and inter-organizational rivalry-but to no avail. Why? Evolutionary psychologists would say that they are working against human nature--emotional and behavioral 'hardwiring' that is the legacy of our Stone Age ancestors.

In this evolutionary psychology primer for executives, Nigel Nicholson explores many of the science's central tenets. Of course, evolutionary psychology is still an emerging discipline, and its strong connection with the theory of natural selection has sparked significant controversy. But, as Nicholson suggests, evolutionary psychology is now well established enough that its insights into human instinct will prove illuminating to anyone seeking to understand why people act the way they do in organizational settings.

Take gossip. According to evolutionary psychology, our Stone Age ancestors needed this skill to survive the socially unpredictable conditions of the Savannah Plain. Thus, over time, the propensity to gossip became part of our mental programming. Executives trying to eradicate gossip at work might as well try to change their employees' musical tastes. Better to put one's energy into making sure the "rumor mill" avoids dishonesty or unkindness as much as possible.

Evolutionary psychology also explores the dynamics of the human group. Clans on the Savannah Plain, for example, appear to have had no more than 150 members. The message for managers? People will likely be most effective in small organizational units.

As every executive knows, it pays to be an insightful student of human nature. Evolutionary psychology adds another important chapter to consider.

NEW FIELDS OF SCIENCE DON'T emerge in a flash, and evolutionary psychology- sometimes called modern Darwinism - is no exception. But over the past several years, evolutionary psychology as a discipline has gathered both momentum and respect. A convergence of research and discoveries in genetics, neuropsychology, and paleobiology, among other sciences, evolutionary psychology holds that although human beings today inhabit a thoroughly modern world of space exploration and virtual realities, they do so with the ingrained mentality of Stone Age hunter-gatherers. Homo sapiens emerged on the Savannah Plain some 200,000 years ago, yet according to evolutionary psychology, people today still seek those traits that made survival possible then: an instinct to fight furiously when threatened, for instance, and a drive to trade information and share secrets. Human beings are, in other words, hardwired. You can take the person out of the Stone Age, evolutionary psychologists contend, but you can't take the Stone Age out of the person.

That said, evolutionary psychologists do not argue that all people are alike underneath. The discipline recognizes the individual differences caused by a person's unique genetic inheritance, as well as by personal experiences and culture. Further, like other scientific theories-the Big Bang and global warming, to name two-evolutionary psychology is the subject of fierce debate, (See the insert "Evolutionary Psychology: A Convergence of Research and Controversy.") Indeed, proponents and opponents of the field are becoming increasingly numerous and vocal.

But evolutionary psychology is by now well established enough to merit examination. Understanding evolutionary psychology is useful to managers because it provides a new and provocative way to think about human nature; it also offers a framework for understanding why people tend to act as they do in organizational settings. Put another way, evolutionary psychology, in identifying the aspects of human behavior that are inborn and universal, can explain some familiar patterns. It sheds light on why people behave in ways that don't appear to be beneficial to themselves or to their businesses. Evolutionary psychology goes so far as to raise the questions: How might organizations be designed to work in harmony with our biogenetic identity? and Are modern-day executives managing against the grain of human nature?

#### Natural Selection: A Primer

One hundred and thirty-nine years ago, the British naturalist Charles Darwin rattled the world with his theory of natural selection. According to his theory, human beings were not "placed" fully formed onto the earth. Instead, they were an evolved species, the biological descendants of a line that stretched back through apes and back to ancient simians. In fact, Darwin said, human beings shared a common heritage with all other species.

Since Darwin's time, scientists have built on the theory of natural selection with modern discoveries, most notably in the area of genetics. Today modern Darwinians hypothesize that evolution occurs in the following manner: All living creatures are "designed" by specific combinations of genes. Genes that produce faulty design features, such as soft bones or weak hearts, are largely eliminated from the population in two ways. First, species with those characteristics simply don't survive the elements long enough to reproduce and pass along their genes. This is called environmental selection. Second, these same creatures are unattractive to other members of their group because they appear weak and less likely to reproduce. They don't mate and therefore don't reproduce. This is called sexual selection.

The genes that survive environmental and sexual selection are passed on to succeeding generations. At the same time, genetic mutations occasionally crop up. They produce new variations—say, improved hearing or sharp teeth. The characteristics that help a species thrive and propagate will survive the process of natural selection and be passed on. Those that don't are weeded out. By these means, species evolve with stable genetic profiles that optimally fit the environmental niches they occupy. Thus, fish that live at the bottom of the sea can see in the darkness, and dogs that prey on burrowing rodents have keen senses of smell. Species become extinct and new species emerge when radical shifts in environmental conditions render obsolete one set of design features and offer opportunities for a new set to prosper.

Darwin and his proponents over the decades have used the theory of natural selection to explain how and why human beings share biological and physical traits, such as the opposable thumb and keen eyesight, with other species. Evolutionary psychologists go further. They use the theory of natural selection to explain the workings of the human brain and the dynamics of the human group. If evolution shaped the human body, they say, it also shaped the human mind.

Evolutionary psychologists describe the "creation" of that mind in this way: The first two-legged hominids emerged after a prolonged period of global cooling approximately four million years ago. A range of variations in their biogenetic design briefly flourished and then became extinct, leaving *Homo sapiens* as the all-conquering survivor.

The success of *Homo sapiens* was no fluke. The greatly enlarged brain of the species made survival in the unpredictable environment of Africa's vast Savannah Plain possible. Much of that brain's programming was already in place, an inheritance from pre-human ancestors. But eventually, thanks to natural selection, other "circuits" developed, specifically those that helped human beings survive and reproduce as clan-living hunter-foragers.

For most of our history, this is how people lived, until their world radically changed with the invention of agriculture approximately 10,000 years ago. This suddenly allowed people to accumulate wealth and live in larger numbers and in greater concentrations, and freed many from hand-to-mouth subsistence. From this agricultural period, fast and short steps have brought us to modern civilization, with its enormous social changes wrought by advanced technology and communications.

But evolutionary psychologists assert there are three reasons that these changes have not stimulated further human evolution. First, as far back as 50,000 years ago, humans had become so scattered across the planet that beneficial new genetic mental mutations could not possibly spread. Second, there has been no consistent new environmental pressure on people that requires further evolution. In other words, no eruptions of volcanoes or glaciers plowing south have so changed the weather or the food supply that people's brain circuitry has been forced to evolve. Third, 10,000 years is insufficient time for significant genetic modifications to become established across the population. Thus, evolutionary psychologists argue that although the world has changed, human beings have not.

### Managerial Implications of Evolutionary Psychology

Evolutionary psychology offers a theory of how the human mind came to be constructed. And that mind, according to evolutionary psychologists, is hardwired in ways that govern most human behavior to this day. But not all inborn traits are relevant

to people trying to manage companies-for instance, an evolutionary psychologist's view on how people are "programmed" to raise children probably belongs in another article. Several key hypotheses among evolutionary psychologists speak directly to executives, however, because they shed light on how human beings think and feel and how they relate to one another. Let's consider these topics in turn.

**Thinking and Feeling.** Life on the Savannah Plain was short and very fragile. The food supply and other resources, such as clothing and shelter, were unreliable and varied in quality. Natural life-threatening hazards abounded. As weak, fur-less bipeds, human beings' strength lay in their minds. The thoughts and emotions that best served them were programmed into their psyches and continue to drive many aspects of human behavior today. Chief among them are:

**Emotions Before Reason.** In an uncertain world, those who survived always had their emotional radar-call it instinct, if you will-turned on. And Stone Age people, at the mercy of wild predators or impending natural disasters, came to trust their instincts above all else. That reliance on instinct undoubtedly saved human lives, allowing those who possessed keen instincts to reproduce. So for human beings, no less than for any other animal, emotions are the first screen to all information received.

Today businesspeople are often trained to dispense with emotions in favor of rational analysis and urged to make choices using logical devices such as decision trees and spreadsheets. But evolutionary psychology suggests that emotions can never fully be suppressed. That is why, for instance, even the most sensible employees cannot seem to receive feedback in the constructive vein in which it is often given. Because of the primacy of emotions, people hear bad news first and loudest.

Managers should not assume they can balance positive and negative messages. The negatives have by far the greater power and can wipe out in one stroke all the built-up credit of positive messages. In fact, because of the primacy of emotions, perhaps the most discouraging and potentially dangerous thing you can do is to tell someone he or she failed. Be careful, then, of who you put in charge of appraisal systems in your organization. These managers must be sensitive to the emotional minefields that all negative messages must navigate.

**Loss Aversion Except When Threatened.** Human beings who survived the harsh elements of the Stone Age undoubtedly tried to avoid loss. After all, when you are living on the edge, to lose even a little would mean that your very existence was in jeopardy. Thus, it follows that ancient hunter-gatherers who had just enough food and shelter to survive weren't big risk takers. That doesn't mean they never explored or acted curious about their world. Indeed, when the circumstances felt safe enough, that is very likely just what they did. We can see this same kind of behavior in children; when they are securely attached-confident that an adult will prevent any harm from coming to them-they can be quite adventurous. But when harm looms, such behavior evaporates. In the Stone Age, this cautious approach to loss certainly increased human beings' chances of staying alive-and thus reproducing. Their descendants, with this genetic inheritance, would therefore also be more likely to avoid loss.

Let's take aversion to loss one step further, beyond living close to the margin. Sometimes our ancestors lived below the margin, with barely enough food to get by and no secure shelter. Or they experienced a direct threat to their lives from a predator, a natural disaster, or another human being. There are no historical records of what Stone Age people did in such circumstances, but it stands to reason that they fought furiously.

And certainly those human beings willing to do anything to save themselves would be those that lived to pass on the genes that encoded such determination.

Thus, we are hardwired to avoid loss when comfortable but to scramble madly when threatened. Such behavior can be seen in business all the time. Every financial-markets trader can recite the old saw, "Cut your losses and let your profits run." The same traders will also tell you that this rational rule of thumb is the hardest thing they have to learn on the job. Their instinct is to take risks as soon as losses start to mount. A stock starts to fall and they double up their positions, for instance. That's the frantic fight to survive in action. And similarly, it's instinct that drives people to sell while a stock is still rising. That's risk aversion in action. That said, experienced traders know how damaging these instincts are; and they have rules and procedures that basically force them to cut their losses and let their profits run. But without such rules and procedures, human nature would most likely take its course.

Consider what happens when a company announces impending layoffs but does not specify which people will lose their jobs. In these situations, people will do almost anything to save their jobs and avoid the pain of such loss.

How else can you explain the kinds of leaps in productivity we see after a company makes such an announcement? But another dynamic emerges when a company announces that entire divisions will close. The people affected-those who cannot escape the loss - do the unthinkable. They scream at their bosses or perform other acts of aggression. Instead of acting rationally, they flame out in a panic to survive. On the Savannah Plain, these desperate efforts apparently paid off. But a flaming out when feeling desperate is hardly a blueprint for survival in the modern organization.

Besides being aware that people are hardwired to act desperately when directly threatened, managers must heed another message. You can ask people to think outside the box and engage in entrepreneurial endeavors all you want, but don't expect too much. Both are risky behaviors. Indeed, any kind of change is risky when you are comfortable with the status quo. And evolutionary psychologists are not surprised at all by the fact that, despite the excellent press that change is given, almost everyone resists it- except when they are dissatisfied.

But what of those Silicon Valley entrepreneurs who have made a high art form of bet-the-company behaviors? Evolutionary psychology would tell us that these individuals are the type of men and women who over the millennia have sought thrills and lived to tell about them. After all, evolutionary psychology doesn't discount individual personality differences. Human behavior exists along a continuum. On average, people avoid risk except when threatened. But imagine a bell curve. At one end, a small minority of people avidly seek risk.

At the other end, a small minority of people are so cautious they won't take risks even when their lives depend on it. The vast majority fall in between, avoiding loss when comfortable with life and fighting furiously when survival requires them to do so.

Managers would do well to assume that the people with whom they work fall under the bell of the continuum. Perhaps the most concrete take-away from this contention is that if you want people to be risk takers, frame the situation as very threatening. The competition is going to destroy us with a new product. Or, our brand has lost its cache and market share is slipping fast. On the other hand, if you want people to eschew risk-taking behaviors, make sure they feel secure by telling them how successful the business is.

That advice does raise a question, however. What if you want people in your organization to be creative, to explore new ideas, and to experiment with different approaches to business? After all, most executives want their people to be neither outlandish fantasists nor mindless robots. The happy medium is somewhere between the extremes. What is a manager to do? If you invite people to make mistakes in the name of creativity, they won't. They will see this as empty rhetoric; in fact, instinct will tell them that making mistakes involves loss (possibly of their jobs). But if you come clean and tell them that mistakes will be penalized, again, you'll get nothing. Sadly, evolutionary psychology brings this managerial quandary to the surface but cannot solve it. Effective managers need to be adept at the very difficult task of framing challenges in a way that neither threatens nor tranquilizes employees.

**Confidence Before Realism.** In the unpredictable and often terrifying conditions of the Stone Age, those who survived surely were those who believed they would survive. Their confidence strengthened and emboldened them, attracted allies, and brought them resources. In addition, people who appeared self-confident were more attractive as mates—they looked as if they were hardy enough to survive and prosper. Thus, people who radiated confidence were those who ended up with the best chances of passing on their genes. The legacy of this dynamic is that human beings put confidence before realism and work hard to shield themselves from any evidence that would undermine their mind games.

Countless management books have been written extolling the virtues of confidence; they cleverly feed right into human nature. Given their biogenetic destiny, people are driven to feel good about themselves. But if you operate on a high-octane confidence elixir, you run into several dangers. You neglect, for instance, to see important clues about impending disasters. You may forge into hopeless business situations, assuming you have the right stuff to fix them. The propensity to put confidence before realism also explains why many businesspeople act as though there isn't a problem they can't control: The situation isn't that bad—all it needs is someone with the right attitude.

The truth is, even with self-confidence we cannot control the world. Some events are random. Ask any CEO who has been blamed for a company's poor performance wrought by an unpredictable lurch in exchange rates. Or ask any young M.B.A. sent in by corporate headquarters to turn around a factory bleeding red. He might go in with high hopes, but a year or two later he'll be talking about all the factors outside his control that he couldn't conquer.

What's the message for managers? Perhaps that it makes sense sometimes to challenge human nature and ask questions such as, Am I being overly optimistic? or Am I demanding too much of a certain manager? Such questions force us to separate confidence from reality, for as evolutionary psychology tells us, our minds won't instinctively do that.

**Classification Before Calculus.** The world of hunter-gatherers was complex and constantly presented new predicaments for humans. Which berries can be eaten without risk of death? Where is good hunting to be found? What kind of body language indicates that a person cannot be trusted?

In order to make sense of a complicated universe, human beings developed prodigious capabilities for sorting and classifying information. In fact, researchers have found that some non-literate tribes still in existence today have complete taxonomic knowledge of their environment in terms of animal habits and plant life. They have systematized their vast and complex world.

In the Stone Age, such capabilities were not limited to the natural environment. To prosper in the clan, human beings had to become expert at making judicious alliances. They had to know whom to share food with, for instance- someone who would return the favor when the time came. They had to know what untrustworthy individuals generally looked like, too, because it would be foolish to deal with them. Thus, human beings became hardwired to stereotype people based on very small pieces of evidence, mainly their looks and a few readily apparent behaviors.

Whether it was sorting berries or people, both worked to the same end. Classification made life simpler and saved time and energy. Every time you had food to share, you didn't have to figure out anew who could and couldn't be trusted. Your classification system told you instantly. Every time a new group came into view, you could pick out the high-status members not to alienate. And the faster you made decisions like these, the more likely you were to survive. Sitting around doing calculus- that is, analyzing options and next steps - was not a recipe for a long and fertile life.

And so classification before calculus remains with us today. People naturally sort others into in-groups and out-groups-just by their looks and actions. We subconsciously (and sometimes consciously) label other people- "She's a snob" or "He's a flirt." Managers are not exempt. In fact, research has shown that managers sort their employees into winners and losers as early as three weeks after starting to work with them.

That such propensity to classify is human nature doesn't make it right. People are complex and many sided. But it is illuminating to know that we are actually programmed not to see them that way. This perhaps helps to explain why, despite the best efforts of managers, some groups within organizations find it hard to mix. The battle between marketing and manufacturing is as old as-well, as old as marketing and manufacturing. The techies of IT departments often seem to have difficulty getting along with the groups they are supposed to support, and vice versa. Everyone is too busy labeling others as outsiders and dismissing them in the process.

A final point must be made on the matter of classification before calculus, and it comes in the area of skill development. If you want to develop some-one's skills, the best route is to give them ways of classifying situations and behaviors. Lists are attractive and often memorable. But advanced math and science education largely relies on sophisticated models of processes-complex explanations of cause and effect in different circumstances. It also advocates probabilistic ways of thinking, in which people are taught to weigh the combined likelihoods of different events together as they make decisions. Many people may come to understand and use these methods-weather forecasters and investment analysts are examples- but even lengthy training cannot fully eliminate our irrational and simplifying biases.

Gossip. Along with a scarcity of food, clothing, and shelter, and the constant threat of natural disaster, the Stone Age was also characterized by an ever-shifting social scene. From one season, to the next, it was not easy to predict who would have food to eat, let alone who would be healthy enough to endure the elements. In other words, the individuals who ruled the clan and controlled the resources were always changing. Survivors were those who were savvy enough to anticipate power shifts and swiftly adjust for them, as well as those who could manipulate them.

They were savvy because they engaged in, and likely showed a skill for, gossip. Even in today's office environment, we can observe that expert gossips time and again know key information before everyone else. That has always been true in human

society. The people who chat with just the right people at just the right time often put themselves in just the right position. In fact, it is fair to assume that human beings have stayed alive and increased their chances of reproducing because of such artful politicking.

What are the implications for managers? Rumor-what has been called "unofficial news"-is endemic in every organization. And since the interest in rumors is ingrained into human nature, it makes little sense to try to eliminate such interest by increasing the flood of official communications. Rather, managers would be smart to keep tabs on the rumor mill. They might even use their own networks to plug into the grapevine. This doesn't mean managers should engage in, or encourage, malicious and petty gossip. But when it comes to gossip, it may be that managing by wandering about is the most effective way to communicate, as long as it is performed in a climate of trust and openness.

Empathy and Mind Reading. Simply stated, these two skills are the building blocks of gossip. People are much more likely to hear secrets and other information if they appear trustworthy and sympathetic. Likewise, people with a knack for guessing what others are thinking tend to ask better - that is, more probing and leading-questions. Thus, because empathy and mind reading abet the survival skill of gossip, they too became hardwired into the human brain.

At the same time, people are also programmed for friendliness. Sharing food was the basis for the cooperative exchange with relative strangers in the hunter-gatherer clan. Human beings, or at least those who survived, became adept at building peaceful social alliances and carrying out negotiations with win-win outcomes. We can see these "design features" at every turn today-people love to barter and trade; in fact, both have been keystones of economies since the beginning of civilization. (We can see barter and trade even among very young children at play.) And so it is that friendly exchanges of information and favors remain our preferred way of dealing with nonfamily and a key to building political alliances for social success.

The good news for managers on this front is that empathy and friendliness are, in general, positive dynamics to have around the organization. It pays to empathize with customers, for instance, and we can assume that things like commitment and loyalty grow when employees are friendly to one another. The bad news is that the instinct for empathy very easily leads us to imagine that people are more similar to ourselves, as well as more competent and trustworthy, than they really are. Further, the drive to act friendly can make delivering bad news-about performance, for instance-very difficult.

The employment interview is one situation that exploits the capacities for friendliness and imaginative empathy to its fullest extent. Our natural tendency to sympathize with the person across the table drives us to make excuses for their weaknesses or to read more substance into their work or personal experiences than truly exists. At the same time, our programming for classification- sorting people into in-groups and out-groups-can make us harshly judge those who appear to be in the out-group. We will even focus on and exaggerate the differences we perceive. Thus, strict controls and lengthy training are needed to make interviews effective procedures for objective judgment, and even then they remain highly vulnerable to empathy and mind-reading biases.

Contest and Display. Finally, status in tribal groups was often won in public competitions. {Such competitions were not introduced by human beings; indeed, they were dramas commonly played out by primates.} To establish status in early human

societies, people {especially males} frequently set up contests, such as games and battles, with clear winners and losers. Likewise, they displayed their status and mental gifts in elaborate public rituals and artistic displays. The underlying purpose of such practices was to impress others. Successful—that is, high-status-and healthy males were thought to produce strong and intelligent progeny. For survival-driven females, determined not only to reproduce but to nurture their babies once they arrived, such males were...well, irresistible. For their part, women found contests amongst themselves unnecessary, although they did seek to be more attractive than one another so they could have the prime pick of high-status males. But more direct forms of contest neither guaranteed females' status as attractive mates nor helped them to achieve their ends of protecting their young.

And so the ingrained male desire to do public battle and display virility and competence persists today. That should not surprise any denizen of the corporate world. Men are forever setting up contests between themselves to see who will be promoted, win a new account, or gain the ear of leaders. Winners of these contests are frequently given to public displays of chest thumping. And even in organizational settings, which would benefit from cooperation, men frequently choose competition.

What are the implications for managers? The answer is sensitive territory, because it gets into the inborn differences between men and women and what that means for managers. Recall what happened nine years ago, when Felice Schwartz suggested in her article "Management Women and the New Facts of Life" (HBR January-February 1989) that companies consider establishing a different career track for women with children. Some heralded the concept of the so-called Mommy Track— a term not coined by Schwartz, by the way—but many feminists excoriated her work.

Suffice it to say, then, that managers should be aware that you can urge men to refrain from oneupmanship, but you may be fighting their programming. In addition, companies might ask themselves if their rules of success were written by men and for men. It might be that the reason most women are not breaking the glass ceiling is because they find those rules abhorrent—or at the very least, against their nature.

When all is said and done, evolutionary psychology paints a rather illuminating picture of human thinking and feeling. We may wish human beings were more rational, but our brains, created for a different time and place, get in the way. But the truth is, today we need rationality more than ever. The world is increasingly complex, and we must make harder, more layered decisions faster and faster.

Of course, people have devised wonderful instruments to help predict and manage uncertainty. The mere fact that there are not many more rogue traders like Nick Leeson, who single-handedly managed to bring down Britain's Borings Bank with his gaming of the system, suggests that many controls are already in place that tame and manage these impulses. On modern trading floors, for example, computer modeling is widely used to estimate risks and probabilities in an unbiased fashion. Traders and managers collectively pore over risk-bearing market positions to limit financial exposure. Reward and punishment systems encourage openness about loss and heavily penalize concealment. Responsibility for different elements of trading deals is divided across functions to prevent an individual from committing fraud. But even with these controls and safeguards, it is a sure thing that enormous costs are still being incurred through the exercise of human irrationality in these and other complex information-based environments.

Evolutionary psychologists contend, however, that our primitive psycho-rationality, so well adapted to the precarious life of hunter-gatherers, will continue to call the tune whenever it is free to do so. In the choices businesspeople make, one can expect the hidden agendas of emotion, loss aversion, overconfidence, categorical thinking, and social intuition to continue regularly to prevail. Evolutionary psychology thus suggests how important it is for us to have a clear view of our biased natures so that we can construct a mind-set to guard against their worst consequences.

**Social Living.** Along with the workings of the human mind, evolutionary psychology also explores the dynamics of the human group. How does natural selection explain the ways in which people organize? What aspects of social behavior can be explained by our evolved circuitry?

To identify our programming for social living, scientists in the field of evolutionary psychology have looked for common features across human societies, past and present, and extrapolated from them what must be biogenetic. The concept of co-evolution is critical to this method of analysis—the idea that cultures and social institutions are adaptations that make compromises between environmental conditions, such as food supply and population density, and the enduring characteristics of human psychology. So, as comparative anthropologists have pointed out, when one looks across the astonishing variety of human societies, one repeatedly encounters common themes, dilemmas, and conflicts. These common factors are inborn and drive many aspects of social relations today.

Evolutionary psychology's findings about the human hardwiring for social relations have implications for managers in three areas: organizational design, hierarchy, and leadership.

**Organizational Design.** Like the primates that came before them, human beings were never loners. Indeed, the family is the centerpiece of all human societies. Because of the family's enduring prevalence, modern Darwinian thinkers hypothesize that human survival was greatly aided by qualified monogamy-pair-bonding necessary for the prolonged care of the young. But no family would have survived the Stone Age without additional support. And thus was born the clan, or an extended family built through "marriages"—that is, mating with other families.

Clans on the Savannah Plain appear to have been similar in one key way: they contained up to 150 members, according to Robin Dunbar, professor of psychology at the University of Liverpool. In his research, Dunbar found a linear relationship between the brain size and troupe size of social primates. The larger the brain, the larger the size of the group. Now, it may appear that other species have groups larger than 150 members. We see thousands of moose together, for instance. But these are not clans in the way people configure or experience them. There is no binding connection or social organization among moose. They don't protect one another, for instance, or establish divisions of labor. They simply gather into mating groups—a single male with his many female mates and their offspring.

Human beings organize socially. They are held together by the bond of communities, although maintaining such communities is a complex matter. It involves a lot of brain power—remembering people, forging alliances, and keeping promises are all advanced mental tasks. And given our brain size, the biggest clan a human being can handle, according to Dunbar's research, has 150 members.

It may very well be for this reason that we see the persistent strength of small to midsize family businesses throughout history. These companies, typically having no more than x 50 members, remain the predominant model the world over, accounting for approximately 60% of all employment. Family-owned companies account for a great deal of big business, too, especially in the Asia-Pacific region. And in the West, many major companies are underpinned by substantial interlocking family networks.

Of course, many companies today employ more than 150 people. And many of these businesses struggle with the tendency of people to break off into cliques, or of functions, departments, or even teams to come into conflict with one another. In recent years, many companies have sought to deal with this complexity through matrix management. Yet it has proved to be one of the most difficult and least successful organizational forms. The reason? Evolutionary psychologists contend that matrix forms are inherently unstable due to the conflicting pulls toward too many centers of gravity. People are instinctively drawn toward commitment to one community at a time, usually the one that is closer and more familiar to them. Thus, when a modern businessperson is asked to report both to her regional boss and to a product manager, she is typically drawn to the regional boss because he is physically closer to where the employee works and to what she knows best. Similarly, when a manager "belongs" to a function and a project, her allegiance to the function-her primary assignment-usually prevails. The dual loyalties required by matrix management are difficult to sustain in the long term. It is no surprise, then, that the matrix has worked best where it has been limited in size and duration and where it has been directed toward the common end of a finite project-like a temporary assembly of a section of the hunter-gatherer clan for some major undertaking such as a game drive.

Evolutionary psychology's rule of 150 might also explain the success in modern times of cellular and starburst organizational forms, where sub-units are spun off from the main body of a growing company, or where new units are acquired but allowed to retain a high degree of autonomy, such that no sub-unit exceeds more than 150 people. Two notable examples are ABB, the multinational based in Sweden, which has become a world-beater by this means, and Virgin, which, especially in its early days, cultivated a climate of sub-unit entrepreneurship and self-management. ABB has around 1,500 units, each with an average of 50 people. Virgin allowed no more than 50 employees at any one site during its early years of phenomenal growth and success.

Hierarchy. We return again to the relationship between the sexes. The hunter-gatherer world was certainly more fluid than ours is today in that wealth-represented by food, clothing, and shelter-was less predictable. As noted earlier, those who were "rich" one season could easily become poor the next. Still, we can assume that some people regularly did better than others and thereby accrued status. When it came time to make alliances, they were sought out, and when it came time to pick leaders, they were chosen.

Wealth mattered in the social relations of Stone Age people, but probably no more than another status symbol-reproductive quality. Females came to believe that dominant males produced stronger babies more likely to survive the elements. Males sought females who appeared healthy and fertile.

By now, you might be wondering, What does this mean for managers? The answer is that the desire to obtain status in organizational settings is human nature. When we try to eliminate it through de-layering, or more radically in experimental communities such as the kibbutz, the human instinct for status differentiation reasserts itself. Even in small

temporary groupings of equals, such as training events that bring together strangers from different companies, the beginnings of hierarchy can be glimpsed immediately in patterns of informal leadership and deferential behavior. What we are seeing is the acting out of roles as ancient as our time on the planet.

Evolutionary psychology's perspective suggests that if managers try to eliminate status markers such as the corner office and the assigned parking space, or if they try to get rid of hierarchical levels, fresh variations will just spring up in their place. By all means, status and hierarchy should be managed in a fluid and flexible way, and all companies know by now to avoid excessively long chains of command. But managers would do well to recognize and reward employees through status recognition.

That doesn't always require conventional rewards such as promotions and salary increases; status can also be awarded through responsibilities such as the temporary leadership of a product team.

Taken together, the research of evolutionary psychology on group size and hierarchy helps a manager to think anew about teams. Indeed, managers should try to keep teams, such as work groups and committees, to manageable family-size proportions of up to 12. Moreover, managers should probably not try to run teams as strict democracies. They should build a common set of purposes by maintaining an egalitarian ethos of sharing and equal rights but expect and allow informal leadership roles to operate. At the same time, managers should watch out for herding, a normal human tendency to imitate what others- especially high-status individuals-are doing rather than making one's own judgment.

Finally, evolutionary psychology's observations about hierarchy suggest that companies can maintain an egalitarian ethos of power only under certain conditions. Some small to midsize consulting firms that "hunt and gather" for clients and projects in a dispersed field of uncertain resources seem best able to cultivate this ideal, just as was done in the old craft guilds before industrialization. For the more conventional organization of modern times, we encounter the contradictions so masterfully satirized by the Dilbert cartoon strip- employees who are cynical about empowerment and mistrustful of de-layering because they recognize that traditional power and hidden hierarchy are alive and well and in control of their destinies. The Dilbert characters seem to know what any evolutionary psychologist would tell you: hierarchy is forever.

Leadership. As noted at the outset of this article, evolutionary psychology does not dispute individual differences. Indeed, an increasingly robust body of studies on twins conducted by behavioral geneticists indicates that people are born with set predispositions that harden as they age into adulthood. Genes for detachment and novelty avoidance have been found, for instance, which together appear to amount to shyness. It used to be assumed that shyness was induced entirely by environment- if a shy person just tried hard enough, he or she could become the life of the party. The same was said for people who were highly emotional-they could be coaxed out of such feelings. But again, research is suggesting that character traits such as shyness and emotional sensitivity are inborn.

That personality is inborn is not news to any parent with more than one child. You provide a stable home environment for your brood-the same food, the same schools, the same basic experiences on a day-to-day basis. And yet the first child is introverted and grows up to be an R&D scientist. The second, who never stopped chattering as a child, grows up to become a flamboyant sales executive. And still a third child is as even-

keeled as can be and pursues a career as a schoolteacher. Evolutionary psychology would tell us that each one of these individuals was living out his biogenetic destiny.

All three of these children are hardwired for certain dispositions. For instance, each falls somewhere along the continuum of risk aversion described earlier. But each one's level of aversion to risk differs. The point is, along with each person's fundamental brain circuitry, people also come with inborn personalities. Some people are more dominant than others. Some are more optimistic. Some like math better than poetry. People can compensate for these underlying dispositions with training and other forms of education, but there is little point in trying to change deep-rooted inclinations.

The implications for leadership are significant. First, the most important attribute for leadership is the desire to lead. Managerial skills and competencies can be trained into a person, but the passion to run an organization cannot. This feeds into the rather unpopular notion that leaders are born, not made. Evolutionary psychologists would agree and, in fact, posit that some are born not to lead.

Second, the theory of inborn personality does not mean that all people with genes for dominance make good leaders. A propensity for authoritative behavior might help, but some organizational situations call more urgently for other traits-such as empathy or an ability to negotiate. There are as many types of leaders as there are leadership situations. The important thing is to have the personality profile that meets the demands of the situation.

Third and finally, if you are born with personality traits that don't immediately lend themselves to leadership-shyness is a good example, as is high sensitivity to stress- that doesn't mean you can't be a leader. Rather, it means that you must protect yourself in certain ways. If you have a low threshold for stress, for instance, you would do well not to lead from the front lines. You could put your trusted senior managers there and position yourself in the corporate office to focus on strategy.

The worst problem an organization can get itself into, this line of thinking suggests, is to have a leader who does not want to lead. Reluctant leaders can survive as symbolic figureheads but will perform poorly if asked to manage other people. The motivation to lead is the baseline requirement for competent leadership. After that, other personality traits and managerial skills matter. They must match the demands of the situation. But if the person in charge is not born wanting to lead, he or she should do everyone a favor and follow or ally themselves with partners who do.

#### Putting Evolutionary Psychology to Work

What are executives to make of the evolutionary psychologist's view of the world? One alternative is to disagree, on the grounds that it is nurture, not nature, that makes us who we are. Another route is to consider the implications of evolutionary psychology as you consider managerial problems. Or on the far end of the continuum, you can use that perspective as you design your company.

One manager who has done so- apparently without any prompting from evolutionary psychologists- is Ricardo Semler, CEO of the Brazilian company Semco. This remarkable Brazilian venture was organized in accordance with the principles of evolutionary psychology, even down to Semler's belief that groups should contain no more than 150 people. In his book, *Maverick* (Warner Books, 1995), he describes how he threw away his management texts and set about trying to find a "natural" way of managing, which turned out to be a highly successful self-organizing communitarian system built around small sub-units. These sub-units involved frequent trading of

people between units, separate development plans for women, and a flexible use of hierarchy and division of labor. In the process, Semlet created something close to what evolutionary psychology sees as our ancestral archetype.

Many other managers, of course, also do some of these things even though they are unaware of the evolutionary psychology perspective. For evolutionary psychology proponents, this is unsurprising, and a sign that instinctively we recognize and enact what we feel to be true about our nature when we are free to do so. However, it might be added that more do not do so because- encouraged by the optimistic recipes of management cookbooks or constrained by technological and economic imperatives- they falsely believe that with commitment, resources, and ingenuity, anything is possible. In this spirit, time and time again we have tried and failed to eliminate hierarchies, politics, and interorganizational rivalry. Evolutionary psychology says it's time to recognize what we are and use this information to live in harmony with our hardwiring.

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by Nigel Nicholson

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#### EVOLUTIONARY PSYCHOLOGY: A CONVERGENCE OF RESEARCH AND CONTROVERSY; A NEW SCIENCE AND ITS MESSAGE FOR MANAGERS

The central proposition of evolutionary psychology-that human beings retain the mentality of their Stone Age forebears-gathers its strength from six convergent sources of scientific research.

**Anthropology.** By studying societies past and present, Darwinian anthropologists are identifying cultural universals with regard to gender relations, art and ritual, language and thought, and trading and competition. Patterns that recur across all societies, regardless of time and place, are thought to have a strong biogenetic origin.

**Behavioral Genetics.** Scientists in this field, drawing on research in genetics and on a growing number of studies on twins and adopted children, focus their research on the hereditary components of the mind. They have identified, for instance, several genes thought to control human dispositions, including aspects of temperament and cognitive skills.

**Comparative Ethology.** Comparing the mating, status-seeking, and social behaviors of monkeys, chimpanzees and other primates, scientists in this field have observed systematic patterns of behavior and analyzed where they reveal parallels in human behavior. In particular, they shed light on our basic programming for sexual politics and cooperative behavior.

**Neuropsychology.** Using a variety of methods, including electrical stimulation, brain surgery, imaging techniques that film the brain in action, scientists in this field try to understand which parts of the brain control emotions and how chemicals in the brain affect thoughts and sensations.

**Paleontology.** Based on their analysis of fossils and ancient human remains, paleontologists believe they have discovered evidence of how human beings lived and how their characteristics adapted to the environment they inhabited.

Social Psychology. Studying social behavior in experiments and field studies, scientists have tested theories in evolutionary psychology about the conditions under which human beings cooperate, compete, and behave aggressively. Their findings about universal patterns suggest which impulses and reactions are hardwired into the human psyche.

Even with the convergence of findings in these disciplines, the field of evolutionary psychology is controversial. Some scientists, for instance, believe that evolutionary psychology overstates the biogenetic origin of cultural mores and norms and understates the capacity of learning and language to shape human nature. Further, evolutionary psychology clearly challenges what some religions, including Christianity, believe about the creation and free will. And finally, the tenets of evolutionary psychology also directly dispute a great deal of popular management theory, which contends that people can change their personalities if correctly trained or motivated. Thus, evolutionary psychology may not be the only lens through which managers choose to view their work and their world, but it is a challenging perspective that calls for a closer look.

To learn more about evolutionary psychology, see Steven Pinker, *How the Mind Works* (New York: Norton, 1997); Matt Ridley, *The Origins of Virtue* (New York: Viking, 1998); and Robert Wright, *The Moral Animal* (New York: Little Brown, 1994).

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