

Fundamental Motives and Business Decisions

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Abstract You walk into a crowded negotiation room. Who do you notice? Who do you later remember? Do you try to fit in, or attempt to stand out from others? Do you accept the first reasonable offer, or do you balk at that offer? The answers likely depend critically on your current motivational state. Emerging evidence shows that a person's behavior differs—sometimes dramatically—depending on whether that person is concerned with personal safety, romance, status-seeking, affiliation, or is motivated to attain some other evolutionary important goal. A growing body of research suggests that certain motivational states are considered “fundamental” in a biological sense because of their implications for evolutionary fitness. In this chapter, we overview the fundamental motives framework, highlighting its applications for business decision-making in marketing, management, entrepreneurship, and finance. We then review recent research that has used this approach to study specific business-relevant topics such as risky financial decision-making, negotiation, advertising, and innovation. Bridging evolutionary biology and business, the fundamental motives framework not only provides novel insights into workplace decisions, but also holds promise as a powerful approach for understanding how behavior in business contexts connects to other aspects of human and animal behavior.

Keywords Motivation · Marketing · Decision-making · Decision biases · Advertising

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1 Fundamental Motives and Business Decisions

Consider the following questions. Why is it that:

- The rules of rational economic choice cannot explain most everyday resource exchanges (Kenrick et al. 2008)?
- People are exceptionally good at solving normally difficult logical problems if such problems are framed in terms of catching a cheater on a social contract (Cosmides and Tooby 1992)?
- Young men choose riskier retirement portfolios than women (Sundén and Surette 1998)?
- Many organizations have rules against nepotism, even though people are more likely to trust, and less likely to cheat, family members (Ackerman et al. 2007)?

In what follows, we will argue that each of these questions, as well the whole range of questions about risky decisions, innovation, negotiation, cooperation, and advertising, can be better answered by an understanding of an emerging set of ideas at the intersection of evolutionary biology, economics, physical and cultural anthropology, and cognitive science.

Consider the following situation. You walk into a crowded negotiation room. Who do you notice? Who do you later remember? Do you try to fit in, or attempt to stand out from others? Do you accept the first reasonable offer, or do you balk at that offer? The answers likely depend critically on your current motivational state. Emerging evidence shows that behavioral responses toward other people differ—sometimes dramatically—depending on whether individual decision-makers are concerned with personal safety, are interested in romance, or are motivated to attain some other evolutionary important goal. Indeed, a growing body of research suggests that certain motivational states, considered “fundamental” in a biological sense, produce adaptively functional effects relevant to information processing and decision-making.

In the first part of this chapter, we overview the fundamental motives framework and highlight its applications for a number of business decision-making arenas, including marketing, management, entrepreneurship, and finance. We then review recent research that has used this approach to study specific business-relevant topics such as risky decision-making, negotiation, advertising, and innovation. Bridging evolutionary biology and business, the fundamental motives framework not only provides novel insights into workplace decisions, but also holds promise as a powerful approach for understanding how behavior in business contexts connects to other aspects of human and animal behavior.

2 The Fundamental Motives Framework

From an evolutionary perspective, motivational systems have been shaped by natural and sexual selection to produce behaviors that increase reproductive fitness. For any social animal, including *Homo sapiens*, reproduction involves much more

than sex. To reproduce successfully—to produce viable offspring and raise them to reproductive age—human beings must achieve many subsidiary goals, including affiliation, self-protection, status attainment, mate-attraction, mate-retention, and child-rearing. Some of these goals may at first glance appear similar (e.g., finding mates, making friends, and caring for children are all associated with rewards and concomitant “positive” feelings), but these goals are qualitatively distinct: Successful attainment of each goal requires different—and sometimes opposing—cognitive and behavioral responses. An emerging literature at the intersection of evolutionary biology and cognitive science suggests that these goals are managed by distinct motivational systems (Kenrick et al. 2010; Schaller et al. 2007). This research suggests that achieving goals within different evolutionarily recurring goal “domains,” such as self-protection and mate-attraction, are facilitated by distinct motivational systems. Given the important implications that these goals have had for reproductive fitness and human evolution, the underlying motives can be considered “fundamental.”

This domain-specific approach to human motivation is consistent with a wealth of research on both human and non-human animals, showing that conceptually distinct adaptive problems often invoke psychologically distinct cognitive systems (e.g., Cosmides and Tooby 1992; Kenrick and Luce 2000). For example, birds use distinct, domain-specific neuropsychological systems for learning and remembering information about species song, poisonous foods, and spatial position of food caches. Similarly, humans use distinct, domain-specific systems and neural architectures for learning and remembering words, faces, and nausea-inducing foods (e.g., Klein et al. 2002; Öhman and Mineka 2001; Sherry and Schacter 1987).

The key implication of the fundamental motives framework for business decisions is that solving problems in different motivational domains often requires qualitatively different solutions. That is, the different fundamental domains are associated with different domain-specific decision-biases. For example, there are important documented distinctions between the exchange rules and decision-making biases involving the domains of affiliation, self-protection, status, mate attraction, mate retention, and kin care (e.g., Ackerman and Kenrick 2008; Schaller et al. 2007). This means that people use somewhat different exchange rules when interacting with workplace friends and allies (*affiliation*), dangerous and threatening others (*self-protection*), competitors and superiors (*status*), opposite-sex co-workers (*mate-search*), a spouse (*mate-retention*), or relatives (*kin care*). In Table 1 we present an overview of this framework, outlining the domains of social life and their associated fundamental goals, as well as the evolutionary biological theories associated with each domain.

Because different social domains involve somewhat different exchange rules, each domain—and each fundamental motive system—is associated with specific types of adaptive biases and motives (e.g., Ackerman and Kenrick 2008; Sundie et al. 2006). We highlight some of these documented biases in Table 1. For example, self-protection concerns lead people to be more conforming; status concerns lead men to take more risks; and mate-attraction concerns lead women to become more agreeable (Ermer et al. 2007; Griskevicius et al. 2006b). A key

Table 1 Different fundamental social domains and motives, associated evolutionary theories, documented domain-specific decision biases, and examples of business applications

Social domain & Associated goal	Relevant evolutionary theories & Social exchange rules	Typical decision biases	Business applications
Affiliation Form and maintain cooperative alliances	<i>Reciprocal Altruism & Social Contract Theory</i> : Equality between close associates	Sensitivity to reciprocity and fairness violations Propensity to conform when feeling isolated Sensitivity to others' trustworthiness Women more likely to treat close others communally	New employees should highly value social capital Productive teams of friends should be kept together and not encouraged to compete within group, though between-team competition may be beneficial Equality violations should be addressed immediately Group membership certainty (e.g., job security) important for stimulating creative thinking
Status Gain and maintain social status	<i>Intra-Sexual Selection & Dominance Hierarchy</i> : Superiors provide resources & protection in exchange for assistance & support	Risk-taking more attractive for young unmated men and less attractive for women Reputational concerns of male dominance & female cooperativeness Power stability concerns	Create rules for promotion that account for males' relatively stronger tendency to seek status, even when females are well-qualified Modify stability of leadership roles to influence degree of risk-taking behavior Increase awareness about the presence of potential mates on male status-seeking Presence of outgroup threat can elevate ingroup allegiance and acquiescence Reduce perception of external threats to increase ingroup's outside-the-box thinking Manage all threat and outgroup cues prior to interactions
Self-Protection Protect oneself and valued others from threats	<i>Coalitional Psychology & Universal Fear Mechanisms</i> : Strict tit-for-tat with outgroup members	Overestimation of anger in males Enhanced attention to threat cues and increased memory for angry outgroup faces Increased ingroup cooperation (in males) and conformity under threat	

<p>Mate Attraction Attract desirable mates</p>	<p><i>Inter-Sexual Selection & Parental Investment:</i> Females exchange youth, health and fertility for male resources and/or long-term commitment</p>	<p>Propensity to become more creative Males become impatient and resist conformity Females become more agreeable and outwardly altruistic Competition between similar, unfamiliar others; cooperation with close others Attention by women to other physically attractive women Attention by men to other socially dominant men Inattention to attractive opposite-sex individuals Stronger focus on resource preservation than resource display</p>	<p>Cues to potential mates can be used to increase creativity, problem-solving abilities, and public help-giving During negotiations, mating cues may promote evaluation and barrier-breaking in women, and active barrier-breaking in men The same mating cues may focus single and romantically committed people on different target attributes In negotiations and advertising and product development, using a mix of single and committed team members may prevent "tunnel vision"</p>
<p>Mate Retention Retain and foster long-term mating bonds</p>	<p><i>Attachment Theory & Strategic Interference Theory:</i> Communal sharing with relationship partner, diminished attention to equity</p>	<p>Relative insensitivity to inequity between relatives (discounted by degree of relatedness) Grandparental investment highest by grandmother in daughter's offspring Allowable violations of many social norms (e.g., reactance more common)</p>	<p>Nepotism useful for increasing cooperation and preventing selfish cheating Nepotism may impede creativity and innovation Family members make good team members, but bad objective evaluators Fictive kinship can be used in situations lacking actual relatedness</p>
<p>Kin Care Invest in and care for offspring and genetic relatives</p>	<p><i>Kin Selection & Inclusive Fitness:</i> Intrinsically lopsided exchange from parents to offspring</p>	<p>Grandparental investment highest by grandmother in daughter's offspring Allowable violations of many social norms (e.g., reactance more common)</p>	<p>Nepotism useful for increasing cooperation and preventing selfish cheating Nepotism may impede creativity and innovation Family members make good team members, but bad objective evaluators Fictive kinship can be used in situations lacking actual relatedness</p>

implication of this framework is that the same information from the environment may be interpreted and acted upon very differently depending on which motivational system has been primed to process this information (Griskevicius et al. 2009a; Kenrick et al. 2010; Maner et al. 2005). Because ecological cues related to a specific domain are known to trigger a specific fundamental motivational system, people interpret and act upon incoming information differently depending on whether they have been primed with self-protection cues (e.g., they recently read a news story about a murder), mate-search cues (e.g., they recently saw an attractive opposite-sex individual), status cues (e.g., they recently heard about a promotion), affiliation cues (e.g., they were recently socially rejected), or kin care cues (e.g., they recently saw a photos of their child). The mere exposure to these types of cues is known to trigger a cascade of goal-directed perceptions, cognitions, and behavioral strategies, leading individuals to interpret and act upon the same information in different ways (e.g., Bargh 2006; Maner et al. 2007; Griskevicius et al. 2009a, b).

A theoretical framework focusing on fundamental motives provides texture and predictive specificity to supplement traditional ways of conceptualizing motivational systems. For instance, compare the fundamental motives framework with conceptualizations that characterize motives according to approach versus avoidance behavior, or according to an association with positive versus negative affect (Kenrick and Shiota 2008). Although useful, these dichotomous classification schemes often fail to capture the psychologically distinct nature of specific motivational states, limiting their ability to successfully predict the specific ways in which fitness-relevant motivational states orchestrate social cognition and behavior.

For example, being insulted to your face or seeing a scorpion on the ground might trigger either approach behaviors or avoidance behaviors, depending on currently active motivations in concert with functionally relevant environmental cues. A person might respond very differently to the insult if he's feeling fear versus anger, and respond differently to the scorpion on the rug near one's child versus on a rock in the desert. As these examples suggest, positive and negative affect are not always directly correlated with approach and avoidance behaviors, and the same stimulus may be regarded as positive or negative depending on motivation and functional context. The fundamental motives framework has generated numerous lines of research drawing directly on theories from evolutionary biology and psychology to predict *a priori* a highly-textured set of cognitive and behavioral responses to functionally relevant events (e.g., Ackerman and Kenrick 2008; Maner et al. 2005; Ackerman et al. 2009; Kenrick et al. 2010).

3 Fundamental Motives and Different Areas of Business Behavior

In Table 1 we provide examples of how the adaptive decision-biases associated with each fundamental motive can manifest themselves in business decisions. Because consumers, managers, suppliers, and employees are likely to behave

differently depending on which fundamental motive system has been primed, this framework has vast implications for marketing, management, entrepreneurship, and finance. Indeed, evolution-inspired research has begun to reveal a number of interesting findings on negotiation, group performance, innovation, advertising, and other business-relevant behaviors (e.g., Griskevicius et al. 2009a, b; Colarelli 2003; Saad 2007; Van den Bergh et al. 2008). Although the implications of evolutionary thinking for business remain largely unexplored, in the remainder of the chapter we review some of the emerging research from these areas. After highlighting how an evolutionary approach can add insight into each area, we review recent findings in each area consistent with the fundamental motives framework. These findings suggest that the fundamental motives framework can be applied to improve worker performance, steer consumer decisions, and improve management strategies.

3.1 *Persuasion and Advertising*

Getting people to adopt a new product or idea can be difficult. Seventy-five to ninety percent of new products fail to catch on, and more than half of new businesses fail within the first 4 years (Ogawa and Piller 2006). To compete for a limited number of consumer dollars, companies use a variety of advertising tactics. Although there may initially appear to be a plethora of different tactics, many effective advertising tactics are rooted in a small number of persuasion principles (Cialdini 2008), including the principle of *Scarcity* (people value things that are rare or scarce) and the principle of *Social Proof* (people look to the behavior of similar others when they are unsure how to behave). Both of these persuasion principles are known to increase the effectiveness of ads and sales pitches, which leads them to be widely used in marketing strategies and consistently appear on a short list of proven persuasion tactics (e.g., Hoyer and MacInnis 2006; Myers 2004; Pratkanis and Aronson 2000; Solomon 2004).

Persuasion tactics based on these principles generally work as heuristic cues. Although scholars have been investigating decision heuristics for several decades, few researchers have considered their implications from an evolutionary perspective. The study of decision heuristics has typically been conducted with primary focus on heuristics as built-in biases in judgment, which can regularly produce decision errors or irrational choices (e.g., Nisbett and Ross 1980; Kahneman et al. 1982). From an evolutionary perspective, however, heuristics are seen as efficient and accurate solutions to recurring adaptive problems; the use of such heuristics results in solutions that are, on average, quick and effective (e.g., Gigerenzer and Selten 2001; Gigerenzer et al. 1999). For instance, while the heuristic tendency to follow an expert might periodically lead to a bad decision, following this heuristic will usually lead to much better choices than choosing at random. Relying on these heuristics helps individuals not only make fast and effective decisions, but also enables people to negotiate adaptive problems of social living. For example, the sense of obligation to reciprocate a gift, the tendency to value scarce items, and the

desire to say “yes” to people we like, all have highly plausible evolutionary underpinnings (Sundie et al. 2006).

A consideration of fundamental motives leads to novel predictions regarding when such heuristics should be especially effective in persuasion, and when they might backfire. Recall that different types of affectively arousing stimuli, such as an attractive opposite-sex individual or a threatening out-group male, can prime different fundamental motive systems. This consideration raises the question of how affective arousal might influence the persuasiveness of heuristics. Several well-established domain-general theoretical models make predictions about how arousal and affect might influence the effectiveness of persuasion heuristics. Arousal-based models predict that arousal should generally inhibit deep processing, meaning that any state of arousal would increase the effectiveness of heuristics (Pham 1996; Sonbonmatsu and Kardes 1988). Affective valence-based models, on the other hand, differentiate between positive and negative feelings, predicting a different pattern for each of these two types of affect (e.g., Schwarz and Bless 1991). According to such dual-process models, positive feelings should lead to shallower processing and increased effectiveness of heuristics. In contrast, negative feelings should lead to more careful processing and decreased effectiveness of persuasion heuristics.

The fundamental motives framework predicts yet a different pattern, suggesting that different affective states should lead people to be persuaded by some types of heuristic cues but not by others. For example, this framework suggests that the same affective state might lead one heuristic to be more effective, while leading another heuristic to be less effective. These competing predictions were tested across a series of experiments in which people watched a video clip that activated self-protection motives (an arousing negative affect state) or mate-attraction motives (an arousing positive affect state) (Griskevicius et al. 2009a, b). People then viewed ads for various products, whereby the ads contained heuristic appeals either to social proof (e.g., “over a million sold”) or to scarcity (e.g., “limited edition”).

The findings across studies were consistent with predictions made from by the fundamental motives framework, but were not consistent with predictions made either by arousal models (which predict that both arousing states of fear and romantic desire should lead all heuristics to be more effective) or by affect-based dual-process models (which predict that the positive affect state of romantic desire should make heuristics more effective, whereas the negative affect state of fear should lead them to be less effective). Instead, consistent with predictions from the fundamental motives framework, self-protection motives led social proof heuristics to be *more* effective, while leading scarcity heuristics to be *less* effective (Griskevicius et al. 2009a, b). Consistent with the evolutionary self-protection strategy of safety in numbers (Alcock 2005), when people were scared, they were especially eager to blend in with the crowd and especially unwilling to be unique. In contrast, mate-attraction motives led scarcity appeals to be *more* persuasive, while leading social proof appeals to be significantly *less* persuasive (Griskevicius et al. 2009a, b). Consistent with the evolutionary mate-attraction strategy of salient positive differentiation (Miller 2000), people in a romantic state were especially

eager to stand out and especially unwilling to purchase the same product that is already owned by over a million others.

These findings have important theoretical and practical implications. First, the predictions that were derived from an evolutionary model were different from those of two other theoretical models, demonstrating clearly how an evolutionary approach can generate novel and testable business-relevant hypotheses. Second, these findings have implications for advertisers. For instance, although television advertisers have traditionally relied on viewer demographic information to determine where and when to purchase airtime, a fundamental motives approach suggests that they might more carefully consider the content of the specific program during which their ads will air. For example, while touting the uniqueness of a product might be effective during a program that elicits romantic desire, the same ad aired during a fear-eliciting program such as a police drama might actually make the same product unappealing. Conversely, explicitly stating that a product is a best-seller should be especially effective during a fear-eliciting program, but it likely to be counter-effective if used during a romantic show (for more on how evolutionary approaches can inform advertising see Ambler and Hollier 2004; Colarelli and Dettman 2003; Saad 2004, 2007).

3.2 Innovation and Creativity

Innovation and creativity drive the development of new products and ideas. Not surprisingly, organizational departments such as marketing and R&D generally want their employees to be maximally creative, often providing sizable financial incentives for innovative ideas and products. Evolutionary considerations of the origins and function of creativity (e.g., Simonton 1999), however, suggests that people are more responsive to some types of incentives than others. That is, research we discuss below suggests that activating fundamental motives related to mating may naturally spur people to be more creative. To understand why, it is important to consider first how human creativity may have evolved.

It was initially presumed that our creative abilities evolved because they somehow enhanced the likelihood of our ancestors' survival. But this presumption failed to explain several key features of creativity: Not only have other large-brained animals not evolved similar creativity capacities (suggesting that creativity, per se, is not necessarily pertinent to survival), but many human displays of creativity are highly valued socially, yet are difficult to explain in terms of survival value. For example, a farmer produces more tangible survival benefits in a week than a team of musicians, poets, and sculptors will likely produce in a lifetime. Yet a provocative melody, poem, or sculpture is likely to elicit greater appreciation than an absolutely perfect melon, potato, or zucchini.

Instead of providing direct survival benefits, theorists have proposed that creativity and our abilities to innovate may have evolved via sexual selection (Miller 2000). Unlike natural selection, whereby traits evolve solely because they enhance

the probability of an individual's survival, Darwin (1871) suggested that some traits, such as the elaborate plumage of peacocks, evolve via sexual selection—they evolve because they enhance an individual's ability to attract a mate (Gould and Gould 1989). Supporting this viewpoint, human creativity has multiple features in common with sexually selected traits across species. Just as members of various species prefer partners with prominent sexually selected traits such as brilliant tails, humans—especially when women are choosing men—show a desire for creativity in a romantic partner (Buss and Barnes 1986; Li et al. 2002). Sexually selected traits across species also tend to function as markers of genetic quality (Møller and Petrie 2002; Zahavi and Zahavi 1997). The peacock with the most impressive tail, for example, by definition possesses high genetic quality: Not only has he survived despite having such a burdensome and costly ornament, but also the brightness and symmetry of his tail indicate his ability to find food and resist infection. Creativity may provide a similar function in humans.

Consistent with the premise that creativity has in part evolved via sexual selection, research shows that mating motives can produce boosts in creativity. For example, men who have just seen photos of attractive women—activating a mate-attraction motive—are more creative (Griskevicius et al. 2006a). Presenting men with cues of attractive and sexy women led these men to solve more problems that required creative thinking and to write stories that were judged as more creative. Moreover, men primed with mating cues were more innovative in solving problems even when compared to a group of men who had a monetary incentive to be creative (Griskevicius et al. 2006a). Thus, in the same way that the presence of peahens leads peacocks to instinctively display their ornate tails, the presence of cues suggesting a mating opportunity appears to lead men to instinctively display their creativity.

It is noteworthy that mate-attraction goals led men but not women to become more creative. This sex-specific effect is consistent with the fact that ornate sexually selected traits are much more likely to occur in mammalian males than females. This sex difference stems from the fact that most males in the animal kingdom provide little to no care for offspring, meaning that females are much choosier when it comes to selecting a mate (Trivers 1972; also see Buss and Schmitt 1993). Unlike most mammals, however, human males in long-term relationships do provide significant care for offspring. This difference suggests that while women should not necessarily be motivated to display creativity to attract men for brief romantic relationships, women should be motivated to display creativity when trying to maintain a relationship with a romantic partner (i.e., when women have an active motive for mate retention). Indeed, when women were primed with thoughts of wanting to stay with an ideal romantic partner, they also became more creative (Griskevicius et al. 2006a).

In sum, evolutionary research suggests that the desire to impress and to retain the opposite sex is a powerful motivator in human ingenuity. These findings have intriguing implications for fostering innovation in the workplace. For example, brain storming sessions may benefit from a mixed-gender composition, R&D and other creative departments may put extra emphasis on achieving gender balance

within ideation groups, and exposure to opposite-sex individuals might be encouraged in office seating styles (e.g., cubicles vs. an open-bullpen office) when creative thinking is needed. It is important to note that these suggestions are not designed to foster office romance, but having these romantic cues in the environment—even subtle strategies such as imagining potential romantic partners before beginning work on a project—may provide better results than typical monetary incentives alone.

3.3 Intertemporal Choice, Self-Control, and Risk

Organizational leaders need to balance the trade-off between short-term results and long-term strategic planning. Consumers need to balance similar types of trade-offs, as when considering the short-term benefits and long-term consequences of eating chocolate cake. An evolutionary perspective suggests that these types of intertemporal trade-offs may be resolved differently depending on the fundamental motive system that has been primed to process the information. Before examining how different motives influence desire for immediate rewards, consider how humans have evolved to respond to rewards.

For most of human evolutionary history, it has been adaptive for our ancestors to value immediate rewards. A bird in the hand has always been better than two birds in the bush. The evolutionarily-recent transition from being hunters-gatherers to farmers had important consequences for these time-preferences (Tucker 2006). Whereas hunter-gatherers focus on short-term returns because their labor is often rewarded the same day, farmers need to adopt a more farsighted perspective because they need to wait several months to begin to see the fruits of their labor. These changes in resource acquisition and lifestyle decisions were made possible by an enhanced ability to exert self-control, delay gratification in the service of more beneficial long-term outcomes. However, when our ancestors shifted from foraging to food production, our evolved short-term preferences were not eradicated. People in present-day societies often still weigh immediate outcomes more heavily than more distant ones.

Consistent with our evolutionary history, neuroscientific evidence shows that immediate and delayed rewards appear to be governed by different neural systems (McClure et al. 2004). For example, evolutionarily-older brain systems, such as the limbic system, are activated when choosing between immediate rewards (e.g., \$1 right now or \$2 tomorrow); but such older systems are less active when choosing between delayed rewards (e.g., \$1 in 365 days or \$2 in 366 days). In the latter case, the evolutionarily-recent pre-frontal cortex is more involved.

Although researchers have often considered one's ability to delay gratification as an individual difference, the ability to delay gratification is highly sensitive to evolutionarily-relevant contexts. Recent findings show that activation of ancient brain systems related to mating uncovers our myopic, hunter-gatherer-like preferences. The priming of mating cues leads men to place greater value on current

rewards. For example, men who fondle lingerie become more impatient when choosing between smaller and earlier versus larger and later rewards (Van den Bergh et al. 2008). Similarly, men who viewed photos of attractive women chose to take less money now than a significantly larger amount of money in the future (Wilson and Daly 2004). These studies suggest that upon the priming of mating cues, men become impatient (i.e., prefer less money now over more money in the future).

Similar to the way in which humans have evolved to prefer immediate rewards, evidence from modern groups living in hunter-gatherer and horticultural societies suggests that people (and many other animals) are generally risk-averse, preferring to invest in activities with relatively low risks as opposed to those with potentially higher, but riskier, outcomes (Winterhalder 2007). Such risk aversion is also consistent with standard observation in market economics (Png and Lehman 2007) and helps to explain, at an evolutionary level, the ubiquitous gain-loss framing effects predicted by prospect theory (Kahneman and Tversky 1979).

Evolutionary approaches suggest that people's willingness to take risks should be highly sensitive to the fundamental motive system that is currently active. For example, given that self-protection is associated with vigilance and caution, self-protection cues are known to lead people to become risk-averse (Lerner and Keltner 2001). Other domain-specific cues, however, have been shown to increase risk-taking. Men's risky decision-making can be strongly influenced by whether their peers are watching their decisions: The presence of other men generally facilitates willingness to choose high-risk/high-gain gambles in young men (Daly and Wilson 2001). In fact, when men are primed with cues for competition and status, they take significantly more risks with their money (Ermer et al. 2008). In contrast, women's financial risk-taking appears to be unaffected by cues of vigilance or competition with other women. Research has yet to examine how activating the fundamental motives of kin care or mate-retention might influence risk-taking, but such domains are likely to have specific effects on risk-taking behavior (Kenrick et al. 2010).

The tendency for young males to be more risky than young females is clearly understandable through the evolutionary lens (Saad 2007). But these sex-specific tendencies can also have long-term economic consequences. For instance, young single men are generally more likely to adopt riskier investment strategies in their retirement packages than are women, and at retirement time those men tend to have earned, on average, substantially higher yields on their investments (Sundén and Surette 1998). The findings that activation of different fundamental motives can make people risk-takers or risk-avoiders have powerful implications for business decision-making. Many companies implicitly prime such motivations already (e.g., insurance companies highlight self-protective concerns when selling policies), and other companies may find it useful to employ motivational strategies with an understanding of their evolutionary implications. For example, investment brokers might activate specific fundamental motives when attempting to influence the level of risk their clients are willing to take in their investments.

3.4 *Negotiation*

When two or more parties, such as consumers and sellers, have a conflict of interest, they often will attempt to resolve this conflict through a process of negotiation and bargaining (Raffia 1982; Rubin and Brown 1975). This process can be tremendously complex, but typically involves a series of sequential proposals and decisions as one party attempts to maximize an element of the interaction (e.g., how much to charge for a product) and the other party attempts to minimize the same element (e.g., how much to pay for the product). From an evolutionary viewpoint, negotiation can be viewed as a social coordination problem that entails trade-offs between costs and benefits relevant to fundamental motivations (Ackerman and Kenrick 2008). These trade-offs are commonly studied in light of contextual and party-specific influences within negotiation games such as the Prisoner's Dilemma or Ultimatum Game (e.g., Axelrod 1984; Rubin and Brown 1975; Saad and Gill 2001a, b). Perceptions about these trade-offs can fluctuate depending on what fundamental motive is currently active (Ackerman and Kenrick 2008), changing people's behavior throughout the interaction. For example, status-relevant cues such as the presence of a briefcase and expensive pen lying innocuously in a negotiation room can reduce the amount proposed for opening offers (Kay et al. 2004), and exposure to attractive opposite-sex individuals increases the likelihood of accepting an unfair deal in bargaining situations (Van den Bergh and Dewitte 2006).

There are several basic difficulties involved in negotiations, all of which are candidates for evolutionary analysis. Perhaps the most important concern is the uncertainty inherent in such situations. Where should discussions take place? What is a given good worth? What opening proposal should I make? Is that company's representative telling the truth? Uncertainty represents a central problem from an evolutionary perspective. Individuals must detect interpersonal and environmental signals in ways that benefit the perceivers, understand which action to take in novel situations and make decisions that minimize costs. Unfortunately, the limits of cognitive capacity constrain these abilities, leading people to employ a range of fallible processing heuristics (e.g., Kahneman et al. 1982). Fortunately, these heuristics have been shaped by evolution to produce positive outcomes on average, at least when these outcomes are considered in terms of their functional relevance.

Consider the problem of detecting whether another party is being deceptive. A number of mental mechanisms can be brought to bear on this question. First, a person will likely use evolved "mind-reading" abilities (*theory of mind*) to intuit the other's knowledge and goals in that situation (Premack and Woodruff 1978). People also (unconsciously) perform complex signal detection analyses to identify and interpret the meaning of interpersonal cues (e.g., Ackerman et al. 2006; Ackerman et al. 2009; Becker et al. 2011). These analyses are shaped by both active motives and cognitive biases that tend to outweigh functionally costly errors, producing evolutionarily cautious responses (Haselton and Nettle 2006). This process tends to be positive for one's fundamental goal pursuit, but may impair current bargaining outcomes. For instance, if one party is a member of a group

stereotypically associated with deceptiveness and lack of trust (e.g., lawyers), a self-protection motive may be activated (see Cottrell and Neuberg 2005; Cottrell et al. 2007). Because deception has been a recurrent problem over evolutionary time, people have evolved an inherent ability to detect and manage cheaters, especially within social exchange contexts (Cosmides and Tooby 1992). When a lawyer accompanies one party to a negotiation, activated motivations are liable to decrease trust and cause skeptical and intransigent responses from the other party. Unfortunately, the same is true when individuals are members of any groups associated with a lack of trust (e.g., in the U.S., Mexican-Americans; Cottrell and Neuberg 2005).

Cognitive mechanisms shaped by their functional utility for addressing ancestral problems also play a role in other aspects of negotiation, such as evaluation (e.g., determining the market value of an item), decision making (e.g., settling on a reservation price), time management (e.g., coping with impatience), and forecasting (e.g., judging how the recipient of an offer will respond). For instance, it is difficult to determine the real, experiential value of many goods and services (e.g., Ariely et al. 2006), but other, fitness-relevant goods are often inherently evaluable (Hsee et al. 2009). That is, people seemingly do not have a good sense of the absolute value of unique or abstract items (e.g., interest rates, listening to poetry readings, carats in a diamond), but they are innately able to make more accurate evaluations about functionally-relevant consumption experiences (e.g., drinking milk, feeling temperature, undergoing social isolation) (Hsee et al. 2009).

Evaluation, decision-making, and forecasting effects are influenced by interactions between personal and environmental factors. Consider the example of gender differences in negotiation outcomes. Past findings have indicated that men tend to outperform women when bargaining for themselves over salary and sale prices (see Bowles et al. 2005; Stuhlmacher and Walters 1999). Why would this be? One possibility is that these bargaining contexts take the form of competitive environments, whereas evolutionary theorizing and evidence suggests that women's interpersonal orientation tends to be more communally-focused (Ackerman et al. 2007; Cross and Madson 1997). In fact, research demonstrates that when women are asked to negotiate *for someone else*, they perform better both compared to men and compared to women negotiating for themselves (Bowles et al. 2005). We might expect that another method of producing communal feelings, activating the fundamental motive for kin care motive (e.g., by highlighting the family-run nature of a business), would help people achieve more profitable outcomes when acting as negotiators for their company or a third party. This motive may even lead to better outcomes for men than for women, as men would have more room to move in terms of their communal orientation. Although negotiation researchers have amassed a detailed understanding of negotiation dynamics, they may still place too little weight on functionally-important variables such as fundamental motives.

Given these types of findings, what techniques should an evolutionarily-minded negotiator be aware of or use to bargain more effectively? An understanding of fundamental motives implies that framing the interaction is of utmost importance. Placement of motive-relevant cues can powerfully influence decisions to accept or

reject offers, even when those cues are incidental to the overall goal of the interaction (Ackerman and Kenrick 2008). For example, cues to self-protective threat (e.g., darkness, angry expressions, germs) are liable to negatively bias decisions and offers made by out-group members (e.g., companies that share an antagonistic relationship). Negotiators may thus want to pay special attention to the time of day and the state of health of the negotiating team. Interestingly, cues that prime self-protective threat may actually have a positive effect on perceptions of in-group members (e.g., employees of the same company) (Becker et al. 2011). People negotiating salaries or positions within a company may find better outcomes under these conditions. Similar outcomes should follow if a sense of affiliation can be established between parties (as underlies relationship marketing; Berry 1983). While motivated by affiliation, having others present may be a positive situation, but this is unlikely to be the case when status motives are active. Instead, the presence of an audience is likely to be aversive during negotiations over status changes (e.g., promotions, mergers) because status hierarchies tend to be primarily relevant to intragroup interactions (Ackerman and Kenrick 2008). One solution is to cast the audience as a status-irrelevant mediator of the negotiation (e.g., Pruitt and Johnson 1970).

Cues to yet another fundamental motive, mate search, may also produce complex outcomes within business deliberations (e.g., Griskevicius et al. 2006b). Consider a natural form of negotiation—courtship. Romantic courtship can be framed as a coordination problem in which one party plays the role of seller (in heterosexual interactions, often the man will attempt to “sell” his own suitability as a romantic partner), and another party plays the role of buyer (the woman will make the decision). In fact, women are especially likely to help each other construct romantic barriers and thresholds, whereas men are especially likely to help each other break down those barriers and overcome those thresholds (Ackerman and Kenrick 2009). If these patterns are representative of more general strategies, it may be that, during platonic bargaining, women perform better as cost-minimizing negotiators (i.e., buyers) and men as benefit-maximizing negotiators (i.e., sellers). Of course, the particular costs and benefits being negotiated are likely relevant; more so than men, women may sacrifice economic outcomes in favor of interpersonal capital such as the maintenance of social relationships (Curhan et al. 2008). Studies like the ones reviewed above highlight the importance of properly structuring cohesive negotiation teams (e.g., tailoring the gender and group makeup of teams) as well as negotiation environments (e.g., providing cues to affiliation, family, and even self-protective threat where appropriate).

3.5 Helping, Generosity, and Cooperation

Family businesses have always made up a substantial portion of the corporate world, with estimates as high as 90% for all businesses in the United States, including 37% of the Fortune 500 companies (The University of Tulsa College of

Business Administration 2000). Yet there is an intriguing difference between firms that are family-run versus those that are led by individuals who are unrelated to their employees: Family-run firms tend to perform better and operate more efficiently (McConaughy et al. 2001; Anderson and Reeb 2003), yet the nepotism they engender can lead to free-riding and worsening performance in subsequent generations (Perez-Gonzalez 2006; Villalonga and Amit 2006). This telling difference can be traced to the different motivational systems regulating our interactions with close kin versus those regulating interactions with friends and with strangers (see Nicholson 2008; Nicholson and Björnberg 2005). An understanding of these fundamental motive systems not only sheds light on why humans have not evolved to be perfectly selfish, but also on the circumstances that engender the most cooperation.

From an evolutionary perspective, the fact that people are quite helpful rather than completely selfish has always been puzzling. On the surface, natural selection would not appear to favor individuals who give away their own resources to benefit others. Some such helping, however, can be understood in light of the biological principle of kin selection (Hamilton 1964). *Kin selection* holds that individuals' actions are designed not so much to ensure the survival of the individual, but to ensure the survival of the genes making up that individual—genes that are shared with one's kin. Consistent with this principle, nepotistic biases are found across species, and individuals behave more benevolently towards others the more closely the givers are related to the recipients of the aid (e.g., Burnstein et al. 1994). For example, the value of gifts given to family members tracks the genetic relatedness those kin share (Saad and Gill 2003). After death, not only do people bequeath more than 92% of their assets to relatives, but descendants receive more money in relative proportion to the genetic overlap they share with the deceased individual (Smith et al. 1987).

Consideration of kin selection has important ramifications for decision-making. Consider the case of someone confronting a prisoner's dilemma-type decision involving either a brother or an unrelated group member. Because a brother shares roughly 50% of the decision-maker's genes, the decision-maker can be expected to devalue outcomes in which his brother does poorly at a small gain to himself (Kenrick et al. 2008). This has tremendous implications for business decisions: Competition for a bonus between strangers in the workplace may manifest itself as cooperation between relatives in a family-controlled firm. Successful joint tasks between strangers might lead to individual credit-taking, whereas the same situation might lead to credit-giving between kin (Ackerman et al. 2007). Essentially, conflicts that are zero-sum games for unrelated strangers might well be transformed into cooperative games for kin. Of course, this is true across cultures as well: "Chinese companies are almost always family firms. A Chinese proverb says—with less whimsy and more hard-nosed sense than most—"You can only trust close relatives"" (Fritz 1997:51).

The theory of kin selection, however, fails to explain helping toward non-relatives. Evolutionary theorists have explained such non-kin helping in light of the theory of *reciprocal altruism* (Trivers 1971), whereby individuals help

non-relatives because the helpers benefit by being helped in return. For instance, people and many species of animals are much more likely to help someone who can reciprocate the favor in the future (e.g., Fehr et al. 1997). Even without a strong reliance on reciprocity, certain non-kin can also receive the interpersonal benefits that accompany familial relationships. For instance, people who share similar attitudes to us are implicitly associated with kinship concepts (Park and Schaller 2005), and people with whom we share a superficial facial resemblance tend to inspire increased trust (DeBruine 2002). Such cues, along with repeated positive interactions, can lead to the formation of friendship and even “psychological kinship” (Bailey 1988). Interestingly, the nature of interactions among ancestral humans may have predisposed women, more than men, to treat their friends like kin. Thus, under everyday conditions, women show more cooperative and less self-serving tendencies with their friends than do men (Ackerman et al. 2007). The evolved mechanisms that produce psychological kinship can be leveraged to increase altruistic tendencies in the kin-free business world. By priming a kin care motive through the use of fictive kinship terminology and (especially) behavior, intra-office altruism may increase, and less time may be spent on needless competitive pursuits.

Yet kin selection, reciprocal altruism, and psychological kinship all cannot fully explain helping such as large philanthropic gifts to non-kin or even handouts to beggars who will never reciprocate these favors. For instance, it is difficult to understand from these perspectives why 70% of U.S. households give money to charity or why nearly 10 million Americans each year give blood to strangers whom they will never meet. The key to understanding such behaviors from an evolutionary perspective lies in the importance of building and maintaining reputations (Griskevicius et al. 2010; Semmann et al. 2005). Earning a reputation as a cooperative and helpful group member is extremely valuable: Individuals with such reputations are not only seen as more trustworthy (Barclay 2004), but they are also more desirable as friends, allies, leaders, and romantic partners (Cottrell et al. 2007; Griskevicius et al. 2007; Jensen-Campbell et al. 1995; Milinski et al. 2000). Indeed, research suggests that helping others is neurologically similar to helping oneself: Helping others stimulates the same evolutionarily ancient areas of the brain that process rewards (Harbaugh et al. 2007), which can lead people to experience even greater happiness than helping themselves (Dunn et al. 2008).

The functional importance of these reputational concerns for solving the adaptive problems of affiliation, status, and attracting mates also makes reputation a valuable tool within business contexts. Consider that when public goods games are played while the players are being watched, the players are more generous (Hardy and Van Vugt 2006). Observers and other players perceive such generous individuals as having higher status. Consistent with the reputational benefits of helping, recent research shows that activating status motives can lead people to be more altruistic, especially when it comes to self-sacrificing to benefit the environment (Griskevicius et al. 2010). Activating status motives, for example, led people to choose pro-environmental green products over more self-indulgent non-green products, meaning that status motives led people to forgo luxury

when given the opportunity to choose green products that could signal one's prosocial nature (and thus boost social status). Companies interested in promoting environmental awareness, responsibility or donation might provide a means of ensuring that an individual's green reputation is advertised among a status-relevant audience. Being helpful also enhances attractiveness to potential romantic partners. For example, after being primed with mating cues, men and women become more generous with charitable donations (Griskevicius et al. 2007). As is the case with helping in public goods games, these status and mating-related helping boosts are driven by reputational concerns. Neither status nor mating motives actually lead people to be more altruistic in private settings (e.g., taking shorter showers to conserve energy or picking up trash by oneself). Instead, status and mating goals only increase helping that is public and that can clearly influence one's reputation (Griskevicius et al. 2007; Griskevicius et al. 2010). Thus, businesses interested in leveraging reputational concerns (e.g., by activating relevant fundamental motives) should take into account the necessity of doing so within a social context.

Considering the evolutionary importance of a cooperative reputation, people are not only sensitive to being watched, but they are also sensitive to mere cues of being watched. Consider the following situation that commonly occurs in the public coffee room at work: When a person gets coffee, he or she is supposed to pay a specified amount. But given that individuals are not under constant surveillance, many employees take advantage of this public good by paying less than they are supposed to or by not paying at all. In a clever field experiment, researchers tested whether coffee payments would be influenced by the presence of a picture of a pair of eyes in the coffee room. Compared to a control condition in which flowers appeared in the same place, people voluntarily paid nearly three times as much for their coffee when a pair of eyes was in the room (Bateson et al. 2006). Similar types of effects are also obtained even when the picture of eyes is highly stylized, suggesting that people are attuned specifically to eye-like objects (Haley and Fessler 2005).

These findings have tremendous implications for both organizational cooperation and productivity. For example, many companies are concerned that employees spend too much time at work dallying on the Internet, thereby decreasing productivity. This concern often leads companies to place surveillance on computers, which can erode trust in management and diminish employee happiness. The coffee study, however, suggests that simply placing cues of being watched, such as a monitor background that contains a pair of eyes, might significantly decrease unwanted work activity and foster (at least superficial) cooperation. Many companies currently attempt to establish more substantial cooperation by increasing the camaraderie felt among employees, thus making it more likely that kin- and friend-relevant behaviors will prevail. This may indeed be a successful strategy, though these companies need to weigh the benefits of closer relationships with the potential downsides of these relationships, including an increased tolerance of social loafing, complacency and sentiment-based decision-making (Nicholson 2008; Schulze et al. 2001; Villalonga and Amit 2006).

4 Conclusion

Evolutionary approaches have successfully led to large numbers of theoretical advancements in the fields of biology, ecology, anthropology, and psychology. But evolutionary models are only now beginning to make inroads into our understanding of economics, marketing, management, and other types of business sciences. In this chapter we presented the fundamental motives framework as a way to view business decisions from an evolutionary perspective. This framework holds that human beings confront modern business issues—including negotiation, investment, product choice, employee management—with brains that have evolved to deal with fundamental recurring social problems that needed to be solved by our ancestors. These social problems include affiliation, self-protection, status attainment, mate-attraction, mate-retention, and child-rearing (see Table 1). Building on accumulating empirical and theoretical work, the fundamental motives framework posits that solving problems in each of these domains is associated with distinct motivational systems. Although the modern world appears to be very different than our ancestral environment, in some ways ancestral groups were very similar to modern human groups; both groups involve status hierarchies, kin members, sex differences in motivational biases, and reciprocal alliances (Hagen 2005; Hill and Hurtado 1996). In other ways, underlying human adaptive biases are mismatched to modern business settings. For example, most of our business interactions today involve unrelated strangers with whom we might interact only once or perhaps never meet.

Just as the understanding of social behavior in general has been enhanced by applying evolutionary models (e.g., Schaller et al. 2007), the fundamental motives framework provides fertile ground for a wide range of insights into business behavior. While in the current chapter we discussed how this approach can provide insight into several business-relevant topics, many others remain to be explored, including employee violence, job stress, workplace discrimination, gender conflict, employee turnover, and workplace romantic relationships. It is important to note that evolutionary models do not aim to replace other theoretical approaches. Rather, evolutionary approaches can be fruitfully integrated into almost any area of research as a means of complementing the existing theoretical models and existing explanations at different levels of analysis. Both evolutionary and other explanations (e.g., proximate explanations) are needed for a complete understanding of business behavior and the various realms of economic decision-making. A consideration of how evolution has shaped our brains is likely to lead to a broader scientific understanding of how and why people behave and think as they do.

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