

Managing *Homo Sapiens*

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ABSTRACT *The evolutionary process in general, and human evolution in particular, are basic to comprehending Homo sapiens. Human evolutionary heritage predisposes human behaviour, and that is what all management systems (including Total Quality Management) seek to affect via training, coordination, and motivation. The evidence of behavioural biology and evolutionary psychology points to two human traits that bear importantly upon the success of managerial efforts. One is the desire for distinction or social status. A comprehension of this behavioural tendency allows managers to anticipate and coordinate employee's risk-taking activities. A second prominent characteristic is the tendency to reciprocate altruism. Understanding reciprocal altruism and the trade-offs between it and status seeking assists managers in knowing when it is productive to form work teams, and how to control and motivate teams. The evolutionary perspective we present offers insights into difficulties that frequently arise when Total Quality Management systems are implemented.*

KEY WORDS: Evolutionary psychology, risk taking, teamwork, status, reciprocal altruism

Introduction

... all enduring structures above the level of the simplest atoms, and up to the brain and society, are the result of, and can be explained only in terms of, processes of selective evolution ... (Hayek, 1979, p. 158; emphasis in the original)

The industrial era that gave birth to the field of management was not the era that moulded human nature. In well over 99% of *Hominid* evolution, ancestral humans lived in hunter-gatherer societies: the human psyche evolved in this environment. Understanding the evolutionary process in general, and humanity's in particular, are essential to comprehend the nature of humanity that underlies all human management systems. Recent advances in behavioural biology and evolutionary psychology allow managers to put workers' behaviours in the context of the millennia of natural selection that have moulded *Homo sapiens* physically, mentally, and behaviourally.

A corollary of the epigraph is that managerial systems, including Total Quality Management (TQM), which ignore humanity's evolutionary endowment, run substantial risks of being incorrect, irrelevant and/or failures. The next section of the paper explains the evolutionary perspective and advances propositions that offer an array of prescriptions that apply generally and which are clear and easily implemented. This section explains: (1) how and why workers react to

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moral dilemmas that involve risk; and (2) how teamwork affects workers' propensities toward risk-taking. The following section of the paper applies the evolutionary perspective toward a resolution of some common difficulties that arise when TQM systems are implemented.

Insights from the Past

Evolutionary theory presupposes that the totality of an organism is an adaptation to the environment that existed during the time in which its ancestors were selected. Risk and scarcity were, as always, pervasive in that environment. Human behavioural patterns in feeding, sexual relations, sheltering, companionship, and status are observationally similar to those of other social mammals. The reason for this similarity is that tastes are evolutionarily selected behavioural responses to risk and scarcity; these tastes were selected over other desires that were less favourable in enhancing 'evolutionary survival.'¹ Evolution has affected all physical and behavioural traits. Two behaviours that humans share with other higher order social animals that provide insights for management are (1) status seeking, and (2) reciprocal altruism.

The Pursuit of Social Distinction (Status)

The innate nature of status seeking in social animals is widely accepted by researchers who study them.² Status seeking is defined as competition between conspecifics for social rank. On the face of it, the competition is a zero-sum game; only one individual can occupy an 'alpha' position. Status seeking is innate in social animals because evolutionary selection favours it. Higher-ranking animals have greater opportunities to feed and to reproduce. These animals are more fit (ecologically and evolutionarily) than lower-ranking animals. Over eons, natural selection made status seeking innate because individual organisms that possessed elevated status had more surviving descendants than lower ranking organisms. Among humans, obvious manifestations for status seeking are: conspicuous consumption, fashion, and 'keeping up with the Joneses.'³

Status seeking is also a key element in human attitudes toward risk.⁴ Brenner (1983) has shown that the relatively deprived ('the poor') play lotteries more often than 'the rich'. Brenner believes that this is because lotteries offer the poor an option not conferred upon the rich: a chance to experience a *large* change in social status. But the rich are not exempt from status seeking, and will wager what they consider to be small amounts in 'unfair' games (that is, games whose expected value is less than the price charged to play them).

The quest for status implies that individuals will purchase 'unfair' lottery tickets, whose prices are small by their *current* living standards, provided that the lottery prizes are large enough to increase materially their social status relative to *current* positions. This aspect of human behaviour has implications for business because an individual who has the potential of significantly enhancing his status by committing his firm to a certain action will be inclined to pursue that action, even if it involves substantial risk. For example, suppose a firm has ten employees and that each individual over a year takes a position that

99.8% of the time will increase the firm's net worth by 20% and 0.2% of the time will lead the firm into receivership. On the positive side, we can predict with confidence that the firm will grow spectacularly in the short-run. On the downside, we can confidently predict that the firm will collapse equally spectacularly in the long run.

Firms whose employees have the ability to make decisions that may jeopardize the firm's survival are at a greater risk of bankruptcy *if* the reward structure of the firm allows these employees to make an immediate quantum leap in status when successful. The recent failures of many of the dot com firms in the United States, and that of the Barings Bank in 1993, illustrate the point.⁵

Status within a peer group depends upon the personal connections of an individual and the assets the individual controls. Having personal connections means that the individual's status, for whatever reason, is greater than his or her current asset position would warrant, *ceteris paribus*. We would expect employees with high-level personal connections to take less risky positions than otherwise. Because personal connections are nebulous it is difficult to generate hypotheses about them. Nevertheless, the evolutionary perspective suggests the following hypothesis: firms that hire workers because of their personal connections (via nepotism⁶ or the 'old boy' network) are more likely to survive, *ceteris paribus*, than firms that ignore these considerations. Unlike personal connections that are vague and difficult to quantify, the evolutionary analysis of personal financial considerations leads to a number of potentially testable hypotheses.

Asset holdings provide useful information on employees' propensities toward risk taking because status and wealth are highly correlated. Firms that monitor asset positions through rigorous financial disclosures achieve two results: (1) the ostensible revelation of any conflict of interest, and (2) the wealth position of employees. Other methods of monitoring asset positions are through the awarding of stock options or partnerships to employees. Both methods serve two purposes: (a) the employee's current asset position is more closely tied to the firm's; and (b) each of the firm's employees has a greater incentive to monitor the actions of co-workers.⁷ Monitoring is also implicit in firms that require a substantial equity investment by their employees (partners must buy into the firm).⁸

Financial markets provide an illustration of the evolutionary perspective both metaphorically and in practice. These markets are continually changing, introducing products that are unfamiliar to the firm's employees. Young and newly employed financial traders will more likely be the ones that specialize in these 'new' markets for two reasons. First, relative to more established traders, it costs them less to learn about new markets. Established traders know the existing products, and time taken off to learn about emerging products costs them more in terms of opportunities foregone in markets where they already have an expertise. Second, emerging financial markets offer a virgin territory to the trader – by definition there are no established traders, so establishing a market niche is easier. (Established traders, again, have a higher opportunity cost in giving up time in their home markets to investigate new markets.)

Young traders typically have fewer current assets and typically are prone to take greater risks than more established traders. If the firm's reward system allows traders to enhance their current asset/status positions on the basis of a

few highly successful trades, then the firm's reward structure imperils its survival. Notice how this system attenuates the firm's internal monitoring system in new financial markets. First, established traders have less knowledge of these markets and their nuances; consequently they lack knowledge of the total risks that traders' positions impose upon the firm.

With respect to emerging financial instruments, firms face the age-old 'risk versus return' trade-off when assigning personnel. While the standard calculus of profit maximization suggests that the firm equates gains and costs at the margin, the existence of risk vitiates the straightforward approach. In a risky world, both expected profits and risk enter the analysis separately. Consequently, only a full understanding of human nature suggests the range of controls that successful (i.e. the ones that survive) firms must use to monitor and direct young traders assigned to trade in new instruments.

Human beings seek social status as well as personal wealth. The evolutionary perspective calls attention to the personal characteristics of employees that indicate their willingness to make decisions that may put the firm at risk. A specific example may illustrate our point. Suppose that we wish to assess the attitude toward risk of a group of four people. First, Adam who is (a) a 63-year-old male, (b) moderately well connected, and (c) currently in possession of assets that are 10 times the amount he earns annually. Second, Betty who is (a) a 41-year-old female, (b) very well connected, and (c) in possession of a wealth three times larger than her annual earnings. Third, Charles who is (a) a 27-year-old male, (b) new to the profession (hence poorly connected), and (c) in possession of almost no net wealth. Fourth, Dorothy who is (a) a 52-year-old female, (b) well connected, and (c) in possession of a wealth equal to her annual income.

We hypothesize a metric that results in an assessment that characterizes the risk associated with each trait. Obviously, this *is* an example and the metrics are somewhat arbitrary. In this example, we set the lowest risk in each category (gender, wealth, age, connections) at a value of one. The highest level of risk in each category depends upon how we perceive the impact of that category on the propensity to take risk. Let us explain our risk assessments for each category.

Begin with gender. We assign a value of one for being female and four for being male. The reason for our assigning males a higher risk coefficient is that the literature on animal behaviour almost always associates males as the sex with the greater propensity for taking risks. This is because the male contribution to the succeeding generation (the energy and the time involved in the act of procreation) is typically small relative to the investment of the female. In the human species, some obvious manifestations are: (1) the greater frequency of male gamblers in casinos; (2) the overwhelming predominance of males in prisons; (3) the typically aggressive behaviour of male automobile drivers (manifested in insurance premiums); and (4) the evidence from the business ethics literature that male employees tend to be far more willing to engage in questionable activities than females.⁹

Wealth is another category in our example. The wealth category ranges from one for anyone whose wealth position is at least a multiple of eight times annual income, four for a wealth multiple of three, six for a wealth multiple of one, and 10 for a wealth multiple of zero. (Obviously, we do not think the link between

wealth and risk taking is a linear relationship.) The coefficient for net wealth may be larger than 10 using the metric in this example. This would be for any individual with a negative net wealth.¹⁰ The connection of these rankings to the evolutionary perspective is clearly that those with substantial wealth endowments have lower risk coefficients because they already possess a high degree of status.

Age is another category to be considered in this risk analysis. We have assigned a value of one to anyone in the 60 years and over category, two to the age 50 bracket, three to people in their 40s, four to people in their 30s, and five to those in their 20s. The reason for these rankings is that younger workers are more driven to raise their status levels than older workers. This is simply because they have less of it and more years to enjoy any gains.

Personal connections constrain risk taking. Human beings are social animals and the more they feel connected, the more loyal they are to the organization. In the personal connections category we have assigned a value of one to the very well connected, three to the moderately connected, and seven to the unconnected.

Table 1 summarizes the metric. We list the personal characteristics vertically, and the four individuals horizontally. Within each cell is the number associated with a particular characteristic for that individual. The ‘Total’ row is simply the addition of the column entries for each individual. In our world of four characteristics, the lowest possible score is four. This means that, in this simple world, the person with the least propensity for taking risk would be a female, older than 60, with a wealth position greater than eight times her annual income and who is also very well connected.¹¹

We assume that the attitudes toward risk are linearly additive and the ‘Total’ score at the bottom of the Table indicates the generic risk that people with these characteristics possess. The lowest Total score indicates the lowest risk. In saying that, we must recognize that people who take few risks also impose costs upon the firm: the adage ‘no guts, no glory’ has a certain amount of merit. If the firm is to profit, it must take some risks but not enough to perpetually endanger its survival.

A further point is that risk assessment should be an ongoing process. The characteristics associated with a person can change drastically with time. Suppose that a 45-year-old male, previously well connected and with substantial wealth, loses his wealth (due to a disastrous divorce and poor investments) and connections (his mentors are convicted of felonies). By our stated metric, his total risk would rise from nine (three for age, four for sex and one each for wealth and

Table 1. Evolutionary perspective of worker risk propensities (Larger numerical values imply greater risk taking propensity)

	Adam	Betty	Charles	Dorothy
Age	1	3	5	2
Gender	4	1	4	1
Wealth	1	4	10	6
Connections	3	1	7	7
Total (Overall risk propensity)	9	9	26	17

connections) to 24 (three for age, four for sex, 10 for wealth, and seven for connections).

Again, these are examples; the metric is meant to be illustrative rather than definitive. We could change the metric to have characteristics interact multiplicatively or in some other fashion. We could advance more characteristics such as marriage and parenthood. The specific example is not the point. The point is that these characteristics are predictably associated with risk-taking. If individuals have characteristic values that are associated with high levels of risk taking, the more likely they are to 'bet the firm'. These are the employees facing the greatest ethical challenges, and the long-run survival and profitability of the firm may depend upon monitoring and constraining such employees carefully. One of the most intriguing aspects of the evolutionary perspective is that it provides a framework for improving management foresight.

Reciprocal Altruism

In contrast to status seeking, social animals also widely engage in activities by which they directly assist other members of their species: this is defined as altruism.¹² We focus on reciprocal altruism because of the substantial body of research supports its existence among the more 'intelligent' social animals.¹³ Reciprocal altruism is behaviour that is engaged in with the expectation of future repayment. The problem with engaging in such altruism is that there is a moral hazard: anticipated repayment may exceed the actual repayment. Nevertheless, humans and other social animals engage in reciprocal altruism. In an interesting example of reciprocal altruism, Axelrod (1984) arranged a computer contest where submitted programs of sociologists, psychologists, and economists vied against each other in a game that simulated human interactions. The winner was a strategy, referred to as *TIT-FOR-TAT*, that merged reciprocal niceness with reciprocal nastiness. This strategy was to cooperate first and then respond reciprocally: nice-for-nice, or nasty-for-nasty. Axelrod's tournaments illustrate the dominance of reciprocity over other interaction strategies. But what are the roots of reciprocal altruism? The answer is that, in the ancestral environment, it offered a significant reduction in risk.

Ancestral humans and pre-humans lived in small, hunter-gatherer societies. The Hobbesian characterization of the life of early man as 'solitary, poor, nasty, brutish, and short' is only partially correct. All evidence indicates that humans have always lived in societies; the life of humankind has never been solitary.¹⁴ The reason for humans' social nature can be traced to the advantage reciprocity gave our ancestors in their quest for survival. To any individual, survival on a day-by-day basis would have been problematic. The risks of being killed or injured and the risks of starvation were greater for an individual alone rather than in a tribe. The survival abilities of a strictly autonomous or 'selfish' individual would have been compromised by 'feast or famine' variability and the increased chance of falling prey to another hunter (either animal or human).¹⁵ Reciprocal altruism increased the individual's odds of surviving long enough to send genetic material into the future.

The tendency toward reciprocal altruism can be used by firms to control its

agents. Before the prolonged Japanese recession, in the stereotypical Japanese firm¹⁶ workers had long tenure, rotated through divisions and, through 'hands on' learning, familiarized themselves with the details of the business. This process may have paid off for two reasons: (1) because Japanese workers were with the firm long-term, the firm was able to realize a return on its investment in workers who acquired broad-based skills; and (2) worker synergies were facilitated because each worker had a broad knowledge of the organization. That is, reciprocal altruism was easier among workers who shared more information, background, and status. Reciprocity among co-workers was further enhanced by the 'corporate culture' of the Japanese firm that encouraged (required) workers and bosses to socialize after work hours. This created a coincidence between the worker's social and work peer group.¹⁷

It is not surprising that the chief executive officers (CEOs) of Japanese firms tend to be paid substantially less than their counterparts in American firms. The decision making efforts that are required of a Japanese CEO are lower because lower-level (non-CEOs) Japanese workers: (1) engage in more cooperative activities with their supervisors, peers, and subordinates; (2) engage in more monitoring of co-workers than their American counterparts; and (3) tend to have more human capital formed through the customs of lengthy rotations of workers through jobs in the various divisions of firms.¹⁸ The formation of human capital in Japanese firms empowers workers in these firms; this causes a Japanese CEO to be more restricted and less autonomous than in the American model. With greater autonomy, the American CEO has greater personal responsibility for the firm's performance. This increases the risk that his employment will be terminated. The increased risk calls for a compensating wage differential. The result is that the CEO of an American firm is paid much more than the CEO of a Japanese firm. In the language of productivity, the marginal product of the CEO of an American firm is greater than that of the Japanese CEO. The Japanese CEO's contribution is much more of a joint product, dependent upon the efforts and goodwill of the firm's lower level employees.

The cost of monitoring workers is reduced in Japanese firms because they have harnessed man's reciprocally altruistic nature. When people work inter-dependently, worker attributes (both strengths and weaknesses) are widely known by colleagues. Reciprocally altruistic workers, like reciprocally altruistic prehistoric humans, end up with a less variable set of results. Information sharing among employees can smooth variations in the firm's production.

With respect to the problem that financial firms face in controlling young traders who have been assigned to deal in new financial instruments, reciprocal altruism offers a partial solution: assign teams of young traders and pay them on the basis of team performance. Such a payment structure will dull the status seeking drive that poses a threat to the firm, while at the same time encouraging information sharing (thereby increasing knowledge about the new investment instrument).

Balancing Status and Reciprocity

Two somewhat contradictory elements exist within the evolved human psyche: status seeking and reciprocal altruism. In the work environment, the contradic-

tion manifests itself by conflicting desires to assist co-workers, or to advance one's own career at the expense of others.

The incentives and constraints of corporate culture act as the fulcrum upon which the individual workers balance status seeking and reciprocity. The heterogeneity of the environment and the activities of firms naturally give rise to the great diversity in corporate cultures we observe.¹⁹ For each firm, and, indeed, within divisions of the firm, the best incentives and constraints depend upon the unique set of circumstances facing it.²⁰

Prominent among the circumstances are the characteristics of the product and the industry. For example, a firm that is producing an established product with a long cycle, consisting of many component parts, would probably do better by encouraging teamwork and reciprocal altruism. The automobile industry is a good example because productivity improvements are likely to be small and cover a host of details that are unknown to any single person. Here, teamwork results in a variety of incremental changes in process and product, which, over time, give the firm a substantial competitive advantage. Teamwork typifies the Japanese mode of automobile production that is now globally dominant.

In contrast are industries where the product is simple and the cycle is short; a good example is the fashion garment industry. This industry relies on centralized control and direction; virtually no innovation comes from production workers. This would suggest that teamwork and reciprocity are of little value among production workers. This is the explanation for why the fashion garment industry is typically organized by piecework. The incentive to increase production is obvious, but less obvious is the increase in status that accompanies it. Furthermore, the entrepreneurial control of the fashion firm allows decisions to be made immediately in an industry where product cycles are ephemeral.

Whether a particular firm is better off encouraging a corporate culture that stresses teamwork or individual initiative is then, problematic.²¹ And, to stress a point previously made, in a large firm with many divisions, one size does not fit all: the culture that is best for the advertising department might not suit the accounting division. The experiences of Japanese firms in the American recording and film industries are ample testimony that corporate cultures that are highly successful in one business environment may be abject failures in another.

Table 2 presents our perceptions of the benefits and cost of teamwork. Within the elements of the table are factors that others have recognized, but the evolutionary perspective expands and explains their rationale. The table highlights the conflict between status seeking, which is dulled by teams, and reciprocal altruism, which can be harnessed by teams.²²

Using the Evolutionary Perspective to Enhance TQM

In this section, we examine the linkages between the evolutionary perspective and Total Quality Management (TQM). Evans & Lindsay (2002, p. 17) define TQM as:

... a people-focused management system that aims at continual increase in customer satisfaction at continually lower real cost. TQ [TQM] is a system approach (not a separate area or program) and an integral part of high-level strategy; it works horizontally across

Table 2. Evolutionary perspectives on teamwork

Benefits:

- (1) Internal (peer) monitoring
- (2) Group synergies generated by reciprocal altruism
- (3) Inhibits sabotage of co-workers' efforts
- (4) Facilitates improvements that are incremental

Costs:

- (1) Set-up costs: retooling corporate management
- (2) Slower reaction to external changes
- (3) Slower identification of 'star' employees
- (4) Dulls status seeking, inhibiting improvisation and quantum changes

functions and departments, involves all employees, top to bottom, and extends backward and forward to include the supply chain and the customer chain. TQ [TQM] stresses learning and adaptation of continual change as keys to organizational success.

Similarly Ahmad & Schroeder (2003) claim that human resources are the most important assets of an organization, and that very few organizations fully harness their potential. More specifically, Coyle-Shapiro & Morrow (2003) analyse the role of individual differences in employee acceptance of TQM. They point out that there are well-known models applying TQM to investments in human capital and vocational psychology (person–environment fit).

Yet TQM is not always successful, and studies indicate a variety of reasons for its failures (see Brown *et al.*, 1994; Sitkin *et al.*, 1994; Whalen & Rehim, 1994; Harari, 1993a,b; Keys, 1991; Becker, 1993; Grossman, 1994). Additionally, Snell & Dean (1992) argue that a common reason for the failure of TQM is that human resource practices have not kept pace with changing technologies. From studying all these sources it is clear that three of the most common reasons for the failure of TQM are (1) the lack of commitment by top management to a common goal; (2) complacency by work teams; and (3) inflexibility in organizational philosophy. Addressing the failures of TQM, Lank (1997) suggests that organizations should shift their attention from tangible to intangible assets. Expanding upon this general notion, we suggest that the evolutionary perspective of human nature offers guidance on all three problem areas.

For those trying to induce higher level management to commit to common goals, we suggest that: (1) status competition be inhibited, and (2) reciprocal altruism be fostered via the formation of teams. Management teamwork is appropriate when the costs are relatively minor and when the goals and objectives may be well defined. In addition, such teams are appropriate when quantum changes are *not* an objective. The ability to identify 'star' employees among a team of top managers is not a problem for a team composed of 'top' managers because, by definition, they have already been identified as 'stars'.

Regarding the failure of TQM because of 'complacent' teams, Table 2 provides two specific situations in which teams may appear complacent because the cost of using the team approach is, *a priori*, too high. According to Table 2, teams are a high cost approach to: (1) achieving quantum changes; and (2) reacting to

external changes. If quantum changes and/or quick reactions to a rapidly changing environment are desirable, the evolutionary perspective suggests that teamwork is inappropriate unless unusually large amounts of resources are available to the teams.

Third and finally, the inflexibility of organizational philosophy is easily understandable from the evolutionary perspective. If the implementation of TQM is viewed as a threat to the existing status hierarchy in the firm, those with high status are likely to resist TQM. Inflexibility in organizational philosophy is rooted at the top of the organizational hierarchy. Fortunately, human nature is not one sided; there is a propensity of reciprocal altruism as well as status seeking in humanity. For an organization to be flexible, the evolutionary perspective suggests that top executives use the team approach to foster reciprocal altruism and to quell status posturing *among themselves*. Once top executives have cooperatively adopted a new organizational philosophy, other members of the organization are more likely to embrace it.

Executives with an awareness of the behavioural propensities endowed by evolution will realize that their own status consciousness is linked to their propensities for risk-taking. Following the analysis of status and risk presented in this paper (summarized in Table 1), an executive who is male and relatively young will realize that he is prone to being more status conscious (and hence more prone to risk-taking) than would be, say, an elder, wealthier, better connected, female co-executive. Additionally, executives with an awareness of reciprocal altruism have a clearer understanding of the potential benefits of behaving more like reciprocal altruists and less like status seeking *prima donnas*.

Conclusions

At the heart of every system of management is *some* theory of the behavioural propensities of human beings. Advances in behavioural biology and evolutionary psychology have identified two innate propensities that can play important roles in the workplace: (1) the drive for status; and (2) reciprocal altruism. Although the evolutionary perspective *per se* has not been foundational to management systems, aspects of it are presently found in use. This is understandable; just like plants and animals, ideas evolve from intellectual antecedents. In an evolutionary process, there is no 'final solution' there is only the incremental process of 'selection'.

This paper represents an incremental advance that modifies and synthesizes the existing theories of human nature that currently guide management systems. In the immediate future, the ideas we have presented offer an approach that may help managers to make better decisions about the increasingly diverse workforces they must educate, coordinate and motivate. The examples and metric we advanced illustrate the practicality of the evolutionary perspective, and the uses to which it can be put. We believe managers who understand and plan around humanity's evolved nature will be much better equipped to implement Total Quality Management systems within their organizations. Without an understanding of the nature of *Homo sapiens*, the implementation of management systems

will continue to be plagued by difficulties that could easily be anticipated and avoided.

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Notes

- 1 'Evolutionary survival' means that the individuals have successfully reproduced and reared offspring.
2. For studies on status seeking in social animals (such as wolves, primates, and humans) see Zimen (1979), Allen (1979), Fox (1980), Harrington & Paquet (1979), Lumsden & Wilson (1981, 1983), de Waal (1982), de Waal & Lanting (1997), Sagan & Druyan (1992), Alcock (1998), Ridley (1993), Cronin (1993), and Wright (1994).
3. On fashion and status see: Coelho & McClure (1993); on conspicuous organizational dress see Rafaeli & Pratt (1993).
4. Sitkin & Pablo (1992) provide an excellent synthesis of the existing literature on risk as it applies to management. The evolutionary perspective presented in this paper extends this effort by tracing risk-taking propensities to human status seeking and reciprocal altruism.
5. The dot com firms were notorious for the youth of their management. Nicholas Leeson was the twenty-something manager in Singapore whose risk-taking led Barings Bank into failure.
6. Bellow (2003) provides a comprehensive set of arguments that cast nepotism in a positive light throughout history and across species. His book is consistent with our argument concerning the advantages that nepotism offers business firms.
7. A usually ignored cost of employee ownership is the moral hazard that it creates. An employee whose wealth is intimately related to the firm's wellbeing may be more predisposed to ignore fiduciary responsibilities if acting upon them would materially affect the price of the firm's stock.
8. Stock options are a way of aligning the interests of employees with those of the firm, but they are not panaceas; they may create perverse incentives. For a succinct description of the hazards associated with stock options see Samuelson (2002).
9. For a good reference from the business ethics literature that has extensive references to additional sources, see Reiss & Mitra (1998, p. 1589). On the greater frequency of men committing violent crimes relative to women explained from an evolutionary perspective see Barash (2002).
10. Analogous to humans with a negative net wealth, many savings and loan firms in the United States in the 1980s had negative book values. These firms were notorious for taking large risky positions, characterized by the 'heads I win, tails you lose' posture their finances assumed.
11. This metric is supported by Deshpande's (1997) analysis and literature synthesis of the impact of gender, age, and education level on the employees' ethical comportment.
12. There is some debate in the literature over the appropriate usage of the word altruism. First, the behaviour labelled 'altruistic' is typically limited to conspecifics, and, very frequently, it is limited to blood relatives. Those who hold to what Dawkins (1989) termed the 'selfish gene' hypothesis argue that these 'altruistic' activities are simply assisting the same genes in another animal's body. Secondly, if the activity is 'reciprocally altruistic' (this is when a favour, or gift, is given with realistic expectations that the recipient will return the favour in the future), how can it be classified as 'altruism?' Payments made on a delayed basis are still payments. We recognize these nuances in the meaning of altruism and, like most other studies, continue using the word altruism.
13. There is a body of closely related literature in management on 'cooperative' behaviour. For a taxonomy and discussion of 13 types of 'prosocial' organizational behaviours see Brief & Motowildo (1986). For propositions linking cooperation to reciprocity see Griesinger (1990); especially 'Proposition 10,' on p. 489. For studies on dolphins, see Taylor & McGuire (1988); on chimpanzees see: de Waal (1982), de Waal & Luttrell (1988), and Goodall (1986); on baboons and other social vertebrates

- see Alcock (1998); on vampire bats see Wilkinson (1990); and for an excellent discussion including references to humans see Wright (1994). Also see de Waal and Lanting (1997).
14. See Maitland *et al.* (1985) for an excellent discussion of Oliver Williamson's Hobbesian-based theories on human cooperation.
 15. White (2001) reports that close to 50% of all early human skeletal remains show evidence of butchering. In the absence of another tool-using species this indicates widespread cannibalism among early humans.
 16. We emphasize that this is a stereotype. There is certainly diversity among Japanese firms in the management systems they employ, and the prolonged Japanese depression has affected the management systems of this country's firms. Regardless of these *caveats*, the stereotype remains representative of the leanings of many Japanese firms relative to their counterparts elsewhere. The employment and managerial practices of Japanese firms in the automobile industry in the United States do differ from those of domestic firms; for details on this see Hashimoto (1994).
 17. If these worker synergies are profitable they would be captured in the capitalized value of the firm (i.e. the share price). Once the implicit long-term labour contract is broken or weakened, say by a prolonged recession, many of these synergies would diminish or disappear. This too would be reflected in the share prices. The decline in Japanese share prices may be symptomatic of declining synergies.
 18. On formal education in Japan and learning on the job there, see Hashimoto (1999). For other insightful analyses of other distinguishing aspects of Japanese labour markets see Hashimoto (1989, 1991, 1992, 1993, 1995), and Hashimoto & Raisian (1989 & 1992).
 19. In a paper linking equity, equality and interpersonal conflict, Kabanoff (1991) provides an insightful analysis of the trade-off between 'social cohesion' and 'overt conflict' in organizations. This trade-off, in terms of the evolutionary perspective, can be traced to the conflict between the competing desires for status and reciprocal altruism that characterize human nature.
 20. Myers (1971, p. 9) offers the same advice: 'If synergistic relationships are to exist between people and their [management] systems, human development and systems development must be guided by persons who understand both people and systems, ideally within the same administrative unit'.
 21. de Leede *et al.* (1999) make a similar point that '*abalancing* standardization with improvisation' (emphasis added) is the key to the usefulness and viability of the team approach.
 22. For an analysis of how wealth and status affects the formation of voluntary peer groupings in society, and human risk-taking, see Coelho & McClure (1998).

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