

Evolutionary Psychology: its contribution to management thinking

A working Paper

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1. Introduction

In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation..... So said Charles Darwin in the final pages of the *Origin of Species*, which laid-out his theory of evolution (1859). His words have been used by academics and science writers in the arguments both for and against evolutionary psychology. Evolutionary psychology is firstly, therefore, a controversial field. This might be the result of its relative youth, but is also likely to be because it challenges the established paradigm held by others (and especially, social scientists) of longer standing. At the same time it dares to tread into many other fields of research, promoting itself as a common foundation that could become a clarifying route to some of the, claimed, innate complexity that exists elsewhere, especially in the social sciences (Tooby and Cosmides 1992). At its extremities, it has also been accused of challenging the beliefs of some religions (in terms of the notion of self will) and directly disputes a great deal of popular management theory, which contends that people can change their natures if correctly trained or motivated.

This paper aims to review the discipline of evolutionary psychology [EP] by discussing the questions:

- What is evolutionary psychology?
- What contribution has this new science made so far to management thinking?
- What is the promise?

2. What is Evolutionary Psychology?

This is not a straight forward question to answer. At least two areas of contention exist, one being where to draw the defining boundary. The second is the debate that the discipline is worthy to exist at all. Some, for instance, call it a new science, a convergence of ideas and research output from other disciplines, old and new. This is the definition Nicholson (1998) offers. The mix of disciplines involved he presents as: anthropology, palaeontology, comparative ethology, social psychology, neuropsychology and behavioural genetics. These come together, he suggests, to explain human nature. Nicholson implies that this convergence of ideas is recent and he conforms with others who see the field as being as young as ten years old. Markóczy and Goldberg (1998) admit that EP is hard to date (acknowledging that its roots were with Darwin) but agree with Nicholson that the contemporary academic movement started as late as 1992 with the publication of *The Adapted Mind* (Barkow et al, 1992). The contributors to this book included anthropologists, psychologists, zoologists, ethologists, biologists and molecular biologists.

Those who are more critical than open-minded about EP, see EP as nothing different from sociobiology, a field which has existed since E.O.Wilson's book *Sociobiology* (1975) was published. Hilary Rose, writing against EP (2000) sees the UK movement as just this - one differing only subtly from sociobiology – whereas in the US she acknowledges that it has gained a different status:

In the UK EP has needed the alliance with sociobiology, an arrangement with which sociobiology is entirely happy. However, in the United States there are enough psychologists involved in the construction of EP for it to have become widely accepted as a new academic discipline.

Those arguing against the ideas of EP rehearse the same theme as they took against sociobiology, one that is encapsulated by Hilary Rose as a battle for centre stage among competing disciplines and theories:

Today's kaleidoscope shakes down into three broad patterns and their protagonists. The first recognises and sees the case for diversity of the disciplines; the second continues to insist on hegemony of the natural sciences over all other forms of knowledge; while the third shows an almost nostalgic longing to build the unity of the sciences.

It is into this third strand that Rose places EP. She does not go so far as to suggest that those involved are bent on a reductionist conclusion, but she does propose a fundamentalist agenda for EP and asserts that at its core, EP is about the dominance of biology in explaining human nature. The implication is that this downgrades the contribution made by sociologists like herself. Steven Rose (2000) does go so far as to accuse EP of being reductionist: *Far from creating genuine integration, it offers yet another reductionist account in which presumed biological explanations imperialise and attempt to replace all others.*

Whether EP is a distinct discipline or not, what is not disputed is that Darwin is at the core of its logic. The undisputed primary premise of EP is that human beings are evolved creatures. As Darwin espoused, 'evolved' means that animals are designed to solve problems of two kinds: surviving the environment and winning a mate in order to reproduce. Evolutionary psychologists propose that not only are bodies adapted to solving these problems, but so is the human brain - an organ like any other found in the body. The EP contention is therefore, a mind better adapted to solving problems of finding food or winning a mate is likely to result in those genes being successfully transmitted into the next generation. Cosmides and Tooby (1997) have described EP as the application of adaptationist logic to the study of the architecture of the human mind.

The proposition that the brain might be designed flies in the face of the implicit assumptions made by long established social scientists, which Tooby (anthropologist) and Cosmides (psychologist) have called the 'Standard Social Sciences Model' [SSSM] (Tooby and Cosmides 1992). The SSSM, they argue, has been accepted for many years and takes as its primary premise that the mind is a blank slate containing nothing but some motor functions and a few drives which acts as a learning machine. It is onto this blank slate that babies start accumulating information, learning language, understanding facial expressions and learning how to get what they need. Tooby and Cosmides argue that while this is true, babies do learn an awful lot, their minds have been designed for this purpose and already have mechanisms enabling learning. They summarise in their 1997 'Primer':

According to this [SSSM] view, the same mechanisms are thought to govern how one acquires a language, how one learns to recognise emotional expressions, how one thinks about incest, or how one acquires ideas and attitudes about friends and reciprocity... everything except perception. This is because the mechanisms that govern reasoning, learning and memory are assumed to operate uniformly, according to unchanging principles, regardless of the content they are operating on or the larger category or domain involved. (For this reason, they are described as content-independent or domain-general). Such mechanisms, by definition have no pre-existing content built-in to their procedures, they are not designed to construct certain contents more readily than others, and they have no features specialised for processing particular kinds of content. According to this view..... the contents of human minds are primarily (or entirely) free social constructions.

Three decades of progress and convergence in cognitive psychology, evolutionary biology, and neuroscience have shown that this view of the human mind is radically defective. EP provides an alternative framework that is beginning to replace it. On this view, all normal human minds reliably develop a standard collection of reasoning and regulatory circuits that are functionally specialised and, frequently, domain-specific. These circuits organise the way we interpret our experiences, inject certain recurrent concepts and motivations into our mental life, and provide universal frames of meaning that allow us to understand the actions and intentions of others. Beneath the level of surface variability, all humans share certain views and assumptions about the nature of the world and human action by virtue of these human universal reasoning circuits.

Cosmides and Tooby contend that the SSSM has been isolated from other scientific disciplines, which has, in their opinion, led to the failure of the social sciences to make progress:

We suggest this lack of progress, this 'failure to thrive', has been caused by the failure of the social sciences to explore or accept their logical connections to the rest of the body of science – that is, to causally locate their objects of study inside the larger network of scientific knowledge. Progress has been severely limited because the SSSM mischaracterizes important avenues of causation, induces researchers to study complexly chaotic and unordered phenomena, and misdirects study away from areas where rich principled phenomena are to be found.

Hence the earlier comments of Hilary Rose.

So, the central premises for believers in the field are drawn from the logic which starts with the fact that evolution is a slow process and occurs under extended periods of selection pressure (the EEA – Environment of Evolutionary Adaptedness). The first hominids appeared about 4 million years ago. According to the standard palaeoanthropological timetable, the human brain evolved to its modern form in a window that started 2 million years ago and ended with *Homo sapiens sapiens* emerging triumphant over other competitor human species between 200,000 and 100,000 years ago. The brain size of our 2 million year old ancestor, *Homo habilis* was between 500 and 800 cc. Early *Homo sapiens* had brains that were between two and three times larger than this. *Homo sapiens* lived on the Savannah Plain in Africa as clan members, surviving as hunter gatherers for the next 100,000/200,000 years until man started the practice of agriculture, about 10,000 years ago. It was during this period of our history, as Stone Age hunter-gathers (the EAA), say evolutionary psychologists, that the brain evolved. Since then, there has been too little time and insufficient selection pressure to re-shape the mind significantly.

The central premises therefore, are:

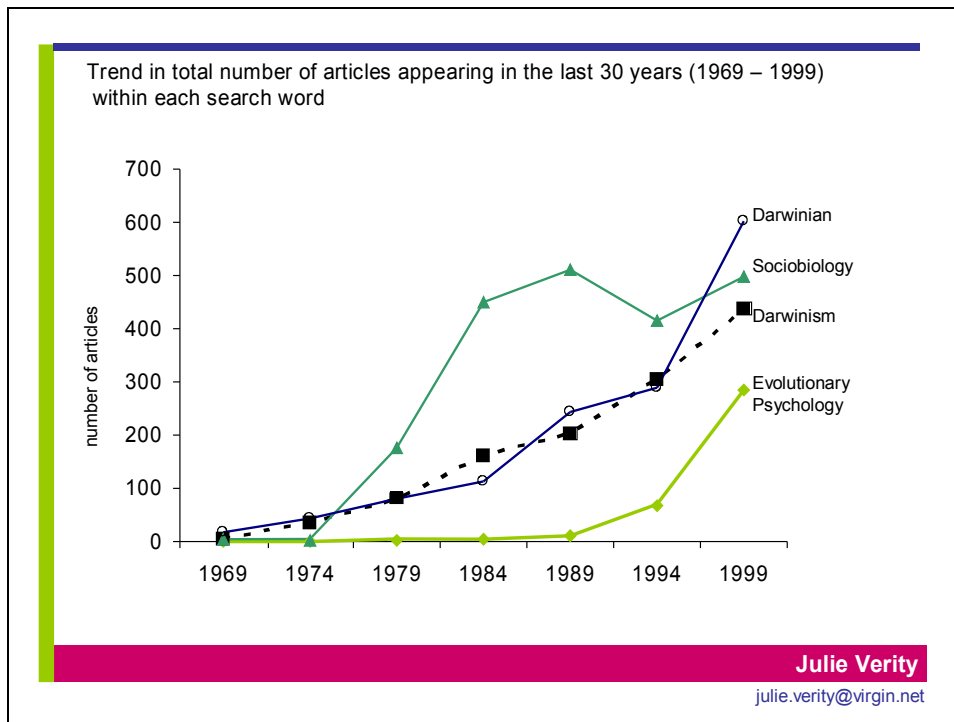
- There is a universal human nature, but its universality exists primarily at the level of evolved psychological mechanisms¹, not of expressed cultural behaviours
- These evolved psychological mechanisms are adaptations, constructed by natural selection over evolutionary time
- The evolved structure of the human mind is adapted to the way of life of Pleistocene hunter-gatherers and not, necessarily to our modern circumstances.

Evolutionary psychology seeks to understand human nature. It does not claim to explain everything that human beings do (contrary to what its critics suggest), but it does claim that there are some behaviours which are shared universally among all human beings regardless of their national culture, creed or social group. EP is controversial, more so in the UK than in the US where it appears to attract fewer critics and where the majority of academic work has been done so far. This paper takes the view of Nicholson (1997, 1998) and others (Markoczy and Goldberg, 1998; Bernhard and Glantz, 1992) that EP provides an interesting line of enquiry for management thinkers to pursue, it has the potential to raise challenging questions about people and their behaviour in organisations and hence, enrich our understanding of many aspects of corporate life.

3. What Contribution has Evolutionary Psychology made to Management Thinking So Far?

Saad and Gill (2000) made a comprehensive review of the literature up to 1999 for articles related to EP. They did not restrict their search to management databases or the narrow term of EP, but looked at the broad definition of the field and across databases (including Economic Literature, Humanities. Medical etc). Their findings are summarised below:

¹ Colarelli and Dettmann (2003) include a provisional list of evolved psychological mechanisms identified in the literature. These are: altruism between kin; prestige seeking and imitating high-prestige individuals; preference for risk to avoid loss; preference for foods rich in fats and sugars; enjoy the taste of salt; fear of snakes; landscape preferences for savanna-like environments; female mate preferences for economic resources; male mate preferences for youth, attractiveness and waist-to-hip-ratio; superior female spatial location memory; male sexual jealousy; natural language, detection of cheaters and, male desire for sexual variety.



They concluded that the value of evolutionary psychology as an explanatory framework to human behaviour was increasingly being recognised and incorporated into thinking across disciplines. At this time, in the field of management specifically, Saad and Gill recorded 14 articles. A search made on 6.04.2005 in the ABI/Inform Global database by this author, revealed 95 references in response to the key word: Evolutionary Psychology. Of these, 61 were published after the millennium and 49 were published between 1994 and 1999. When the same search was limited to academic publications only (filtering out practitioner journals and news sources) the total number over the period was reduced to 56 references, with 35 dated after 2000. Of the 56 articles in 'academic' journals around ten focused on EP and its application to marketing, another ten on the broad field of behavioural economics and decision making, a further ten into a broad category of organisational behaviour, eight were not directly relevant to any management field and the balance were articles continuing the debate about the relevance of the field *per se*.

Generally, work not specific to the management field, has concentrated in three areas: sexual differences, co-operation and investigations of our moral sense. What follows is a review of the EP work presented specifically within the field of management research.

3.1 Organisational Behaviour

London Business School professor, Nigel Nicholson, has been foremost in applying EP theory to observed management behaviour. In his 1997 paper he explored the extensive breadth of the theory and how it touched on gender relations, motivation, stress, group behaviour, leadership, organisational design and culture. He concluded that EP presented two major challenges for those studying organisational life. *The first is to rethink our theoretical ambitions, to test and establish their consistency with what we are learning about human nature. The second is to use these ideas to challenge current practice in management and organisation to move toward forms which uphold the dignity of our essential natures and individuality, and in so doing help us rediscover the meaning of community in organisational life.*

Because of Nicholson's dominance in the field, this section is, in large part, a review of his work, underpinned with further in-depth explanation of the theory from original researchers.

3.1.1 Emotion and Rationality

Our modern minds are adapted to solve problems that were frequently encountered by our stone age forebears, rather than the world we inhabit today. In that world, food was a scarce resource and life was short and full of life-threatening hazards. Living by one's wits and trusting to instinct was probably a more successful strategy than resorting (solely at least) to logic and reasoning. It is still more common to find human beings nursing a fear of snakes or spiders and for children to be afraid of lions and large animals compared with those who fear electric sockets or crossing the road. An unreasonable balance given the risk attached to each in today's world. It is also suggested that it is much harder for human beings to unlearn adaptive emotions (like the fear of snakes), compared with unlearning a non-adaptive fear (like the 'learned' fear of electricity).

Emotions are universal in human kind. Evolutionary psychologists argue that emotions are an adaptive feature, designed to ensure our survival. In extensive studies across many cultures Ekman (1993) found that the six emotions: happiness, sadness, anger, fear, disgust and surprise were recognised by all those that he studied and that the facial expressions used to signal each were the same. So what are they for? How do they help humans survive? Pinker (1997) explains:

The emotions are mechanisms that set the brain's highest level goals. Once triggered by a propitious moment, an emotion triggers the cascade of subgoals and sub-subgoals that we call thinking and acting.

Pinker (1997) explains that in this mechanism there is no sharp dividing line between thinking and feeling, nor does he support the notion that one inevitably precedes the other, contrary to other exponents.

Each human emotion mobilises the mind and body to meet one of the challenges of living and reproducing in the cognitive niche. Some challenges are posed by physical things, and the emotions that deal with them, like disgust, fear and appreciation of natural beauty, work in straightforward ways. Others are posed by people. The problem with people is that people can deal back. The emotions that evolved in response to other people's emotions, like anger, gratitude, shame and romantic love, are played on a complicated chessboard....

There are twice as many negative emotions as positive ones, and losses are felt more keenly than equivalent gains. It is 'easier' to find things to worry about, compared with events that make us happy. Our stone age ancestors would have fared better in their 'on-the-edge' world if they could avoid loss. If food and shelter were scarce their natural instinct would have been to reduce their risk of losing it. Unless, that is, their very existence was in jeopardy. Then, when cornered, like all animals in similar positions, the reaction is to 'fight for your life'!

Thus, Nicholson concludes (1998) *we are hardwired to avoid loss when comfortable but to scramble madly when threatened. Such behaviour can be seen in business all the time.* He cites as evidence, traders' behaviour when losses start to mount, typically doubling their positions. This, he explains is the result of their instinct to fight to survive. The counter experience is to act cautiously when stocks are on the rise by selling-out early. He also notes how hard traders find it to adhere to rational rules, without which, he suggests human nature would take-over.

A second example provided by Nicholson is about employees' reactions to impending lay-offs. If it is unclear about which employees will lose their jobs, he suggests, the natural reaction is to act in ways that might minimise the loss. He explains this is why under these circumstances, organisational productivity often rises. The opposite is true if the announcement is that an entire division will close. Under these circumstances, those involved will act aggressively and irrationally in an attempt to survive.

The theory also supports observations of organisations in periods of change. Whilst in their comfort zones, people will find it hard to take risks. Nicholson's advice is the same as Kotter's (1995) in this situation, when the organisation desires change and active pursuit of risk, the context has to be threatening. How many times have we heard change agents use the phrase: *there is no*

alternative? When the organisation requires caution, the pervading talk should be all about success and wellbeing.

As well as feeling loss more harshly than experiencing gains, people also hear bad news more clearly than good news. The example used by Nicholson (1997) here is the performance appraisal system endemic in many organisations: *Appraisers fail to appreciate the asymmetry of positive and negative feedback and the tendency of individuals to react 'disproportionately' to the latter. One drop of criticism seems to sour the milk of all the positive kindnesses communicated.*

There is an obvious link between this line of thinking from EP and the recent interest in the field of emotional literacy and its promotion of the recognition that emotions are a part of organisational life that should not be ignored. Nicholson (1998a) takes-up this point and talks about feeling-phobic organisations which fail to recover, express or manage the negative emotions of their members. Such organisations, he suggests, are not good places to work since they are stressful and do not allow community support systems to develop where negative feelings can be expressed and dealt with. The description of these organisations will be familiar to many current employees and include:

- High work loads with low individual control
- Uncertain and unstable roles and structures, leading to low job security and the tendency to work longer hours as a protection mechanism
- Individuals tend to deny they are stressed since this could lead to poor performance appraisal (more and more, a highly rational process) and greater fear of loss of job
- Fear is expressed as an off-loading onto others who have few support mechanisms to offer
- Communities at home are not as evident as they used to be – fragmented by our living styles.

In the same paper, Nicholson describes how, because we live in a world that we are badly adapted for, we suffer in terms of being relatively poor at solving problems that require rational calculus and probabilistic reasoning. He explains that our natural propensity for risk coupled with one that is poor at reasoning, leads to our tendency to be over-confident and a belief that events are less random and more controllable than they really are. We tend to believe that failure is usually attributable to human agency and that failure can be avoided if only we practised greater control. Hence we introduce serious, often excessively optimistic bias into our decision making. In ancestral communities, confidence would have conferred benefit on those displaying it. Confidence attracts allies and resources and could also be attractive to potential mates. Today, confidence as a leadership trait is regarded highly. Heroic tales are told about leaders, which fuel their feelings of being unbeatable and boosts confidence to the point where it becomes a liability and a poor choice versus rational analysis and logical thinking.

Evolutionary psychology suggests that taking emotions out of business is impossible. The wholly rational approach is simply not within our human capability and yet, this is the assumption implicit in many of our firms and attitudes to the way organisations are 'properly' run. It goes further, rationality is commonly the grounding for many of the business models we teach managers as recipes for their actions in the workplace, but we do not explain how to get over the emotions that might prevent us from reaching the rational view. EP suggests that we need to understand the way emotions are influencing us and to build processes which take account of them, reintroducing them where they have been inhumanly removed and learning to surmount them when rationality would find a better solution.

3.1.2 *Natural classifiers and co-operators*

The human mind is adapted to label and categorise. *Contemporary accounts of one of the few remaining hunter-gatherer societies have documented their astonishingly deep and detailed taxonomic knowledge about their natural world* (Nicholson 1997). The EP view is that the brain is naturally adapted to solving hunter-gatherer problems by classifying situations, experiences and fellow humans and to use cues to recognise if these are 'good' or 'bad'. The pay-off of storing information in this way, Pinker (1997) explains, is efficiency in that certain characteristics *infer*

certain behaviours are trustworthy, or certain colours of food mean they are safe to eat. When a decision has to be made, therefore, humans refer to their classification system to make a judgement. This comes more naturally than taking time to reason it out. In fact, there are certain sorts of information humans can 'naturally' deal with and others that the mind finds difficult to accommodate (Markoczy and Goldberg 1998a).

Hunter-gatherer peoples lived in bands, hunted and gathered together, co-operated for mutual benefit, and (a trait almost unique among all living organisms) engaged in social and economic exchange. They were nomadic and rarely encountered strangers, but when they did, they needed to know quickly if this stranger might be trusted. As Ridley (1996) explains: *You cannot pay back a favour, or hold a grudge, if you do not know how to find and identify your benefactor or enemy.*

Leda Cosmides pursued this idea that societies were constructed around co-operative behaviour, and hypothesised that if this were true, survival would depend on a detection mechanism for cheaters. In her own words (Cosmides and Tooby, 1997): *The evolutionary analysis of social exchange parallels the economist's concept of trade. Sometimes known as 'reciprocal altruism', social exchange is an 'I'll scratch your back, if you scratch mine' principle. Economists and evolutionary biologists had already explored constraints on the emergence or evolution of social exchange using game theory, modelling it as a repeated Prisoners' Dilemma. One important conclusion was that social exchange cannot evolve in a species or be sustained in a social group unless the cognitive machinery of the participants allows a potential co-operator to detect individuals who cheat, so that they can be excluded from future interactions in which they would exploit co-operators (Axelrod, 1984; Axelrod and Hamilton, 1981; Boyd, 1988; Trivers, 1971; Williams, 1966). In this context, a cheater is an individual who accepts benefit without satisfying the requirements that provision of that benefit was made contingent upon.*

.....[this] led us to hypothesise that the evolved architecture of the human mind would include inference procedures that are specialised for detecting cheaters.

Cosmides (1989) went on to find proof of the existence of such a mechanism using experiments based on the Wason selection task. Pinker (1997) summarised her work starting with an explanation of Wason and how he devised his tests to explore Popper's ideal of scientific reasoning about accepting hypotheses that deny falsification: *Wason wanted to see how ordinary people do at falsifying hypotheses. He told them that a set of cards had letters on one side and numbers on the other, and asked them to test the rule 'If a card has a D on one side, it has a 3 on the other', a simple P-implies-Q statement. The subjects were shown four cards and were asked which ones they would have to turn over to see if the rule was true. Try it:*



Most people choose either the D card or the D card and the 3 card. The correct answer is D and 7, 'P implies Q' is false only if P is true and Q is false.... Only about five to ten percent of the people who are given the test select the right cards. Even people who have taken logic courses get it wrong....

But when the arid numbers and letters are replaced with real-world events, sometimes – though only sometimes – people turn into logicians.... Leda Cosmides discovered that people get the answer right when the rule is a contract, an exchange of benefits. In those circumstances, showing that the rule is false is equivalent to finding cheaters.

So, when people are asked to find violations of social contracts where taking a benefit is conditional on meeting a requirement, the correct answer is obvious to almost all people being given the test. Whenever the content of a problem asks subjects to look for cheaters in a social exchange – even when the situation described is culturally unfamiliar and even bizarre – people experience the problem as simple to solve. In general, 65-80% of the people tested get it right, the highest performance ever found for this type of task.

What is happening in the brain to enable people to solve exactly the same sort of logic test with much higher levels of accuracy, simply because the question is framed in such a way as to suggest a cheater might be lurking? Cosmides suggests that there is a domain specific algorithm that is adapted to solving these sorts of problems. As Pinker (1997) says: *It is not that a logic module is being switched on, but that people are using a different set of rules. These rules, appropriate for detecting cheaters, sometimes coincide with logical rules and sometimes don't. When the cost and benefit are flipped, as in 'If a person pays \$20, he receives a watch', people still choose the cheater card (he receives a watch, he doesn't pay \$20) - a choice that is neither logically correct nor the typical error made with meaningless cards. In fact, the very same story can draw out logical or non-logical choices depending on the reader's interpretation of who, if anyone is a cheater.*

The mind seems to have a cheater-detector logic of its own. When standard logic and cheater-detection logic coincide, people act like logicians; when they part company, people still look for cheaters.

In a group that bases its future survival on co-operation, it is essential that members of the group have a highly sensitive mechanism for detecting cheaters, otherwise self interest would always dominate over mutual gain (as demonstrated by the Prisoner's Dilemma – played once vs played repeatedly, see Ridley 1997). Reading others' minds and body language appears to be an innate skill (doubly useful when resources are scarce and competition fierce). There is plentiful evidence not only that we possess and use this gift in organisational life, but also that we find it difficult to suspend. Research has shown that managers sort their employees into winners and losers as early as 3 weeks after starting to work with them (Nicholson 1998). Recruiters tend to form judgemental impressions of candidates during the first minutes of the selection interview (Anderson 1992). Functional groups within organisations behave as 'bands' constantly classifying who is 'in' or 'out', creating barriers between Marketing and R&D for example.

There are countless examples of organisations that break the foundation of trust with their employees because of contracts (formal or implicit) that are not met. Given that people are hard wired to seek-out cheaters, any management promise which is not delivered on will be remembered and future declarations treated with scepticism and mistrust.

3.1.3 Gossip, Reputation and Status

Pinker (1997) notes: *The search for signs of trustworthiness makes us into mind readers, alert for any twitch or inconsistency that betrays a sham emotion. Since hypocrisy is easiest to expose when people compare notes, the search for trustworthiness makes us avid consumers of gossip. In turn, our reputation becomes our most valuable possession, and we are motivated to protect (and inflate) it with conspicuous displays of generosity, sympathy and integrity and to take umbrage when it is impuned.*

It was Trivers (1971) who first proposed that the human brain expanded in size to accommodate the various mechanisms needed to deal with reciprocal altruism and living in a complex social system. Ridley (1997) notes that the bigger the society in which the individual lives, the bigger his/her neocortex relative to the rest of the brain. To acquire a big brain, you need to live in a complex society which is rich with information. Greater command of this information will increase your survival chances. Hence, Dunbar (1996) proposed that the correlation between brain size and social group size were so close that the former could be used to predict the natural size of the latter, if it is unknown. This logic suggests that 'natural' human communities number 150 – toward the upper limit of hunter-gatherer clan size. And, his research indicated that around 70% of all conversation is devoted to personal experiences and social relations (information about the clan), squeezing all of the remainder of human discourse about tasks, ideas, entertainment and the rest into 30%.

Nicholson (1998) argues that since gossip is fundamental to human beings in social groups there is little point in managers trying to stamp it out or substitute it with loads of 'formal' communication. Instead, he advises that managers tap into it and ensure that what is being said is 'healthy' rather

than malicious. Management by wandering about might be the most effective way of communicating, especially if it is in a climate of trust and openness.

Gossip defines the social group (Gluckman 1963). If no one tells you the gossip, you are an outsider. Barkow (1992) reminds us that to anthropologists, gossip is a means of social control which encourages people to adhere to the norms of the group. Disobey and you might be ostracised. Also, gossip determines the reputation of individuals and creates the hierarchies of social standing within groups. Barkow concludes that by applying EP theory to this pervasive phenomenon of gossip and social information, a testable theory should emerge of what and who we are interested in gossiping about. In the Pleistocene environment, keen interest would have been shown in potential rivals for resources, present and potential allies, possible mates, close kin but **not** strangers or outsiders. Subjects of interest would have included sexual and political activity, reputation and reliability, health and physical condition, births and deaths and the factors affecting the relative standing of others.

Whilst reputation and social acceptability were important to hunter gatherer communities, Barkow (1992) denies that Pleistocene societies were stratified to any well defined degree:

Surprisingly, social stratification is not all that ancient a phenomenon in human history. Stratification requires a sufficiently large-scale society to produce a surplus with which to support some degree of political and economic specialisation. Foraging peoples rarely have such surpluses, and our ancestors were of course foragers. Such peoples are generally organised in terms of bands..... In bands, all individuals have approximately equal access to resources and usually share an ideology of egalitarianism.

Most anthropologists agree that in hunter-gatherer bands the males did the hunting and the females the gathering. The contribution to the survival of the group was roughly equal, so the status of men and women was also roughly equal. All the men did roughly the same work, as did the women. There were no formal institutions, there were no bosses or subordinates (except perhaps in terms of age), everyone was more or less at the same level.

Throughout modern life, however, hierarchy and social stratification is everywhere (Murdock 1945). Barkow argues that the traits which allow social stratification to develop must be adaptive and suggests that they are:

- (i) *seeking social standing* : it is commonly accepted that human beings are much concerned with their relative standing and seek to improve it, even communicate to others that it is higher than rivals might concede. In evolutionary terms, higher status would have won the individual more mate choices and therefore greater chance of reproductive success.
- (ii) *nepotism* : it is recognised generally that human beings tend to favour their own offspring and close relatives over others. Hamilton (1964) elucidated the selection pressures that could be expected to lead to the evolution of nepotism. Despite the fact that western cultures typically consider nepotism to be 'wrong', other cultures perceive nepotism as commonsensical.
- (iii) *Social exchange and the ability to form coalitions* : one of the fundamentals of group living is the ability for social exchange and cooperation to gain mutual advantage. Playing politics is often a better strategy for survival than engaging in physical combat.

Nicholson (1997) explains why status seeking within groups results in relatively stable hierarchies:

A hierarchical order supplies a solution to the problem of competition being self-defeating for the community. For those in ascendant positions, it gives rewards of wealth and reputation coupled with the ever-imminent risk of contest and loss of position. For those in subordinate positions, it offers freedom from the need to compete and protected membership status within the clan, albeit with a diminished share of resource benefits. This is the social contract of the community and classical bureaucracy represents the most refined social form to have developed to satisfy the human inegalitarian impulse without incurring the cost of anarchistic striving.

Whilst the universal existence of hierarchy can be explained by psychological mechanisms and its social benefits acknowledged, Nicholson also makes clear the downsides. The 'Matthew Effect' is quoted as constantly supported by research where status confers many psychological and material benefits on the people with it, whereas those who suffer its lack are more often absent from work, typically suffer from stress and lack motivation, as well as being poorly rewarded.

Nicholson concludes with three inferences for management:

- hierarchy is ineradicable – it persists and managements attempts to wipe-out status symbols are wasted energies.
- psychologically we are adapted to smaller, more fluid and egalitarian hierarchies than those which have developed in post-agrarian societies. Some small and midsize consulting firms that 'hunt and gather' for clients and projects in a dispersed field of uncertain resources seem best able to cultivate this evolutionary ideal as did some of the old craft guilds before industrialisation.
- in all forms of hierarchy those in inferior positions suffer poorer quality lives.

One of the inevitable outcomes of social groups with the ability to cooperate and indulge in social exchange yet still motivated to gain status and opportunities for mating advantage, is playing politics. Nicholson (1997) sites the growing literature on impression management in support of the ubiquitous presence of image over ability in our organisations and the many instances where political connections and social linkage still dominate career promotion decisions, compared with technical capability.

In their paper, Colarelli and Dettmann (2003) highlight the distinction between status and prestige. They equate status with rank in a hierarchy gained through having more political or military power, control of resources or legitimate authority. Prestige is a particular type of status, one that is gained by an individual with a specialised skill and as a result receives deference and entitlements. They make this distinction because prestige is valued and sought by both males and females and hence can be used in marketing communications differently from status which is more strongly pursued by men.

3.1.4 Gender at Work

The reproductive capacities and opportunities of men and women differ, as does their biological role in neonatal nurturance. This has had a number of consequences in the evolution of sex-typed psychology (Nicholson 1997, the detail can be found in Buss 1994 and for a summary logic see Browne 1998). The consequences are differences in two areas. One is demonstrated in the behaviours males and females display in mate selection. The second is found in the division of labour between the sexes.

EP theory predicts that males will benefit from competing with other males for females to mate with. They compete either by:

- (a) vanquishing rivals, by fighting with them or displaying superior fighting adaptations (eg: antlers in deer)
- or (b) appearing more attractive to females by displaying signals of their superior genes (eg: peacock tails, tall, fit and healthy men) and inviting the females to choose, or by offering more resources to care for the offspring (in terms of wealth, status, time, food, a home etc).

Females, on the other hand, invest significantly more time in reproduction and child care than do males. Their reproductive potential is significantly less than that of males and their need to compete is much less. Under sexual selection pressure, therefore, males will do better at ensuring their genes survive into the next generation if they compete, if they take risks, if they are fitter, healthier and have more resources to invest in their offspring.

The phenomenon is not reserved for species other than human beings. Numerous studies across many human cultures have confirmed that women prefer men with high-status and wealth and who

are also dominant (rather than domineering). Women also prefer men who are tall and strong. Men, on the other hand, are more concerned with youth and physical attractiveness as qualities in females to mate with (see: Browne 1998 and Wright 1994). Similarly, empirical studies of sex differences in temperament and behaviour have yielded results consistent with the predictions of evolutionary theory (Buss, 1995). Men more often than women exhibit a constellation of temperamental traits encompassing aggressiveness, dominance-assertion, competitiveness, achievement orientation, status-seeking and risk-taking. Women tend more than men to exhibit nurturing and caring behaviour for others and to show greater interest in cementing social relationships.

Divisions of labour between women and men evolved because women were required to spend more time close to the natal home. Males travelled longer distances to hunt or scavenge, while women foraged locally, often with their offspring (Megarry, 1995). It is argued that the long predominance of these conditions in our history has equipped us with mental modules adapted to this domain. Examples of such differentiation have been found in experiments, where men were found to out-perform women in mental mapping skills and women were found superior in object memory and object location skills (Silverman and Eals, 1992).

Nicholson (1997) summarises the implications for the workplace:

..first of all it implies that many of the gender-related problems in work, such as the glass ceiling and the sexual harassment of women, have deep and persistent roots, and will only be eliminated by extreme measures of social control or radical change in how we organise. Likewise, without coercive structuring, sexual division of labour will also persist where tasks and operations relate most closely to sex-typed skills and preferences. However, there is no implied endorsement in EP of the conditions which give rise to the prototypical male-dominated organisation..... EP suggests that sex differences can operate more as nuances than role separations in organisations.

Browne (1998) concludes that typical male traits of competitiveness, status-seeking and risk-taking are related to workplace success independent of sex. People who tend to strive for status and resources tend to be rewarded with status and resources to a greater extent than those whose priorities lie elsewhere. Because of the long-standing association between male status and reproductive success, the former group is disproportionately male. This finding is replicated worldwide. He also concludes that it is natural for many women to find the choice between joining this competitive world and investing more time in their children an easy one, in that many would prefer the caring role. As Nicholson suggests (1998) *companies might ask themselves if their rules of success were written by men and for men.*

3.1.4 Personality and Leadership

Evolutionary psychology predicts that personality traits, such as status-seeking, dominance and the need to achieve, are adaptive behaviours which are exhibited by those individuals who have the relevant innate psychological mechanisms. Nicholson (1998) said: *The point is, along with each person's fundamental brain circuitry, people also come with inborn personalities. Some people are more dominant than others. Some are more optimistic. People can compensate for these underlying dispositions with training and other forms of education, but there is little point in trying to change deep-rooted inclinations.*

So where is the proof that some aspects of personality are in-born, rather than solely learnt as the SSSM model would purport? In her review Waldron (1998) cites primate studies with lesions to the posterior orbitofrontal cortex region of the brain. Monkeys with these abnormalities exhibit disorders of dominance behaviours. Humans with damage in this part of the brain lack social graces and the ability to succeed professionally and socially. She also records the links being made between the neurochemistry of the brain and status behaviours. Again in monkeys, high status individuals have been found to have, on average, concentrations of the neurotransmitter serotonin 50% higher than low ranking monkeys. Whilst status is a more complex phenomenon in humans, (and experiments mimicking the primate ones not possible), Waldron refers to the evidence about the popular pharmaceutical drug Prozac, and its generic equivalents. These have

the effect, in humans, of increasing the level of serotonin by blocking its re-uptake, which also appears to produce changes in status-related behaviours.

Nicholson (1997) cites twin studies as long-standing evidence of the presence of in-born dispositions. He also takes the analysis a step beyond psychological mechanisms by pointing to research that suggests links between genetic components and various work attitudes and interests, and stability coefficients for political attitudes suggesting they too may have deeper roots than are supplied by adult socialisation.

In his 1998 paper, he suggests evidence for the existence of genes for detachment and novelty avoidance, when these are expressed together they appear to amount to shyness in the individual. In-born personality traits, therefore are not exclusively about status striving or the need for dominance. Similarly, Nicholson does not contend that all leaders have to have prescribed personalities which include a specific mix of traits like dominance or status striving. Instead he refers us to contingency approaches to leadership. From this he suggests that what is important for leadership success is to get the right match between personality and context. His conclusion is that what is crucial for leaders is that they are motivated to lead. He implies that this motivation is hard wired and therefore concludes that leaders are born, not made.

However, in his 1998a paper, where he uses EP as a lens to define seven organisational syndromes, he describes one where leaders display behaviours typical of the alpha male. In this culture, leaders display and act-out their power over submissive and powerless followers. Powerless followers look to their leaders to bolster their own self-esteem and security. From his own research, Nicholson suggests that this syndrome is typical of small and medium sized firms where survival requires aggressive competition against established rivals. Other firms, however are not exempt since anywhere where the organisation promotes males with high dominance needs, they are likely to recruit and retain submissive followers. In such organisations, succession planning is probably not common and leaders typically outstay their usefulness. When they eventually leave, the firm may not survive long due to the loss of the power that sustained the many processes the leader put in place and kept close control over. Nicholson argues that this syndrome would not have been typical in hunter-gatherer communities where leadership would have been contested openly and frequently.

3.2 *Structure*

In their paper, Pierce and White (1999), bring together evolutionary psychology, socioecology and ethology to explain social behaviour and emergent social structure in two different environmental contexts. They argue that humankind has evolved different forms of social structure in response to the survival challenges present in the ancestral environment and that when we are presented with these contexts in our contemporary environment, we have a natural response to them. Hence, they argue that the informal, emergent social structure within organisations is predictable when these contexts prevail and, to some extent, manageable if managers can influence the internal context and affect perceptions about the external environment. They suggest that if organisational resources are clustered and concentrated, if they are highly visible and predictable, and have significant delays between their acquisition and use, then an organisational structure resembling that described by Burns and Stalker (1961) as 'mechanistic' will likely result. Whereas, in organisations where managers are encouraged to 'forage' widely for the resources they need, which are therefore, likely to be unpredictable and hidden, an 'organic' structure is predicted.

Burns and Stalker's 'mechanistic' and 'organic' structures are likened to the agonistic and hedonic models described by Chance and Jolly (1970) following their observations of communities of chimpanzees. Mechanistic or agonistic structures are characterised by hierarchy where control, authority and communication are dependent upon position and rank. Superiors are dominant and expect subordinates to follow direction submissively. Organic or hedonic structures are also commonly stratified, but hierarchy is not position-related or fixed, but linked with competence and prominence to the task at hand. Authority is often linked to seniority, but can also be attributed to the best informed or capable individual. There is also greater interaction with the outside world, so that networks are extended both internally and externally.

Pierce and White contend that these different social structures are the natural human responses to the environment. They can be harmonious with the formal structure, designed and imposed by managers, or they might be in conflict with the organisational design. But, they are deeply ingrained in human nature and could be used by managers to deliver a desired organisational outcome if deployed appropriately.

They also suggest that their integrated framework provides a theory of organisational structure and behaviour that is new and potentially full of promise to organisational theorising

3.3 Marketing

The potential of EP as a lens on marketing activities has been explored relatively enthusiastically since 2000, especially in the areas of advertising and understanding consumer behaviours. Bagozzi and Natarajan (2000), for example, reflect positively, but rather generally on its future application to marketing. A special issue of *Psychology and Marketing* (2003) presented four papers – three empirical and one conceptual – considering aspects of consumer behaviour in the light of EP. One of these explores gender differences in gift giving (Saad and Gill, 2003). Studies showed that the amount of money spent on gifts was highest for romantic partners, followed by gifts for close kin members and then by gifts for close friends, consistent with an evolved fitness and reciprocal altruism explanation. The second paper by Foxall and James (2003), applied an extension of foraging theory to explore brand choice and price sensitivity for common supermarket goods. Again, apparent irrationality on the part of the consumers is explained by adaptive-evolutionary principles. In Colarelli and Dettman's (2003) conceptual paper, they describe examples of successful (and not so successful) marketing campaigns from the perspective of EP theory. They argue that where marketers work with the grain of human nature (and to date practitioners have done this intuitively) the resulting campaigns are more successful. This, they argue, is because our psychological mechanisms elicit strong responses (most likely subconsciously), and these in turn influence our susceptibility to consumer products and advertising.

Saad (2004), explored the representation of young, attractive women in advertising through the lens of EP and concluded that aspects of sexuality were universal, as EP theory predicts: *when it comes to sexuality, Homo sapiens react to certain stimuli in clear and predictable manners that have little to do with cultural agents*. From this understanding, he predicted that the use of attractive women in advertising was likely to continue and continue to be successful regardless of the predominant social and/or national culture.

The underlying precept of EP is that human nature is universal. Evolved psychological mechanisms are common to all of us regardless of nationality. The interest in human universals in the marketing domain has increased, therefore, as more companies extend their reach globally. Whilst Wathieu, Liu and Zaltman (2004) do not refer directly to EP as the logic for their support of rooting marketing strategy in human universals, the work they cite has strong links to the EP field (especially that of Brown, 1991 and Damasio, 2000). They concur with the EP premise of universal human processes and that these processes underlie individual preference formation that are not subject to rapid change, providing further positive endorsement to practitioners to exploit these universals in their development of global marketing strategies. In an unpublished paper, this author (Verity) argues for the use of EP theory for understanding universal preference formation and hence providing a framework within which to create powerful, globally relevant, advertising.

In his radical paper, Earls (2003) proposes that the value of market research is seriously undermined by ignoring some of the lessons from EP theory. He argues that consumer research focuses too strongly on the individual, overlooking the most important part of what it is to be human, that we are (in his words) herd animals. He reasons that *by holding onto our individualist-based view of humanity, we are failing to live up to the standards we aspire to in providing business with the means for informed decisions about the future*.

The idea of the 'herd' is found again in Bonabeau's (2004) Harvard paper, he concurs with Earls that current methods of measuring human behaviour are inadequate in that they treat people

(economic agents) as independent decision makers who don't interact with others. But, promises that there are tools on the horizon that will make it possible to infer individual behaviours and interactions from aggregated data – something he predicts will be useful to market researchers and very interesting to marketers. Unfortunately, he does not provide hints as to what these tools might be. His ideas and those of Earls, however, appear to be shared by Wright (2002) who argues for a different approach to consumer research, one which starts from the premise that our minds are primarily evolved to deal with social problems, in social contexts and that the results of measuring consumer behaviour will only be accurate and representative when conducted in these contexts. So that, asking a consumer to make a choice between two options in an 'academic-type' setting will elicit an 'academic' response rather than the response that would be made in a socially-realistic situation.

In his paper, Bonabeau uses EP theory to explain why imitation is a human predisposition and why today's environment is stimulating imitation behaviour in us. This, he posits leads to increasing instability in society generally as well as in business with the increased possibility of fads, fashions and explosions of opinion, dissent etc... occurring more frequently. He deduces that strategy formulation becomes more difficult due to this environmental unpredictability. He also suggests that because there is greater transparency generally, the possibility of strategists copying other company strategies increases.

4. What is the promise?

The promise is not that the clan-living societies of the past are the 'ideal' form of social or work organisation. Nor that we could recreate this 'ideal' in today's environment, if we wanted. What is being said is that if human nature is hard-wired in some respects it could be worth understanding how and testing if organisations could be managed sympathetically with human nature. If so, would they prove better organisations for all their stakeholders?

Nicholson notes (1998a), for example, that clan communities were able to self-regulate in ways that our modern organisations often fail to do. For instance, the EP model suggests that these communities would have managed a healthy diversity. In the hunter-gatherer band membership would have exhibited a statistically normal diversity of individual differences. This compares with selection and self-selection mechanisms that exist in firms, giving rise to populations often biased to certain personality traits. He discusses the consequences of this asymmetry : *The [natural] community is forced to accommodate the range of its diversity through its own regulatory mechanisms. These would need to incorporate solidaristic processes for tolerance and social support, as have been attributed as the cause of the low incidence of mental ill-health in many tribal communities. In contemporary society the same phenomenon was closely studied in the relatively small Pennsylvanian town of Roseto, where exceptional levels of physical and mental health were associated with strongly cohesive kinship ties across the community, both of which declined as growing affluence eroded egalitarianism over two decades.*

He makes three other points. First, reciprocal altruism is likely to operate most reliably in closed communities, *where in the language of game theory, first mover cooperation makes strategic sense when players are exposed to repeated encounters with other players. Acts of sharing without immediate return are likely to yield both reputational and material gains in the long term.* Second, flexible goals and roles are more likely to deliver against the different tasks the community is likely to face. Finally, that different projects and the different leaders and structures needed to achieve them, favour a fluid hierarchy which at times, may almost disappear.

He suggests some small organisations create these conditions of diffuse and varied goals, decentralised resources and relatively stable membership, for example, in some consultancy firms. The most difficult to achieve, he postulates, would be maintaining stability with diversity. Changing membership is fashionable in the current workplace, but, Nicholson argues, is in danger of creating fragmentation and conditional loyalty. Sustaining diversity is also a fashionable management challenge. Here, the segmentation that exists in our society more widely makes it very difficult to

maintain diversity in the workplace, which leads to a lack of creative tension and insufficient challenge.

The current literature search found no papers which applied EP theory to the strategy field. However, this could be a rich seam of exploration for the future. For example, the 'classic' rational view of strategy formulation (Whittington, 2000) is seen by many as an implausible construct when compared with the reality of messy environments and organisations that are populated with people. EP theory provides an explanation as to why purely rational strategy processes are an ideal that is impossible to attain while people are involved – since the thought process is not separable into 'the rational' and 'the emotional'. Similarly, EP theory might explain why managers find tools like the PEST and SWOT easy to adopt into strategy analysis (because of our predisposition to classify) but find it much harder to use tools like scenario thinking (because human nature leads us to deny uncertainty and be overly confident about our ability to control events) (Verity, 2003). It is also logical to extend EP theory into the area of strategy implementation and discover processes that might be more humane, and therefore, more effective at delivering change initiatives.

There is one example of a leader who made a deliberate attempt to transform his organisation into one that acknowledged human nature and tried to work with it instead of against it. Ricardo Semler, CEO of the Brazilian company – Semco - decided to try and manage his company as a 'natural' business after reading the book *Corporation Man: Who He Is, Why His Ancient Tribal Impulses Dominate the Life of the Modern Corporation (1971)*. His experience and his results are recorded in his book (1993), and the HBR (1989, 1994 and 2000).

The field is very young and its applicability to management in its infancy. Given the degree of controversy that surrounds it, there is a good chance that it will not gain easy access into management practice. There is a sense, however, that only a big idea is worthy of large amounts of anti-campaigning and that there could be a lot at stake among the nay-sayers. What EP threatens to do is to explain *why* some aspects of organisations work and why some will always struggle. Because EP is a theory (rather than a model or a hypothesis), it is predictive and hence will provide a true guide for successful practice, in marketing communications, in organisational design, in informing how to manage people. Many of its predictions, however, appear commonsensical and relatively simple. For this reason alone, the promise might be received by practicing managers as disappointing, unexciting and 'not new'.

References

- Anderson N.R (1992) Eight Decades of Employment Interview Research: A Retrospective Metareview and Prospective Commentary. *European Work and Organisational Psychologist*, 2, 1-32.
- Axelrod R. (1984) *The Evolution of Co-operation*. New York: Basic Books
- Axelrod R. and Hamilton W.D. (1981) The Evolution of Co-operation. *Science*, 211, 1390-1396.
- Barkow J.H., Cosmides L. and Tooby J. eds (1992) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. Oxford University Press
- Barkow J.H. (1992) Beneath New Culture is Old Psychology: Gossip and Social Stratification. *in: The Adapted Mind* (ed Barkow, Cosmides and Tooby), Oxford: Oxford University Press
- Bernhard J.G. and Glantz K. *Staying Human in the Organisation. Our biological heritage and the workplace*. Praeger
- Bonabeau E (2004) The Perils of the Imitation Age, *Harvard Business Review*, June 2004, 82, 6, p 45
- Boyd R. (1988) Is the Repeated Prisoner's Dilemma a Good Model of Reciprocal Altruism? *Ethology and Sociobiology*, 9, 211-222
- Brown D E (1991) *Human Universals*, McGraw-Hill, New York
- Browne K.R. (1998) An Evolutionary Account of Women's Workplace Status. *Managerial and Decision Economics*, 19, 427-440
- Bagozzi R P and Natarajan R, (2000) The Year 2000: Looking Forward, *Psychology and Marketing* 17, 1, pp 1-11
- Buss D.M (1994) *The Evolution of Desire: Strategies of Human Mating*. New York, Basic Books.
- Buss D.M (1995) Psychological Sex Differences; Origins through Sexual Selection. *American Psychologist*, 50 164-168.
- Colarelli S M and Dettmann J R (2003) Intuitive Evolutionary Perspectives in Marketing Practices, *Psychology and Marketing*, 20, 9, p 837
- Cosmides L. (1989) The Logic of Social Exchange: Has Natural Selection Shaped how Humans Reason? *Studies with the Wason Selection Task*. *Cognition*, 31. 187-276
- Cosmides L. and Tooby J. (1992) Cognitive Adaptations for Social Exchange. *in: The Adapted Mind* (ed Barkow, Cosmides and Tooby), Oxford: Oxford University Press
- Cosmides L. and Tooby J. (1997) *Evolutionary Psychology: A Primer*. Center for EP at UCSB web site. www.psych.ucsb.edu/research/cep/primer.html
- Damasio A R (2000), *the Feeling of What Happens: Body, Emotion and the Making of Consciousness*. Pub : Vintage
- Dawkins R. (1976) *The Selfish Gene*. Oxford University Press
- Dunbar R. (1996) *Grooming, Gossip and the Evolution of Language*. Faber and Faber, London

Earls M (2003) Advertising to the herd: how understanding our true nature challenges the ways we think about advertising and market research. *International Journal of Market Research* 45, 3 pp 311 - 336

Ekman P. (1993) Facial Expression and Emotion. *American Psychologist*, 48, 384-392.

Foxall G R and James V K (2003) The Behavioural Ecology of Brand Choice: How and What do Consumers Maximise? *Psychology and Marketing*, 20 (9)

Gluckman M (1963) Gossip and Scandal. *Current Anthropology*. 4, 307-316.

Kotter J.P (1995) Leading Change: Why Transformation Efforts Fail. *Harvard Business Review*. Mar-April

Hamilton W.D (1964) The Evolution of Social Behaviour. *Journal of Theoretical Biology*, 7, 1-52.

Markóczy L and Goldberg J. (1998) Management, Organisation and Human Nature: An Introduction. *Managerial and Decision Economics*, 19, 387-409

Markóczy L and Goldberg J. (1998a) Women and Taxis and Dangerous Judgements: Content Sensitive Use of Base-rate Information. *Managerial and Decision Economics*, 19, 481-493.

Megarry T. (1995) *Society in Prehistory: The origins of human culture*. Macmillan.

Murdock G.P. (1945) The Common Denominator of Cultures. *in: Culture and Society*. Ed. G.P.Murdock. University of Pittsburgh Press.

Nicholson N. (1997) Evolutionary Psychology: Toward a New View of Human Nature and Organisational Society. *Human Relations*, 50, 9, 1053-1078

Nicholson N. (1998) How Hardwired is Human Behaviour? *Harvard Business Review*, Jul-Aug.

Nicholson N. (1998a) Seven Deadly Syndromes of Management and Organisation: The View from Evolutionary Psychology. *Managerial and Decision Economics*, 19, 411-426

Pierce B.D and White R. (1999) The Evolution of Social Structure: Why Biology Matters. *Academy of Management Review* Vol 24 No 4, 843-853.

Pinker S. (1997) *How the Mind Works*. Penguin Books

Rose H. (2000) Colonising the Social Sciences? *in: Alas Poor Darwin* [eds: H.Rose and S.Rose]. Jonathan Cape.

Rose S. (2000) Escaping Evolutionary Psychology. *in: Alas Poor Darwin* [eds: H.Rose and S.Rose]. Jonathan Cape.

Saad G and Gill T. (2000) Applications of Evolutionary Psychology in Marketing, Psychology and Marketing, 17 (12) pp 1005-1034

Saad G and Gill T (2003) An Evolutionary Psychology Perspective on Gift Giving Among Young Adults. *Psychology and Marketing*, 20 (9) p 765

Semler R (1989) Managing Without Managers. *Harvard Business Review*, Sept-Oct

Semler R (1993) *Maverick*. Warner Books

Semler R (1994) Why Former Employees Still Work for Me. *Harvard Business Review*, Jan-Feb

Semler R (2000) Why we went Digital Without a Strategy. *Harvard Business Review*, Sept-Oct.

- Silverman I and Eals M. (1992) Sex Differences in Spatial Abilities: Evolutionary Theory and Data. *in: The Adapted Mind* (ed Barkhow, Cosmides and Tooby), Oxford: Oxford University Press
- Symons D. (1992) On the Use and Misuse of Darwinism in the Study of Human Behaviour. *in: The Adapted Mind* (ed Barkhow, Cosmides and Tooby), Oxford: Oxford University Press
- Tooby J. and Cosmides L. (1992) The Psychological Foundations of Culture. *in: The Adapted Mind* (ed Barkhow, Cosmides and Tooby), Oxford: Oxford University Press
- Trivers R. (1971) The Evolution of Reciprocal Altruism. *Quarterly Review of Biology*, 46, 35-57.
- Verity J (*in print*) Global Advertising – a prescription for success.
- Verity J (2003) Scenario Planning as a Strategy Technique. *European Business Journal*, 15, Iss 4 185-195.
- Waldron D A. (1998) Status in Organisations: Where Evolutionary Theory Ranks. *Managerial and Decision Economics*, 19, 505-520
- Wathieu L, Liu Y and Zaltman G (2004) *Rooting Marketing Strategy in Human Universals, in The Global Market*, Jossey-Bass, San Francisco
- Whittington R (2000) *What is Strategy and Does it Matter?* Pub Thomson Learning, UK.
- Williams G. (1966) *Adaptation and Natural Selection*. Princeton: Princeton University Press.
- Wilson E O. (1975) *Sociobiology: The New Synthesis*. Cambridge, MA: MIT Press
- Wright P (2002) Marketplace Metacognition and Social Intelligence, *Journal of Consumer Research*, 28, 4 p 677
- Wright R. (1994) *The Moral Animal: Why we are the Way we are*. London, Abacus