

Creative Management

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3 The Innovative Mind: Becoming Smarter by Thinking Less

Guy Claxton

Woolworth's, the pyramids and the Internet have one thing in common: they started out as nothing but an idea. As B.C. Forbes, founder of *Forbes* magazine, succinctly put it, thinking is the fundamental material out of which physical structures and real organizations are made. Successful ventures are the embodiments of good ideas. The most precious commodity in every company is not the body of knowledge it already possesses, nor the skill with which this knowledge is 'managed'; it is the quality of thinking which its members routinely and spontaneously display, as they go about their jobs and encounter new challenges.

The successful company needs both innovation and implementation. Innovation without effective implementation can easily lead to a succession of bright ideas that never somehow take off, and which easily leave behind a trail of 'innovation fatigue' and even cynicism. 'Don't worry, it's just the MD's latest brainwave. It'll blow over.' On the other hand, implementation without innovation produces a kind of bureaucratic and stereotyped 'management by numbers' which may be obsessed with the need for accountability, while remaining oblivious to mounting pressures for change (and to opportunities to do so) (West 1999).

In stable times, the risks of faulty implementation may be greater than those of the failure to innovate. If a product has a safe market niche, with consistent demand and no emerging competitors, it may well be smarter to ensure that you keep doing well what you are good at. To try and keep fixing something that ain't broke may entail unnecessary risks and waste valuable time.

But there are a shrinking number of companies left which live in such a world. The runaway speed of change, the increase in complexity, the failure of long-term planning and the need to replace it with shorter-term responsiveness are all well documented. 'The learning organization' has become a cliché, but only because it accurately reflects the demands under which most managers now operate. In such conditions, for managers to leave the creative thinking to the chief executive, and remain preoccupied with routine matters of implementation, is somewhere between myopic and suicidal. As change quickens, and as companies delay and re-engineer, thinking about and questioning what they are doing, at both tactical and strategic levels, have to become managers' second nature.

Inquiring minds are fast becoming *de rigueur*, and the art of management, in uncertain times, involves a much more delicate and dynamic balance between implementation and innovation than heretofore. It is therefore important to know:

- what the differences are between the innovative and the implementing mind-sets;
- how they interact;
- what are the inner, psychological, conditions which encourage the emergence and the development of the innovative mind-set;
- what are the outer, physical and cultural, conditions which do they same;
- how a dynamic balance between the two can be fostered.

This chapter explores these questions in the light especially of recent work in cognitive science about the nature of creativity and intuition, and the value of kinds of thinking that are 'slow' and 'soft' (Claxton 1997/1999).

The implementation mind-set

There are a number of assumptions that are commonly made about the nature of thinking and learning which are at odds with the view of the mind that is emerging from the laboratories of psychologists and neuroscientists. These assumptions, or 'mind myths' as I shall call them, are embedded both in the way individuals relate to their own mental processes, and in the structures, attitudes and languages of corporate cultures. Even when a company professes to value creativity in its middle and junior managers, its good intentions may be undercut by these old habits of mind and of 'common practice'. It is not that these 'myths' are completely false; rather that they over-emphasize just one aspect of the mind, thereby eclipsing others. In particular, they foreground and highlight mental attitudes and processes that are often conducive to good implementation, but neglect, or even suppress, those that are more relevant to innovation. A first step towards liberating the innovative mind is, therefore, to expose what some of the mind myths might be, and to demonstrate how they both inhibit creativity, and how they conflict with current research. I shall focus on just four of these tacit beliefs, ones that seem to me to be particularly prevalent, and pernicious, in the business world.

The first may be encapsulated in the slogan: 'Being decisive means never having to say you're stumped.' This myth tends to equate decisiveness with a continual absence of confusion, hesitation or uncertainty. A decisive person is able to take in the essentials of a predicament quickly and is either able to produce a rapid response, or at least is able to know exactly what more she or he needs to know in order to decide what ought to be done – and this ability is to be admired. In public settings and private mentalities which act as if they believe this, uncertainty and confusion are seen as aversive conditions. Their

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presence, or even their imminence, thus tends to generate a degree of personal (or collective) discomfort or even shame, and makes people prone to accept quickly and uncritically plausible-sounding solutions which may later turn out to be superficial or flawed.

The second myth says simply: 'Time is (always) short.' Under this belief, people tend to act as if there were a war on, and therefore to suppose that everything, from production to decision making, has to be done as fast as possible. Speed becomes a universal 'good', regardless of the real exigencies of the situation. Thinking always occurs in an atmosphere of pressure and urgency, and it is presumed that such pressure does not materially alter the quality of the thinking. Indeed it may even be believed that the pressure to deliver has, if anything, a positive effect, in that it 'motivates' people, and forces them to 'focus' and concentrate. Without that sense of urgency, it is assumed, people would be more likely to drift 'off task', and to waste valuable time. Under this belief, faster processing – whether it be in the form of 'quick wits' or the latest upgrade from Intel – is to be preferred to anything more leisurely; and 'slow' tends to become a euphemism for 'stupid' (as it has, for example, throughout the educational system). Being 'slow on the uptake' becomes, like being uncertain or confused, a source of private or public shame, which renders the discovery of solutions urgent (even when in reality they are not), and opens up the same traps as the myth of decisiveness.

The third myth says: 'Information is the most important resource'. If you do not know what to do, get more data. The systematic, comprehensive, up-to-the-minute database is the busy manager's most precious asset, and her or his spreadsheet, laptop and modem are her or his most trustworthy friends. Under this assumption, continual briefings and updates are essential. To be deprived of hourly access to email, voice mail and the Web places you in serious jeopardy – and one of the greatest dangers to good decision making is not to be 'up with the play'. Information is understood to be composed of 'facts' that are clearly expressed and, for preference, unequivocally true. If it can't be programmed, it's probably not good information.

And the fourth myth tells the manager: 'Always (be prepared to) show you're working.' No proposal or conclusion can be taken seriously unless it comes accompanied by a trail of reasoning, which shows how you got there and why it is a good idea. Ideas that lack such an analytical pedigree are not worth very much. Under this assumption, thinking that is intuitive, metaphorical, hazy or half-baked should not be exposed to public gaze, and may even be treated privately as if it were primitive and childish, to be neatened up and explicated as quickly as possible. The best kind of thinking is explicit and clear: articulate, analytical, logical and conscious. Any other kind is at best a sloppy approximation to this cognitive ideal.

The collective effect of these mind myths is to promote a certain mental attitude, and certain kinds of thinking processes, as being the best or the most powerful, regardless of the precise nature of the predicament being tackled. Being quick-witted, clear-headed, well-informed, rational and decisive are

valued. Being slow, fuzzy, ignorant, metaphorical or indecisive is not. And also on this view, the mind itself appears to be a kind of rather old-fashioned, slow and faulty computer, liable to suffer from ignorance, confusion and lapses of logic, but (thankfully) capable of being networked with other human minds, as well as with faster and less fallible machines that make up for some of its deficiencies.

I call this the 'Hare Brain' view of thinking, because it values the speed with which the hare is traditionally associated – it likes to 'hare about' – but also to suggest that there may be a downside to the preoccupation with fast, articulate thinking. Such thinking may not be all that it is cracked up to be or, more moderately, we might wonder whether there are situations in which it may be prone to come up with 'hare brained' schemes that might have been avoided or improved upon in a different mental mode: the one I shall call 'Tortoise Mind'.

Before turning to a more systematic look at the shortcomings of Hare Brain, and a fuller consideration of the virtues of the Tortoise Mind, we might note just how much the Hare Brain view has come to dominate corporate culture. To take one example, consider the extent to which managers are selected for their Hare Brained abilities and tendencies, and trained to develop them still further, while their more Tortoise Minded peers are being weeded out. At virtually every management school in the US, and increasingly worldwide, applicants are required to take the GMAT: the Graduate Management Admission Test. Anyone who thinks slowly, who does not always see problems in terms of right and wrong solutions, and who likes to ponder and contemplate, is unlikely to be offered a place on an MBA. Any possible virtues that Tortoise Mind thinking may have are simply given no opportunity to reveal themselves. The GMAT assumes that all good management thinking is of the hare brain type.

Misgivings about the mind myths

When these assumptions about how we think are presented in this stark form, it is clear that they do not represent 'the truth, the whole truth, and nothing but the truth', about the human mind and the way it works. We know, for example, that decisiveness can be shallow and premature, masking a failure to take the time to think more deeply about an issue. John Keats, the poet, described such an acquaintance who could not 'feel he had a personal identity unless he had made up his mind about everything', and he would 'never come at a truth so long as he lives, because he is always trying at it'. In terms of a more familiar aphorism, 'all work and no play makes Jack a dull – and therefore uncreative and underachieving – boy.' Remember the old IBM maxim: 'don't confuse activity with achievement'.

We know that the current obsession with saving time is not always productive. We have proverbs to remind us, such as 'More haste, less speed' or 'Look before you leap.' John Cleese, who amongst his many accomplishments

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How Hare Brain su

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founded the highly successful management training company Video Arts, said in a keynote address at the Training '99 conference:

Let me tell you the most important lesson I have ever learnt in my 26 years with Video Arts. It is this. When there is a decision to be taken, the first question to ask is 'when does this decision need to be made?' And that's when you take it. Don't take it until then, as new information, unexpected developments, and better ideas may occur. So although taking decisions very fast looks impressive, it is in fact not only show-off behaviour, but actually a bit cowardly. It shows that you'd rather create the impression of decisiveness than wait to substantially improve the chances of coming up with the right decision.

It does not take a lot of thought to realize that there are many predicaments that are not caused by a lack of information. If crime terrorizes a city, it is not because people do not have enough facts at their fingertips. And if a firm goes out of business because a competitor has come up with a fresh and original idea, it is probably more to do with its complacency or its inertia than its lack of information (Postman 1992).

We know that verbal fluency and rhetorical skill are not the same as genuine creativity. There are many in the business world who have grave misgivings about the skewed orientation to thinking encouraged by the management schools. Robert Bernstein, once chairman of publishing giant Random House, confessed: 'That's what frightens me about the business schools. They train their students to sound wonderful. But it's necessary to find out if there's any judgement behind their language.' Roy Rowan, author of *The Intuitive Manager*, talks about a similar business type which he refers to as the 'articulate incompetent' (Rowan 1986).

And we also know, in our day-to-day lives, that many problems are not solved by earnest, rational discussion, or by drawing up long lists of pros and cons for different courses of action. Ideas and solutions often just 'pop into our heads', sometimes in the middle of doing something completely different. Informally, we know the value of 'sleeping on it', and of allowing thoughts to drift, and possibilities to 'come to us'. (In a telling exchange in *Winnie-the-Pooh*, Rabbit asks Pooh how he came to think up a new ditty. 'I don't know', said Pooh, 'It just sort of came to me.' 'Ah', said Rabbit, who never let things come to him, but always went and fetched them.) When we are off-duty, we think like Pooh much of the time. But somehow, as we go into a meeting or sit down to prepare a report, we feel obliged to switch into Hare Brain mode, and become, like Rabbit, purposeful seekers after solutions and busy manufacturers of arguments.

How Hare Brain suppresses innovation

Such informal bits of testimony hardly amount to a strong case against the hegemony of Hare Brain, and in favour of a renewed appreciation of the merits

of slower, softer, forms of thinking. There is, however, a growing body of evidence from laboratory studies of cognition which helps to clarify what exactly the downside of clever hare-brained thinking is, and when it needs to be supplemented with a more reflective or intuitive frame of mind. This research is demonstrating the extent to which innovation is suppressed when the Hare is allowed to bully the Tortoise into silence. Some examples follow.

Tunnel vision

The fact that thinking under pressure tends to be more focused than leisurely thinking can be either a benefit or a curse, depending on the nature of the problem. For a greater degree of focus represents a tighter set of preconscious decisions about what is likely to be relevant and what is not. We can make our thinking more concentrated by excluding a whole lot of *possible* considerations that are *probably* not to the point. To do this, we make intuitive judgements about what kind of problem this is likely to be, and what kinds of precedents are likely to be relevant, and then make our thinking more streamlined by basing it on these assumptions. We use these hunches to narrow the 'cone of attention': the range of factors which we take into account.

Where the assumptions are valid, and the situation we are facing turns out to be a variant of one of the familiar scenarios we have selected, the gamble pays off, and our problem solving does indeed become more efficient. But where such analogies, though plausible, are in fact misleading, then the cone of attention may have become narrowed too much, or pointed in the wrong direction, committing us to a fallacious interpretation of the problem, and preventing us from seeing the relevance of other perspectives or sources of information which have been prematurely discarded. And the greater the effort with which we try to solve the problem from within the erroneous view, the more locked in to that view we are likely to become. Hare Brain gets stuck in a groove and (to mix metaphors), the harder it tries, the more it spins its wheels and the deeper it gets embedded in ruts of its own making.

This kind of tunnel vision may be either perceptual or conceptual. Perceptually, we are all familiar with the experience of 'not being able to see for looking', and this phenomenon has been replicated in the laboratory. If you ask people to watch a screen and spot faint flashes of light that may occur either in the middle or on the periphery, the more you increase the rewards for a correct detection, the more they concentrate their efforts on the middle (Bahrick et al. 1952).

But pressure – whether it is induced by rewards, penalties or all-round stress – also makes our sense of possible solutions more restricted and rigid. In a classic study by Abraham and Edith Luchins in the 1950s, people were set puzzles in which they had to use three measuring jars of different sizes to produce a designated volume of water (see Rokeach 1950). For example, you might be given hypothetical jars of 17, 37 and 6 pint capacity, and asked to end up with 8 pints. After a bit of trial-and-error, most people figured out that you

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could do it by filling the 37 pint jar, and then, from that, filling the 17 pint jar once and the 6 pint jar twice – leaving you with 8 pints in the big jar. They were then given three or four more problems in which, though the actual sizes of the jars were different, the same procedure – subtracting the middle-sized jar once and the small one twice from the biggest – would be successful. Then, on the critical trial, they were given jars of 23, 49 and 3 pints, and required to end up with 20 pints. Many people persisted 'mindlessly' with the same method – even though there is now a much simpler solution: you just take 3 pints out of the 23 pint jar. And the prevalence of this myopic approach increased dramatically the more pressure people were put under. As the stakes get higher, so the cone of attention narrows and problem solving becomes stereotyped and uncreative. It is not hard to see the relevance of this result to real-life troubleshooting and decision making.

The converse is also true: that if you want people to be able to 'think outside the box' – to question conventional assumptions and generate innovative ideas – then you have to allow them time to relax and meander. And you have to create a culture within which it is seen as being OK to do that. Harriman, the US railroad wizard, once declared that he liked to drop in unannounced and find one of his executives with his feet on the desk. Harriman assumed that the man was taking time to think. B.C. Forbes comments on this: 'But isn't it true that nine out of ten executives would hesitate, would be almost ashamed, to be seen sitting at a desk apparently completely idle? Has it not become fashionable to appear busy every moment of the day?' (Krass 1997).

The research shows that people who are good at accessing a state of gentle reverie, in which they can allow their minds to drift and play with images and ideas, are also more creative (Lynn and Rhue 1986). People who can allow themselves to guess, generate and express possible solutions even when they are very unsure, arrive at creative solutions sooner than those who are unwilling to 'think' until they have a much higher degree of confidence in what they are thinking (Baker-Sennett and Ceci 1996). When a test of creative problem solving is preceded by an exercise that makes people feel relaxed and happy – a clip from a comedy show, for example – their performance improves (Isen et al. 1987). When tests of analytical intelligence and creativity are carried out in either 'serious' or 'playful' conditions, creativity is better in the playful state, while analytical problem solving shows no difference (Boersma and O'Bryan 1968).

Tunnel vision can be induced by anything that increases the sense of pressure or stress. Offering large incentives will do it, just as well as imposing penalties for failure. Putting people under time pressure reduces creativity. Making them work in adverse physical conditions, such as a hot and stuffy room, has the same effect. And, perhaps most pervasively of all, a culture that is critical and competitive, in which there are real social costs involved in voicing ideas that are unusual or which sound half-baked, is a powerful suppressor of innovation. George Prince, the co-founder of the creativity-enhancing programme called 'Synectics', concluded that: 'any action that

results in the offerer of an idea feeling defensive tends to reduce not only his speculation but that of others in the group ... The victim of the win-lose or competitive posture is always speculation, and therefore idea production and problem solving. When one speculates he becomes vulnerable. It is easy to make him look like a loser' (Prince 1975).

This is not to say that pressure or criticism are always inappropriate: far from it. In the phase of management planning and decision making in which ideas are being tested, elaborated and implemented, the Hare Brain is of vital importance. Tortoise Mind comes up with all sorts of ideas, if it is allowed – but not all of them are good ideas, by any means. The wheat has to be sorted from the chaff, and implications worked through in detail. The ethos in the most productive and successful scientific laboratories, for example, is one of 'agonistic support' (Dunbar 1996), in which periods of solitary creativity – individuals musing over the meaning of their results in a leisurely or even playful manner – are interspersed with vigorous critical discussions in which teams will submit each others' ideas to the most searching examinations. The crucial feature of these debates, however, is that criticism is neither directed nor taken personally. Everyone understands, even when their latest theory has taken a severe mauling, that the goal of such critical appraisal, to which all subscribe, is the production of the highest quality research.

Analytical paralysis

As well as causing the cone of attention to become narrow and over-conventional, an habitually hare-brained attitude can also be over-analytical. Some problems, especially those of a technical or logistical nature, succumb to the logical, methodical approach of Hare Brain. Where the problem space can be accurately characterized in terms of a relatively small number of well-known, clearly defined and independent variables, then hard analytical thinking may well be the best tool for the job. 'Brain-teasers' are often of this sort. For example: 'the police have four suspects for a crime, Alan, Bob, Chris and Dave. Each has made a statement, but only one of their statements is true. Alan said "I didn't do it". Bob said "Alan is lying". Chris said "Bob is lying". Dave said "Bob did it". Who is telling the truth, and who did the crime?' Intuition and reverie will not help you here; only a methodical exploration of the possibilities.

However, most real-life management (and indeed personal) problems are not of this type. They are more messy, holistic and ill-defined. You may not be able to 'see the wood for the trees' if you insist on focusing exclusively on the details using an analytical approach. Even some stylized puzzles may be like this. For example: 'a conniving moneylender offers to cancel a merchant's debt if he will gamble with his daughter. The three of them are standing on a path composed of black and white pebbles, and the moneylender proposes putting one of each colour in a small bag and letting the girl choose. If she picks black, she has to marry the moneylender. If she picks white, the debt is cancelled and

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she is free. However, she sees that the moneylender has actually placed two black pebbles in the bag. What should she do?' No amount of logical thinking will get you to the smart solution: she picks one stone out of the bag, but as she does so she fumbles and drops it on the path before its colour can be seen. 'Oh dear', she says. 'Never mind: we can tell what colour it was, because it must be the opposite of the one that remains in the bag.'

Several studies by Jonathan Schooler at the University of Pittsburgh have shown that analytical thinking actually interferes with solving what he refers to as 'insight' problems. When people are asked to think aloud, their performance on insight problems suffers, whilst their ability to solve analytical problems is

unimpaired. What is more, those who maintain a stream of rational thought are less likely to come up with creative solutions than those whose minds go blank from time to time (Schooler et al. 1993).

Premature articulation

Hare Brain thinking is articulate. For it to work, all the relevant aspects of a situation have to be capable of being talked about. There has to be an adequate vocabulary. If the person or the group involved do not have such a vocabulary, then insisting on the use of articulate speech or writing as the sole medium of thinking means neglecting any information that cannot be put into words, and therefore operating with only an impoverished model of the predicament. Forcing people to articulate and justify their reasons for making a decision may be tantamount to forcing them to neglect more of this non-verbal data – and thus to invite them to make bad choices. Again, this possibility has been demonstrated in the laboratory. Students at the University of Virginia were asked to choose their next year's courses either intuitively or by 'thinking methodically and carefully weighing up the pros and cons so you can explain and justify your choices to someone else'. A different group of students were asked to choose one of a number of art prints to hang on their study wall, again either intuitively or methodically. When all these were followed up some time later, those who had been encouraged to think most systematically and explicitly turned out to be less satisfied with their choices than those who had been more intuitive (Wilson and Schooler 1991). As Donald Schon (1983) has persuasively argued, most of the situations with which professionals are faced on a daily basis contain significant facets that are hard to articulate, and they should thus be wary of insisting on clear analyses and expositions, especially during the early stages on problem solving when the parameters and the vocabulary are likely to be at their most hazy.

Other studies have shown that our softer, quieter thoughts often have greater validity than we think. When people are learning to manage a complex environment, their intuitive grasp – their 'know how' – develops much faster than their ability to describe what they are doing. Expertise precedes explanation. However, during the pre-articulate phase, people often dramatically underestimate their own level of performance. They make

perfectly good decisions and actions on the basis of hunches, yet may believe that they are merely guessing (Berry and Dienes 1993). Their 'feelings' are reliable, yet their confidence in those feelings is weak.

Interestingly, when people's learning does not involve the intuitive stage, their conscious knowledge seems unable to guide their actions. Patients with damage to certain parts of the frontal lobes of the brain are as good as normal people at eventually being able to explain what is going on in such complex environments. They have lost none of their ability to construct accurate accounts on the basis of their experience. However this knowledge turns out to be of no real use, for their practical expertise never improves. And their 'learning' is not accompanied by any intuitive promptings, as normal people's is. It is as if our hunches and feelings, far from being primitive or irrational, are a vital part of our learning and knowing. Anthony Damasio, who conducted these studies of brain damaged patients, concludes that 'intuition' is actually the glue that holds intelligent action and conscious understanding together. Without it they become disconnected, and the level of 'articulate incompetence' becomes dangerous (Bechara et al. 1997).

The ability to listen to, and the willingness to trust, the inarticulate voice of intuition is one of the hallmarks of the most creative people. A recent survey of 83 Nobel science laureates revealed that around 90 per cent of them relied upon intuition in one way or another (Marton et al. 1994). One said: 'We felt at times almost as if there was a hand guiding us, because we would go from one step to the next and somehow we would know which way to go. And I really can't tell you how we knew that.' Another talked about an intuitive sense of knowing which results to trust. He said: 'I am not always right, but I do have feelings about what is an important observation and what is probably trivial.' A third referred to the almost magical appearance of insight. 'You've been thinking about something without willing to for a long time, and then the problem is opened to you in a flash and you suddenly see the answer.' Igor Sikorsky, renowned aircraft designer and manufacturer, echoed the scientists when he said that sometimes:

in a moment, a solution of a difficult and complicated problem comes in with remarkable clarity, and so convincingly that no doubts are left as to its correctness. Quite often it is possible to select one out of a dozen sketches of proposed solutions and state positively that it is the best, when it is still not possible to say why. (Sikorsky 1997)

Incubation

Hare Brain tends to be relentless in its search for solutions. It sees no value in less focused mental activity or in 'time off task'. Yet this is another of the ways in which it stifles creativity. For there is plenty of evidence that the innovative mind needs to move between open-minded playfulness and concentrated purposefulness, and to do so with a range of different rhythms and tempos. We

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have already seen the value of allowing pauses and gaps in the train of thought. A few seconds of 'down time' can allow a fuller and more integrated mental picture of a situation to emerge, enabling a response to be less impulsive and more 'thoughtful'.

Taking a few minutes away from a problem that is proving recalcitrant can also be very productive. Studies have shown that problems on which people have got stuck are more likely to be solved after a break of a few minutes than if problem solving is persistent (Smith 1995). In 'hare brain' mode, it is easy to get locked in, as we have seen, to a view of the problem that may contain some unnecessary or misleading assumptions. By taking a break and thinking about something else, you increase the likelihood that these assumptions will lose their strength and dissolve away, so that when you return to the problem, you may be able to take a fresh approach. Collectively, it can be very helpful to suggest such a 'hunch break' in a meeting that has become blocked, or where positions have become entrenched. Even a ten-minute recess can allow minds to soften and emotions to cool, so that greater creativity can emerge.

On a slightly longer time-scale, it has been shown that creative individuals tend to structure their daily routines so that they contain significant periods of playtime or rest. A recent survey of outstandingly creative people in the USA found that: 'Many of the individuals we interviewed structured their day to include a period of solitary time that follows a period of hard work... Without this solitary quiet time, they would never have their most important ideas. Several respondents kept their minds idle by engaging in repetitive physical activity.' For example one said: 'Generally the really high ideas come to me when I'm gardening, or when I'm doing something steadying with my hands' (Csikszentmihalyi and Sawyer 1996). Longer-term still, there are too many accounts to ignore of people who discovered solutions to complex problems whilst they were on holiday. The 30 page document that outlined the structure of the first consumer banking enterprise in the US has become widely known in financial circles as the 'memo from the beach'.

Desensitization

Finally, too much hard thinking undermines innovation by closing people off to their own existing resources of knowledge and experience, and renders their perception of current events coarser and more conventional. When people are searching earnestly, anxiously or impatiently for a solution, they tend to see what they expect or want to see, and the incongruous detail or the small but vital clue gets overlooked. The good tracker, or the insightful detective, possesses a large body of knowledge, skill and experience – much of which is not systematically formulated in consciousness – but the way they make use of this rich memory is more through resonance than rationality. They take time to absorb the fine details of the situation, and to allow this subtle image to resonate gently with their accumulated wisdom in a way that could not be described as intellectual or explicit. Sherlock Holmes, you may recall, when

faced with a particularly difficult case, would not spend hours checking the Interpol database on his computer, but having inspected the scene of the crime would retire to his room with a full tobacco pouch, saying 'Do not disturb me, Watson. This is, I think, a three pipe problem.'

It is as if there is a variable threshold between the conscious and the unconscious minds, and an analytical, critical attitude, or too much pressure for results, causes this threshold to be raised, so that information that is subtle or equivocal becomes unavailable. This happens even at the level of bare perception. People who are looking at a screen in order to detect faint flashes of light are better at doing so when they are not trying too hard. Perception is more sensitive when you are relaxed, just allowing what is faintly there to 'pop up' by itself. Interestingly, however, this effect is reduced when people do not feel comfortable adopting such a receptive attitude. For people who found it difficult to allow themselves to respond spontaneously, or who rated themselves as more highly motivated to do well, the advantage of the 'pop up' condition was removed (Snodgrass et al. 1993). Learning to ease up, and let the mind 'do its own thing' clearly has its advantages.

Implications for innovation

Taken together, this research shows that the relentless application of the Hare Brain mind-set is antithetical to innovation in organizations. The innovative mind needs to be able to move fluidly between its different modes.

There are many indications in the foregoing review of how the innovative mind can be supported and cultivated. Let me conclude by highlighting just a few of these. First, there needs to be a widespread intellectual reappraisal of the nature of human thinking. The idea that systematic, rational, clear purposeful conscious thinking is the best tool for all jobs has to be replaced by the realization that the mind has a variety of different modes, all of which have their place, and which need to be in dynamic balance with each other.

Second, we need a broader conception of what counts as 'data'. There is more to information than spreadsheets, bullet points and glossy reports. Brief informal conversations and direct experience may be of greater use to a manager than a detailed report. Anita Roddick, founder of The Body Shop, is famous for the 'board walk', in which senior executives make time to stroll around and chat to people on the shop floor. Andy Grove, CEO of Intel, says: 'The type of information most useful to me comes from quick, often casual conversational exchanges, many of them on the telephone.' Formal reports, he says, may be worth writing, in that they force the author to clarify their thinking – but they are often not worth reading. Much valuable information is, at least to start with, unsystematic, experiential and intuitive, and is none the worse for that. The mind is at least as much like a rich compost heap as it is like the Library of Congress.

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Third, managers need to learn to listen to and respect their hunches and inklings. Note, 'respect', not 'trust', because intuition can be as wrong as logic can. Logic based on a crude or rigid perception of the situation can produce stupid 'solutions'. So can intuitions based on a plausible but inappropriate analogy. Somewhere between uncritical acceptance and dismissing it out of hand there is an attitude which notices the uneasy feeling, the odd detail, the nagging question, the flash of an idea, and takes it seriously.

Fourth, people need to learn the rhythms of thinking as much as the skills of any one particular type. Often the creation of a 'problem space' starts with some kind of niggling dissatisfaction or disappointment – the underperformance of a highly qualified team; poor returns on a marketing campaign – which needs to be sharpened using some hard-nosed thinking and research. But then there may need to be a phase – time-limited if necessary – of pondering and playing with possibilities. Finally there may need to be careful analysis of proposals and monitoring of implementation. And within this broad cycle, there will be many smaller loops and rhythms as well. A natural sense of these rhythms, and the patience to wait while ideas may come to the surface, are essential attributes of the innovative mind.

Fifth, managers need to create for themselves, and for the people they manage, physical and social conditions that are conducive to innovative thinking. Some people can enter a state of reverie in the midst of a busy open-plan office, but not all can. More commonly people need a little peace and quiet, and some informal and playful interaction. In an innovative culture, activity is not confused with productivity, and breaks are seen as being an essential counterpoint to focused busy-ness. Gordon Gekko may famously have said in *Wall Street* that 'lunch is for wimps', but it is also for the creative. An atmosphere of incessant rush and panic militates against innovation. So does an ethos in which 'thinking out loud' or 'wondering' are seen as risky activities.

Creating an innovative culture is not so much a matter of instituting new practices as it is of remembering to import and value in the workplace modes and states of mind which we all know and make use of in our leisure hours. The hare brained manager might immediately ask for a list of 'how to' points and the address of a good tortoise mind 'trainer', but to do so is to miss the point. Slow and soft thinking are not new mental technologies like 'brain gym' or 'synectics'. They are modes of mind to which everyone has access, and in which we are all more or less well versed. In fact, if you look below the surface of managers' practice – how they actually think, rather than how they say they do – you find that slow tortoise mind and the use of intuition are alive and well. Senior managers in particular will admit that they get most of their ideas in the bath or on the beach – but they feel obliged to pretend that they developed them through purely rational means (Isenberg 1984). All that is required is to replace the lop-sided view of the mind as ideally articulate, with a slightly more subtle model that embraces a variety of mental modes – and then to create cultures in which these modes can all flourish.

Note

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