The Neuroscience of Leadership and Culture

by Katharine McLennan

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TimeToReflect.Today

the neuroscience of leadership & culture

We live in a world that at last is attempting to learn between disciplines: religion informing science, science informing business, business informing psychology, psychology informing marketing, marketing informing technology, among others. A few years ago, Daniel Goleman, the author of Emotional Intelligence and many other leadership books, gathered together a group of physicists, Buddhists, psychiatrists and neuroscientists so that they could learn from each other about how the mind works. Each year in Australia well-known CEOs and board members gather for two days in retreat with Sogyal Rinpoche (author of *The Tibetan Book of Living and Dying*) to learn about the Buddhist philosophy, focusing on how to calm their minds more effectively so that they can think more innovatively and be more effective leaders for their people. Harvard and Insead Business Schools talk about the

two most potent tools of the 21st Century being intuition and meditation. The *Harvard Business Review* writes about executives and their new attention deficit trait—overloaded circuits in their minds. With the use of functional MRI and other technologies, we are able to glean more information about how the mind works, helping us to understand how behaviours can be changed and innovative thinking can be improved in our organisational cultures.

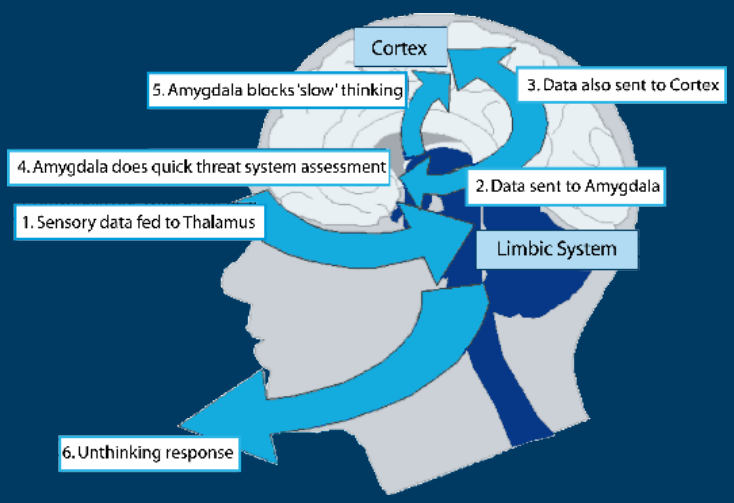
Perhaps most telling is that the first Global Annual Summit on Neuroleadership will be held in Italy in May this year (www.neuroleadership.org), designed to take the learning of science into the realm of organisational design and culture. This paper will introduce several insights from neurosciences that will assist us in improving leadership and culture in organisations:

1. An understanding of the attention deficit trait (ADT) which is beginning to create a whole class of frenzied underachievers in our executive ranks.
2. The power of meditation and why it will lead to less ADT, more innovation and better leadership in our culture.
3. The counter intuitive findings that neuroscience is showing us about culture change and how we can better implement change programs.
4. The trust as well as the respect and suspension of judgement we need in using our Blink-like intuition.
5. Nurturing of diversity of thought processes, particularly as they relate to men and women.

1. An understanding of the attention deficit trait (ADT)

In January 2005, the *Harvard Business Review* published an article called "Overloaded Circuits: Why Smart People Underperform." Its description of the executive being bombarded by emails, Blackberry beeps, voicemails, constant interruptions, back-to-back meetings and deadlines that never end is all too familiar to most of us. This executive is constantly in touch with her business at least 18 hours a day, seven days a week. Unlike attention deficit disorder (ADD)—a neurological disorder that has a genetic component and can be aggravated by environmental and physical factors—attention deficit trait (ADT) springs entirely from the environment. Never in history has our brain been asked to track so many data points. When the mind is coping, it is being governed effectively by the frontal and prefrontal lobes of the cortex, which guide our decision making and planning, the organisation and prioritisation of information and ideas, and time management. When the mind is coping, the deep centres below the frontal lobes that govern basic functions like sleep, hunger, sexual desire, breathing and heart rate are sending up messages of satisfaction and joy. They are pumping up your attention and motivation and won't interfere with your working memory, which is what you need to track the many data points coming in. But when the brain suddenly has to deal with the sixth decision after the fifth interruption in the midst of the search for the ninth missing piece of information on the same day that the third deal has collapsed, the brain begins to panic, reacting as if it were responding to a sabre-toothed tiger attack. The deep centres now interpret the messages from the frontal lobes by sending alarm signals of fear, panic, anxiety and irritability. The frontal lobes are hijacked by these deep centres' messages and fail to assert their calm, rational decision making.

Daniel Goleman has coined the term "amygdala hijack", which is when our deep centres hijack our rational thought and we respond to challenging stimulation with anger, fear and anxiety. We are robbed of our flexibility, our sense of humour and our ability to deal with the unknown. We forget the big picture and the goals and values for which we stand. We lose our creativity and our ability to shift course. We fail to see the choice that humans alone as a species have to react to any situation. We forget the greatest lesson of Victor Frankl, a German psychiatrist who survived arguably the most horrendous of all human stimulations, the Nazi concentration camp. Frankl wrote about how that, even in the most dire of all human conditions, we ALWAYS have choice about how we can respond. We do not have to succumb to the hijack that wants to bypass our rational frontal lobes—IF our minds are in a healthy state capable of pressing that PAUSE button for even just a split second.



Implications on what organisations need to do for their people:

- Promoting positive emotions through ensuring people are working in teams with support. Apparently most humans need a "human moment" at least every four hours where they can just talk face-to-face with someone, which stimulates the deep centres of the brain to send messages through the pleasure centre to the area that assigns calm resources to the decision-making frontal lobes, supporting the physical care of employees' brains through sleep, a good diet and exercise.
  - If you can wake up without an alarm clock, you are getting enough sleep.
  - Too many carbohydrates cause the blood glucose levels to yo-yo, which leaves the brain either glutted or gasping for glucose. The brain needs complex carbohydrates and protein, supported by omega-3 fatty acids.
  - Exercise produces many chemicals that the brain loves, including endorphins, serotonin, dopamine, epinephrine and norepinephrine, as well as brain-derived neurotrophic factor (BDNF) and nerve growth factor (NGF). Both BDNF and NGF promote cell health in the brain and protect it from aging and stress.
- Organising for ADT—helping the employees to figure out how to have times which are free from distraction and learn to have the office environment that works best for them.
- Looking at making the office environment calming and soothing: on-site gyms, shortened work hours, on-site day cares where parents can eat with their children, unlimited sick days, etc.

“The question is: how do people learn new management behaviours?”

Slowing down our minds for: creativity, innovation, intuition.

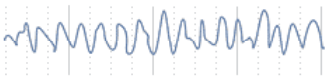
2. The power of meditation and why it will lead to less ADT, more innovation and better leadership in our culture

One of the most effective remedies to the stressed and rushed environment we are living in today is proving to be meditation—the slowing of the mind, which technically means reducing the frequency of our brain waves. There are classically four types of brain waves that are described, each representing different states of "slowing down" for our mind.

Figure A: Four Categories of Brain Wave Patterns

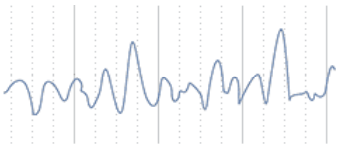
Beta (14-30 Hz)

- Concentration, arousal, alertness, cognition
- Higher levels associated with anxiety, disease, feelings of separation, fight or flight



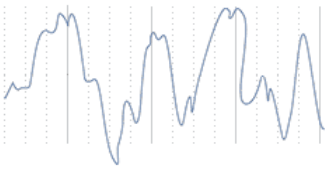
Alpha (8-13.9 Hz)

- Relaxation, super learning, relaxed focus, light trance, increased serotonin production
- Pre-sleep, pre-waking drowsiness, meditation, beginning of access to unconscious mind



Theta (4-7.9 Hz)

- Dreaming sleep (REM sleep)
- Increased production of catecholamines (vital for learning and memory), increased creativity
- Integrative, emotional experiences, potential change in behaviour



Delta (.1-3.9 Hz)

- Dreamless sleep
- Human growth hormone released
- Deep trance like state, loss of body awareness
- Access to unconscious and "collective unconscious" mind

In our normal business rushing around, we experience beta brain waves. The more anxious we feel, the more frequent the beta brain waves. In this state, it is rare to have an "innovative" thought. We are mostly processing information and going from task to task analytically. When most people are asked where they have their most innovative thoughts, they seldom say "at work." Our left-brained analytical environments induce beta brain waves which do not lead to creative thought. However, as we begin to slow our minds, we begin to relax and daydream, and we enter the alpha brainwaves where creativity is more possible as we begin to access our subconscious mind. This is where learning is much more likely to take place. As we slow down even further, we enter into theta brain waves, where we access our unconscious mind and we can begin to integrate new learning and new behaviours. Theta brain waves are known as "out of the blue" brain waves because ideas often come to us from nowhere when we are in this state. With theta brainwaves, we can retain more material, and we can access some of our deepest sources of creativity. Finally, in the delta brain waves, we actually lose all sense of our body and we go into a deep trance, where we really access what Jung termed the "collective unconscious," the source of the greatest wealth of new ideas. When present in combination with other waves in a waking state, delta brain waves act as a form of radar which seeks out information from the people around us on the deepest unconscious level that we can't understand cognitively. Delta waves provide us with our intuition, with our empathic attunement with people and our instinctual insight.

Creativity, innovation, intuition, empathic radar and instinct are increasingly required in a knowledge economy that relies on ideas coming faster and faster, wilder and wilder. The problem is that our workplaces are not set up to induce the type of thinking that this economy requires. Our workplaces induce beta brain waves, often of the very high frequency type. These brain waves seem to induce more cortisol, which is a hormone that causes us more stress and is known as the major age-accelerating hormone within the brain. These brain waves induce the fight or flight response in which blood flows away from our brain and toward the periphery of the body, floods the bloodstream with sugar, and increases heart rate, blood pressure and respiration rate in order to prepare for the tiger. In this state, learning ability, problem solving, reasoning ability and consideration of change are seriously inhibited.

However, as we lower the frequency of our brain waves, we begin to produce neurochemicals and hormones that are much more beneficial to creativity and learning. Alpha brain wave patterns boost the production of serotonin, which increases relaxation and eases pain. Theta brain waves induce the production of catecholamines, vital for memory and learning. Theta brain waves also induce the production of vasopressin, which is associated with increased access to memories and increased creativity. Lower frequency brain waves also release endorphins, which are the brain's reward system for learning something new. This means that new belief systems designed to effect desirable behaviour changes, if presented to the mind when it is flooded with endorphins, may be perceived as beneficial and adopted as such—a powerful boost to any behaviour modification protocol in cultural change programs. Endorphins provide us with that "aha" moment that excites us to change and reinforces our will to change.

Lower brain frequencies have also been correlated with higher levels of DHEA and melatonin. DHEA is produced by the adrenal glands and is a precursor to virtually every hormone the body needs. It is a key determinant of physiological age and

resistance to disease. DHEA acts as a buffer against stress-related hormones. Melatonin is a hormone associated with the creation of restful sleep.

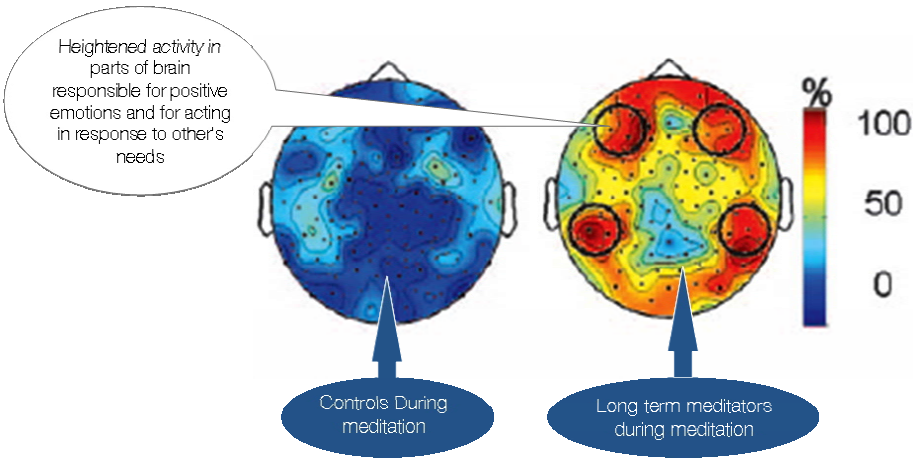
We now know from both science and many meditation practitioners that the brain can consciously be slowed down. Some of the most interesting science is now being done with Buddhist monks who can consciously slow their minds in a matter of seconds to theta and delta states. Richard Davidson of the University of Wisconsin has spent many years researching the effect of meditation on the brain waves through the use of MRI and EEG signals, and can exhibit such results as shown in Figure B (below) that compares a person who does not regularly practise meditation with a long-term meditation practitioner.

Scientists are showing what we also know to be true in athletes. World class athletes in the zone are experiencing the lowest frequency of brain waves. Tiger Woods' brainwaves are in their lowest frequency when he is playing the best. The amateur golfer, on the other hand, is using very high frequency beta brain waves to analytically work out his swing, his stance, his hands, his grip, etc.

Implications on what organisations need to do for their people:

- People who need to constantly create, innovate, and construct strategies that are not simply regurgitated thought need to SLOW their minds. They need practice and space to do this. Innovation will not come in the typical frenzied atmosphere of most corporate environments. Successful executives will learn to train their mind in the same way they need to keep their bodies fit. Learning meditation has proven to be one of the most effective ways of training one's mind—but it's not the only one. Yoga, gardening, other exercises and simply just sitting also train the mind to slow down. The idea is to create the ability for the mind to just observe itself—observe the thoughts as they pass by, observe the fickleness of the thoughts and allow new creative thoughts to arrive without effort. Slowing the mind allows us to tap into our most creative selves.
- The most authentic dialogue between leaders and their people occurs only when brains are in low frequency states. The conversation between two brains in high beta brain state is riddled with "cosmetic" listening and superficial understanding, and certainly no new thoughts are being created between the two people. As minds begin to slow down, people connect intuitively, they find ideas between each other that never existed before, they feel heard and honoured in ways they have never felt before. The pleasure centres of their brain release endorphins of joy and excitement that keep them motivated by work and the people with whom they work.
- Organisations need to completely rethink the way they run meetings, especially meetings designed to create strategic and innovative thought. People need a chance to get in that space of slow thinking and authentic dialogue and, once they do, magic begins to happen.

Figure B: Heightened Brain Activity



3. The counterintuitive findings that neuroscience is showing us about culture change and how we can better implement change programs

As we have argued, it is a given that we all now work in a knowledge economy, where people are paid to think and respond to change that is exponentially increasing in complexity and uncertainty. Command-and-control, wait-until-you-are-told-what-to-do cultures can no longer produce innovation, quick response and places where generation Y people want to work. The problem is that most managers have grown up in such a culture, and they will need to learn new management behaviours to adapt to the new environment.

The question is: how do people learn new management behaviours? Traditional leadership and management development programs in the corporate world and academia are based on learning by transmission—give the student the book and the lecture and they will change their behaviour. "Run the two-day Leadership Excellence program through the entire organisation and you will change the culture in a year." We also all know that this doesn't work.

The newest brain research shows us why behaviour change is so difficult. The way we manage people has become a routine that is hardwired into our brain in a very efficient automatic processing centre called the basal ganglia which operates like an automatic transmission, shifting among patterns of deeply held thought. How we sell ideas, how we run meetings and how we communicate to our people are deeply embedded within us. Trying to change these embedded behaviours creates discomfort. In fact, not only does it create discomfort but also new behaviour is often perceived as an error signal by a part of the brain called the orbital frontal cortex, which works quite closely with the amygdala which, as we have seen, houses the brain's fear circuitry. The "error signal" created by new behaviour creates emotions of fear and anxiety that often override logic and push the person back to their old behaviour.

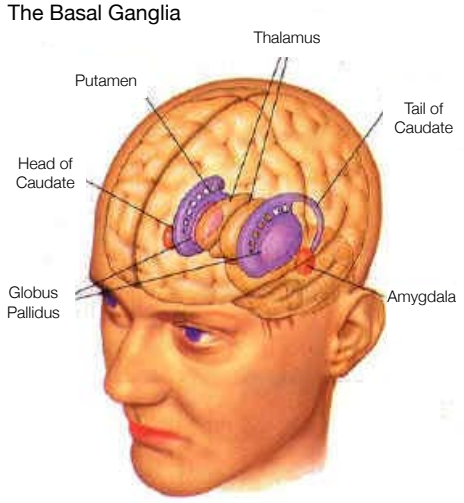
At Mettle, we experience seven classical reactions to change in our clients:

1. People feel awkward, ill at ease and self conscious.
2. People think first about what they have to give up.
3. People feel alone, even if everyone is going through the change.
4. People can handle only so much change.
5. People are at different levels of readiness for change.
6. People are concerned that they don't have enough resources.
7. If you take off the pressure, people revert to old behaviour.

The classical approaches to changing behaviour are now being shown as ineffective. B.F. Skinner and John B. Watson's 1930s behaviourist approach, which is based on the traditional carrot and stick approach to eliciting change, rarely succeeds in the long run. Salary and other monetary incentives are useful to some extent in rewarding the right behaviour but have not been shown to correct undesirable behaviour, and their effectiveness tapers off once the employee has attained an acceptable level of compensation. The brain research is also showing us that the stick approach only seems to reinforce the neural patterns associated with the habitual problem. Punish an employee for not being a team player and he will continue to not be a team player if he does not have a mental model to replace his existing one, and he may revert to being a two-year-old: tell a two-year-old what to do and they automatically push back.

The more humanistic approaches of the 1950s and 1960s based on the likes of Carl Rogers and Abraham Maslow have also shown to be not overly effective. This assumes that, if we work on employee's self esteem, emotional needs and values, we can work on changing their behaviour. These approaches emphasise empathy from the manager. Complex performance management processes are implemented across the organisation, and the manuals on administering annual appraisals counsel the managers to "deliver constructive performance feedback". However, translated from the jargon, this often means, "Politely tell people what they are doing wrong." This approach assumes that, if we tell people what they are doing wrong and give them the right incentives to do right, their behaviour will change. This is as mechanistic as the carrot and stick approach.

The Basal Ganglia



People want to determine themselves how they are going to behave and, if change is necessary, they need to call the terms for it and have the support for constant reinforcement. The best coaches know this. Socrates knew this. Rather than lecturing and providing solutions, effective coaches ask pertinent questions and support their clients in working out solutions on their own over a long time until the new behaviour is embedded.

So what does elicit behaviour change?

The latest brain research into behaviour change concentrates on three points: focus, expectation and attention.

1. The combined learning from quantum physics and psychology has led to the finding that the mental act of focusing—whether on a thought, an insight, a picture in your mind's eye or a fear—maintains the chemical brain changes arising in association with that experience. Over time, paying enough attention to any specific brain connection "cements" the chemical links into actual physical changes in the brain's structure. Hence, we can say that the brain changes as a function of where an individual puts his or her attention.
2. All the psychology research around pain and the expectation of pain relief has also shown us the power of expectations in actually shaping people's reality. People in pain who were told that they were being given morphine but who were actually given a sugar pill perceived a reduction in pain. Not only did they perceive it, but their actual brain's pain-relief circuits were activated, which caused the real decrease in the sensation of pain.

   Managers who have two different mental maps of the people they manage will perceive different reality. A manager who does not trust her people will constantly see error and people out to get her. A manager who thrives on his people's ideas will produce great results and be rewarded by his people. The findings now say that large scale behaviour change requires a large-scale change in mental maps. This in turn requires some kind of insight that allows people to change their expectations more quickly and dramatically than they normally would. In the brain, insights are associated with sudden bursts of high frequency brain waves just before the moment of insight which create new connections that help us overcome our resistance to change.
3. However, the issue is that we cannot be just given the insights from someone else; we need to come to them ourselves. Insights that we make ourselves give us adrenalin which helps us to fight against the amygdala's fear response. Our individual brain architecture will also not readily just pick up someone else's mental model—we need to adapt it to fit into our own thinking. We also need to give regular attention to these insights over time.

A stand alone training program is not sufficient to create significant behaviour. One study, for example, showed that a training program for the public sector increased productivity by 28%[1]. However, if you added follow-up coaching, which acts to sustain attention on the behaviour change and allow the individual to build on their own insights, the productivity rose to 88%. The training program is useful in the introduction of new ideas to the participants, but the participants must

Implications on what organisations need to do for their people

Research Findings	Implications on our approach to eliciting behaviour change in organisations
The carrot and stick approach is not overly effective at eliciting behaviour change.	Relying on the performance management system to elicit behavioural change won't work—it may reinforce, but it certainly will not cause change.
Teaching empathy to your people managers may raise the standards of rapport but, if the managers concentrate on what is wrong, it is unlikely that behaviour change will occur.	Empathy and coaching are skills that can definitely be taught. However, there is more than just the art of coaching at stake—it will also be important to focus on the positive behaviour changes that are being made and find ways to reinforce them continuously.
Law of focus: Focusing on something long enough creates physical changes in our brain which allows us to overcome routine behaviour.	Behaviour change programs need to be oriented around focusing on identifying and creating new behaviour, not on identifying and concentrating on the ineffective old behaviour.
People will change their behaviour when their expectations about what they can accomplish are accompanied by their own flash of insights.	People need to experience their own insights about how their behaviour needs to change. While training programs are useful to feed ideas into their minds, they need to have time to adapt these ideas into their own hardwiring and determine their own insights, which will give them the energy to overcome old routine behaviour. Help leaders with this wiring process by getting them involved in adapting workshops to meet their local team's needs AND in teaching the principles they learn to their people through co-facilitation.
Changes in behaviour require constant attention over time to occur.	A once-off training program is not sufficient for change in behaviour to occur. People need constant attention to support them in their rewiring process. This attention is most effective in small bites that can be more easily digested by the small capacity of the working memory. This attention is also supported by constant coaching and feedback that can come from your leader, your colleagues, your team members and independent coaches who work with you to keep your new behaviour reinforced.
Changing behaviour requires changes in emotional states and mindsets.	Behaviour change programs need to allow people to develop a self-awareness that will help them to discover which mindsets and emotional states are useful to support the culture and which are not useful.

adapt these ideas in their own world, play with them, generate their own insights, and continue to pay attention to the ideas over time. Given the small capacity of working memory, which is where new behaviours are introduced, small bites of learning such as e-learning may be the key to the larger blocks of time spent in workshops.

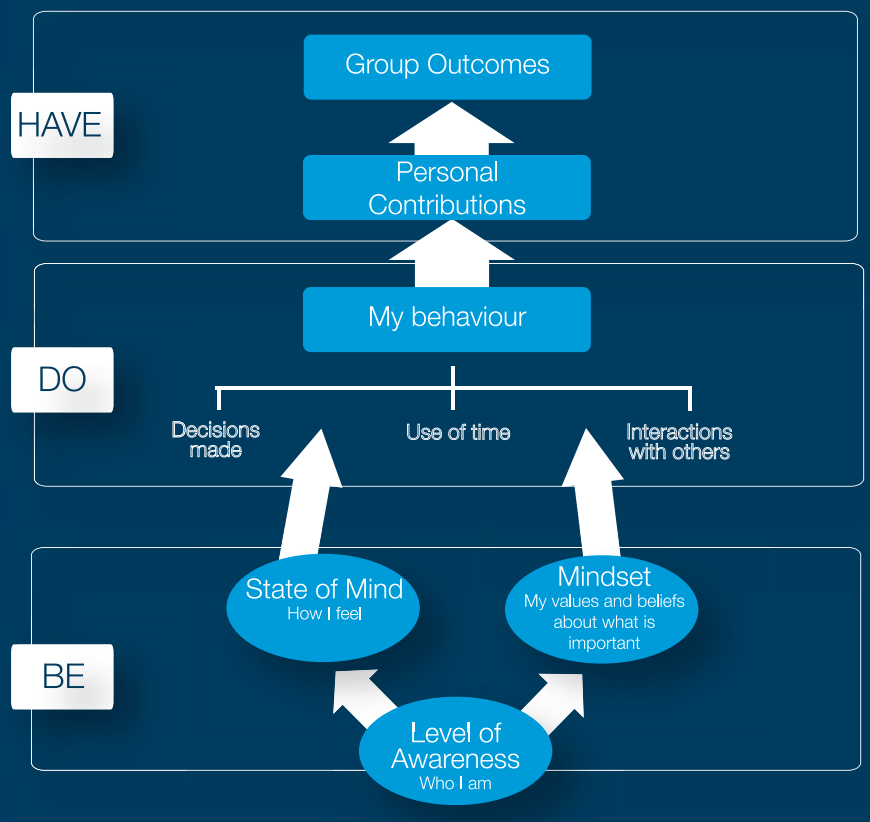
The founder of the positive psychology movement, Martin Seligman, has shown over and again how attention to positive behaviour in the form of optimism can significantly change behaviour. He has worked with depression and pessimism over much of his career and now has significant data that shows that, if you get people to concentrate on the things that are going well in their life and they are assisted in this attention by colleagues and coaches, the depression and pessimism can be significantly reduced to mild. He then has empirical data from hundreds of organisations and individuals that link productivity, health and longevity to the level of optimism in the individual and the organisation.

Use the principles of focusing, expectations and attention on what lies below the iceberg of behaviour.

Mettle's experience in working with behaviour change employs focusing, expectations and attention on what lies underneath behaviour—both the individual's values and their emotional states (see Figure C).

The state of mind determines a person's level of engagement, which will determine the level of interest they will invest in any situation and the motivation or energy they will use to exert the type of change the organisation will need. The mindset is just as important, which consists of the beliefs and values that direct this energy charge towards what we believe to be important. Some mindsets will be useful for the organisation's transformation; some will not. Many of our mindsets are so subconscious that it takes work to unearth them through the process of developing self-awareness. Changing behaviours will be possible only by changing people's underlying mindsets, and this takes work and time.

Figure C: The Be-Do-Have Model



1 Gerald Olivero, K. Denise Bane, Richard E. Kopelman, Executive Coaching as a Transfer of Training Tool: Effects on Productivity in a Public Agency," Public Personnel Management, vol. 26, no. 4 (Winter 1997): Research on the value of follow-up in coaching.

4. The trust as well as the respect and suspension we need to put in our "Blink"-like intuition

Malcolm Gladwell, best-selling author of *The Tipping Point*, also wrote *Blink*, which gives us insight into the power of our intuition. In this book, he describes the ability of our brains in "rapid cognition"–the ability to make snap decisions in the background, without our ever really consciously knowing about them. This itself is a surprising idea. Gladwell says that we're not aware how much work our brains do for us in secret—how they're always sizing things up, extracting meaning out of the tiniest details, constantly making sense of the world, even when we think we're not paying attention. What's more, as a culture we're trained to discount such rapid cognition in favour of deeper thinking and greater analysis. First impressions are never thought to be as reliable as lifelong studies.

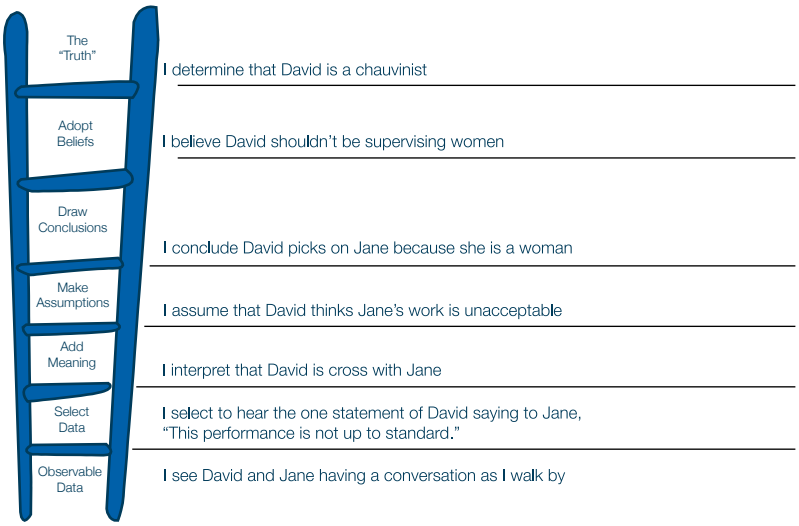
Gladwell wants us to honour our first impressions. "The first task of Blink," he writes, "is to convince you of a simple fact: decisions made very quickly can be every bit as good as decisions made cautiously and deliberately." However, listening to our snap judgments can be a tricky business, and Gladwell documents the many ways in which our "internal computers" can be "thrown off, distracted, and disabled" (or worse—what if your unconscious is culturally skewed, preferring white people to black people?). He argues that, to make the best use of our internal machines, we have to learn how rapid cognition works, what screws it up, and how we can control it. That's the real purpose of *Blink.* Gladwell believes that, if we just paid more attention to how our brains process things, we'd get a much truer, smarter picture of what's going on around us, and perhaps a fairer, more egalitarian world.

Gladwell talks about "thin-slicing," which is the ability of our unconscious to find patterns in situations and behaviour based on very narrow slices of experience." By thin-slicing, our minds can just know; we can look at a situation, gather its essence in a few seconds or so, and extract meaning, order and truth amidst the chaos of the moment. Our brains make snap judgments of who will make a good employee, who will be a trusted colleague, who will become a revered leader without our conscious minds even knowing. And our body language will give us away with people we have judged as not good enough. We will unconsciously lean forward a little less, turn away slightly from him or her, close our body a bit, be a bit less expressive, maintain less eye contact, stand a little farther away, smile a lot less, hesitate and stumble over our words a bit more and laugh at jokes a bit less.

Implications on what organisations need to do for their people:

There are two messages for organisations from *Blink*; firstly, intuition in a time of huge change where precedents are not available to really provide the answer may be the most powerful tool. As we have seen in the previous section, intuition is more available in lower frequency mind states. Organisations need to create environments that foster these mind states. Secondly, organisations must also help their leaders to be aware of the Blink judgments they are making of their people and their potential recruits when they might be riddled with bias and prejudice.

Figure D: The Ladder of Inference - How we judge and form our 'truth' or 'our noble certainties.'



The Latin root of "respect" is "respecere," which literally means "to look AGAIN". At Mettle, we work with leaders to become increasingly conscious about their judgments, which are constantly being generated with everyone who crosses our path, whether or not we know it. We ask people to always attempt to employ the "Nelson Mandela Rule," which is that everyone who comes across our path has the potential to be as interesting as Nelson Mandela. We quietly greet each person with the Zulu language's "Sawu Bona," which means "I SEE you and all your potential." In response from the person we greet, we quietly hear "Sikhona," which means, "I am here because you have seen me."

Mettle also teaches its leaders to be aware of certainty and "the noble truth". In our Blink-like decisions about people and situations, we are often unaware about how fast we race up the ladder of noble truth (see Figure D on the previous page). We think that our "truth" is the only right truth in the room, and it is only when we use a combination of advocacy and inquiry into other people's truth, that we realise that ten other versions of the truth are in the room (see Figure E below).

Arguing for who is right is often wasted effort. Creating shared vision, a vision that is new and not regurgitated, will be essential for organisations to succeed in the economy of the 21st century. Authentic dialogue balancing advocacy and inquiry, and featuring deep listening, suspension of judgement, and respect will be necessary.

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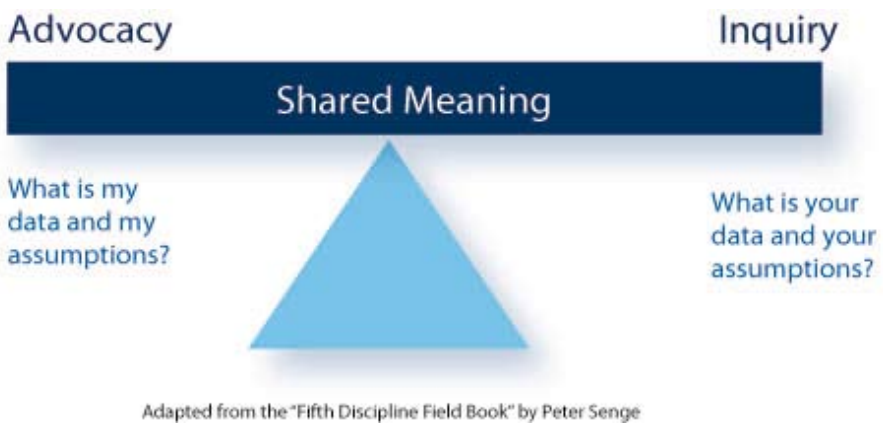
Figure E: Advocacy and Inquiry



“...the realm of organisational design and culture.”

5. Nurturing diversity of thought processes, particularly as they relate to men and women

Every organisation Mettle has observed in relation to diversity has identified "diversity" as a major focus. But, for most of them, this is narrowly interpreted to mean "women". Ask a senior executive about diversity, and the conversation soon turns to the fact that there are insufficient numbers of women in the senior ranks. These executives are concerned that the organisation is hiring the "best and brightest" (which means at least half the graduate intake is female) but that, within ten years, despite the investment in training and skills development, the majority of the women will leave. Clearly the talent pool needs to be deepened.

This focus on women diverts us from the real issue. "Diversity" in these organisations in fact means "other" or "different". The impact of this narrow interpretation is profound because the same organisation that has an issue with retaining senior women manifests a parallel characteristic in that it does not foster, reward or enjoy the benefits of "other" or "different" thinking.

The issues of "women" and "diversity" are merely symptoms of a broader and equally important—indeed vital—issue: diversity of thought. And there is increasing recognition, backed by research, that diversity is the key to an organisation's successful long-term survival. Mettle's practice in working with teams always includes a focus on this diversity of thought, as we get teams to understand how each other relates to the world, how they take in their information, how they make their decisions, how they solve problems and how they organise their mental constructs. We still believe in the power of the classic Myers Briggs Type Indicator to show how not everyone thinks alike, and we find it exceptionally useful to foster an acute awareness of how your colleagues think that is different from the way you think AND to encourage teams to thrive on this diversity. Diversity of thinking is necessary for innovation and problem solving.

However, there are differences between men and women that are worth noting. Here are some of the fascinating results that have come from the neurosciences, biology and anthropology:

Women are constant radar detectors.

- When men are at rest, at least 70% of the electrical activity is shut down compared to women, whose brains remain 90% active in the same state. Women are constantly receiving and analysing information from their environment, trying to understand how other people are thinking and feeling. Men are, instead, registering where potential attack may come from and possible escape routes, as well as things that need to be fixed or repaired.
- Women have a wider peripheral vision than men (to monitor any predators sneaking up on the nest), and men tend to have more long-distance tunnel vision (to pursue targets in the distance). Women take much more in than men in any given environment.
- Body language research reveals that in face-to-face communications, nonverbal signals account for 60-80% of the impact of the message, while vocal sounds make up 20 to 30%, leaving seven to 10% for words. A woman's better ability to read body language leaves her more proficient at integrating and deciphering verbal, visual and other signals to understand what is really going on with the other person.
- Also, a woman's corpus callosum, which is the bundle of nerve fibres connecting the left and brain hemispheres, is much thicker than a man's, with up to 30% more connections. This fosters more fluency of speech, and apparently fosters a greater sense of intuition, because it allows for a much faster transfer of information between the hemispheres.

Women tend to be better at communication.

- Women's eyes display more white than men's eyes, which provides more connection to others through the greater range of eye signal that is possible with eye movement.
- The left side of a girl's brain develops much more rapidly than that of a boy, meaning she'll speak sooner, read earlier and learn a foreign language more quickly (boys, however, develop the right side of the brain faster, giving them spatial, logical and perceptual skills earlier).
- For males, speech and language are not specific brain skills. These skills operate mainly in the left brain and have no particular location. For women, speech and language have specific areas located in both sides of the brain, which makes them better conversationalists.
- Women need to talk. Unlike male brains, which are highly

compartmentalised and have the ability to separate and store information, women's brains do not store information as well—the problems just keep going around and around unless she can talk about them. Women use speech to build relationships, make friends and solve problems. Men use it to relate facts. Women speak an average of 6,000 to 8,000 words a day and use an additional 2,000 to 3,000 vocal sounds to communicate, as well as 8,000 to 10,000 gestures, facial expressions. Contrast that to men: 2,000 to 4,000 words, 1,000 to 2,000 vocal sounds, and 2,000 to 3,000 body language signals (a THIRD of the output of a woman).

- Women use indirect language because they use language to build rapport. Men's sentences tend to be short, direct, solution oriented and to the point.

Women can multi-task.

- With specific areas to control speech, the rest of a woman's brain is available for other tasks, enabling her to do a number of different things at once.
- With her greater flow of information moving between the left and right hemisphere, women can talk about several things at once, and brain scans show that they can actually speak and listen at the same time.

Men have better spatial ability.

- Males' brains have a specific location on the right front brain for spatial ability, while women do not have specific locations. Only 10% of women have spatial ability that is as dynamic as those of the best men.
- This ability evolved from being the hunter; as the lunch chaser, he needed to find his way back home or there would be little chance of survival, and he needed to be able to estimate angles and distances in order to hit his game.

Different values and emotions.

- A study conducted in five western countries asked men and women to describe the kind of person they would ideally like to be.

  Men chose adjectives such as bold, competitive, capable, dominant, assertive, admired and practical. Men rated prestige, power, and owning things as important. Men valued things.

  Women chose warm, loving, generous, sympathetic, attractive, friendly and giving. They rated being of service to others and meeting interesting people high on their scale of values. Women valued relationships.

- MRI scans show that the locations for emotion are in two areas in the right hemisphere, whereas for women they are throughout both hemispheres. In an argument, a man can argue logic and words (left brain) and then easily switch to spatial solutions (right brain) without becoming emotional. For women, emotions can preside while she is speaking logically and often hover everywhere.
- In the new organisations that value constructive culture, male characteristics and values are largely responsible for driving people to the top of the tree, but feminine values are fast becoming the only way to stay there. Feminine values encourage teamwork, collaboration, and interdependence, which are far better suited to an organisation's strategic capabilities.
- Women still value raising children as their top priority—over 80% of the 5,000 women surveyed in the UK by the British private health insurance company BUPA rated it as the top priority, which was a finding that was corroborated by a similar Australian survey. Even at the top of the "achievers" in business, raising children is important:

  Over 35% of women graduating from Stanford Business School since the 1970s have opted to take significant time off from full time work (averaging 5.4 years), mostly due to raising families.

  Harvard Business School surveys found that, of the women graduating since the 1970s who had significant family responsibilities, only 38% were employed full time; most of the others were working part-time.

Implications on what organisations need to do for their people:

Science is showing us that brain differences can explain much of the diversity in how we think and behave as men and women. Brain differences exist between all kinds of people, though, not just between men and women. Organisations that encourage diversity of thought will get the most innovative thinking, the most robust strategy and the creation of communities of respect and tolerance. They will also attract and retain their best talent in an environment of skilled labour shortage and increased retirement of baby boomers. There are biological reasons we are made differently, and businesses that celebrate and leverage these differences will thrive in the new world of the knowledge economy.

Summary of insights to be incorporated into organisations by neuroscience.

This paper examined only five broad categories of insights that businesses can extract from the field of neuroscience. Hundreds more lessons will now be learnt as we exponentially increase the rate of learning from brain research. We are learning more and more about the power of thought and how it can shape the reality we experience and, indeed, how it can rebuild the circuits in our mind, well into our elder ages. Works such as *The Secret* (www.thesecret.tv) and *What the Bleep Do We Know?* (www.whatthebleep.com) are popularising the findings of neuroscientists and quantum physicists to show us the magic of our minds. The new field of "neuroleadership" is emerging, which will be a field that constantly rushes ahead of us to tell us how we can work with discoveries to help organisations:

- Increase the level of employee engagement
- Drive cultural change
- Improve decision making
- Assist in the development of high performance leaders
- Improve the performance of individuals and whole systems
- Achieve strategic and tactical business goals

New talents will become important in this world—particularly the ability to quiet our minds so that we can tap into a deeper level of wisdom. Einstein knew this. He discovered $E=mc^2$ through deep, long years of meditation. As he writes, "Intuition is more important than IQ—I never discovered anything with my rational mind."

We have a lot to learn. Amen.

"...Intuition is more important than IQ—I never discovered anything with my rational mind."

- Albert Einstein

“..aligning culture to strategy is a key to success.”

Strategy without operations is a daydream.
Operations without strategy is a nightmare.
Either without talent development is unsustainable.
All without a kind and curious awareness of Self is meaningless
- Katharine McLennan

About the author

Katharine McLennan's combined career spans corporate strategy, operations, talent/leadership development and self transformation. Her most recent corporate roles have included Senior Vice President of People & Culture at Cochlear, Head of the QBE Global Leadership Academy and Executive General Manager, Talent and Business Unit HR for Commonwealth Bank of Australia.

Katharine is now an executive coach and psychotherapist for a range of corporate, government and non-profit leaders of organisations, where she focuses on corporate strategy, talent and psychology. She also works individual facing depression, anxiety, addiction, trauma, and career transition.

Prior to her corporate career, Katharine spent 10 years in leadership consulting, providing advisory services on behalf of three major organisations: Heidrick & Struggles, the Mettle Group and PricewaterhouseCoopers.

Before becoming the passionate leadership developer, Katharine's execution and pragmatic sense was fully developed in her role as head of operational planning and execution of the Sydney Olympic Games between 1996 and 2000, as well as her experience in the non-profit sector with her work with the YWCA NSW. In this role she led the operational planning process for the venue operations and was the main facilitator on all operational planning and contingency exercises within the Sydney organisation. She continues today to advise the IOC and all Organising Committees in their operational planning, workforce strategies and leadership development.

Her corporate strategy background is grounded in her formative years with Booz & Co driving corporate growth strategies, business reconstruction and process re-engineering across industries such as health care, banking, telecommunications and logistics. Clients included CBA, NAB, Tubemakers, TNT, Telstra, Royal Adelaide Hospital, the Alfred Hospital and Royal Prince Alfred Hospital.

Katharine has degrees with top honours in Biology/Neuroscience and History (Duke), Business (MBA, Stanford), and Political Science (MA, UNSW) .

Katharine is a qualified psychotherapist (PACFA), and an Industry Professor of the University of Technology
Sydney. She is also a
Director of Petrea King's
Quest for Life.

www.timetoreflect.today
kath@timetoreflect.today

TimeToReflect.Today