

CHAPTER TWO

NEUROSCIENTIFIC ILLUMINATIONS for LEADERS

Awareness of our Complex Brain

The Architect of the Universe has crafted the most extraordinarily engineered device on earth — the human brain. It is our most complex organ yet is made up of 60 percent fat and 75 percent water. But because we did not pay for it, we take our brains for granted. At just 2 percent of our body weight, it is so ferociously energy hungry that it absorbs 20 percent of our blood flow. It uses 160,000 kilometers of blood vessels to feed 100 billion braincells (neurons). Using trillions of synaptic transmissions between these neurons, our mind processes about 400 billion bits of information per second. Yet we are only aware of 2,000 of the 400,000,000,000 bits of information¹; thus at any one time we are only conscious of a mere 0.00005 percent of what our powerhouse is really calculating. Nevertheless, we are more conscious than any other mammal. A whale's brain weighs in at 6kg, yet it can't compare to our modern and more evolved 1.4kg brain. This is because, in evolutionary terms, the human brain is wrapped in a new 'jacket', our more conscious neocortex.

When it comes to achieving our goals and assisting others to achieve theirs, let us look at how *Mirror Neurons*, *Somatic Markers* and our super-conscious *Ascending Monoamine System (AMS)* will keep leaders decades ahead of the pack. In other words, to fully understand how to lead ourselves and others, let us explore the scientific explanation of our *sixth sense*, the *Law of Attentiveness*, and *the power of positive thinking and feeling*.

HOW BRAIN SCANNERS HAVE EXPOSED US

To appreciate part two of this book, *The Implementation of Successful Leadership*, we first need to introduce more of the major psycho-dynamic building blocks behind the neuroscience of success. And don't forget that 'success' is a personal thing; it must be relevant and aligned to what you and your followers really want.

Thanks to sophisticated brain scanners and experienced neuroscientists, the convergence of neuroscience with physiological psychology, clinical psychology and developmental biology has

brought an exciting start to the new millennium. There is a flood of new scientific information elucidating how *mental events* occur in our brain, mind and body. As we will discover, this interdisciplinary fusion has spawned a new and fresh understanding how our mind works; it has opened up our belief system, expanding the narrow window through which we once attempted to make sense of our thoughts, feelings and intuition. And as we better understand how our mind *really* works, neuroscience is poised to continue evolving our primitive superstitions into much more quantifiable terms. For instance, by studying neuroscience, I've discovered many modern neuroscience concepts that together clearly demystifies the ancient Law of Attraction. But let us first understand how neuroscientists examine our brains whilst we think, feel and act.

Understanding how brain scanners work is not difficult. If someone has undergone one of Dr. Walter Freeman's transorbital "ice-pick" lobotomies (1930-1967), an infamous and barbaric psychosurgical procedure using an ice-pick-like instrument to sever the prefrontal lobes of the brain, the inactive lobotomized part of the brain would show up as a black hole on a neuroimaging machine — no thinking, no flared activity observed.

However, as oxygenated blood flows through the multifaceted constellations of a normal brain, the parts thinking the hardest flare-up like detonations on functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and magnetoencephalography (MEG) machines. Professor Oliver Turnbull, the head of the School of Psychology at Bangor University, has for instance studied our body's sensation spot, the somato-sensory cortex, and has observed that parts of our neck and earlobe are connected or 'mapped' to our nipples. (It now makes sense why it has been taboo for male Japanese hairdressers to work on women's hair.) Turnbull has also observed that our faces and hands, as compared to other parts of our body, have the largest dedicated brain space, exposing why it is so natural to read people's body language mainly from their faces and hands. Understanding this hardwiring helps us understand why a grumpy face, by triggering our mirror neuron system, makes us feel grumpy too.

Aglow in 3-D, these MRIs reveal our psycho-physiological activity whilst we think and feel. If we create an image in our mind, or react to an external stimulus, our brain impulses can be observed. These machines even 'see' our pre-conscious thoughts before we are aware of them ourselves. Observing and statistically mapping this neuron activity under a myriad of situations, neuroscientists have now charted out minuscule constellations of our mind and have started

modelling all sorts of human behaviour. They can fairly reliably see our reactions, predict our actions, and reflect upon our experiences, all through careful observations of pre-determined micro patterns of brain activity.

Unlike traditional marketing research where the respondent typically feeds back what the researcher wants to hear, with a neuroimaging scanner neuroscientists can objectively see the truth of what the subconscious actually likes and dislikes. Astonishingly, neuroscientists can predict what our decision will be a few seconds *before* we act. Neuroscientist John-Dylan-Haynes, at the Max Planck Institute, has observed that when we consciously do something, “most of the work has already been done” before we act. Our subconscious and unconscious brain activity *precedes* conscious thought activity. Neurologists thus see our unconscious thoughts *before* we are even aware of any of our own thoughts. We may feel like the decision to press a button is a snap decision, but, as can be revealed with an fMRI scanner, the pressing of button is first preceded by a few seconds of unconscious frontopolo cortex and parietal cortex activity.

Neuroscientists broadly describe the brain as being comprised of three layers of “systems within systems”. Using Paul Maclean’s *triune brain model* (see diagram below), these are: the *reptilian* complex, *paleomammalian* complex, and the *neomammalian* complex. The core of our brain (midbrain), the deepest layer or *brain stem*, is a primitive two hundred year old reptilian complex, or “lizard” brain, which is responsible for basic functions like hunger, thirst, lust, sex and knee-jerk reactions. This reptilian brain cannot think or learn — it just reacts.

The second primeval layer is our *limbic system* or “dog” brain. After getting a fright it is our two *amygdalae* (mainly the right one) that trigger our heart racing *sympathetic nervous system* (SNS) of “fight, flight and freeze” adrenal responses. Our limbic system also includes our ancient paleomammalian *hippocampi* and *hypothalami*, which governs more of our basic instincts, like the unconscious pheromone-processing of people’s armpits around you, the ability to be loyal, to love and hate. At our core we are *social beings*, and when in a relaxed state, it’s our limbic system that cares for others (‘towards’ response of limbic resonance). It is an emotion-based brain where much of our value judgement and emotional memory, like our self-esteem, is internalised. Our hippocampi memorises events, whilst our amygdalae memorises the emotions accompanying those events. When our status or state is threatened, we can become very uncaring (‘away’ threat/avoid response of limbic dissonance). In an instant we can become emotionally aroused (often

unconsciously), breakout into a cold sweat of goose bumps making our hair stand on end, dilate our pupils and constrict our blood flow to certain areas — all because of a cascade of events triggered by neurotransmitters in this ancient area of our brain.^{2,3} It is important to note that this hormone-primed second layer of brain, feelingly, is responsible for *both* care giving and aggression.

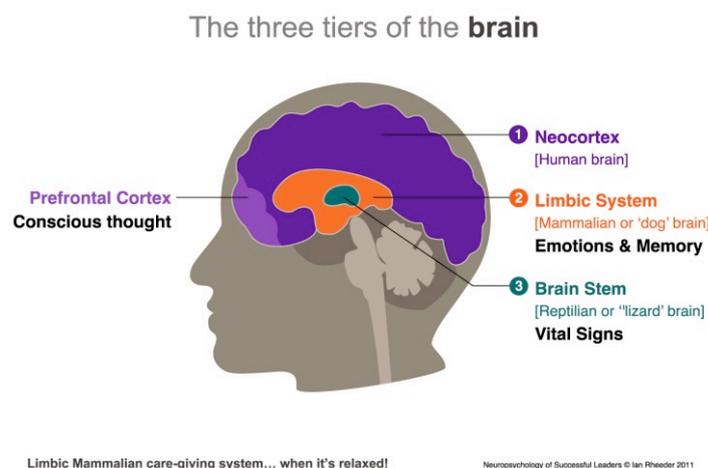


Fig 2.1: When it's relaxed, our limbic system is a care-giving system.

But in evolutionary terms, it is our relatively brand new (just two hundred thousand years old) thought-based third layer that separates us from knee-jerk reptiles and lower order mammals; this is our extremely well developed modern *neocortex* (Greek: neo meaning new) and *prefrontal cortex* (neomammalian complex or new “human” brain), allowing the leader to reason, be consciously aware of himself and others, develop a culture, plan, do maths, visualise in minute detail and communicate these visions. It is this new part of our brain that Harvard psychologist and author of *Stumbling on Happiness*, Dan Gilbert says, “We have the capacity to manufacture the very commodity that we are constantly chasing.” We can fabricate or synthesise our happiness.

In 2005 the mapping or unravelling of the human genome showed that humans share 96 percent of their DNA sequence with chimpanzees (pan troglodytes).⁴ Surely this 4 percent difference must lie in the fact that we have a well developed neocortex, and in specific, a superior prefrontal cortex. Humans are thus much better equipped at “critical thinking”. Secondly, our ability to communicate (verbal and written) is far superior to any other primate, allowing us to pass down the wisdom of the ages.

Our ancient limbic system *feels* and *acts*, whereas our prefrontal cortex *thinks*, yet there is a continual tête-à-tête between these two minds. This is also why people are so complicated — two opposing forces drive us — *rational human thoughts* and conflicting *mammalian feelings* and *actions*. It is why someone can cheat on the one they dearly love, and then by using thought, rationalise their irrational conduct! Further complicating this tête-à-tête, Ajit Varki at the University of California suggests that because humans are aware of the certainty of death, we've developed an overreaction, an *irrational optimism* to life in general. There is no doubt that over optimism (hope) may be crucial for our wellbeing, but when it comes to sound business judgment, I suggest we first use our prefrontal cortex to analyze the micro and macro business environment. Nevertheless, we can choose to picture the past, present and future in full Technicolor, and if we so desire, can even radically modify — *reframe or reappraise* — these images, emotions or experiences. When in flight or fright mode, using self-talk (labelling the feeling and then reframing it) we can choose to relax our two, tiny, almond size amygdalae and their related circuitry. This allows us to switch from using our heart racing, adrenalin and cortisol producing sympathetic nervous system, to our more healing *parasympathetic nervous system*, where we can use blood flow to calmly think and feel. Yet a lower order mammal does not have the same degree of control over its amygdalae or limbic system, but is rather completely controlled by them. Just slightly provoked, a 'tamed' animal can easily attack its owner, yet should not be blamed for its body's hardwired *sympatho-adrenal response*. This is why, as you will find out, why insecure "knee-jerk" leaders often irrationally bite the hand that feeds them. They do not have the big match temperament — the ability to "keep it together" — for complex reasoning. They are controlled by an over-aroused limbic and sympathetic nervous systems. It is important to note that small amounts of the stress hormones cortisol and adrenaline can assist motivation, *yet high levels of those hormones shuts down the cognitive and creative reasoning function of the prefrontal cortex*.

Are we conscious of *all* our choices and images sliding through our mind? Definitely not; but brain scanners can help track where the activity is. Unless we locate the root of our problems, we cannot adequately address our problems. A brain scan, for example, can indicate undeveloped parts of our brain and diagnose disease decades before it surfaces. This is the real advantage of neuroscience. Because brain waves are not camera shy, brain scanners are aglow with the naked truth. We even know what an MRI scan of a brain in love or lust looks like. Neuroscientists have thus mapped out our brain and are now much better able to "read" our unconscious mind, which often reveals the root cause of our problems.

For example, although a person may claim, at a rational level, that he is not racist, the primitive amygdalae of his brain shows an increased activity when the face of a person of another race is exposed to him. The image of a foreign tribe, for example, may fire off a cascade of biochemical events. Even if a photograph of another tribe is flashed subliminally, the unconscious amygdalae fires panic, but consciously this person may be oblivious to the incidence.^{5, 6} Discussing the dark side of our limbic system, psychiatrist Ian McCallum says, ‘It is the core of xenophobia and racism.’⁷ This is just a primeval evolutionary residue — a current maladaptive misfire from the past — that once instinctively encouraged men and woman to guard their caves from tribes that looked different. Janet Crawford says “We come preloaded with deep programming, generated from a long tribal evolutionary history on the plains of Africa. Our DNA tells us to distrust strangers and those who are “different” from us. We see this behavior even in infants nine months and younger.”^{7b}

How long is it going to take to acknowledge that there is indeed a menagerie within each of us ... a wolf, a hyena, a lion ... a wild man and a wild woman. -- Ian McCallum, psychiatrist (2005)

But we know for certain that education and more information leads to less racial discrimination, so this discovery is an important milestone when addressing and controlling ethnic tension, and even for pinpointing why humans are irrationally capable of genocide. Robert Sapolsky, professor of neurology and neurological sciences at Stanford University, has linked detrimental cardiovascular, reproductive, immunological, and neurobiological consequences to feeling the effects of “social rank” or racism⁸, making it a prime issue to eliminate in any organization or country. Education creates cultural appreciation through cultural awareness. Indisputably, the better traveled and more highly educated a leader is, the more this leader trades racial discrimination for love and respect and acceptance of people different to himself. This can hold true for all of us — to the point that integrating with other cultures can be the most exciting part about being alive! So as our nations are fast losing their unique cultural distinctions, while differences yet remain, we should enjoy the privilege of interacting with people different to us.

Education is the most powerful weapon which you can use to change the world.

-- Nelson Mandela

Neuroscience and neurobiology have also opened up a whole new marketing and leadership qualification: neuromarketing and neuroleadership. Martin Lindstrom's US\$7 million neuromarketing study, by tracking activations of different parts of our mind, has dispelled many marketing myths and thus paved the way for advanced qualitative research. In his book *Buy-ology*, Lindstrom easily convinces us that there are a multitude of irrational and unconscious forces motivating us to buy things: 'It's not that we mean to lie — it's just that our unconscious minds are a lot better at interpreting our behavior (including why we buy) than our conscious minds are.'⁹ Lindstrom goes on:

But like it or not, all of us consistently engage in behavior for which we have no logical or clear-cut explanation. This is truer than ever before in our stressed-out, technologically overwired world, where news of terrorist threats, political saber-rattling, fires, earthquakes, floods, violence, and assorted other disasters pelt us from the moment we turn on the morning news to the time we go to bed. The more stress we're under, the more frightened and insecure and uncertain we feel — and the more irrationally we tend to behave.

The more insecure we are, the more our ancient mammalian id-ego (limbic system) irrationally and unconsciously drives us to do certain things. We buy far too expensive cars because they are 'safe'. We wish our current lives away looking forward to the security of retirement. We upgrade our wardrobes and widgets with borrowed money. This psychology of using fear to motivate us is often cleverly applied to keep a mass market loyal to a brand, and more aligned to a political party or megalomaniac leader. When investing in something when the choice was originally motivated by fear, we irrationally adopt a defensive position and vehemently defend our 'rational' stance on a ridiculously irrational decision. So what may begin with good intentions, *when feeling insecure*, ends in becoming something jealously defended with the fanaticism of a mammal defending its young. As leaders, we need to know how to dim the noise of an insecure ancient mind or limbic system (id-ego); we need to take full advantage of our modern prefrontal cortex (super-ego).

MIRROR NEURON SYSTEM

Example is the most potent of all things. -- Theodore Roosevelt

As it sheds new light on our every action, the most profound breakthrough in neuroscience must be the discovery of our *Mirror Neuron System*. This discovery proves the ancient Chinese Proverb ‘A child's life is like a piece of paper on which every person leaves a mark.’ Consequently, the unearthing of mirror neurons has dramatic implications on the way CEOs, politicians, parents and role models should conduct themselves. It also explains why leaders, who are not actually leading by example, make no lasting difference and in fact, often get fired. Psychopaths, sociopaths and manipulative Machiavellian leaders have little empathy and have the ability to dehumanize the workplace. They are not positively emotionally engaged to other human beings, and thus decompose the fabric of their group. But by *observing* this sort of leadership, society unfortunately has (thanks to our mirror neurons), become more psychopathic in their desire for short-term winnings at the expense of others. It is the reason the Eastern expression ‘A fish rots from the head down’ is so accurate in describing how leaders cause the ruination of their organisations and society. Bad leadership, like corruption, is catchy.

Values, attitudes and beliefs are contagious. The question is, “Are yours worth catching?”

Ever wonder why a yawn at a dinner party triggers a chain reaction of yawns, and a smile triggers a smile, and a frown, a frown? Why, if a suicide is publicised, does this trigger copycat suicides of the same generation and gender?^{10, 11} Why, every year, will hundreds of alleged witches be murdered in Kenya, Cameroon, Sierra Leone, Congo and South Africa? In fact, who instigated the ideas that underlie the superstition that ‘witches’ are responsible for our bad luck in the first place? What about the adult child, who, having grown up and now with children of his own, cannot believe how he has inherited the same behavioural traits he once despised in his own parents? Mirror neurons are proof that learning is *caught* not just taught.

To stop HIV and AIDS, leaders and preachers advise monogamy; yet why do they themselves divorce and have illegitimate children? In what was then, the most Christianised country on earth, how did the alienating palm-down “Heil-Hitler!” salute practised for a few years, replace an intimate handshake in Germany? How did intelligent people, including archbishops, adopt this ridiculous power salute with such zeal and dedication, giving Hitler a divine significance? Adolf Hitler was a feared and revered leader, who by using movies and media, infected peoples’ *mirror neuron systems*, and thus emblazoned them with his divine military psyche, mobilising the average German to conform to his words, expectations and belief systems. This discover is probably also why we inherently seek heroes; unconsciously perhaps we are programmed to want to mirror off

someone more experienced than us. This twenty first century discovery may also explain why Sigmund Freud in the 1900s cites Gustav LeBon's work; and agrees with him that we intuitively have a 'thirst for obedience' and can instinctively place ourselves 'under the authority of a chief'.¹²

Although we may think that we are completely in control of our deliberate cognitive thinking process, our brains are automatically driven more by our embedded emotional drive to imitate — held hostage by our mirror neurons in fact. Even though we sometimes don't *want* to copy what our role models do, we irrationally end up copying anyway. Victor and Mildred Goertzel's study of four hundred famous individuals, recorded in their book *Cradles of Eminence*, demonstrates that a love of reading is developed because children mirror their parents' love of reading. As American lecturer and poet Ralph Waldo Emerson said, 'Men are what their mothers made them.'

Do this exercise before reading further. Hold up your hand and display the number five. Good. All five fingers of your hand should be stretched out. Now display the number two. Any idea why you displayed those two particular fingers and not another two? Were you even aware that that is how you *always* display the number two? You displayed those two fingers because that is what your role models have mirrored or imprinted onto you, which was mirrored onto them by their role models. In South Africa, for example, about 90 percent of the rural Africans use the small finger and ring finger; however, in the cities, because of the Anglo Saxon influence, only about 30 percent of Africans indicate a two with those particular fingers. City dwellers usually display two using the middle and index finger. In the Middle East, for instance, I asked an audience of 1,100 delegates to do this test and only 0.30 percent used their small finger and ring finger, displaying the power of our mirror neuron system's stealthy work.

In the 1980s at the University of Parma, neurophysiologists Giacomo Rizzolatti, Giuseppe Di Pellegrino, Leonardo Fogassi, and Vittorio Gallese discovered that the macaque monkey's brain fired up neurons in the same manner whether they observed people pick up food or if they themselves actually picked up the food. Like us, nature has thus equipped the monkeys with internal 'mirrors' that force them to behave like the monkeys they were modeling off. Their inner-environment is hardwired to copy or resonate with their observed outer-environment. The sender's motor movements are picked up and mirrored by the receiver pre-motor cortex of their frontal lobes (this happens in approximation to our Broca's Area responsible for our advanced speech capability). The modern neuroscience of *physiological resonance* or *shared reactivity* has thus

shed light on why a normally functioning person feels so empathetic by just watching someone's face. The observed actions of facial expressions is now documented to affect our own facial expressions, pupil dialation, skin conductance, pulse rate, breathing and of course our neural activity. Amazingly, the activity (or communication) on someone's face causes an emotional reaction in us. In a sense, actions and emotions are linked. In this way, people are not just in proximity to us, they are *inside* us.

Our mirror neuron system also reveals how the *Law of Attraction* works. Like Dr. Richard D. Rosen says, 'If we ever do end up acting just like rats or Pavlov's dogs, it will be largely because behaviourism has conditioned us to do so.' If we look at a grumpy face, neurons fire as if we are feeling grumpy. There is cause and effect — stimulus and response. And this is why, when we send out good vibrations, the same positive emotional state enters the people around us. Director of the MIT Human Dynamics Lab and author of *Honest Signals*, Professor Alex Pentland, maintains that we can now scientifically measure the effect we have on others: 'There is a biological function that transfers signals. If I'm happy, it almost literally rubs off on you.' Additionally, Pentland has noted that 'Positive, energetic people have higher performance. We're proving that.'¹³ So what we sow and send out, we sooner or later reap. Love attracts love and hate attracts hate. Or as the commons saying attests, 'to every action there is a reaction'.

But these "vibrations" are not transmitted or received by us through telepathy. That's improbable. Russell A. Poldrack, a neuroscientist at the University of California, explains just how tiny the electrical activity is outside our brain. Our brain's faint halo or *magnetic field density* is just 10^{-15} tesla, which fast dissipates when leaving our skull and is completely squashed by all other ambient radio waves. The earth's magnetic field at 10^{-5} tesla completely swamps any brain wave by 10 orders of magnitude as it leaves our cranium.¹⁴ (However, although a 'language' has not been discovered to prove synchronicity through telepathy, it should not be ruled out.)

This part of The Law of Attraction thus really should be called the *Law of Similar Responses*, and is the key to becoming an excellent leader. If you laugh enthusiastically, I respond by laughing enthusiastically; if you're depressed, I feel depressed. Positive people attract positive people and make them even more positive. This Law of Similar Responses is also the reason why when a watch is advertised, the time is always set at 10h10 — we feel better because subliminally the watch's face is smiling at us and thus we are more inclined to purchase it. A newborn macaque

monkey will even respond to a human action. Stick your tongue out and they ‘irrationally’ stick out theirs too. This survival gift has enabled the monkey to quickly and effortlessly copy their role models’ behavior. Like ours, this mirror system is so multifaceted that a monkey can encode and associate the sound of ripping paper, even though someone else ripped the paper. Then there is *The 100th monkey phenomenon*¹⁵, a social-compliance marvel in Japan, where once a critical mass of monkeys (about 100 in the 1950s) began washing their potato like vegetable before eating them, then all the monkeys suddenly started washing their potatoes too. Thus only when the monkey’s mirror neuron tipping-point was reached, through observation, did all other monkeys conform to their mirror neurons.

Using neuroimaging apparatus like functional magnetic resonance imaging (fMRI) scanners, neuroscientists believe that our mirror neuron system operates inside our inferior frontal cortex and superior parietal lobe. So when a follower observes a leader, the follower’s motor cortex resonates or becomes excited in the mirror neuron regions of the brain, and a learned association is burnt or *imprinted* into his mind. The point is, in a hardwired and unthinking way, through *observational learning*, we tend to copy our leaders. And the more we trust and like our leaders, the more apt we will be to unconsciously immitate them.

We unconsciously motor mimic others and thus unconsciously infect or program others too. In Afghanistan, boys frequently witness their role models abusing females and not surprisingly, these boys mostly become abusers themselves. Young women, even the most educated, because they often watch their mothers, subserviently accept this exploitation, and will perversely accept this pattern of behaviour as ‘normal’ too. Therefore it comes as no surprise that India’s largest survey, the National Family Health Survey-3 (NFHS-3), reports that 54 percent of women in India believe that wife-beating is justified, with 41 percent agreeing that showing disrespect to one’s in-laws is good reason for a beating.

So, like an obedient slave, our behaviour is carved out and propelled by our mirror neuron system. Every generation thus unconsciously and innocently infects their sons and daughters. So history perpetuates itself as men and women pass their sins (and thankfully virtues as well) onto boys and girls.

My point is this: if this is how our minds work, then leaders (especially youth leaders), managers, parents and politicians have an enormous responsibility to *act* as role models. They must lead responsibly by *example*, and we as voters, and employees, must responsibly make our mark. Vote aggressive leaders in, and we will have an aggressive nation. Inherit an incompetent and insecure school principal and we will have incompetent and insecure teachers. Accept insecure teachers, and “snap-spin,” you’ll soon have an insecure and incompetent nation.

Armed with this knowledge, it now makes indisputable sense for leaders to lead by actually acting out the instructions they expect and desire others to follow. For instance, my wife recently saw a teacher litter in front of his entire class. She promptly picked up the chip packet and placed it back into his hand; but the damage was already done. Talk is cheap, but leading by example carries the required weight to initiate a new project, a change in people. If a principal instructs kids to pick up litter, he should not litter himself, but should *also* be seen picking up litter first. It is in his interest to use the vulnerability of the students’ mirror neurons to create a domino-effect across the school yard and beyond. On the last Saturday of every month, Rwanda’s government leaders set the example by taking to the streets and picking up litter (called umuganda or contribution) — the consequence — Rwanda is now as clean as Switzerland because every able bodied citizen now contributes.

As one hand washes the other, so people wash off onto each other. A parent could improve a child’s resilience or emotional intelligence quotient (EQ) by actually *being* patient, kind, forgiving, tolerant and relaxed. Or this same parent can just as easily pass on neuroses by overreacting to spiders, strangers and traffic jams.

Probably one of the most compelling discoveries backing up the power of positive thinking is that our brains fire the same way if we *emotionally imagine* an event as *if* it actually happened. This means that we can role model on *ourselves* by creating images in the mirrors of our own minds. But how much easier is it to role model off an actual image, photograph or person? Killer whales and big cats are often seen teaching their offspring hunting tactics, sometimes repeatedly catching the quarry and then releasing it. Social mammals instinctively know that etching in the kill technique onto their young is part of their responsibility as parents.

The lesson? Children don't copy what we *say* as much as they copy what we *do*. Their morals, norms and values are learnt by *watching* us. This "mirror learning" from influential role models and peers is unmatched. From a kid's perspective, copying what we say requires hard work, but copying what we do is automatically soaked up by his mirror neuron system. A child's self-esteem and EQ (i.e. social skills, general mood, body language, confidence, stress handling ability and patience levels) are initially molded straight off the parent.

As Benjamin Franklin said, 'A good example is the best sermon.' My father, who has counselled alcoholics and anorectics for over 30 years, is convinced that these emotional and spiritual diseases are passed on more through observing their parents (nurture) than through being predisposed to the parent's physical genes (nature). For example, the parents' insecurities, low self-esteem, neuroses, social climbing traits and of course possible bad parenting styles, all rub off, or are "mirrored," onto the child. Through observation, the children inherit an *emotional malady* that predisposes them to alcoholism or other disorders. This has been recently backed up by modern science (Leafy, C, 2013. Switch your brain on.).

Just 20 years ago, the method of scoring a try in rugby was to run over the try line and discreetly dot the ball down. However, when Springbok star scorer Brian Habana started to dive dramatically over the try line, other players started diving needlessly too. Oblivious of their unconscious mirror neurons role modelling off these star players, most rugby players (including school kids) have now been hardwired to dive over the try line. Triple Olympic champion skier Jean-Claude Killy has rightfully said, 'The best and fastest way to learn a sport is to imitate a champion.'

This is the reason the McKinsey Quarterly (Aug 2009) recommended that frontline managers spend 60-70 percent of their time in high quality individual coaching and why the best sales managers spend 29 percent of their day selling *with* their team.¹⁶

Watch someone cry and a "trigger-spin" happens inside us. Watch a friend break down during a eulogy, and observe the domino effect. In the 1980s Dr. Robert Cialdini called a trigger incident like this a "click-whirr", and in his book *The Psychology of Persuasion*¹⁷ recorded hundreds of such incidents. For example, if we do someone a favour, this person feels indebted to return an even bigger one. Dr. Cialdini called this the *Rule of Reciprocity*, which means we actually

sometimes receive more than we give. This is why being nice to other people may be more hardwired than we think — because apart from feeling indebted to the giver, our mirror neurons fire off a mood of trust and reciprocation. Another “click-whirr” Cialdini cited was the one of *Social Proof*, where if enough people did something then this behaviour was considered ‘correct’. For example, Cialdini cited that pre-recorded canned laughter in comedies created a “click-whirr” of laughter in the audience, even when the audience knew that the laughter was artificially generated. Ridiculous, but true — we often behave like sheep. You smile, I smile. You lead honestly, I lead honestly.

Here’s another exercise to try: simultaneously smile and do an eyebrow flash (momentarily lift or ‘flash’ your eyebrows) at someone and watch the face of a disheartened person light up. This mirroring is how anorectic fashion models have spread anorexia and why, due to advertising, a ‘real’ man would feel that a Camel cigarette is appropriate around a campfire. Large townhouse complexes sell out quickly once prospective buyers see that the first few homes are sold. Once we witness that a social club or organisation gains a critical mass of followers — the tipping point — then it must be ‘right’. Right? This is exactly how, over time, cults grow their numbers.

This Social Proof “click-whirr” verifies why the insecure and vulnerable are most likely to follow fashion, rituals and superstitions; yet surprisingly, across all faculties, almost all the most influential leaders and inventors believed in something *in opposition* to the masses’ general opinion. So we must be careful. Just because everyone is burning witches and saluting “heil-Hitler!” mass participation does not necessarily make it right. Mark Twain has brilliantly said ‘Whenever you find yourself on the side of the majority, it’s time to pause and reflect.’

In the 1900’s, European women’s fashion conformed to the most unbearably painful and uncomfortable clothing, the corset, but because everyone was conforming, women’s suffering was acceptable. Leading alone Coco Chanel courageously changed all that: ‘I gave women a sense of freedom; I gave them back their bodies: bodies that were drenched in sweat, due to fashion’s finery, lace, corsets, underclothes, padding.’¹⁸

Of course the average person does not believe that he is allowing his unconscious to rule his life, but rather believes that everything he does has a rational explanation. In his book *The Hidden Persuaders*, Vance Packard in 1957 cites Louis Cheskin’s research into how unconscious and

vulnerable a woman is when shopping for an evening dress.¹⁹ Cheskin concluded that libidinous drive, followed by ego drive (what they looked like) and then fashion or style, were the important influences. Interestingly, the most seemingly rational influence, function, did not feature in women's decision making process, a process which was clearly not cognitive (thinking) but emotional. Because there is an inner struggle between three opposing subterranean motives, it unsurprisingly took ninety minutes, on average, for a woman to choose a dress. Packard further wrote, 'Mr Cheskin recalls that one girl, when she first saw the stylish chartreuse dress, commented that "the colour makes me want to vomit". Yet when she was reminded that it was the latest style in colour, she finally ended up buying it!' Although her worst colour was chartreuse, just imagining herself mirroring the latest high-fashion was so appealing she conformed and blindly followed the 'leaders' of fashion.

But it is this *collective unconscious*, as defined by Dr. Carl Jung, of the general population that is in dire need of re-shaping by our world leaders. From a mirror neuron perspective, a leader is the shepherd and his followers the sheep. When we trust and are emotionally engaged with someone, we just seem to comply like sheep being led to greener pastures. Using this hypothesis, is it then fair to blame followers when they are badly led? For instance, was it not hate-speech spewing from leaders that incited the 1994 genocide in Rwanda?

Strategy or business consultants know, when a family, organisation or country has issues, it is almost always a reflection of their leadership — rarely is the problem the people. Clearly this is why, as far as possible, people must be careful with whom they associate. As novelist CS Lewis stated, 'The next best thing to being wise oneself is to live in a circle of those who are.'

In an attempt to rid South Africa of its escalating crime wave, we need to understand how leaders infect the masses. *In their defence though, leaders often just don't realise how powerfully their actions and statements influence those whom they inspire to lead, which is why it's imperative that we cover this topic here.* In fact, we all need to be educated in just how powerfully we infect and affect others. But until South Africans face the glaring truth and stop patronising each other, this country has very little hope of curbing crime. Crime novelist, Catherine Aird said "If you can't be a good example, then you'll just have to be a horrible warning." But the problem with this is that the warning almost always comes too late, and in South Africa it is being ignored.

Let's now look at South Africa's collective psyche a bit deeper. When he became SA president on 10 May 1994, Nelson Mandela had a smile that lit up a room and a warm demeanour that instilled love in South Africans' hearts. Mandela inspired a national will of reconciliation. If enough of our leaders would be peace loving, for example, a "snap-spin" with the required mass and energy would influence citizens by replacing a 'fighting mood' in the heart with one of 'peace'.

Following Thabo Mbeki, President Zuma was then sworn in on 9th May 2009. But in the years leading up to his presidency, he irresponsibly and routinely did a "machine gun song and dance" before addressing the nation, whilst the ANC Youth League President threatened and recklessly incited followers by this comment: "we are prepared to take up arms and kill for Zuma", if Zuma was not elected. Many South Africans, already living in the murder capital of the world, have proudly downloaded this machine gun song ("uMshini Wami" or "Bring me my machine gun") as their mobile phone ringtone. This aggressive rhetoric and 'culture of violence' has unfortunately become the norm — it is not even frowned upon anymore. In 2012 "uMshini Wami" still drives followers wild at rallies.

This is the danger of our mirror neuron system; it is so deceptively powerful in manipulating the masses that some people only realise what they have been programmed to do when it is too late. *Unfortunately the majority are also oblivious to this unconscious programming, which is why leaders should read this book, and know how important it is to behave responsibly.* Thus, through education, we can at least stop future leaders from imbedding a violent streak in the masses.

South Africa's 'top cop' and former president of Interpol, Jackie Selebi, perpetuates this cultural theme by responding lethargically to SA's high crime rate in 2007. Crime was, and still is, SA's most pressing issue, yet posed the question about crime Selebi stated, "What's all the fuss about crime?" Ironically, in 2008, Selebi himself was charged of corruption and sentenced to 15 years imprisonment on 3 August 2010. He was replaced as National Police Commissioner in July 2009 by Bheki Cele; due to allegations of corruption Cele was also suspended in October 2011. It would appear that the two top crime fighters were fighting to cover their tracks more than they were fighting crime.

The crack crime fighting squad and best corruption-busting team in the country, the Scorpions, was disbanded by the SA government in 2008, signalling to criminals that the government was not tough on crime. What's more, the Scorpions did not use strong-arm tactics but rather intelligence to fight crime.

If all these incidences were not a way to infect a nation of followers with a sense of lawlessness and disorder, then what would be? Even though leaders may later retract their remarks, did this leadership not precipitate the most aggressive municipal and taxi riots by the ANC's closest followers in 2009? In August 2009, two thousand soldiers stormed the Union Buildings whilst the police used stun grenades and rubber bullets to disarm their own army. On 7th August 2009, a leading radio station²⁰ reported that police could not understand why normal house break-ins had become so violent. Never in the history of South Africa had the army or the revenue services gone on a large-scale strike, yet in September 2009, South African Revenue Services, who collects the country's life giving income tax, also went on strike. Two weeks after this, 14-16 Sep 2009, students from one of South Africa's premier universities, WITS, went on the rampage, disrupting traffic and other students from writing exams, whilst 60,000 textile workers, already earning 300 percent more than their Chinese counterparts, also went on strike. What were the ring-leaders wearing? President Zuma T-shirts.

Despite increased budgets to curb crime, on 23 September 2009, just nine months before hosting the 2010 football World Cup, South Africa announced that residential burglaries were up by 29 percent and business theft by 41 percent; yet from 2002–2008 crime was on a steady decline. Irregular spending of state tenders in 2009 was R2,4bn, and in 2010 it escalated to over R4bn. In 2011 Siphos Pityana the chairman of the Council for the Advancement of South Africa Constitution says corruption is now “so pervasive and rampant” the country is on the verge of being deemed a “dysfunctional state.”²¹ The suspended former ANC Youth League leader (2008 - 2010), Julius Malema, recklessly contravened section 16 of South Africa's Constitution — where no person in South Africa may advocate hate based on the grounds of race, ethnicity, and which incites action to cause harm to others — when on 09 March 2010, he led students at the University of Johannesburg in a song with the words: "Shoot the boer [farmer], they are rapists". With this aggravating and well-publicised speech on radio, TV and print by the leading party's youth league leader, was it a coincidence that during the subsequent days a string of farmers

were attacked and murdered? Just three weeks after the speech, infamous Afrikaner Weerstandsbeweging (AWB) leader Eugene Terre Blanche was bludgeoned to death on his farm (3 April 2010). Thankfully on 16 May 2011, the South Gauteng High Court in Johannesburg declares “Kill the farmer” chant “incitement to murder” and on the 17 Oct 2011 Judge Collin Lamont declared it “hate speech”, and everyone in South Africa is restrained from singing the “morally culpable” song. Not surprisingly, in spite of higher unemployment rates in 2011, murder and crime has dropped significantly in South Africa since the 16 May 2011. Judge Lamont said “Words are powerful weapons, all genocide starts as simple exhortations.”

From what we know of our mirror neuron systems, these crimes were probably not coincidences. If we understand how our mirror neuron system works, creating this sort of ‘hate’ atmosphere will spur on those who are already that way inclined, to commit murder. Does the hate speech “kill the boer” reflect the golden rule, "Love your neighbour as you love yourself"? Certainly not.

Criminologists Wilson and Kelling developed a theory that small things create and remove crime. They called this the “Broken Windows” theory. For example, graffiti, they believed, was a symbolic disorder that triggered the climate of lawlessness in New York. Graffiti transmitted an unconscious signal to criminals that authorities were not concerned with the New York environment. With so many other variables at play, this is a difficult hypothesis to test, but how much more convincing is it when a president unashamedly sets off a nation’s mirror neuron systems with a symbolic, but divisive, machine gun dance?

Example is not the main thing in influencing others. It is the only thing.

-- Albert Schweitzer, Nobel Peace Prize winner and medical missionary.

Now with a clearer understanding of our mirror neuron system, leaders and role models should have a newfound respect and ethical responsibility in the way they do or do not fire-up their followers’ neurons. As role models are almost always the proximate cause of a nation’s action, inaction and outlook, leaders should be extremely conscious of the moral fibre they project onto others. Albert Einstein said, ‘The world is a dangerous place to live, not because of the people who are evil, but because of the people who don’t do anything about it.’ Whether we like it or not, we

will become more and more like the role models we observe. Adults, teenagers and children will act much like their leaders, regardless of efforts to teach them otherwise.

Now that we know just how vulnerable we all are to our mirror neuron systems being programmed by our role models, think twice about doing nothing when crowds are erroneously excited. We should responsibly exercise our citizenship and remind our leaders when they have overstepped the line. As Luis Palau announced, ‘Timid measures will not change a nation.’ Silence is complicity!

Start by smiling at your whole household, then the traffic cop, then your entire office, and then you will notice that the whole world will come back smiling at you.

We know that our mirror neuron system seizes information, but now let us see how our *somatic markers* intelligently record and file this information in our mind and body’s databanks.

SOMATIC MARKERS

There comes a leap of consciousness, call it intuition or what you will, and the solution comes to you, and you don’t know how or why. -- Albert Einstein

If we listen to our somatic markers, intuition is real. As leaders of others and ourselves, let us find out how our sixth sense works.

Thoughts are housed in our mind but our body feels emotions. By formulating the Somatic Marker hypothesis, behavioural neurologist Dr. Antonio Damasio has revealed a strong link in how our emotions play a central role in our cognitive decision-making process.²² Our emotions assist our thought process *before* we act. Damasio says, ‘That is the beauty of how emotion has functioned throughout evolution: it allows the possibility of making living beings *act* smartly without having to *think* smartly.’²³ This of course also frees up our mind’s processing capacity to focus on other tasks.

The most complicated achievements of thought are possible without the assistance of consciousness. -- Sigmund Freud (1886 – 1939)

Previously, we mainly concentrated on a rational cognitive and emotional thinking process that offered us a reasonable incentive if the decision was carried out. However, not every real-life circumstance is that cut and dry. *Sometimes a situation we find ourselves in has complex and conflicting alternatives, requiring more intuition than our rational minds are capable of producing.* However, with the support of our somatic markers and unconscious memory (stored in both our body and brain), we can turn a mind-numbing indecision into an informed snap decision. With this ‘inner-consciousness’ (although we may be unconscious of it) reading complex situations, like a person’s multifaceted body language, becomes second nature. A mother, for example, will intuitively sense that the boy her daughter is dating is a loser, yet the daughter, unaided by experience with boys, cannot yet see it. This snap-intuition in reading situations is what psychologists Dr. Ambady and Dr. Rosenthal in 1992 called “thin-slicing”. An experienced driver or pilot eventually becomes unconsciously competent and will often ‘intuitively’ avoid the danger zone. We thus often instinctively know, from a “thin-slice” of information what the right decision is, even though our ‘rational’ conscious reasoning may confusingly say otherwise.

Although they are emotional associations, somatic markers are intelligent and without the accumulation of them we would appear mind or brain-dead in many situations. Although Dr. Damasio does stress that in some instances reasoning may be better than relying purely on our emotional somatic body markers, he suggests that, ‘when emotion is entirely left out of the reasoning picture, as happens in certain neurological conditions, reason turns out to be even more flawed than when emotion plays bad tricks on our decisions.’²⁴ Of course Damasio isn’t talking about neglecting our reasoning when playing the stock market. Warren Buffet has made his

billions because he certainly does not rely solely on emotions. However, Buffet would use his ‘gut’ if he was intimately involved in the public listed company’s daily management. But there are a myriad of other life scenarios where our decisions rely on our emotional intuition — that inner intuitive consciousness — if only, like a cat, we listened to it more consciously. In 2010 Sir Richard Branson said ‘Luck and listening to my gut have played a major part in my success.’²⁵

So let us go a little bit deeper now. As an adult, the sound, smell and sight of a dentist’s drill is instantly linked to the pain of our first filling. A song can trigger a flood of emotions associated with the time we first heard it — the event sits in our hippocampi and the emotion linked to the event sits in our amygdalae. Somatic marker associations, good and bad, are past experiences stored in our body and brain, and these retained somatic patterns will be called upon in the future to assist our cognitive thought process. The best part is much of this processing is done at an unconscious level. For instance, we have an inner protection facility (hypothalamus-pituitary-adrenal axis) to infer the presence of potential danger, and deduce that now is the time to freeze, fight or run for it — flight!

Differentiating between over 10 000 different aromas, our sense of smell is our most commanding sense. A past fragrance, for instance, will instantaneously call up a somatic marker reminding us of a childhood experience. This is because our nose connects us directly to primitive parts of our brain, the thalami and hippocampi, making our response to past smells especially primeval. We are thus instantly emotionally charged with strong feelings associated with our memory bank. What is more, we cannot turn off smell even if we try. We are ignoring all sorts of visual stimuli around us right now, but if a smell wafted past, our primitive brain responds without our permission. This is why we think of dogs and cats as having a sixth sense; unlike humans, animals are more attuned to their five senses and do not have a rational prefrontal cortex to govern their responses.

Some of these smells are not learnt, but pre-programmed. In her book, *The White Maasai*, Swiss author Corinne Hofmann demonstrates these strong primeval linkages on her visit to Kenya. Corinne picks up the body odor of a passing Maasai man, which she explains, left her instantly erotically charged. Possessed by this experience, she pursued her man and married him. These snap incidents, orchestrated by nature, lead her to bear a child with her Maasai husband. Interestingly nature also sometimes attracts us to our opposite DNA gene pool, which evolutionarily secures the healthiest offspring. Unfortunately, Corinne’s relationship did not work

out; but nature already had her way with her. Corinne, loaded with thousands of new somatic markers, or new frames of references, would probably now have a different reaction to the same stimulus. This is the advantage of somatic markers: they are jam-packed with insight, experience and wisdom — intuition. Our body is like a painting with mountains of layers of experience. The important neurophysiological discovery is the difference between our *mind* and our *brain*. Our brain (100 billion neurons) is confined to our cranium, but our *mind, which sits within and interacts with our entire body, is made up of trillions of neurons.*

Somatic markers are a finite sequence of embedded or embodied past experiences, seated in trillions of neurons — nature’s problem solving algorithms. We are continually running these complicated algorithms; thus the net effect of all our stored somatic markers, consciously and unconsciously, will select and direct our actions. Somatic markers are the reason for our familiar *deja vu* moments. We suddenly have a weird feeling that we have been ‘there’ before, but perhaps the current incident just has many similar coinciding smells, sounds, colours, people and architecture, which miraculously seems identical to a past childhood experience. That is the marvel of our somatic markers; they can instantly rush to the rescue when they’re needed. Our subconscious mind, stored feelings, our soul, our spirit, memories and somatic markers are our inner-guides; and at the risk of sounding a bit too esoteric, *we’re operating at a much higher frequency than we think we are.*

Depending on the depth and type of stored somatic markers, we will also be steered away from potentially dangerous circumstances. As early as 1933, Dr. Carl Jung observed that our unconscious “easily seizes power” and thus “instinctive defence mechanisms automatically intervene.”²⁶ Describing the mind, amazingly Dr. Jung was also on a similar track when he made this observation:

But if we can reconcile ourselves with the mysterious truth that the spirit is the living body seen from within, and the body the outer manifestation of the living spirit — the two being really one — then we can understand why it is that the attempt to transcend the present level of consciousness must give its due to the body.²⁷

So our entire body, made up of over ten trillion cells and neurons, with all its organs, including our brain continuum, really is the temple of our spirit and psyche (psyche is Greek for soul). Dr.

Damasio argues that the ‘brain and the body are indissociably integrated by mutually targeted biochemical and neural circuits ... the body provides the ground reference for the mind ... for millions of years, brains have been first about the organism that own them.’²⁷ Embodied somatic markers are that part of our inner-environment (the brain-mind continuum), which encode our outer-environment, and at lightning speed, billions of bits of information are processed to make sense of complex patterns observed in our systemic bi-vironment (our inner and outer environments, as introduced in Chapter One). *We don’t see or feel the outer-environment exactly as it is, but rather we see it with reference to our past body-markers.* Our brain and mind feels around using past cellular insights and beliefs. Instantaneously digging-up these valuable markers-of-events makes us so much more insightful in a given situation, offering us a *superior cognitive representation of the complex outer-environment.* With knowledge of this amazing inner-consciousness, the end result is that we feel more in control and empowered in our bi-vironment.

Dr. Damasio raises an important difference between our five basic senses — sight, hearing, smell, taste and touch — versus our emotions. Our five senses are activated by our outer-world, whereas our *emotions* are triggered by the accumulation of our inner world’s cognitive representations. If for instance, our total being has experienced a negative *emotional* state, like being chased by a lion, then this ‘body-marker’ will be recorded in nerve cell activation patterns, allowing us to modify our future behaviour for improved traction the next time the same event happens. In other words, our memory of an event is a neural recollection of what happened in *both* our brain and body. So the past emotional reactions that our body felt when being chased by a lion becomes a somatic marker, or a cognitive representation, of our emotions that were felt by our body.

Astonishingly, the mainstream of some of our neurotransmitter production takes place in our body, not our mind. There is a definite brain-gut or neuro-gastro connection. Our intestine for example produces 90 percent of the ‘feel good’ neurotransmitter serotonin. So we really are what we ingest and feel in our gut. And the temple of our soul (emotions) really is our body.

Even if we are unaware of it, these somatic markers control us at an unconscious level. For example, if we were monitored by a brain scanner, our mind would show the real ‘signature’ of what we were feeling by exposing the symptoms evident in our body. *Our future emotional reactions are therefore mere perceptions, strongly influenced by our past cognitive representations, or somatic markers.* So, if we were chased by a lion again, the stored somatic markers linked to the last horrific chase will be used to modify future behaviour. And if we were

chased often enough, and survived, we would start having an uncanny sixth sense when scanning our surroundings, intuitively perceiving a dangerous situation just before something happens.

Our accumulated somatic markers, therefore, have evolutionary advantages — they keep us safe. And so based on feedback from thousands of previous somatic references, using our five senses, sensing a dangerous situation can become second nature, if in fact, we survived many previous close shaves. *Our body therefore is not a passive vessel, but is actively involved with itself and our mind to ensure our survival.* The *thinking* mind is not in the body, but the body interacts with and influences the brain. If for example, says Damasio, you cut off your brain from your body, ‘your body state would change radically, and so consequently would your mind.’²⁹

How do cliff divers intuitively know the exactness of their performances before they exit a somersault? Before they actually make contact with a golf ball, how do pro golfers intuitively know whether the shot is going to be perfect or not? It’s because after thousands of golf swings, a golfer has so many somatic markers montaged on top of each other that the subconscious operates like an intelligent super computer. Drawing upon this complex algorithm of data, snap intuition becomes real. This is often why the experienced coach, too, in a split second, can spot the miscalculated shot even before the point of impact.

Understanding how somatic markers aid us, intuition can be understood as common sense, a ‘gut feel’ caused by years of combined experience, knowledge and reflection. Common sense is wisdom, making physician and author Benjamin Spock’s words ring so true: ‘Trust yourself. You know more than you think you do.’ But because we are so unaware of our unconscious feedback, we often don’t give our magnificent mind and body the credit for our intuition, but too readily palm it off as some other external force. We can, for example, read over 250,000 different facial expressions, yet Shakespeare’s vocabulary, praised incessantly, was comprised of only 25,000 words in all his works. Ray Birdwhistell notes that the average person only speaks for about 10 minutes a day, but with over 250,000 different facial expressions, which unlike spoken language are never switched off, *body language is our main mode of communication.* Seen in this context, it is no wonder that we so often feel like we can read someone’s mind.

The major breakthrough of this somatic marker concept has vastly clarified how neuroscientists study our body and mind. Our emotions are fed by our internal state. Thus it can be said, even

though our body is internal to us, it is in fact the mind's *external* trigger. Read the previous sentence again. Just as our sight is triggered by our outer-environment, our brain is fed by our body's internal environment. Not just psycho-somatic but somatic-psycho. *Both mind-body and body-mind interact.*

So our body houses our mind. Our challenge is to become more conscious of these feelings so we can control them, and not be controlled *by* them. If we are conscious of a certain feeling and its origin, we can then control our response by "*reframing or reappraising*" it in a more positive light. Anthony Robbins suggests, 'a signal has meaning only in the frame or context in which we perceive it.'³⁰ We can choose to re-represent the emotion in a different frame of reference, and thus can immediately start modifying our perceptions of reality. *That is the beauty and danger of owning a prefrontal cortex.* If we fill our minds with danger signals, our mind will cause physiological effects of shock. It is what Aristotle called cause and effect — stimulus and response. Therefore, our conscious *choice* of a positive attitude towards our perceived reality is actually more important than reality itself. Ask "What valuable insights can I learn from this situation?" or say "I'm much more in control this time." Through repetitive reframing (reappraisal or reinterpreting) we can overshadow the negative somatic marker with a more positive and larger one. The more emotional we are about attempting to reframe, the faster the overshadowing or overwriting of an existing somatic marker can take place. An attitude of reframing potentially negative situations is the start of a "self-fulfilling prophecy" to success.

With this understanding of our somatic markers, Dr. Damasio goes on to highlight why humans are distinctively intelligent, and contrary to popular belief that emotions get in the way of us behaving rationally, *Dr. Damasio believes emotions actually assist rationality.* He proved this by observing patients who had damage to the part of their brain which tapped into somatic markers; this group of people showed gross misjudgement in being streetwise, revealing their helplessness to respond to their thoughts. Yet this group could respond well to an intelligence test. In other words, this group had the *inability* to access somatic markers in a dangerous scenario; they therefore could not make the swift and necessary adjustment to avoid the threat. Yet they could complete a complicated intellectual assignment. Without their somatic markers, however, they were socially inept. Phineas Gage, for instance, who accidentally blew a two-inch hole through his brain (1848), could hold an intellectual conversation but was not as streetwise.

Of prime importance to this book, and the reason I want to introduce the concept of the somatic marker, is to highlight the synergistic alliance of our inner-environment with our outer-environment (systemic bi-vironment). I think Dr. Damasio has found a scientific explanation as to why, when something creeps up behind us (figuratively and literally), we have a gut-feeling or sixth sense that alerts us. We have a *superior consciousness*, especially when we consciously feed our somatic markers with our five senses and conscious thought input. *We develop an intuition bordering on metaphysical or paranormal.* It is not voodoo or the universe feeding us information — it is the marvel of our body-and-mind interaction. Extended consciousness of both our inner and outer-environment is key. We need to consciously integrate our inner-environment (mind, soul/emotions and body) with our outer-environment. *But we are only truly conscious when we are relaxed and deliberately immersed in our bi-vironment.*

Thanks to these insights into how our mind and body interact, the advantages of our bi-vironment interacting with our somatic markers are endless. We can avoid a would-be hijacking as our minds rapidly calculate the emerging risk, or avoid a second date with someone whom we prophesy will hurt us in the future. This explains why, if the phone rings, we can actually calculate who the caller is and know why this person is phoning us. We can rapidly figure out, through an unconscious effort of recalling countless somatic markers, who is on the phone. *But because we are so unconscious of this rapid cognitive process, we palm it off to a 'sixth sense'.* Yet it is our sixth sense, but it is not telepathy. This discovery begins to uncover the *illusion* of coincidence. For example, how conscious are you right now of your environment's sounds and smells? Yet unconsciously, your mind is aware of it all. How much more attuned would we be if we consciously tapped into our bi-vironment?

If we are impressed with how our somatic markers assist in our bi-vironment, we will be equally stunned at the power of our super-conscious *Ascending Monoamine System (AMS)*. It is important to understand how the universe appears to 'collaborate' with us, because once we are aware, we can consciously tap into this wonderful gift within us and not wait on the universe to make the first move. So, building on mirror neurons and somatic markers, enter our marvellous AMS.

ASCENDING MONOAMINE SYSTEM (AMS)

There is a landslide of new neurological discoveries elucidating how our minds work, and because it is believed that our Reticular Formation³¹ is the crux of our behavioral functions, these discoveries are garnering much attention from neuroscientists. For instance, to better understand Alzheimer's, attention-deficit disorder (ADD) and comas, neurologists were studying our extremely complex ascending and descending Reticular Activating Systems (RAS). *Of particular importance to this book is the fact that this Reticular formation is the difference between unconscious and conscious living — the difference between just existing in life, and being motivated to live.* Our RAS is thought to be responsible for avoiding pain whilst maximizing pleasure in our lives. Therefore, in any given situation, our RAS was thought to keep us conscious and on the lookout for anything that may assist us in achieving our life's vision and calling, whilst steering us away from pain. Apart from it alerting our consciousness function, the RAS has the unbelievable dual responsibility of unconsciously maintaining the rhythm of our heart, lungs and many other essential bodily functions.

A medical definition of Reticular Activating System is as follows: The system of cells of the reticular formation of the medulla oblongata that receive collaterals from the ascending sensory pathways and project to higher centres; they control the overall degree of central nervous system activity, including wakefulness, attentiveness, and sleep; abbreviated RAS.³²

However, with the more recent discovery of the serotonin, norepinephrine and dopamine systems, our RAS has been given the new title *ascending monoamine system (AMS)*. Interestingly, snorting cocaine also leads to an increase in serotonergic, noradrenergic or adrenergic (adrenaline), and dopaminergic neurotransmissions. This gives us insights into what a great leader can do for a follower. Cocaine, like a great leader, can increase alertness, feelings of euphoria, well-being, energy and motor activity, feelings of competence and sexuality. Great leaders can put their group onto a natural high.

Along with somatic markers, our AMS is the modern explanation of the 'secret' and the Law of Attraction which Napoleon Hill explained so well when he described it in these three steps to personal success: "Whatever the mind can conceive, and believe, the mind can achieve." We thus have the power to control our minds and to create our reality. But Hill also reiterated that we need to *work* to attain goals. Thus the 'secret' is a good first phase, but we also need a detailed follow-

up plan of action too. In the 1800s, the first modern-day psychologist William James already observed that the ‘greatest discovery of my generation is that man can alter his life simply by altering his attitude of mind.’ In 1905, William Walker Atkinson also revealed the ‘secret’ in his book *Thought Vibration or the Law of Attraction*. In 1926, Robert Collier called his book *The Secret of the Ages*. In 1937 Napoleon Hill wrote *Think and Grow Rich*. In 1953 Norman Vincent Peale wrote *The Power of Positive Thinking*. In 1956, Earl Nightingale made his famous recording, *The Strangest Secret*. In 1965, Joseph Murphy wrote *The Power of Your Subconscious Mind*. And if we really want to go back thousands of years, most philosophers and religions propagate the same timeless advice: “We become what we think”. The Bible reads, “Everything you pray and ask for, believe that you have received them, and you shall receive them.”³³

But be warned, we don’t become purely what we “think”. We become what we “*think, feel and do,*” which we will examine in Chapters 5 to 7. By studying the above mentioned books, it is evident that the ‘secret’ and the Law of Attraction have *not* been shrouded in mysticism at all, but have been recognized and valued over the ages.

So why is the *Law of Attraction* suddenly portrayed with an X-factor status this millennium? It is because this law is so basic and common that it has been repackaged to make the unsuspecting consumer believe that it is the new metaphysical shortcut to prosperity that the world has been waiting for. If anyone should receive praise, however, it should go to the creator of our magnificent mind. The Law of Attraction, or the ‘secret,’ contains no inexplicable formulae and should not be pondered upon with the mystique of a new age religion. Let us discover why:

Most of the time, the Law of Attraction is an off-beam term to use anyway. With the discovery of our AMS (and other parts of our mind), it should be called the ***Law of Attentiveness***. Our AMS takes us from a state of Attention Deficit Disorder (ADD) to what I term an Attention Surplus Disorder (ASD). Other synonyms for attentiveness are consciousness, alertness, awareness, watchfulness, wakefulness and preparedness. But without a sensitized AMS, we would be lulled into unconsciousness or nothingness. *When emotionally aroused, we develop neural structures or “markers” that engage us in cognitive processes that would have otherwise never happened. It’s these inner “representations” – our AMS’s inner neural-markers - that connect us to the outer-environment.*

Thus, paying attention and emotion work with each other. The more emotional we are about a thing, the more we observe that thing. The more we observe that extremely relevant thing, the more emotional it seems. The more emotional it seems, the more we seem to notice it. Activating us, this is how emotions and attention feed-off and build each other. Because our mind does not prioritise things we are not emotional about, irrelevant things pass unnoticed. When we're not activated by our AMS's internal representation, we passively ignore things. The discovery of this *cognitive neuroscience* has obvious implications for leaders and marketers – we need to make our target audience emotional about what we wish them to notice. It's the key to activating and engaging with our followers. To establish a share-of-mind, this is the key to breaking through – to accessing – a target audience's mental space. This is explained in Figure 2.2. below.

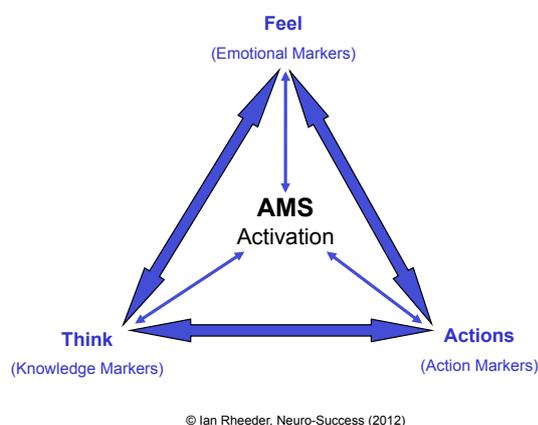


Fig 2.2: Our AMS is Activated by a Mental Representation of our Knowledge, Emotional and Action Markers

A woman looking for an upmarket hairdresser will assemble a mental representation like this (ref Fig 2.2): Her *knowledge* markers will be the spelling of the word hairdresser and the shop-front adorned with striking photographs of models displaying attractive hairstyles. The *emotional* markers are the smell of filter coffee, chemicals associated with hair colouring, relaxing, and the image of her aspirational new haircut. The *action* markers would be the sight of hair being cut, scissors, blow-drying and tossing of hair. Marketers would target all these subliminal markers, and also develop a catchy jingle that pulls them all together when the tune is played.

Understanding the relationship between emotion and attention (our AMS) explains many situations in our internal and external world. The universe does not drop things into our lap or inexplicably remove other people's cars from a parking lot to make space for our cars; rather inline with our

internal *markers*, we detect relevant patterns that are always out there, and then by choosing to pursue what we have detected, our mind seems to ‘attract’ these things into our life. Our AMS detects *coinciding incidence*, which an unconscious person would call a coincidence. Our AMS puts us on an autopilot beeline to achieve our goals. In Dr. Maxwell Maltz’s book *Psycho Cybernetics (1964)*, he called this autopilot phenomenon our servo-mechanism.

When we are in control of our own destiny, the Law of Attentiveness opens up opportunities instantly, whereas, because we seemingly have to wait for the universe to act on our behalf, the Law of Attraction is disempowering in comparison. Why wait for the universe to conspire with us? *Why not conspire with a world of opportunities and create many of our own opportunities right now?*

The Law of Attentiveness is further fueled by gaining experience over time and by being extraordinarily conscious, we take notice of our bi-vironment. We develop the knack for, or wisdom to, visualize the opportunities before they appear, enabling us to preempt our own actions. For instance, because his AMS knows what to look out for, a failed but experienced entrepreneur can easily start another business. Empowering isn’t it? The *Law of Attentiveness* is not clouded in mysticism like the Law of Attraction; The Law of Attentiveness is completely believable because it has happened to all of us. When we emotionally yearn for something badly enough, our attentiveness of our bi-vironment produces the dots; we then act and join the dots into a workable solution. Our AMS forces us to become inventive and fires up our otherwise dull imagination. We can stare at a cloud in the sky and identify patterns that would have otherwise gone completely undetected.

So how can we program our AMS to alert (‘attract’) us to what we want in life? Have you ever consciously chosen to learn a new word and then ‘coincidentally’ heard it used many times shortly after learning it? Coincidence? No. These are just *coinciding incidences* that you are now aware of as the newly learnt word coincides with your AMS. Your AMS, emotionally charged by your desire to learn this new word, picks it out with laser beam accuracy. The day you learn a new word you’ll often hear it on the radio or TV the same week. But if your AMS was not sensitized to your systemic bi-vironment, the word would go undetected although you had ‘heard’ it. The word was always out there *but* you were not filtering it with your AMS.

Like a 360 degree panning radar dish and searchlight, our AMS filters out what we need and want; thus something appears like it was ‘attracted’ but actually we were merely more attentive and alert in our bi-vironment. Our AMS is one up on consciousness. It effortlessly triggers our automatic extended consciousness — our super-consciousness. We could even decide to look for a message or a shape in a developing cumulonimbus cloud and together with our AMS and imagination this will unfold before our eyes. So we start to notice what we desire. Believing is seeing.

Thus when conscious of it, you begin to witness how your AMS merges your bi-vironment into a cohesive whole. You will become more aware of how the chatter inside your head coincides with your outer-environment. Ask a pregnant (and understandably emotional) woman what she notices when she is pregnant. She inexplicably detects other pregnant woman and becomes acutely attentive to shops running specials on baby goodies. That is not actually inexplicable; that is her AMS alerting and reinforcing itself, it is an incident that is just coinciding with her AMS.

Seeing, on its own, is not the precondition for believing. Feeling is.

– Ian McCallum, psychiatrist, 2005

The below diagram clarifies the Law of Attraction by splitting it up into two completely separate laws: *The Law of Attentiveness* and *The Law of Similar Responses*. By regarding these two laws, we will see how aptly our Mirror Neuron System and our AMS demystify the theology that has been surrounding the Law of Attraction for millennia.

Demystifying The Law of Attraction	
The Law of <i>Attentiveness</i>	The Law of <i>Similar Responses</i>
Our AMS, assisted by millions of Somatic Markers, makes us super alert or conscious of the activities in our bi-vironment. Once programmed, our goal-centric AMS picks up	When we smile we fire up a smile in the Mirror Neuron System of the people witnessing it. If you are positive, it literally rubs off onto others. Thus the mood you are in becomes the mood of

coinciding-incidences in our bi-vironment, which makes these ‘coincidences’ appear like they were ‘attracted’ into our lives.	people around you. Your team responds similarly to the vibe that you send out.
<p style="text-align: center;">Example:</p> If you truly believe that your strategy is going to work, your AMS will make you and your senses super-conscious. You start to notice opportunities and solutions. Like a heat seeking missile, a sensitised AMS will put you on a beeline that will astound you.	<p style="text-align: center;">Example:</p> Happy and enthusiastic people are attractive. Furthermore, if you want to attract optimistic individuals into your life, start by being optimistic and you will infect others with your positive spirit and emotions too.

Table 2.1: The Law of Attraction is made up of The Law of Attentiveness and The Law of Similar Responses

Whatever you emotionally desire, your AMS gets to work fast. The more your heart is in it, the more faith and hope you have, the more blatantly these opportunities and valuable resources will ‘appear’. *But don’t just be a witness to what your AMS reveals. Act and do something about it too.*

Besides doing billions of calculations per second on your behalf, the beauty of our AMS is that it works both the day and night shifts, sometimes alerting us to a solution just before drifting off to sleep or awakening the next day. But you must be really emotional about something or your AMS will not be operating at its full potential, and therefore you will not experience those miraculous “aha” moments throughout the day and night.

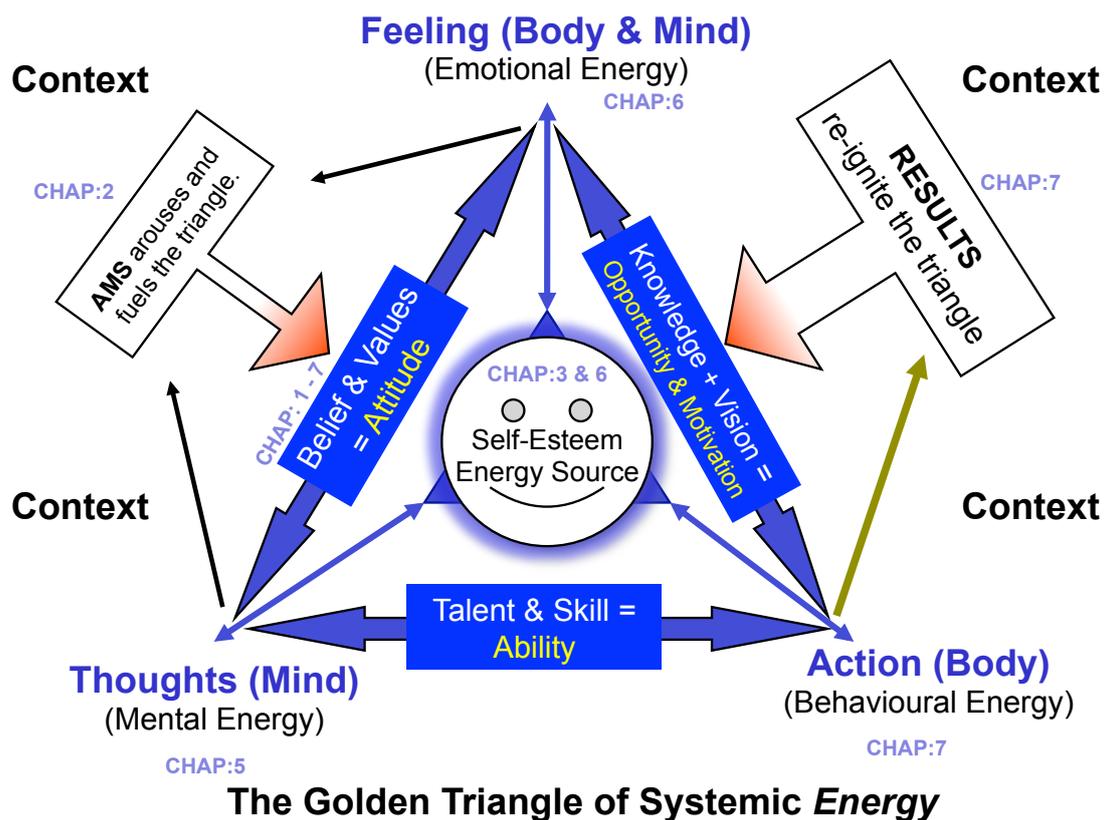


Fig 2.3: Our AMS is Activated by a Mental Representation of our Knowledge, Emotional and Action Markers

Inventors, emotionally bent on finding a solution, constantly speak of eureka moments which normally creep up on them whilst quietly relaxing or attempting to fall asleep, or while lying in bed the next morning. It should come as no surprise then that the most creative place in the house for inventors is the bedroom.³⁴ It is also interesting to note that muscles do not need sleep to recover; it is our brain that needs the rest.³⁵ During our waking hours, our five senses absorb an enormous amount of data which needs to be consolidated and pigeonholed, shedding new light on the expression “I need to sleep on it.”

Besides having a strong belief in your goals, there are another two rules:

- Goals must be crystal clear or your AMS will be confused about what it needs to reveal to you. Confusion, on the other hand, is diffusion of thought and energy.
- As your AMS feeds you new information, also remain open-minded that your plans may need to change.

Key Takeouts: NEUROSCIENTIFIC ILLUMINATIONS for LEADERS

- Humans have an *advanced prefrontal cortex*, allowing us to *consciously visualize* and *reprogram* our unconscious and subconscious minds.
- Our unconscious mind is controlling our conscious mind — our consciousness. But our unconscious was originally partly programmed by our conscious. *So although our unconscious mind controls us, we are still in control of our mind.*
- **Mirror Neurons, Somatic Markers and our AMS are major building blocks for success:**
 - By observing others, *Mirror Neurons* allow us to learn fast. So be careful who you hang out with, because with every passing hour you become more and more like them.
 - Loaded with insight, experience, and wisdom, *Somatic Markers* are stored in the cells of our body and mind. Millions of somatic markers are the multi-layers of experiences, which collectively, whether we like it or not, give us a sixth sense or a connectedness; an extrasensory perception (ESP) into our bi-vironment. But the more conscious our intent of living is, the more alert our sixth sense will be, offering us a better cognitive representation of a complex outer-environment. *The end result is we feel much more in control of our bi-vironment.*
 - The *Law of Attentiveness* is enacted by your
 - Our AMS is nature's radar system that filters out what we want in this world; but to the uninformed and unconscious mind this would appear like it was 'attracted'. Without our AMS we would be lulled into unconsciousness and neglect to detect incidences that could be beneficial to our strategy. When emotionally aroused, our AMS is a super-conscious, enabling us to be infinitely more intelligent.

References: Chapter Two

1. What the BLEEP Do We Know? 2004. A documentary on quantum physics, neurology and evolutionary thought.
2. Amunts, K., Kedo, O., Kindler, M., Pieperhoff, P., Mohlberg, H., Shah, N., Habel, U., Schneider, F., & Zilles, K. (2005). Cytoarchitectonic mapping of the human amygdala, hippocampal region and entorhinal cortex: intersubject variability and probability maps. *Anat Embryol (Berl)* 210 (5-6): 343–52. doi:10.1007/s00429-005-0025-5. PMID 16208455.
3. Solano-Castiella, E., Anwender, A., Lohmann, G., Weiss, M., Docherty, C., Geyer, S., Reimer, E., Friederici, A.D., & Turner, R. (2010). Diffusion tensor imaging segments the human amygdala in vivo. *Neuroimage* 49 (4): 2958–65. doi: 10.1016/j.neuroimage.2009.11.027. PMID 19931398
4. Chimpanzee Sequencing and Analysis Consortium (2005). "Initial sequence of the chimpanzee genome and comparison with the human genome" (PDF). *Nature* 437 (7055): 69–87. Bibcode 2005Natur.437...69.. doi:10.1038/nature04072. PMID 16136131.
http://www.genome.gov/Pages/Research/DIR/Chimp_Analysis.pdf
5. Williams, Leanne M.; Belinda J. Liddell, Andrew H. Kemp, Richard A. Bryant, Russell A. Meares, Anthony S. Peduto, Evian Gordon (2006). "Amygdala-prefrontal dissociation of subliminal and supraliminal fear". *Human Brain Mapping* 27 (8): 652–661. doi:10.1002/hbm.20208.) and Brain Activity Reflects Complexity Of Responses To Other-race Faces, *Science Daily*, 14 December 2004.
6. Morse, G. (Jan, 2006). Decisions and Desire. p.49. Harvard Business Review.
7. McCallum, I. (2005). Ecological intelligence. p.90. Africa Geographic. Cape Town.
8. Sapolsky, R.M. (2005). The Influence of Social Hierachy on Primate Health. *Science* 308, no.5722: pp.648-52.
9. Lindstrom, M. (2008). Buy-ology, p. 19. rh Business Books.
10. "Suicide and the Media," (with K. Lesyna and D. Paight; DPP as main author); in R.W. Maris, A.L. Berman, J.T. Maltzberger, and R.I. Yufit (eds.), *Assessment and Prediction of Suicide* (New York: Guilford Publications, 1992).
11. "Recent advances in suicidology: The study of imitative suicide," in Rene Diekstra et al., eds., *Suicide and its Prevention: The Role of Attitude and Imitation*, (Published under the auspices of the World Health Organization, by E.J. Brill, Leiden, 1989.)

12. Freud, S. (1921). Group psychology and the analysis of ego. In J. Strachey (Ed.), The standard edition of the complete works of Sigmund Freud: Vol.28. Beyond pleasure principle, Group psychology and other works (pp.81). London: Hogarth Press.
13. Pentland, Alex “Sandy” (Jan – Feb 2010). We Can Measure the Power of Charisma. p.34 – 35 Harvard Business Review.
14. Poldrack, R. A. (2007, June) *Scientific American*; Vol. 296 Issue 6, p39-39
15. Watson, L. (1979). *Lifetide*. p.148. Coronet Books.
16. Dalrymple, D.J., Cron, W.L., & DeCarlo, T.E. (2001). Sales Management. John Wiley & Sons, Inc.
17. Cialdini, R.B. (1984). *Influence: The Psychology of Persuasion*.
18. Degunst, Sylviane (2008). *Coco Chanel: Quotes* Huitième Jour Editions.
19. Packard, V. (1957). The Hidden Persuaders. p.108. Penguin Books.
20. 702 talk radio, 07h30, 7 Aug 2009
21. Lund, T. (2011, July 14), Lifting The Lid: Unrelenting graft risks making South Africa a dysfunctional state, *Fin Week*, 15-19
22. Damasio, A.R. (2006). Descartes' Error: emotion, reason, and the human brain.
23. Damasio, A.R. (2006). Descartes' Error: emotion, reason, and the human brain. p.xviii, Vintage Books. London.
24. Damasio, A.R. (2006) *Descartes' Error*, (p.xviii). Vintage Books. London.
25. Destiny. (Jan/Feb 2010). p.27
26. Jung, C.G. (1933). Psychotherapists for the clergy. *Modern Man in Search of a Soul* (p. 279). Vintage
27. Jung, C.G. (1933). The spiritual problems of modern man. *Modern Man in Search of a Soul* (pp. 253 – 254). Vintage
28. Damasio, A. (2006). Descartes' Error. pp. 87, 223, 229. Vintage Books. London.
29. Damasio, A. (2006). Descartes' Error. p. 227. Vintage Books. London.
30. Robbins, A. (1986). *Unlimited Power*. p.291. Free Press.
31. The Human Brain: An Introduction to its Functional Anatomy 5th ed by J Nolte, chap 11 (pp. 262–290)
32. Medical dictionary. Definition of Reticular activating system: Retrieved from <http://medical-dictionary.thefreedictionary.com/Ascending+reticular+activation+system>
33. Bible. Mark 11:24

34. Absolutely new: Your innovation launchpad. Retrieved from <http://www.absolutelynew.com>
35. Gorman, C. (2005, Jan 24). Why we sleep. p.34. *Time*.

7b Crawford, J. (2013). What's Better for Business: Logic or Emotion? Answers From Neuroscience. Available at:
http://www.forbes.com/sites/victorhwang/2013/03/27/whats-better-for-business-logic-or-feelings-answers-from-neuroscience/?utm_source=Gapingvoid%20Daily%20Email#58224ee62535 (Accessed 24 November, 2016)