# The Neuroscience of Organizational Culture

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Sometime ago I delivered a presentation to three large groups of human resources professionals totaling about 1300 people across different geographic regions including Asia, Europe and North America. The topic I was invited to speak on was the neuroscience of fear in the workplace. Initially I wondered whether this topic would be of interest to this group, but to my surprise it was the most watched of the five topics during this five hour long program. What was also interesting was the large number of questions that were posed during this virtual presentation. The essence of this experience is that many people experience anxiety and fear often during their day to day work experience, and they want to know how these negative behaviors (and cultures) develop in the first place, and more importantly what can be done to change a company's culture and behavior in order to avoid the results of fear and anxiety.

## The Neuroscience of culture

Very little research has been conducted on the neuroscience of organizational culture. Robert Doidge, psychiatrist and author of "The Brain that Changes Itself" (2007) describes the relationship between national or societal culture and the brain. He notes that conventional science suggests that the brain – from which all thoughts and actions emanate – produces what we understand as culture in societies. However, he continues, neuroscientific research in recent years regarding this perspective is limited:

> *"Culture is not just produced by the brain; it is also by definition a series of activities (experiences) that shape the mind … we become "cultured" through training in activities, such as customs, arts, ways of interacting with people and the use of technologies and the learning of beliefs and shared philosophies and religion."*

Doidge continues his description by noting that research into neuroplasticity shows that every sustained activity ever mapped – including physical activities, sensory activities, learning, thinking and imagining – changes the brain and the mind in some way. Cultural ideas, rituals, and customs are no exception. As culture evolves so this, when continued and practiced for long enough, creates physical changes in the brain. The neural connections and networks, as well as the strength of those networks (in other words the connections between neurons) become more extensive. In societies, this process may take decades and centuries to occur. In companies, this process may take years and decades. What Doidge's perspective suggests

about the observation of corporate fear I described in the introduction of this essay, is that over time employees' brains become more likely to expect danger in every interaction, or as Robert Sapolski (2004), the Stanford Neuroscientist, humorously comments as "*seeing lions attacking around every bush on the African savanna*" – or in the case in our workplaces.

Doidge provides a few fascinating examples of brain "rewiring" that occurs in both societal as well as in business/industry situations. He notes that brain scans of London taxi drivers show that the more years the cabbies spend navigating the streets of London, the larger the volume of the hippocampus, the location of the brain that processes spatial information. Similarly, musicians have several areas of the brain that are larger than non-musicians, for example the structures connecting the two hemispheres. A remarkable societal example that Doidge describes about how brains change in response to cultural activities, are the Sea Gypsies located in the tropical islands of the Burmese archipelago. What differentiates this group is their ability to see underwater at great depths as they search for clams and sea cucumbers. These individuals "learn" to constrict their pupils to see underwater, which is an example of how the nervous systems adapts to experience and training.

## Neuroplasticity in the Workplace

But Doidge notes that there is a negative or "*dark side*" to brain plasticity. He comments that "*cultural activities change brain structure*" and this can be either good or bad. In the context of corporate culture, this can be bad if companies are unaware of how corporate values, rituals and ways of thinking and behaving create plastic changes in the brains of employees over time. The rewiring of neurons and networks can become difficult to "rewire" when corporate culture needs to change in response to strategic and competitive pressure. In the case of the organization I referenced in the introduction to this essay, the danger with this "hardwiring" of a limbic-driven fear response in organizations suggests that over many years employee's brains have become acutely trained to be fearful and cautious.

These behaviors, as Doidge comments, become "*deeply wired into our brains*". He continues to quote Canadian neuroscientist Merlin Donald who argued that "*culture changes our functional cognitive architecture, meaning that, as with learning to read and write, mental functions are reorganized*". This observation suggests a much deeper and neurologically significant implication of deeply entrenched corporate cultures which are therefore much more difficult to change, particularly when these cultural behaviors need to change quickly in response to competitive pressures. Beliefs, and ways of thinking and behaving which made a company successful in previous years and decades can become barriers to a new competitive environment. Doidge quotes research by mid-twentieth century European psychologist Jean Piaget in which he experimentally demonstrated how children from different social cultures learned to perceive the world in different ways, but that scientists believed, until recently, that

these differences where interpretation and perception differences, versus microscopic differences in their perceptual brain structures and physiology.

## The Power of Cultural Indoctrination

Doidge describes how some totalitarian regimes like North Korea recognize the power of cultural indoctrination very early in life. North Korea, he describes, places children as young as two to four years old in schools for purposes of indoctrination in a cult of adoration for their leaders. The high level of plasticity of these young brains creates deep changes in their "*perceptual emotional networks that do not merely lead to differences of opinion, but to plasticity-based anatomical differences which are harder to bridge or overcome with ordinary persuasion*" or learning later in life. So, while it would be unfair to make comparisons between large corporations and totalitarian regimes, one proposed correlation is that cultural immersion, for example in "New Employee" type programs and the ritualistic programs and experiences that follow are not simply learned and unlearned easily, but can similarly form physiological changes in the very structure of the brains of employees over many years. The implication again is that these are therefore much more difficult to change.

Wexler (2006) in his text "*Brain and Culture: Neurobiology, Ideology and Social Change*" supports this viewpoint by stating: "*Learning and action are in an inverse relationship throughout our lifespans: We learn the most when we are unable to act (i.e. as infants). By the time we are able to act on the world, our ability to learn has dramatically diminished*". This is because, as the author notes, the human brain shapes itself to its environment and the particular form of the environment (for example, different culture characteristics) is unimportant – differences in the environment are not a factor in the human brain's adaptation. In other words, the brain, especially an immature brain, is remarkably responsive to responding physiologically to diverse cultural stimuli. Also, incongruences between the environment and the developed brain, for example changes to the environment (for example, having to learn a new language) produce significant distress, anxiety and dysfunction (aligned with Aronson's discussion of cognitive dissonance). While Wexler is referring to societal culture, the same can be said for corporate culture.

More importantly these learned cultural beliefs and behaviors are not simply learned cognitive constructs. Rather they are deeper changes in brain structure and neuronal interconnectedness, and therefore much more difficult to change. This implies that corporate culture change initiatives that focus primarily on short term retraining will likely be ineffective. Retraining can be effective at creating new brain function. For example, memory training in elderly subjects in the age range of sixty to eighty seven (Doidge, 2007) can increase auditory memory to function in the range of forty to sixty year olds. However, this kind of training needs to be extensive and prolonged, and in this example was in the range of forty to fifty hours of

practice over many weeks. Moreover, this example refers to specific memory skills versus the kinds of learned emotional, fear-based responses noted in the introduction of this essay. Overcoming these kinds of negative emotional-behavioral responses seldom emerge as a priority in companies needing to change culture in response to a change in the competitive environment. Most often organizations change organizational processes, structures and other structural factors, and rely on high level communications and in some cases versions forms of training (akin to re-stacking deck chairs on the Titanic). But these efforts seldom reach the kind of neural changes needed to rewire the way employees think and act.

## Neuroplastic-based methods for changing behavior, and culture, in companies

Psychiatrist Daniel Siegel (2010) describes that the brain changes physically in response to experiences and "*new mental skills can be acquired with intentional effort and with focused awareness and concentration*". Experiences, he describes, activate neural firing which in turn leads to the production of proteins that enable new connections to be made amongst and between neurons in the process of neuroplasticity. Depending on where we focus our attention (i.e. on what) and how (i.e. eliminating distractions) we focus our attention, neuroplasticity is initiated by this "*focused attention*", Siegel notes, particularly when the experience is important to the individual. Siegel's research focuses on interventions under the broad definition of mindfulness (closely related to meditation) as a set of methods and tools to leverage the science of neuroplasticity. Siegel refers to these as "mindsight" and applies these techniques in psychoanalytic consultation situations. While the case studies that Siegel provides involve individuals in a psychiatric treatment environment or in which a specific pathology or health care is the focus, mindfulness techniques have been applied in organizations. Aikens et al (2014) describe a study in which mindfulness practices were applied to reduce stress in an organization, but also comments on the health benefits of these techniques:

> *"Traditionally delivered MBSR programs, which teach core mindfulness concepts, have been well researched with beneficial therapeutic effects found in psoriasis, fibromyalgia, type 2 diabetes, rheumatoid arthritis, chronic pain, chronic low back pain, attention-deficit/hyperactivity disorder, and insomnia. Research also indicates that mindfulness-based therapies are beneficial in the treatment of depression, anxiety disorders, and bipolar disorder"*

The focus for this essay is primarily on techniques that are applicable in the workplace where formal psychoanalytical interventions, as described by Siegel, are generally difficult to apply. The research conducted by Aikens et al provides a more appropriate insight into how mindfulness related techniques can be applied in the workplace. While Aikens focuses primarily on mindfulness techniques to reduce stress in the workplace, the authors comment as follows:

> *"Our results suggest that mindfulness training is more than just an effective stress management solution, but an efficacious intervention for the development of positive organizational behavior, which can be used throughout the employee base… This (research) indicates that a shortened, web-based mindfulness program can replicate the results of traditionally delivered MBSR (Mindfulness Based Stress Reduction). In addition, program compliance was significant, suggesting that a workplace specific mindfulness intervention is practical within an employer setting."*

While these findings and conclusions need to be tested for broader behavioral changes in a corporate culture context, they do provide tangible evidence of how relatively simple techniques can be used to add rigor to culture and behavioral change efforts in corporate settings at a level in which physiological neuronal changes are possible.

## Mindfulness applied as a set of techniques for changing behavior in corporate culture initiatives

Aikens et al describe the process of mindfulness as a series of steps focusing and "*exercising*" the mind in a similar way that one would exercise the body in a gym setting. The authors describe the first component as taking time during the workday (but also with regular practice at home) to focus one's full attention on one's "*immediate experience*". The second phase is focused attention on acceptance, curiosity and openness (i.e. non-judgmental) to the experience. For example, this might include the issue I raised in the Introduction to this essay, namely one of fear and anxiety in the workplace. In this context, the experience could be one of having experienced a limbic system response to a fearful event, such as an intimidating encounter with a leader, and possibly feeling paralyzed and unable to respond effectively. Phase two in this scenario might include a non-self-judgmental consideration of the experience of this fearful experience. It's important to note that in this description, the focus is on the experience itself and the sense of "distancing" oneself somewhat from the experience and being more objective and non-judgmental about it. What this description does not provide is the step of changing one's response and behavior to the stimuli. Muesse (2014) provides a graphic example of this "distancing" in practice, in which, while conducting a wedding ceremony, a bee landed on his face and proceeded to crawl between his glasses and into his eye lid. Instead of the instinctual response of screaming and flailing around that most of us would have exhibited, and most likely being stung, Muesse describes utilizing the mindfulness technique to be objective and inquisitive of the event demonstrating significant control over typical limbic "*fight or flight* "response.

One of the significant barriers to implementing mindfulness in the workplace as a process for driving culture change in organizations is that of leaders expecting results – fairly quickly. Much of the mindfulness literature describes the process as Smith (2014) describes as follows:

> *"Going into a meditation and mindfulness practice you want to have the least amount of expectations as possible, but after some weeks or even months of practice you may find yourself expecting some sort of revelation and peace in your everyday life. When this doesn't happen you will probably give up on the practice all together because it "doesn't work".*

In my experience with companies requiring culture change, the need emerges from a competitive threat and for rapid change. Rather than expecting the "*least"*, corporate leaders have the highest level of expectations for any intervention – they want the most in the least time.

Additional insights for behavioral change at the neurological level are provided by the process applied by Doidge (2007) in which he describes techniques used for patients with Obsessive Compulsive Disorder (OCD) in which psychotherapist Jeffrey Schwartz attempts to shift the obsessive focus of OCD patients who get immobilizing "brain lock". He achieves this by training these patients to actively focus on something else, specifically a pleasurable experience, besides the obsessive worry. Doidge notes that this makes sense from a neuroplasticity perspective because this kind of focus, when practiced and repeated, "grows" a new brain circuits that provide the pleasure sensation by triggering dopamine release which rewards the new thinking process and consolidates and grows new neuronal connections. This new circuit can eventually become a more dominant connection than the previous one, and the old neuronal connections weaken. Doidge continues to describe that in this way "*we don't so much "break" bad habits as replace bad behaviors with better ones*".

Swartz, as described by Doidge, describes a three-step process to rewire negative thinking and behaving patterns:

- The first step is to "*re-label*" what is happening. In the case of an OCD patient, this may be to begin to recognize that the negative thought is not actually happening, say being invaded by massive swarms of toxic germs, but rather recognizing it as a faulty connection in the brain that can be corrected. In other words, similar to the "mindfulness" technique of creating distance from the thinking process and contemplate the "*thought from a distance*" – in other words develop the skill to "*think about our thinking*". In this manner, the patient can be contemplative about the sensation versus simply reacting to it (Muesse's bee experience is a good example for this step).

- Once the patient acknowledges that the anxiety is not real ("*it's my bad neural wiring not actually germs attacking me*"), the patient refocuses on a pleasurable thought – something that is unique to that individual, like gardening, walking on beach, or hiking in the forest. In this step it is important for the patient to initially have a "trigger" that quickly "*shifts gears*" and re-focuses the brain. This step requires practice. Doidge explains that by refocusing "*the patient is learning not to get sucked in by the content (ie the germs) of an obsession but to work around it*". By doing this the "*use it or lose it*" principle kicks-in, but in reverse – by diverting the thinking process, the old neuronal connections atrophy and new connections strengthen. The patient actually learns to think about and imagine neural circuits being changed in this process.

- Doidge comments that this technique won't give immediate relief because (like exercising a muscle in the gym) neuroplastic change takes time, but it does lay the groundwork for change by exercising the brain in a new way. For the OCD patient, at first they will continue to feel the urge to react to the compulsion, and the anxiety and effort needed to resist it, but with practice this become easier. Doidge describes this process as "*neurons that fire together, wire together*" (grow stronger) and "*neurons that fire apart, wire apart*" (atrophy).

## Applying the "*Neurons that fire together, wire together*" principle in the Workplace

In the Introduction to this essay, I provided an example of a company that I consulted with in which a large number of employees expressed the experience of fear in the workplace. In most cases, the source of this fear appears to be concerning some form of retribution from senior leaders resulting from speaking out or appearing challenging in some manner. While recognizing the potential for this possibility, when questioned, many of these individuals recognize that the potential for retribution is low, and the tangible evidence of retribution is scarce. Even in cases where there may have been some form of retribution by a leader, the fear response to the potential retribution is also unlikely to have benefited the situation, indeed is more likely to have worsened the individuals performance on the job.

As Robert Sapolski, the Stanford University neurobiologist, comments in his wonderfully informative and humorous book "*Why Zebras Don't Get Ulcers*", most beasts on earth have adapted to short bursts of stress (being chased by a lion) and they either survive it and forget it (they don't experience long lasting anxiety once the lion has given up the chase) or it's all over (they get eaten). For most humans in the workplace, many or most of our anxieties are "*in our heads*" and our responses to these threats are ongoing – in other words, we don't simply shrug off that the lion has given up chasing us and go back to a resting state (and therefore we don't

get ulcers), we maintain a high level of anxiety, ruminating on the experience, thus creating a "*neural highway*" that is difficult to get off. In Doidge's words, the "*neurons that fire together, wire together*" are building a neural "*highway*". The objective is to create an off-ramp off the neural highway and build another neural highway that is healthier and more productive.

Sapolski notes that this takes daily work – it's not something that can be practiced, as he says, "*waiting on hold on the telephone*" once in a while, it has to be practiced daily just like any other disciplined exercise program (indeed, as a number of neuroscientists has noted, aerobic exercise appears to enhance neuroplasticity). Sapoloski provides the description of the anxiety experienced by novice parachutists where stress levels are "*through the roof*" before during and after, whereas after practicing a "*gazillion times*", they still have the stress levels at the moment of the jump, but this stress declines rapidly once the chute opens (similar to zebras after the lion has given up the chase) and they start thinking about "*what's for lunch*". This ability only comes from practice. In the workplace, the key is to determine what "practice" looks like and how to make it fit into a work environment, similar to the safety example I provided earlier in this essay.

In the company I referenced in the introduction of this essay, we are implementing a simple process, not necessarily to deal with stress, but rather to shift responses to various cultural-behavioral stimuli and create more effective and productive response behaviors. The following process involves three steps. These steps can either be carried out individually or with a working team (although there is an additional step for teams).

For an individual, the process operates as follows:

- **Re-label:** Clarify the behavioral stimuli that produce negative behaviors. This is "*re-label*" phase that Doidge describes. It's important to write these down or document them in some fashion concise manner. For example, if an individual feels extremely anxious interacting with a difficult senior leader, they need to think about and write down these feelings and make observations about how these responses to the fear stimuli are unproductive. In other words, this step is similar to Doidge's description of the OCD patient acknowledging that anxiety to "germs attacking" is incorrect and unproductive.

- **Refocus:** The employee then mentally reframes a more suitable response. This exercise is critical and initially requires detailed thought and planning. This is the "re-focus" phase that Doidge describes. I encourage employees to initially write down this imagined response succinctly and vividly including the emotional content of what this new response would feel like. The individual should picture it and imagine it vividly in

their minds and rewrite what they see and what they feel as it becomes increasingly vivid and clear.

- **Practice!** The third phase is the "*going to the gym*" phase. This process is the same as the mental rehearsing that Doidge describes, often used by musicians, chess players and athletes. I personally have used this technique effectively in various athletic endeavors by imagining the specific movements and the sensations of these movements. Repetition is critical and needs to be daily of possible. Most practitioners of mindfulness and mental rehearsing suggest fifteen to thirty minutes per day. I have personally found that once an individual has successfully developed the practice, and the new images are vivid, that as little as a few minutes daily is adequate.

While this process is designed to be applied individually and privately, as Wexler (2006) notes, that interconnections between and among neuron assemblies only occurs with specific stimulation and the nature of the interconnections depends on the nature of the stimulation, and the most impactful stimulation comes in the form of "*interaction with other people*". Not only is this most impactful in the workplace, but behavioral problems can only be solved through this interactive process with others. For an intact work team, or even two individuals working together, the process would operate as follows and includes one additional step:

- As with individuals described above, a team needs to clarify the behavioral stimuli that produce negative behaviors and poor performance. This is obviously a more challenging task in the workplace than privately with a therapist, and there needs to be a collective understanding and acceptance of this process. Often a coach or expert facilitator help this process greatly, particularly in the early stages. Again, there is a need to be specific about the stimulus (for example, a particular behavior that exhibits a negative response) and the writing down process is important.

- The team then discusses a more suitable response in this "*re-framing*" step. In this case, both the stimulus behavior (for example how a manager might behave) and the response behavior (how employees respond to the manager's behavior) needs to be reframed in a more productive manner. This discussion should be couched in a positive and mutually beneficial way (because it is easy for this dialogue to devolve into a blame game scenario).

- This reframing must then be practiced like a sports team would practice drills. The most effective example I have witnessed this process working in company was with a safety focused ritual. These rituals were practiced by the CEO down to contract workers. The introduction of these activities can be more difficult with a team because there can be a sense of awkwardness, particularly at first. But if the team handles this process in a

constructive manner, they can positively hold each other accountable to be successful and to be mutually reinforcing.

- For a group, there is a fourth step – to discuss and debate if the practicing is actually working in the medium to long term, and to review step 2 above if members feel they are not making progress.

For intact work teams, in the same way that sports team practice drills, overtly practicing stimulus- response behavior "drills" is necessary to develop new neural pathways. Sapolski describes an important aspect of stress reduction that can be related to this process - that of personal control. When individuals in a team feel that they some control over how people behave and interact, stress and anxiety levels are significantly reduced.

## Summary

It is remarkable to me how common negative behaviors and toxic coworkers derail effective workplaces and create cultures that are deeply embedded and ineffective to meet new challenges and opportunities. The techniques described in this essay are relatively simple methods that, if applied rigorously and widely, can have a significant impact on changing behavior and forging a more deeply embedded corporate culture.

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## References


Aikens, K. et al (2014). Mindfulness Goes to Work: Impact of an Online Workplace Intervention. http://journals.lww.com/joem/Fulltext/2014/07000/Mindfulness_Goes_to_Work__Impact_of_an_Online.7.aspx#

Aronson, E. (2008). The Social Animal. Tenth Edition. Worth Publishers.

Doidge, N. (2007). The Brain that Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science. Penguin Books.

Muesse, M. (2014). Practicing Mindfulness: An Introduction to Meditation. The Great Courses, Course no. 1933.

Smith C. (2014). Lifehack Presents: The Mindfulness Meditation Mini Guide. http://www.lifehack.org/articles/lifestyle/lifehack-presents-the-mindfulness-meditation-mini-guide.html.

Sapolski, R. (2004). Why Zebras Don't Get Ulcers, Third Edition. Henry Holt & Company.

Siegel, D. (2010). Mindsight: The New Science of Personal Transformation. Bantam Books.

Wexler, B. (2006). Brain and Culture: Neurobiology, Ideology and Social Change. A Bradford Book. The MIT Press.