

The Neuroscience of Resistance

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Abstract: 1. Framework: Seventy percent of change initiatives fail. Why do people resist? Neuroscience shines a new light. 2. Description of practical application: A number of successful leaders illustrate practices that leverage an understanding of the brain to reduce resistance and improve change program results. 3. Outcomes: Many traditional prescriptions for change leaders, like creating a sense of urgency, are more likely to intensify resistance due to generating fear and stress. Sharing a vision created by the top team can also backfire. This is due to how we value gains and losses, and to leaders generating social evaluative threats. We value losses twice as much as equivalent gains. We also discount future gains two to one compared to immediate gains. Thus any potential gain needs to be perceived as four times better than what people stand to lose. Social evaluative threats—the perception of status threats—activate some of the same circuits as physical threats, with the same results. Targeting culture first triggers a response from our inflexible reptilian brain. Programs that start with supportive action that targets the cortex are more effective. For example, change strategies that increase productive capacity and reduce stress are more likely to make it possible to engage people and share information. Likewise, sequencing disruptive strategies to follow supportive ones reduces resistance and the likelihood of destructive emotional responses. All these and other implications are illustrated by numerous client experiences. 4. Implications: Change leaders need to better sequence supportive and disruptive activities to leverage brain functions. A new vision needs to be developed in a collaborative manner. Participants need to be nudged in the right direction rather than be forced to accept a fully formed vision from the top. Leaders need to be mindful of status threats, or risk triggering fear-derived resistance.

Keywords: Leadership, Brain, Neuroscience, Fear, Loss, Change, Vision, Communications, Supportive Change Strategies, Disruptive Change Strategies

A Tale of Two Executives

The stories that follow are based on real clients managing transformational changes. Only the names have been changed to maintain confidentiality.

Ron was a very accomplished executive settling into his new COO role. The company faced major challenges and was primed for a transformation program. He started by conferring with consultants on best practices to help him frame a transformational change program. He was a strong but progressive leader more than up to the task.

As the designs of his program were taking shape, the product of numerous consultations at all levels of the organization, he was poised for action. He rolled his program out sparing no expense, traveling around the company to meet with his managers 200 at a time. And Ron was accompanied by all his senior officers, each speaking persuasively for the changes ahead. The task was to demonstrate alignment and convey a sense of urgency, and no one could have questioned Ron's determination and leadership.

At the first session the sound engineer played some energizing music starting with, in what can only be described as a prescient moment, Aretha Franklin's "Ship of Fools". Indeed, every implementation was racked with resistance – usually covert and always unyielding – despite every attempt to win "hearts and mind".

Contrast this with Jerry's approach. Faced with an organization that has sunk to the depths of third quartile performance, Jerry was brought in to repair matters. He, too, sought the counsel of consultants and had a similarly enlightened instinct to get others involved. But Jerry's approach was still different.

Recognizing that people had important delivery responsibilities during the day, he arranged a meeting in the evening. And to underscore the importance of the meeting he paid everyone overtime and fed them, as well. He also included union leadership and key informal leaders, all unscripted. Fully a third of the event was devoted to Q&A.

People listened and within for months had helped Jerry completely transform operations, achieving first-quartile performance before year end. And not only change for real but without the typical resistance even his consultants expected and predicted!

Introduction

A great deal has been written about employee resistance and the destructive impact it has on change efforts. The fact that 70% of all change initiatives fail (Keller and Aiken 2008) points to a significant problem and tremendous waste, and clearly resistance is the primary culprit.

But we are struck by the fact most writers approach resistance as an *inside-out* phenomenon. Most see resistance as an attribute of people, instead of a phenomenon driven by external factors. Indeed, it is common to lament that people are not more adaptable or resilient, and many organizations focus on developing such capabilities. “If only our employees could be more flexible and open to change, how much more successful we would all be,” seems to be the complaint. Executives facing such challenges labor to present an aligned front and try to compel action. When this isn’t enough, “It’s their fault,” seems to be the conclusion. In other words, it’s a problem that emanates from within *them*.

This view can be traced back to Kurt Lewin who suggested people need to be able to overcome restraining forces and inertia to change (Lewin 1974). Kanter, Stein and Jick defined this as driven by a loss of control and because people have, among other things, their own interests (Kanter, Stein and Jick 1992). Daryl Conner built upon this by referring to resistance as a disruption in expectations (Conner 1993). While John Kotter notes the role that fear can play in creating resistance, his prescription is that creating a sense of urgency can overcome any such resistance (Kotter and Cohen 2002). More recently, and building on the thinking of Peter Senge, Richard Axelrod pointed to the lack of engagement and a sense of ownership of the change (Axelrod 2010). All of these have in common the notion that resistance is a product of ones make-up and go on to appeal to redirecting the role or amount of control as ways to overcome resistance.

Most of this thinking seems to ignore what we have been learning about the brain. When viewed from this perspective, resistance to change looks like a fight or flight in response to fear (or stress). Or perhaps resistance manifests as an emotional reaction to a potential loss. Regardless of the source, all of a sudden resistance starts to look more like an *outside-in* phenomenon and the product of the actions change leaders and managers take.

Ironically, those involved in change efforts seem to understand the importance of engaging higher order brain functions, but seem to ignore how the brain reacts to stimuli. This article discusses what we know about the brain, and why it sometimes resists. We hope to demonstrate that leaders and organizations who respect the brain mechanisms involved in change can greatly enhance their effectiveness at significantly less cost, both financially and emotionally.

The Brain and Change

From a change perspective, it is helpful to approach the brain through its evolution history. The *triune theory* defines our brain as made of three concentric structures: our “reptilian brain”, the limbic system, and the cortex (McLean 1990). It is helpful to think of these areas as hierarchical, ranging from the most instinctual to the most developed responses and behaviors.

At our most primitive level, the reptilian brain is similar to the brain of today’s reptiles. It regulates heart rate, breathing, temperature and other vital but unconscious functions. The next level, the limbic system, appeared in mammals. It is involved in the formation of long-term memories and our emotions. At the highest level is the cortex, which is most developed in primates, and with humans having the largest. It gives us our higher functions: language, abstract thinking, self-awareness, and fine motor skills.

The reptilian brain is very fast, and inflexible. The limbic system is the source of our emotions. The cortex is flexible, but slow. The reptilian brain helps us pull our hand away from a flame much faster than the time it takes to curse and observe, “Ouch, that is hot”. For change managers and leaders, then, the question is: are you trying to generate fast (and simple) reactions, emotional responses, or learning? The latter require higher order brain functions.

One area of the cortex, the prefrontal cortex (PFC), deserves special attention. The PFC is the most recent part of our cortex to develop. It is also the last to be fully developed as we grow up. It gives us the ability to focus on specific things, and to hold them in our mind and compare them. This ability is carried by our working memory.

But the PFC also has significant limitations. First, it is very small. It can hold on average seven, plus or minus two, items (such as pairs of digits) at any one time. When we face complex situations, the PFC can easily get overwhelmed.

Second, the PFC holds memory in a special way. In the rest of our brain, memories are encoded through strengthening of connections between neurons. Once established, these connections require very little energy to maintain. But the working memory is different. It is encoded through the continuous firing of circuits of neurons. This makes it very energy-hungry; translated: the PFC requires a high blood flow. This makes its performance susceptible to anything that affects its energy supply. One such thing is fear.

Fear triggers our fight or flight response. In a very general way, this draws blood away from anything that is not required to fight or flee, including the PFC. When our PFC is disabled (or overwhelmed), we have no recourse but to rely on learned patterns. These are fast, inflexible and tinged with emotion.

Most change programs share a need to help individuals master new skills and behaviors. But many accepted change practices actually limit learning. If you hear “Why weren’t they thinking straight?”, here is why: their PFC was either overwhelmed or it was disabled by fear.

Two Complications—Status and Loss

So what specifically triggers fear in change? There appear to be two primary mechanisms: loss aversion and status threats. Either of these can be stimulated at any point, but often whenever leaders and managers attempt to communicate!

Perceived status threats are a major potential source of resistance generated by communication. They are known in the research community as social evaluative threats, and activate similar brain circuitry as physical threats (Wager, et al. 2009).

Status threats activate the amygdala, an area of the limbic system known to be activated by fear (Morris, et al. 1996). In response to social or status threats, the Rostal dorsal anterior cingulate cortex is also activated. This is part of our error detection system. There is also activation of a region of the brainstem - part of our "reptilian brain" – involved in regulating heart rate. At the same time, the ventromedial prefrontal cortex is deactivated. This area is involved in decision making and learning. Where there are significant differences in power between the communicator and audience, there is a significant potential to generate status threats.

Status threats come primarily in two forms. First, there are the well-meaning threats, as when the CEO takes a front-line employee out to lunch as a “reward” or a COO takes his senior team on the road. The uneasiness the employee feels is akin to fear, due to the power differential. Second, are more critical threats, as when your boss announces that s/he has some ‘necessary feedback’. The physiological and mental distress point to how status threats trigger emotional discomfort.

Communications can also trigger loss reactions. Importantly, in the way the brain processes information, losses are valued more than potential gains (Kahneman and Tversky 1979). This phenomenon is called loss aversion. Studies have demonstrated that if we are offered a coin toss in which we may lose \$10, we will on average ask for a potential win of \$20. Why is it that we

are more sensitive to losses than to equivalent gains? A broad set of brain areas is activated in response to gains, including the ventromedial prefrontal cortex (associated with decision making and learning in the context of reward and punishment), and the ventral striatum (associated with learning, motivation and reward) (Kuhnen and Knutson 2005). Interestingly the activity of the same areas decreases with losses. Some of the activated areas contain dopamine neurons, and are known to be activated in response to pleasure. Our sensitivity to losses disappears in individuals with damaged amygdala (again, a part of the limbic system that is activated when we experience fear) (De Martino, Camerer and Adolphs 2010). Other studies have shown that the amygdala are involved in decision making (Gottfried, O'Doherty and Dolan 2003) (Hsu, et al. 2005). This is another way activation of the amygdala will disable our ability to deal with change in a rational way.

Change programs that emphasize the potential for future gains to create commitment overlook the brain reality that perceived or certain losses are valued much more highly.

Loss aversion is compounded because we discount future rewards at a ratio of about two to one. This is why weight loss programs fail: the reward is distant, but the pain of skipping the pizza is now. So a compelling vision becomes much less important than mitigating losses.

So, in both the case of perceived status threats or losses, people shift to automatic and negative response patterns. At the same time, our rational thinking capability shuts down making it even harder to absorb, let alone master new material. While some people may have lower thresholds, these brain functions are activated from the *outside-in*.

One more fact about the brain still makes change more difficult. In the run-up period to change, people are particularly susceptible to feeling betrayed by the organization. They feel they have done their part, and deserve security. They feel betrayed if this is not acknowledged and confirmed. This betrayal is a form of social pain. It activates some of the same circuits as physical pain (Lieberman, et al. 2004).

The Failing of Change Leadership

Now consider how many change luminaries advise that leaders begin by creating a sense of urgency. This proposition has been prominent among change management authorities for years. Daryl Conner, for example, in *Managing at the Speed of Change* (Conner 1993), noted that it is important to “recognize that a change must be clearly and strongly sanctioned by those in initiating and sustaining sponsorship positions” (p. 124). More recently, John Kotter reiterated his view in *The Heart of Change* (Kotter and Cohen 2002) that a first step is to “raise a feeling of urgency so that people say ‘let’s go,’ making a change effort well positioned for launch”. This was certainly the advice that Ron followed.

Any subsequent failure in such a change effort looks to us to be a self-inflicted wound, challenging rather than leveraging brain processes.

The impulse to drive change quickly is understandable. But when a leader focuses on creating a sense of urgency, s/he is actually triggering brain processes that drain away the ability to process all of the information the leader is attempting to convey!

Respect for the brain would suggest you begin instead by understanding the overall level of stress in the organization and then estimate the sources of potential fear an initiative might provoke. This sort of estimate is easily accomplished by engaging with informal leaders – i.e., the people others turn to for advice and interpretations – to determine how a change might impact various stakeholders. Doing so builds “two-way trust in all matters” (Deal and Kennedy 1982).

Then, the leader can address the key challenge: if there is already too much stress or an impact that might decrease productive capacity by 10% or more (Sirkin, Keenan and Jackson 2005), what might be done to mitigate these? Typically, any investments that increase the time available or that resolves operating problems important to employees, will reduce the major

sources of stress and fear in change programs. This was the strategy Jerry adopted when he scheduled his meeting after hours and on overtime to support a true dialogue.

Change Architecture Implications

So what can leaders do to achieve progress but also respect the brain processes involved in change? What did Jerry do that was so competent?



First, he engaged by listening rather than telling. This is important for two reasons. It is the quickest way for the leader to determine the existing patterns of thought the change may trigger. This will help the leader anticipate the source of fears and perceived losses that will have to be managed. Potentially more significant, listening will also reduce the potential for status threats. Indeed, the mere act of listening increases the status of others. Is it any wonder that some of the most successful executives Jim Collins identified in *Good to Great* were described as having personal humility! (Collins 2001) Collin's notion of Level 5 Leadership embraces the idea of a Level 5 Executive who "builds enduring greatness through a paradoxical blend of personal humility and professional will."

When Jerry met with all his managers and employees, he was not just talking about his view of their challenges, and how he would keep people informed of their collective progress. He was also listening to people who were important to his team.

Second, leaders should focus on factors that will optimize the potential of rational engagement. One such thing to do would be to carefully monitor resources (and here we are focused mostly on the time people have) available to support change activities. This will make it easier to keep the PFC engaged. When Jerry paid everyone overtime and carved out an additional three hours to meet, everyone was able to listen free from the distractions of their daily routines. He did not presume that he faced a fight. Instead he expressed that he wanted a dialogue, and worked to create circumstances where people would feel free to ask their questions and state their opinions.

There are implications here for the way change programs themselves are architected. Some change activities are naturally more supportive (i.e., do not create fear or losses) and, hence are less likely to activate fight or flight responses than others. To limit what we call resistance and maximize information sharing, change programs need to be architected so as to sequence supportive activities in advance of those that are disruptive.

The table below rank orders a variety of supportive and disruptive activities that could be included in a change program – assembled from examining the details of Jerry's change program (Spencer 2010). The items in the 'Supportive' column are arranged from top to bottom as those that employees would find most supportive to least. In the 'Disruptive' column the rankings are likewise ranked from those often most disruptive to least. Another way of understanding these is that supportive activities inherently reduce stress and sources of fear or loss while also increasing productive capacity and creating an opportunity for dialogue and learning. On the other hand, disruptive activities are inherently stress producing, inevitably reduce productive capacity, and trigger resistance.

Most	Supportive	Disruptive	Most
	Adequate Resources & Time	Culture Changes	
	Resolving Problems	Performance Management	
	Input & Participation	Employee Training	
	Leadership Development	New Technologies	
	Recognition & Rewards	New Processes	
	Reinforcing Social Networks	New Roles & Organizations	
	Least	User Coaching	

The point here is not to avoid disruptive activities – this is impossible. Instead, we find the important question is how to sequence change management activities to maximize intellectual engagement and minimize or at least control emotional responses.

From a brain perspective, the level of difficulty matches the source of the problem. Providing resources, resolving problems employees encounter in their work, getting input on issues and/or developing leaders as better listeners and managers of change responses, all deal with rational thinking. These engage the PFC and thoughtful problem solving processes. This describes the response Jerry got when he spoke with his team, and how they were able to be engaged.

As we move further down the list and into disruptive practices, we then are dealing with emotion (carried by older parts of our brain). We need our emotions. Without them we could not function. We need, through supportive action, to engage them in a positive way. Again, resolving a workplace problem that generates emotional responses before proposing role changes, should improve an organizational change implementation.

Finally, performance management and culture changes seem to trigger our most basic, deep-rooted associations. These come from our reptilian brain, fast and inflexible. To be effective in managing change, we want to avoid deep contradictions in the assumptions and values people have in their work. We want to move away from instinctive reactions, and towards rational thinking. So, it is better to build mastery and new work habits before broaching changes in performance management and culture.

Revisiting Ron’s effort, however noble an expression of aligned leadership it might have been, it seems to us that what he really created was an emotionally charged, very dangerous and potentially fearful atmosphere. Everyone speaking had significant power and every presentation was way too polished. That was not an opportunity to co-create but instead to swallow whatever was shared. Ironically, whatever was shared was undoubtedly garbled since Ron’s meeting was during the workday and attendees had things to do, which they switched to during breaks, and on their Blackberries while listening!

In Conclusion

Change leaders and managers can greatly increase their effectiveness if they leverage a few simple insights about how the brain is affected during change. The top concern is to control the potential for fear and/or perceived losses.

In instituting change, for example, leaders should avoid setting out a clear vision. Instead, they should establish general parameters but let a picture emerge over time. This is counter-intuitive, but, crucially, avoids initiating change with loss aversion reactions. It also creates the potential for listening and greater involvement, thereby minimizing status threats. In the end, the

change may be slightly different from what you initially envisioned, but it will be less likely to fail.

It also makes sense to rethink the priority organizations sometimes place on achieving ‘buy-in’. As most people think about it, ‘buy-in’ is an emotional predisposition to support a change. But early in the change process, if we take a brain perspective, we want to engage the PFC and rational processes, followed by engaging emotions in a positive manner as much as possible.

There is also an implication for the role change leaders should play to be most effective. Instead of focusing on providing directions, they will be more likely to succeed if they work to limit the overall stress in the organization. Stress and chronic fear reduce the ability of others to engage mentally in your change. Reduce stress, and leaders will automatically create an organization better able to adapt.

Finally, we would caution against initiating change with the intent of significantly modifying an organization’s culture. Cultures do not just reflect a set of assumptions and values that guide work, but also generate a parallel informal structure where people have defined roles, functions and relationships every bit as real as those in the formal organization. In purposely disrupting cultures, leaders trigger deep-rooted instinctual reactions. We need to start the change process with the most adaptable part of our brain: the cortex. From there we may, over time, be able to affect older, less flexible parts. Starting with the culture, however, is likely to trigger reactions that doom the whole change process.

Instead, we advise the leader who suspects a cultural transformation is important to start by engaging the informal organization in a rational discussion of the kinds of work habits and judgments that could help reduce problems employees, customers and the organization encounter. Then we have seen that engaging more emotional processes, for example with demonstrations or improvisational workshops, helps to create new patterns of thinking. This, in turn, makes it easier to master new behaviors. Finally, rewarding successes associated with the new ways of working seals the deal, and allows for new cultural assumptions and values to emerge naturally and at speed.

Neuroscience is giving us cues for how to manage effective change programs. Some of these cues may be counterintuitive. Successful change leaders will pay close attention to status threats and the potential for perceived loss. They will not spell out a detailed vision of the future, especially if it involves culture change. They will start instead with small, supportive steps to establish guardrails and nudge people in their intended direction, and let a new picture emerge over time. In short, they will draw important lessons from the approach Jerry took in making his transformational change.

These actions will reduce stress, thereby reducing resistance. This will allow all, the leader included, to learn and adapt to the new ways of working. All of this in turn will paradoxically accelerate change.

Respect for the brain holds the promise of greatly increasing the change effectiveness of organizations while also greatly enhancing the quality of life in the workplace!

REFERENCES

- Axelrod, Richard H. *Terms of Engagement*. Berrett-Koehler, 2010.
- Collins, Jim. *Good to Great*. Harper Collins, 2001.
- Conner, Daryl. *Managing at the speed of change*. Random House, 1993.
- De Martino, Benedetto, Colin F Camerer, and Ralph Adolphs. "Amygdala damage eliminates monetary loss aversion." *Proceedings of the National Academy of Sciences* 107, no. 8 (2010): 3788-3792.
- Deal, Terry E., and Allan Kennedy. *Corporate Cultures*. 1982.
- Gottfried, Jay A., John O'Doherty, and Raymond J. Dolan. "Encoding Predictive Reward Value in Human Amygdala and Orbitofrontal Cortex." *Science* 301, no. 5636 (2003): 1104-1107.
- Hsu, Ming, Meghna Bhatt, Ralph Adolphs, Daniel Tranel, and Colin F. Camerer. "Neural Systems Responding to Degrees of Uncertainty in Human Decision-Making." *Science* 310, no. 5754 (2005): 1680-1683.
- Kahneman, Daniel, and Amos Tversky. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47 (1979): 263-291.
- Kanter, Rosabeth Moss, Barry A. Stein, and Todd. D Jick. *The Challenge of Organizational Change*. The Free Press, 1992.
- Keller, Scott, and Carolyn Aiken. *The Inconvenient Truth About Change Management*. McKinsey & Company, 2008.
- Kotter, John P., and Dan S. Cohen. *The heart of change: real life stories of how people change their organizations*. Harvard Business Review Press, 2002.
- Kuhnen, Camelia M., and Brian Knutson. "The neural basis of financial risk taking." *Neuron* 47 (2005): 763-770.
- Lewin, Kurt. "Frontiers in Group Dynamics: Concept, Method, and Reality in Social Science; Social Equilibria and Social Change." *Human Relations* 1, no. 1 (June 1974).
- Lieberman, Matthew D., Johanna D. Berman, Steve D. Jarcho, Bruce D. Naliboff, Brandall Y. Suyenobu, Mark Madelkern, and Emaran A. Mayer. "The neural correlates of placebo effects: a disruption account." *NeuroImage* (Elsevier) 22 (2004): 447-455.
- McLean, Paul D. *The Triune Brain in Evolution*. Springer, 1990.
- Morris, J.S., Chris D. Frith, David Ian Perrett, D. Rowland, Andrew W. Young, Andrew J. Calder, and Raymond J. Dolan. 1996. "A differential neural response in the human amygdala to fearful and happy facial expressions". *Nature* 383: 812-815.
- Sirkin, Harold L., Perry Keenan, and Alan Jackson. "The Hard Side of Change Management." *Harvard Business Review*, October 2005.
- Spencer, Robert. "How Change Programs Fail." *Workspan* 53, no. 12 (December 2010).
- Wager, Tor D., Christian E. Waugh, Martin Lindquist, Doug C. Noll, Barbara L. Fredrickson, and Stephan F. Taylo. "Brain mediators of cardiovascular responses to social threat, Part I: Reciprocal dorsal and." *NeuroImage*, no. 47 (2009): 821-835.

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