

# Your Brain at Work

## By David Rock

### Introduction

The ability to understand and manage ourselves is critical to our success. If we want to do well in life, we need to understand how our brain, the central processing unit for all our thoughts, feelings and emotions, works. By understanding how our brain functions, we can become more focused, productive and outcome oriented. By following some simple principles, we can improve our mindfulness and become better leaders.

This write up is based on David Rock's book, "Your brain at work- Strategies for overcoming distraction, regaining focus and working smarter all day long". David Rock is a world renowned executive coach who has distilled the wisdom from the world of neuroscience into simple action points that can enable us to become better leaders.

### The primitive (reptilian) brain

The most primitive part of the brain is the brain stem surrounding the top of the spinal cord. This brain regulates basic life functions like breathing, metabolism and body movements. The primitive brain helped our ancestors to survive in the jungles. But this brain does not have the capacity to think or learn. When we try to beat the traffic signal at a busy junction, crossing the speed limit, the primitive brain is at work!

### The emotional brain and the limbic system

From the brain stem emerged the emotional centres. Human emotions map to the **limbic brain**. The limbic system determines how we feel about the world from moment to moment. It drives our behavior quite unconsciously. Emotions are important while making judgments and taking decisions. But too much of emotion can be counterproductive.

The emotional brain has a simple way to classify things around us: **those that will hurt us and those that will help us to stay alive**. The organizing principle is simple: **Minimize danger and maximize reward**. We either move towards things or away from them. Emotions such as curiosity, happiness and contentment evoke toward responses. Anxiety, sadness and fear evoke away responses.

As we experience emotions, the limbic system becomes more automatically aroused. The portions of the brain that are most important here are the **hippocampus** and **amygdala**. The hippocampus is the memory region and remembers whether something is a danger or reward and links new experiences to previous memories. As Daniel Goleman mentions in his seminal book, "Emotional intelligence" the hippocampus remembers the dry facts but the amygdala provides the emotional flavor. The hippocampus will help us to remember a face but the amygdala will tell us whether we like or do not like the face.

The amygdala tends to become aroused in proportion to the strength of the emotion. The amygdala has the ability to hijack the brain. Sensory signals from the eye or the ear reach both the cortex and the amygdala. But the amygdala senses some things faster and can react before the cortex, which mulls information through several layers of brain circuits before coming up with a measured, deliberate response.

The limbic system fires up more intensely when it perceives a threat compared to when it perceives a reward. The toward emotions are more subtle, more easily displaced and harder to build on, than the away emotions.

When the degree of arousal of the limbic system becomes too high, the resources available for the prefrontal cortex are reduced. With less resources available for conscious processing, the brain becomes more automatic in its functioning. We become less aware of what is going on. It is under pressure that we should be able to make our best decisions. (Think of a major customer escalation.) But it is precisely under these circumstances that an amygdala hijack happens and we lose our self-control.

The limbic system tends to make us respond negatively to situations. It may make us anxious and start paying more attention to the downside and become less risk taking. An agitated limbic system also increases the possibility of seeing connections and links even if none exist. We may start generalizing excessively. We may imagine ghosts where none exist! Over arousal can affect our health, with cortisol and adrenaline levels shooting up.

When emotions kick in, we have only three options. We can **express our emotions**. We can **suppress our feelings** and stop the emotions from being perceived by others. The third approach is **cognitive change**.

Expressing our emotions in the workplace is difficult. Most of us have learnt to suppress our emotions. But when we try to suppress our emotions, the memory of the event is impaired. Suppression can increase the blood pressure. A better technique to use is cognitive change. When we find ourselves in a bad situation, we must learn to think about it differently. We must label the emotion so that we become aware of it and it does not trip us. Instead of becoming tough on ourselves, we must learn to say, "Oh. That is just my brain." This kind of reappraisal can greatly reduce stress. We must learn to reinterpret the event. If we describe the emotion in a word or two, it will help us to recognize the emotion and then reduce the intensity of the emotion, i.e. cool down.

### **The thinking brain or the Prefrontal cortex.**

From the emotional centres, evolved the thinking brain. The **cortex** is the outer covering of the brain. This is the part of the brain which has evolved more recently. It is the rational side of the brain where logical thinking happens. Within the cortex, a particularly important part is the **pre frontal cortex**, which makes up only 4-5% of the volume of the brain. It is the last major brain region to develop during human evolution.

The pre frontal cortex helps us to think through situations and avoid impulsive, reflex actions and behaviors. This rational brain came long after the emotional brain. Because the thinking brain grew from the emotional brain, thoughts and feelings cannot be completely separated. The prefrontal cortex can be called the working memory, where we hold the facts essential for completing a task or solving a problem. Circuits from the emotional brain to the prefrontal cortex mean that emotions like anxiety and anger can sabotage the ability of the prefrontal cortex to maintain working memory. In short, when we are emotionally upset, we cannot think straight!

The brain in general and the prefrontal cortex in particular have only a finite amount of resources. So we must learn to use these resources skillfully. Each day of our life, we spend our time trying to understand what is going on, taking decisions, remembering things, recalling from our memory and trying to

restrain ourselves from doing certain things. All these activities consume energy. When we are thinking about a problem, we are consuming energy. When we are trying to visualize something we have not seen before, we need energy. When we are trying to prioritize, we are essentially understanding things, taking decisions and inhibiting ourselves from doing some things. Again, we consume energy. And that is exactly, why prioritization is difficult and we tend to drift along with the flow! We start and end the day with emails!

### **Reducing the load on the brain**

How do we reduce the load on the brain? Simple techniques, that we are already aware of, can come in handy. As an example, David Rock points out that visuals are better than words when it comes to grasping an idea. The brain is quite experienced in creating mental imagery involving objects and people interacting. Visual processes have evolved over millions of years and are quite efficient in terms of energy usage. In contrast, the brain circuitry involved in language processing has evolved more recently and is still not state of the art!

There are other examples as well. Scheduling the most important tasks at the beginning of the day, when we are fresh, is a smarter way of using the brain's resources. What would take hours when we are tired can be done in a few minutes when we are fresh. Thinking of only a few things at a given time can also reduce the load on the brain. Another useful technique is breaking complex ideas into a few concepts. This makes it easier for the brain to process them, thereby reducing the load. Writing things down instead of trying to remember them can also reduce the load on the brain.

### **More about the five conscious processes**

At any given time, we can perform only one of the 5 conscious processes- understanding, deciding, recalling, memorizing and inhibiting. How do these processes occur within the brain?

- **Understanding** involves creating maps that represent new information. It also involves connecting these maps to existing maps in the rest of the brain.
- **Decision making** involves activating a series of maps and making a choice between these maps.
- **Recalling** involves searching through the billions of maps in our memory and bringing the right ones into the prefrontal cortex.

- **Memorizing** involves holding maps in attention in the prefrontal cortex long enough to embed them in long term memory.
- **Inhibiting** means making sure we do not activate certain maps.

Each of these processes involves billions of neurological circuits. These processes also have overlaps in terms of the circuits used. That is why handling one process at a time can make us more effective and multi-tasking often does not pay off. One study for example has shown that cognitive capacity of an adult can fall from the level of a Harvard MBA to that of an 8 year old when we attempt two tasks that involve considerable mental processing at the same time.

David Rock mentions that we must be fully aware of when we are multi-tasking. We must also limit the time we spend operating in this mode. Multi-tasking works best for tasks which involve automatic embedded routines. The portion of the brain that stores routine functions, goes by the name of **basal ganglia**. This part of the brain is good at executing If Then instructions. The basal ganglia are four masses in the brain which drive routine activities that do not need much mental attention. The basal ganglia are very energy efficient and can take over an activity after we have repeated it a few times. It is because of the basal ganglia that we can listen to music or hear the news while driving to work.

### **Getting more out of the brain**

The brain learns complex routines by a process called **chunking**. Essentially, this involves grouping pieces of information together. The size of a chunk is roughly equivalent to how much time it takes to say aloud each item to ourselves. Expertise evolves by creating large numbers of chunks. Thus a few moves together constitute a chunk for a chess player.

Sequencing activities in the best order can also improve the functioning of the brain. Decisions can queue up if they are not taken in the right order. Essentially, some decisions have to be taken earlier than others. So we must spend enough time to figure out the right order to make decisions. And if we can do that, we can save ourselves a lot of effort and energy. To take an example, if we decide upfront what key messages we want to convey in our proposal, we can find it that much easier to find the required content. Similarly, in a complex program, if we understand the dependencies among the various stakeholders, it is much easier to put in place a governance mechanism.

Blocking out external distractions is the key to improving mental performance. The human mind likes to wander because of the way the nervous system functions. This system is constantly processing, reconfiguring and reconnecting the trillions of connections in the brain each moment. Lapses in attention occur when the **medial pre frontal cortex** is activated. This region of the brain can be called the **default network**. When we are not doing much, this network becomes active and we start thinking about our problems and worries.

**Our brain can be compared to the elephant and the rider.** The conscious will, the rider tries to control the large and uncontrollable unconscious mind, the elephant. The prefrontal cortex is the key to conscious decision making but it is too small compared to the remaining part of the brain. That is why the uncontrollable unconscious mode tends to dominate.

The region in the brain that detects something different or new is called the **anterior cingulate cortex**. It is like an error detection circuit that lights up when we notice something unexpected. Novelty tends to get our attention. In small doses, novelty is positive but too much novelty can cause discomfort as the error detection circuitry tends to get activated too often. That explains why change initiatives encounter a lot of resistance.

The key to a laser like focus while doing something important is clarity about what not to focus on. The **ventrolateral pre frontal cortex** is the key to inhibiting unwanted things. This part of the brain serves as a braking system. This system is fragile, temperamental and energy hungry. So it works at its best only every now and then. The capacity to apply the brakes reduces after each braking effort. In other words, self-control takes effort. Each time, we stop ourselves from doing something, the next impulse is harder to stop.

Before a voluntary movement, the brain sends a signal called action potential. The brain takes this decision about 0.3 seconds before we are aware of it. We have a window of .2 seconds to be aware of something that is going to happen and stop it. We may feel .2 seconds is too short a period of time but all of us have the capacity (provided we train ourselves) to notice an urge and control ourselves. We cannot intervene when the brain is sending out crazy ideas. But we can decide whether or not to act on impulse. To be able to do so, we need to be aware of what

is happening in the brain. We must practice paying attention to our mental experience and start noting urges for action as they unfold. We have a fraction of a second to inhibit the response. And if we are tired, hungry or anxious at this time, it is easier to make mistakes.

### **Over and under arousal and achieving flow**

Arousal refers to the level of activity in the brain. An optimal level of arousal makes the prefrontal cortex work at its best. The synapses that connect the brain cells or neurons have to fire well. They can fire in two ways, **excitatory** and **inhibitory**. An excitatory signal tells the neuron to do more of something. An inhibitory signal tells a neuron to do less of something.

Two kinds of chemicals, **dopamine** and **norepinephrine** determine whether the firing is effective. Too little of these chemicals can lead to boredom and too much of these chemicals can lead to stress. Norepinephrine also called **noradrenaline** is the brain equivalent of adrenaline that causes fear in us before say making a presentation to a senior leader or an important client. It is about the **chemistry of fear or alertness**. We can consciously increase alertness by imagining something going wrong during the presentation. Dopamine is about the **chemistry of interest**. It increases when we see something new, hear a funny joke or expect something positive.

Over arousal can create more problems than under arousal. Over arousal means there is too much electrical activity in the prefrontal cortex. To reduce the degree of arousal, we must reduce the volume and speed of information flowing through our mind. We can reduce the information overload by writing things on a piece of paper, instead of trying to remember. We can also deactivate the pre frontal cortex by activating other regions of the brain. We can pay attention to the sights and sounds around us or do some exercise. That is why watching a sunrise or sunset or standing in front of the beach watching the waves can be so soothing (provided we don't think of a customer escalation at that point of time!) . Over arousal can also come from positive emotions such as romance. In an optimal state of arousal, we arrive at a **state of flow**. In this state, we do something that is novel and challenging but not so different or so difficult that it leads to stress.

## **From impasse to insight**

An **impasse** is a roadblock to a desired mental path. It is a connection that we want to make but cannot. When we are doing something creative, an impasse can be frustrating. Think of a digital engagement where we are reimagining the customer's journey for a client. We have to be able to move quickly from impasse to insight.

Insights are the result of unconscious processing. To develop an insight, we have to get our conscious processing capacity, the pre frontal cortex out of the way. Some ways to achieve this are to take a break from the problem or consult someone who is not actively grappling with the problem. The key to developing an insight is not high IQ or visionary thinking. What is more important is awareness of our mental experience and changing the way we think when the situation demands. Developing cognitive control and quietening the mind when the situation demands are crucial.

The **ARIA model** developed by David Rock comes in handy when dealing with an impasse. The model covers 4 phases: **Awareness, Reflection, Insight, Action.**

- Awareness is a state in which the brain focuses gently on the impasse.
- In the reflection process, we focus more on the thinking processes rather than the content of the thoughts.
- In the insight stage, there is a burst of gamma band brain waves, representing a group of neurons firing in unison.
- The Action phase is the opportunity to harness the energy released upon the formation of an insight. This energy is powerful and short lived.

In short, developing an insight is about freeing up the mental stage and allowing the unconscious processes to take charge. It is about "thinking without thinking deeply"!

## **Feedback vs Insight**

Enabling people to develop their own insights is superior to giving feedback. How much ever, we may try to package negative feedback, people get it clearly and remember only the negative part! We can spend 29 minutes talking about good things and one minute about a development need. What will be remembered? For most, if not all human beings, criticism is not easy to swallow. We may pretend we are accepting it but within, it hurts. We can change people's behaviors when we

help them to think better about their own thinking. Essentially, instead of telling people where to improve and how to improve, we have to help them to quieten their brains and improve the chances of getting their own insights about how they need to improve and what new habits they must cultivate. We have to help people to become more mindful. That brings us to the subject of mindfulness.

### **Becoming more mindful**

**Mindfulness** is the ability to observe ourselves. It is thinking about our thinking. It is a higher order skill that helps us to develop a third person perspective about ourselves by watching ourselves closely. Such an ability is critical if we want to ensure that we do not get carried away with the flow and instead can choose to direct our attention. Mindfulness means living in the present, being aware of the experience as it is happening in real time and accepting what we do without forming quick judgments.

We experience our world in two ways: using the **default network** and the **direct experience network**. The default network is activated when we start thinking about ourselves and become absorbed in our problems. The default network is involved in planning, day dreaming, ruminating and thinking about other people. With this default network, which can also be called a narrative network, we filter information coming from the outside world and add our own interpretations. In contrast, when we use the direct experience network, we are not thinking about the past, the future or other people. We are experiencing in real time, the information coming to our senses. We are present!

Mindfulness meditation helps us in understanding the difference between directly experiencing something and the interpretation added by the brain. When we are mindful, we not only perceive information more accurately but we also become more flexible and less vulnerable to old habits and assumptions. Mindfulness also helps us to be more aware of our own thoughts, feelings and emotions. Mindfulness keeps a check on our impulsive nature and makes sure we pause before we react.

### **Managing expectations**

Expectations alter the data the brain perceives. We tend to fit incoming data into expectations and ignore data that do not fit. As expectations alter perception, we

tend to see what we are expecting to see and do not see what we are not expecting. Unmet expectations create a threat response.

Expectations also affect our neurochemistry. When we expect to get a reward, **dopamine** is released. Unexpected rewards release more dopamine than expected rewards. But if we are hoping to get a reward and do not get it, dopamine levels fall steeply. Dopamine is central to the toward state- to being open, curious and interested. The brain makes more connections when the dopamine levels are high.

When we are happy, we are that much more effective. And to be happy, we should lead a life with a good amount of novelty, create opportunities for unexpected rewards and believe that things are always going to get better. To be happy, we must also carefully manage our expectations. We must try to avoid situations of unmet expectations. One way to do this is to keep our expectations low. We can also keep ourselves in a good mood by thinking more of those positive expectations that are going to be met for sure.

### **Applying the SCARF model**

The SCARF model, which draws from some crucial principles of neuroscience, tells us how to engage with the team members and motivate them. There are 5 different components here: **Status, Certainty, Autonomy, Relatedness** and **Fairness**.

A leader who makes us notice what our strengths are and feel good about them ( Enhancing our Status) , sets clear expectations ( Increasing Certainty), empowers us to make decisions ( Increasing Autonomy), connects with us at a personal level ( Showing Relatedness) and treats us fairly ( Demonstrating Fairness) will make us feel calmer, happier, smarter and connected.

- By being humble, great leaders eliminate the status threat and in fact raise the status of the team members.
- By being clear about the goals and explaining how the future is likely to evolve, they reduce uncertainty.
- By not micromanaging and leaving people free to go about getting their work done, they increase autonomy ( Empowerment in Cognizant lingo!).
- By being authentic, they create a sense of relatedness.
- By being open about what they do and by keeping their promises, they are perceived to be fair.

Let us examine the concepts of status and fairness in more detail.

### **Status**

An increase in status makes dopamine and serotonin levels go up and pushes down cortisol levels. We feel less stressed and become more happy. An increase in status increases the number of new connections that we make in the brain. We can process more information and become more mindful. When we try to collaborate with others, making them feel their status has gone up, it is smart strategy. We must become careful about other people's status not being threatened. We can reduce status threats to others by lowering our status, by sharing our own infallibility and mistakes. Giving positive vibes is another way of reducing status threats. Instead of trying to be smarter than others, we must focus on our own skill sets. By understanding and observing ourselves better, we will be able to raise our own status without threatening the status of others.

### **Fairness**

Fairness is a primary need for the brain. A sense of fairness can create a strong reward response. A sense of unfairness can generate a threat response. People prefer equity and resist unfair outcomes. When there is a sense of fairness, we connect safely with others. There is more trust and cooperation.

We can consciously cultivate a feeling of fairness and thereby feel better. For example, if we work in Outreach programs, we are helping the underprivileged and righting the perceived wrongs. So we are bound to develop an increased sense of fairness. Sharing our time, resources and donating money helps us sense greater fairness and make us feel even better than we would while receiving something.

When we expect someone to be fair and they are not, (Think of the promotion season!) dopamine levels fall significantly. Unfairness cannot be eliminated completely in the workplace. Being able to manage our response to unfairness puts us at an advantage over others. We should learn to label our emotional state and reappraise the situation by looking at it from different perspectives.

## **Improving Collaboration**

Collaboration with people whom we do not know well is somewhat difficult because the human brain considers them to be adversaries unless proved otherwise. When we are with friends, we release a pleasurable chemical called **oxytocin**. In fact, a spray of oxytocin can increase the level of trust among people. When we think someone is an adversary, there is less oxytocin. We get distracted and become less smart. When we think someone is an adversary, we find it difficult to accept ideas even if they are good. A handshake, quick introduction and discussing something in common, can increase feelings of closeness and release oxytocin. By developing a personal connect and sharing our experiences and investing time in understanding each other's work, we can turn rivals into friends.

## **Driving change**

The brain is mutable. It changes all the time. All we need to do is to focus our attention in new ways. Making people's attention move away from a feeling of being threatened to focusing on the issue at hand is the central challenge to driving change. When we focus on the solution instead of the problem, the functioning of the brain is transformed. The brain is now ready to notice information relevant to the solution and not information about the problem. When we look for solutions, we scan the environment widely for options, thereby leveraging the right hemisphere and actively looking for insights. Focusing on solutions generates a toward state and releases dopamine.

People develop insights when they think more broadly without getting lost in details. Anxiety narrows people's views and makes their brains noisier. So it is important for a leader to reduce the anxiety levels of people and increase their positive emotions. By creating a safe environment, we can reduce the threat response.

How do we sustain change and make sure people do not go back to their old ways of doing things? A change involves developing new connections in the brain. Leaders must help the team members keep the new circuits alive by having them come back and paying attention to the new circuits over and over again.

## **Concluding notes**

Understanding how the brain works can go a long way in making us more mindful. Small changes made in a fraction of a second can make a big difference to the way

we function. By understanding our brain better, we can direct attention and energy in the right way and activate the right parts of the brain. We will become better at when to use the logical brain, the pre frontal cortex and when to shut it down. We will get better at labelling our emotions and reappraising them and thereby improve our emotional intelligence. We will become better at driving change by helping people to become more solution focused and by developing their own insights. By loving to watch our brain at work and enjoying the process of watching, we can become more mindful, better human beings and better leaders.