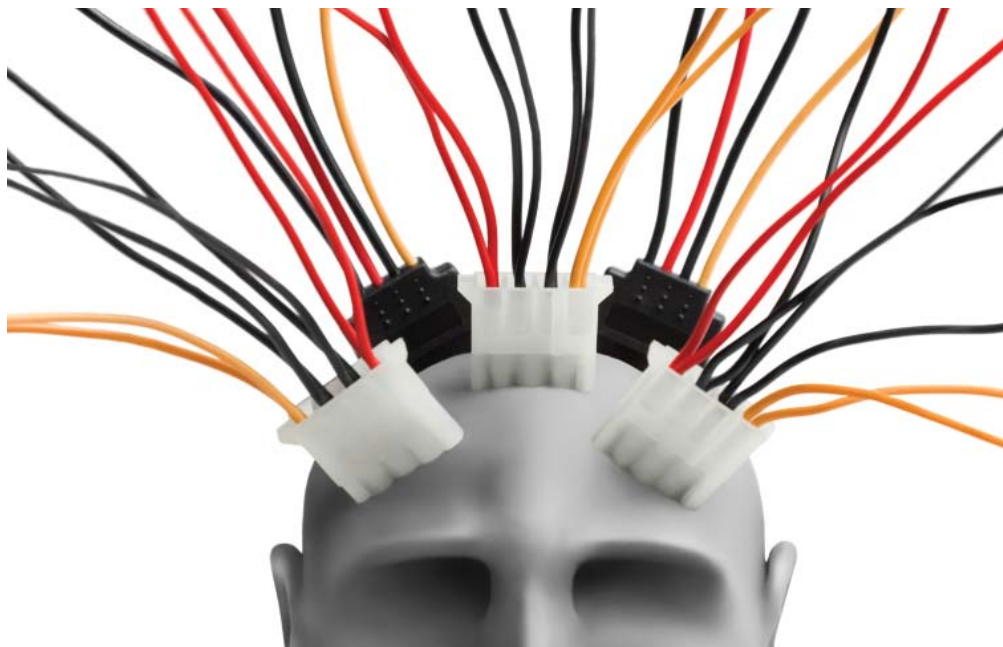




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Managing Your Brain – A User's Guide

By Mark I. Sirkin

Information about the human brain has increased dramatically over the past 10 to 15 years, radically changing our understanding of its functions and its capabilities. Since lawyers rely on their brains (as opposed to specialized instruments and tools) more than most professionals, this knowledge is particularly relevant to them. What follows is a "user's guide" or primer about neuroscience for the practicing lawyer.

The brain is, far and away, the most complex organ known to man. Some estimates suggest that there are more potential connections in the brain than there are stars in the universe.¹ That's a large number. Even more fascinating than the mere quantity of connections is the way the brain interconnects its systems and subsystems.

One reason the brain is so complex is that several different systems operate simultaneously in living brains. The brain can be understood from an anatomical perspective, a biochemical perspective, and an electrical perspective. Anatomy rules the brain; understanding the place, or position, of its parts is critical to understanding brain function. If you know the topology of the brain, that is, where things are located, you are well on the way to understanding many of its functions. This principle is true even on the cellular level, where the placement and growth of axons (the antennae that bring information into the cell) and dendrites (the transmitters that send information out of the cell) dictate brain function and growth

at the micro-level. The biochemical perspective or system deals with the neurochemistry of the brain – the relevant neuroanatomy here concerns the tiny gaps between axons and dendrites that are filled with chemicals, called neurotransmitters, that excite or pacify the receiving neuron. This is the level at which pharmaceuticals operate. Finally, and perhaps least understood, the brain is an organ of electrical transmission, where brain frequencies (referred to by the Greek terms *alpha*, *beta*, *theta*, *delta*, and *gamma*) facilitate or reflect certain states of preparedness, awareness, and learning. Although well documented, these brain waves are not well understood and their function (for example, are they cause or effect?) is still a mystery. Rather than focus on neuroanatomy or neurochemistry, however, let us examine the brain *in vivo*, that is, how the brain functions as it is being used. This article will discuss three areas that warrant special attention: information overload, emotional reactivity, and working with others. But first, what's changed about what we know?

What's New?

When you were in high school or college, you probably were taught that while other parts of the body regenerate naturally, the brain does not regenerate new brain cells. This is no longer considered gospel. The brain does regenerate new cells, as well as rewire and remap existing connections. This is called *neuroplasticity* and the discovery of

this phenomenon lies at the heart of our changing ideas about brain function. Another breakthrough that has changed the way we think about the brain is the fact that new technology, such as functional magnetic resonance imaging (fMRI), has allowed us to actually see the brain at work. So what have we been learning?

- **We Think in Maps** – Every idea is a group of interconnected neurons that we call maps. Every thought, concept, or idea represents a group of neurons or map. Complex ideas, or concepts built from a number of discrete pieces of information, are larger maps that interconnect smaller maps into a unitary thought. This is how many points in the brain can become interconnected, and a single idea or set of neurons can participate in more than one map. Thinking is the process of creating new maps, and we create millions of new maps every second. A memory, while once thought to be a single idea residing in a single place in the brain, is now known to be made up of many discrete impressions (residing in multiple regions of the brain) all brought together in the single act of remembering.
- **Up Close All Brains Are Different** – The brain changes with experience. This is the essence of neuroplasticity. Your brain has been impacted by your unique experiences which have affected your brain, which permanently reflects everything that has happened to it since birth. Even identical twins have different brains due to their unique experiences beginning *in utero*. Everything that has happened to you has affected your brain, for better or for worse. The nanny who gave you ice cream, that professor in law school that influenced you so much, your first case, all have impacted your brain more or less permanently. While we always knew that experience mattered, we never knew that it mattered at such a deep level. The brain is literally shaped by experience; brain cells live or die, and pathways are created and reinforced by repetition. Gerald Edelman, a winner of the Nobel Prize in Medicine, called this phenomenon “neural Darwinism.” The brain literally changes as a function of where an individual puts his or her attention. Professionals in different fields think differently; their brains are different because of their training and their day-to-day mental activity.
- **Multi-tasking Is a Myth** – The brain is an excellent sequential processor of information, but attention is like a spotlight that can be focused only on one thing at a time. The brain requires some degree of sustained concentration to process information, first into short-term, or working, memory, then into long-term memory. Multi-tasking is actually a rapid sequencing from one task to another and it is a very inefficient process.² (For example, drivers using cell

phones are four times more likely to get into accidents; they are the functional equivalent of drunk drivers because of the brain’s inherent information-processing limitations.) In addition, the brain stores new information into short-term memory or working memory, which is quite limited. In our information society, working memory gets filled quickly. When working memory is overloaded, the brain does not function efficiently – we become forgetful, inattentive, and frustrated.

- **The Brain Prefers Certainty** – In some respects the brain is a “difference” engine; it spots and resolves differing or incompatible inputs. When a discrepancy arises, the brain strives to resolve it. This is why we are inveterate problem solvers, even for fun (think crossword puzzles and Sudoku). Established maps are preferred because the brain tends to do things the way it has done them before. Like the law, the brain is inherently conservative. Existing maps (or expectations, to use common parlance) influence the way new information is processed. Conflicting maps irritate, so we are motivated to resolve discrepancies between overlapping maps. Changing old wiring in the brain is difficult, if not impossible, and the more we focus on an idea, even a wrong idea, the more we set it. The good news, however, is that *new* maps are relatively easy to lay down. New ideas, or new maps, are easier to adopt than re-learning or changing an old idea. This may seem to fly in the face of logic, a favorite mode of thought for lawyers. Logic leads to certainty, which neuroscience tells us the brain prefers. Logic has its place; it leads to certainty, which the brain craves. But if you are trying to convince someone of something, it is easier to teach that person a new idea than to get the person to give up an old one.

Attention and the Myth of Multi-tasking

We live in a wired world where new information comes flowing in – fast and furious. This is no longer your father’s law practice with libraries down the hall and an *eminence grise* in the next office who knew everything there was to know about a particular law or client. The amount of information processed by the average lawyer today is many times what it was just a few years ago. Moore’s law describes the phenomenon that lets us squeeze more and more data into smaller spaces ever more quickly. This discovery has changed the lawyers’ world permanently, forever changing the way law is practiced. What has not changed as quickly, however, is the brain that processes all this information. As lawyers juggle cell phones, BlackBerrys, emails and the like, more and more input is bombarding their brains. It’s true, the technology gives us the ability to file and access information more efficiently than ever, but simply trying to

remember what is there, while juggling several things other tasks at the same time, may strain the brain beyond optimal functioning.

Most of the brain's informational inputs reside in working memory which, as we said, is limited. This presents a problem. A complicating factor is that most people believe they can multi-task without degradation of quality or inefficiency. But the brain research disagrees: the brain can focus primarily on one thing at a time, and that's the limit. While it can switch rapidly from one task to the other – called “serial attention” – some information is always lost in the switching back and forth. And most people will notice what you are doing and that you are not concentrating fully on the task at hand.

When the limits of working memory are reached, several things can happen. First, information gets lost; there is simply no place to store it effectively, and either the new input gets dropped or the new information pushes out the old. How many of us have had the experience of being told something quite clearly and plainly; we listened, but then got distracted and now we can't remember what it was we just heard. This is not only a common phenomenon, it is becoming more and more common with consequences that range from annoyance to malpractice. In addition, this type of overload has emotional consequences. It is frustrating and stressful to have so

one at times; it improves and gets stronger with practice. Psychologists have been developing games and other methods to help working memory function more efficiently. Some sites that provide brain training are: www.positscience.com, www.lumosity.com, and www.cogmed.com/program.

3. Learn to Relax: Stress is the enemy of efficient brain functioning. The fight-flight mode is activated when the brain is stressed. While this may prepare you to run away or fight someone, it is not effective in today's professional world. Also, stress pumps hormones into your bloodstream that further distract you. There are, however, a number of mind-body disciplines that all contribute to better brain functioning through focused relaxation. Among these are yoga, tai chi, meditation or mindfulness, and biofeedback, to name just few. Try one that interests you, learn the discipline, and then practice it regularly to control your body's reaction to stressful events and information overload.

The Role of Emotions and Emotional Intelligence

If absorbing and using information was a purely cognitive exercise that involved filing and retrieval, modern life would be hard enough. But research shows us that

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much information coming at us at once. Forgetting can be embarrassing, which creates further emotional stress.

What can be done? Here are several suggestions, taking our current knowledge about brain functioning into account, that can help with the problems related to information overload.

1. Care and Feeding: Brains do best on seven to eight hours of sleep each night – get enough sleep. Caffeine is not food; make sure your brain is well fed with a minimum of carbohydrates and a maximum of protein. Alcohol and the use of other substances do not contribute to the efficient functioning of your brain – use them sparingly. If you need these substances, including sleep medication or other pharmaceuticals to help you function, you may need a lifestyle change that fits better with the brain you have. In addition, exercising the body may be the single best thing to do for your brain – it increases blood flow and keeps the brain systems working at peak efficiency.
2. Train the Brain: Working memory can be trained. Although the brain is not a muscle, it behaves like

most, if not all, inputs and memories get tagged with an emotional association as well. These emotions, it seems, enable us to process and retrieve information more effectively.

Let's start with some basic brain anatomy. In the 1960s and 1970s we made the exciting discovery that the left brain was primarily analytic, specializing in fact-based and sequential information processing. The right brain was more emotional and holistic, and processed gestalts most effectively. We have moved beyond the left brain = analytic/right brain = emotion dichotomy. Psychologists now believe that there is more than one type of intelligence. IQ, or what is called cognitive intelligence, is what most people traditionally think of when they say someone is smart. However, recent findings indicate that emotional intelligence, sometimes called EQ, is distinct from, and is not correlated with, cognitive intelligence. But EQ is correlated with strong interpersonal relationships, leadership skills, and positive client interactions. The good news for lawyers, based on preliminary findings by my colleague Dr. Larry Richard at Hildebrandt Baker Robbins, is that lawyers tend to have higher IQs

than the average person. The bad news, however, is that their EQ scores tend to be lower.

Lawyers live in a world where they are taught, and reminded every day, that logic is good and emotions are bad; careful, non-emotional reasoning should trump emotion every time according to this old-school way of thinking. Indeed the law is based on this sort of reasoning. Emotions, if noticed at all, ought to be factored out. But not so fast! Emotions are fundamental to the way people, and their brains, operate. Here are some things scientists have recently concluded about emotions that should give every lawyer reason to pause:³

- Emotions are information.
- We can try to ignore emotion, but it doesn't work.
- We can try to hide emotions, but we are not as good at it as we think.
- Decisions must incorporate emotion to be effective.
- Emotions follow logical patterns.
- Emotional universals do exist, but so do specifics (i.e., individual and cultural differences).

As with any life skill, some people are better at using emotions than others (i.e., are born with a higher EQ). And like any other life skill, learning how to use it and practicing it will improve the ability to recognize, use, and track emotional information.

Emotional intelligence, according to one definition, is the set of skills we use to read, understand, and respond effectively to the emotional signals sent to us by others and by ourselves. These skills allow us to understand and adjust our reactions to events and people, and they enable us to anticipate and influence others.⁴ If none of these skills and capabilities is important to you then no need to worry about emotional intelligence . . . but check your pulse because you may not be a fully functioning human. Interacting with others requires the use of emotional intelligence. The better you are with it, the more you will be able to anticipate, affect, and utilize your own emotions and those of the people with whom you interact.

According to the literature, the four branches of emotional intelligence are:⁵

1. Perceiving and Identifying Emotions – Knowing your own emotions and reading the emotions of others accurately.
2. Using Emotion to Facilitate Thought – Understanding how mood affects you and affects situations, and how to create moods to achieve your goals.
3. Understanding Emotions – Making accurate inferences; predicting emotional reactions in others.
4. Managing Emotions – Choosing emotional expression appropriate to time and place.

Tests have been developed to assess your own emotional intelligence and diagnose the areas that need strengthening. As with IQ, you can be good at some aspects and not so good at others, thus impacting your

overall EQ. But the good news is that, as with any life skill and a good assessment, you can determine what you need to work on and improve.

How can emotional intelligence be improved? Some of the sensitivities required for higher emotional intelligence do not come easily and may be hard to learn. But practice and diligence will pay off. Here are a couple of suggestions:

1. Facial expressions are the key to reading the emotions of others. Practice reading faces and body language, and think about whether there is a match or mis-match between the two. Use the information that is often written on the faces of others. Dr. Paul Ekman (www.paulekman.com) has been studying emotional expressions for his entire career and has developed methods for teaching this skill to others. As an added bonus, if you take his course, you may be able to spot when people are lying to you; emotionally intelligent people will often pick up subtle but real and reliable clues.
2. Keep an emotions journal – start to study your own emotional reactions to events and their consequences. This does not mean writing down every emotion you have during the day, but rather journaling one stand-out event during the day that engaged you or someone close to you emotionally. Try to do this every day. By writing about it, you will be teaching yourself to be more sensitive to emotional cues and learn how your emotions are connected, one to the other. Remember, focus changes the brain; so, by thinking about your emotions, you are re-wiring your brain to be more emotionally astute.

Motivating and Influencing Others

While it's important to understand the role of emotions in interpersonal interactions, brain science is teaching us things about motivation and influence that we never knew with such certainty before. For example, by reading *fmr*is when people are exposed to various situations, we can tell what they like and how they react. We can recognize a perceived threat as it impacts the brain, regardless of what an individual says or knows about himself or herself.

Remember, the brain is, first and foremost, a difference-analyzing engine. It makes mental maps which are predictions based on expectations based on past experience. If the predictions don't match, the brain sends out an alert that causes the difference to be analyzed until it is understood or resolved. But the brain does not function in a vacuum: we are social creatures that must negotiate a social world whether that is a courtroom, a law firm, or a family home. Research suggests that there are intrinsic, built-in motivators that all humans strive to attain.⁶ Having these motivators enhanced or achieved is rewarding, while having them frustrated or diminished is intrin-

sically de-motivating. Although the list below may not be complete, these well-documented social motivators must be taken into account in every social situation:

- Status
- Certainty
- Autonomy
- Relatedness
- Fairness

These motivators are easiest to remember as the acronym SCARF, although this is not necessarily in their order of importance. To the extent that you can enhance any one of the SCARF elements – for yourself, your firm, or your client – it will be experienced as a social positive or good.

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We are programmed by thousands of years of evolution to seek certainty – and the other elements of SCARF as well. The brain seeks certainty; the brain really likes predictability. That the world, or events, can be anticipated with (a degree of) certainty is intrinsically calming, just as an unpredictable environment typically creates anxiety.

Status is next. We are primates and, as primates, social hierarchies are literally a part of our DNA. As humans, we enjoy status, the more the better, and it is part of the warp and woof of most social organizations, including law firms. Or think of the courtroom, with all the built-in status cues that reinforce the authority of judges. When we want to reward someone, we heighten their status, elevate them so to speak. Status-seeking behavior often motivates professionals, and men especially, to a strong degree.

Professionals tend to over-value autonomy, another intrinsic SCARF motivator. Overlapping a bit with status, autonomy refers to the freedom to act as one chooses with no constraints. The greater the constraints, the more autonomy is diminished.

Relatedness, another intrinsic motivator, is sometimes at odds with status and autonomy. People like to feel connected to each other and this motivates us to be part of a firm or a profession. Interestingly, significant gender differences are emerging from the research, indicating that women place a higher value on relatedness while men seek status more.

Finally, fairness seems to be an intrinsic motivator, which should come as a reassurance to those who practice law. Primates, and even many mammals, seem to have an innate sense of what is fair and what is not. This

may well be the biological and evolutionary basis for the importance of the legal system in civilized societies.⁷

The SCARF model has significant ramifications for how people lead and manage others.

- Compensation systems are usually more about fairness and status than money. What matters most is how people are treated in relation to others of similar status.
- Relatedness is a primary motivator. Firms should be looking for ways to enhance it as it is among the best predictors of efficiency, profitability, and teamwork.⁸ Men, and male-dominated organizations, tend to over-emphasize status and under-emphasize relatedness.
- When mentoring or managing others, attend to the SCARF factors. Good mentors naturally seek to enhance SCARF. Notice individual differences; some SCARF factors are more important to some than others (you will improve your skills by working on your emotional intelligence!).
- Reading your emails or scanning or inputting on your BlackBerry while interacting with others has an impact – it is “de-statusing” and thus not a good relationship enhancer. And considering the limits of working memory and the myth of multi-tasking, it may just push your overflowing brain over the edge. Simply put, it’s bad manners and bad neuroscience.

Although there is much more to say about the confluence of neuroscience and the practice of law, attending to the simple facts and suggestions above should give the average lawyer plenty to think about and much to improve. ■

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2. Harold E. Pashler, *The Psychology of Attention* (Cambridge, MA: MIT Press 1998).
3. David R. Caruso & Peter Salovey, *The Emotionally Intelligent Manager* (San Francisco: Jossey-Bass 2004).
4. See, e.g., the work of David R. Caruso and John Mayer.
5. Note that there are different approaches to emotional intelligence in the psychology literature. In this article we are focusing on the theories of John Mayer, Peter Salovey, and David Caruso. Others psychologists who have written extensively on this topic include Reuven Bar-on and Daniel Goleman, both with different theories.
6. David Rock, *SCARF: A Brain-Based Model for Collaborating With and Influencing Others*, *NeuroLeadership J.*, Vol. 1 (2008) pp. 44–52.
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