CHAPTER 5
WHAT MAKES US TICK?
THE NEUROLOGY OF EMOTIONS

Have We Evolved?

Whenever I teach a seminar on Emotional Intelligence, I will ask the audience:

“Which is stronger: Our logic or our emotions?”

Inevitably, the answer will always come back … EMOTIONS!

I will then typically ask the audience, “Well, did you ever wonder why that is?”

The audience then thinks for a minute … and then I ask them:

“Have we evolved?”

I will then explain that I am not talking about “Darwinism” or “Evolution.” Instead, I am talking about humans, and 5,000 to 10,000 years ago, Fred Flintstone, a human, lived on this planet. Now, if you happen to believe in evolution, then you understand that man stopped evolving anywhere from 10,000 to 50,000 years ago. If you do not believe in evolution, then you don’t believe that man has evolved at all.

So, everyone is in agreement:

Man has not evolved at all for the last 5,000 to 10,000 years.

(It is important to note that when I use the term “evolution,” I am referring to the DNA structure of a human being actually changing. We are bigger and faster and stronger now than Fred was, but that is because of better living conditions, better nutrition, and so on. Since Fred’s time, our DNA structure has not changed at all.)
However, even though humans have not evolved in at least 5,000 to 10,000 years, our environment certainly has … and not just a little. The civilization we have built for ourselves is very different from Fred’s.

I will then ask the audience, “So, when Fred left the hut everyday, what was his number one concern? “Eating and not getting eaten!”

As a result, our brain still functions the same as it did back in Fred’s time. However, the same brain that served Fred very well 5,000 to 10,000 years ago is not working quite so well in the 21st century.

When Fred Flintstone, a human, left his cave in the morning, he took his life into his hands. If Fred was going to survive the day and come home to see Wilma that evening, he had to rely on his highly developed primal (“primary” … not “primate”) instincts. We still exhibit the same primal instincts that Fred exhibited, but we don’t even think about them. We just do them … automatically.

To illustrate this point, I will often ask the audience if they have ever had “philoerection”. There will then be a long pregnant pause. I will then hold up my forearm, feeling the hair on my arm and say, “No, it’s not what you are thinking. Have you ever had goose bumps? ‘Philo’ means hair. You don’t command it to happen. It just happens. It is an emotional response. It is automatic.”

Other automatic emotional reactions we exhibit everyday include:

- When we taste or smell something bad, we purse our lips and “scrunched up” our noses. Why do we do this? Because when Fred tasted or sniffed something that smelled bad, that scent might indicate that the plant was poisonous, so his lips would purse and his nose would “scrunched up” in order to keep the bad odor out of his nasal passages …

- When we are surprised, our eyebrows immediately rise, our eyes widened and we take a deep gasp of air. Why do we do this? Because when Fred was surprised by a saber tooth tiger, his eyebrows would immediately rise and his eyes would widened in order to let in more light to better illuminate his retinas and to broaden his line of sight. He would also take a deep gasp of air in order to expand his lungs for fight or flight. (That’s probably what you were thinking … right?)

---

When we lose a loved one, we grow sad. We lose energy and cannot focus as well as we usually might. Why do we do this? Because when Fred lost a loved one, he too grew sad. However, in Fred’s saddened state, his reflexes were not as “sharp.” This meant he would be in danger if he left his home … and his brain knew it. So, his limbic system, which governs our emotions, would burn “hotter,” which would put Fred into a state of depression. Fred would then grow very tired, so he would stay near his cave or hut, or maybe even in bed. He would feel very tired. Fred would therefore remain at home where his loved ones could comfort him until he felt better. “Depression” would keep Fred close to home until he was better able to defend himself out in the world.

Today, we can see how the limbic system, the source of our emotions, reacts when it is afflicted with one type of depression.

![Healthy Brain vs. Brain with Depression](image)

Above you will see two brain SPECT scans. A brain SPECT scan (An acronym for Single Photon Emission Computerized Tomography) is a sophisticated nuclear medicine study that looks at cerebral blood flow and at brain activity, or metabolism. The types of scans you see above are **Activity SPECT Scans**. Since every thought you have is really a burst of chemicals and an electrical spark in your brain, your thoughts generate heat. Activity SPECT Scans measure the varying degrees of heat being generated in our brain, which basically reveal our feelings.

It is largely because of nuclear SPECT scans that we have learned so much about how the human brain operates. Actually, we have learned more about how our brains work in the last ten years than we have known in the last 5,000.

---

It is important to understand that a brain SPECT scan is quite different from CAT scans and MRIs. CAT scans and MRIs are basically “anatomical scans,” which means they show us what is in the brain and what the patient’s brain physically looks like. CAT scans and MRIs will therefore reveal bruises (concussions), clots, tumors and so on.

SPECT brain scans, on the other hand, looks at how the brain is actually functioning. It will reveal the level of blood flow throughout the brain, as well as where the brain is overactive, underactive and where it is functioning normally. In other words, for the first time in the history of mankind, we can now look inside the brain and actually watch it work.

The brain SPECT Activity scan on the left is how your brain should look. Everything in blue indicates this person’s “baseline brain temperature.” Anything in red is burning about 15% hotter, which means it is more active than other parts of the brain.

In these Activity Scans, the forehead is at the top and the base of the brain is at the bottom. This is as if you were lying down in bed and we are looking up into the underside of your brain through the bottom of your chin.

At the base of the brain, you can see the cerebellum, which controls all of our automatic functions, like our breathing, heart rate, balance, coordination, organizational skills and so on. This area is burning hotter because of the critical and constant nature of these functions. Believe me … you want these left turned on.

You will also see in the center of the brain that the “limbic” system is burning a little bit hotter, which indicates a “touch” of depression. That is not unusual. In other words, adults don’t sit around and “giggle” all day like five year olds do. Actually, children typically laugh more than 100 times a day. An adult is lucky if he laughs a dozen.

Also, the two little balls glowing towards the top of the brain are the “basil ganglia.” This scan shows that the basil ganglia in this brain are a little overactive, which reveals a little bit of “anxiety” or “apprehension” Again, that is not entirely bad for us. The basil ganglia was put there so we would be apprehensive of whatever we do not understand or anyone we do not know. As a result, whenever Fred met someone new for the first time, he was wary of this “strange” person. It was safer for him to learn about anyone who was different from him before trusting them. We still have this same “defense mechanism” keeping us “safe” from strangers … which explains a lot of the distrust and bigotry we humans tend to have towards other people we do not understand.

Today, this is why we tend to look both ways when we cross the street, pull out into traffic, and so on. It is better to be cautious. (This “apprehension” is what Dr. Daniel Amen, CEO of the Amen Clinics, refers to as “Automatic Negative Thoughts,” or “ANTS.” We will discuss ANTS and why humans are predisposed to not trust one another in more detail in the “Building A Trusting Relationship” chapter.)
However, if you then look at the scan on the right, you will see a brain that looks “angry.” That is because this brain on the right is greatly inflamed.

If you look at the center of the brain on the right, the limbic system is much more inflamed than the one on the left, so it is “irritated” and is overactive. (See arrow.) This is how Fred’s brain might have looked throughout his depression – which is the limbic system’s way of protecting the body.

Of course, Fred did not know why he was reacting in these various ways … he just did. All of these various reactions were simply his primary (“primal”) responses designed to keep him safe. His brain certainly was not trying to hurt him. It was trying to protect Fred. In Fred Flintstone’s time, his emotional responses kept him alive. Why?

BECAUSE HUMANS ARE FOOD!

Earth is full of predators. However, compared to the other animals on this planet, we are a joke. We can’t run or jump worth a darn. Our “claws” are a joke. We can’t climb a tree to save our lives … literally. We don’t have any fur to speak of, our teeth are pretty much worthless in a fight and our vision and hearing stink.

In short, humans are easy prey. So, Fred had a lot to worry about in just staying alive.

However, what God did give to Fred was a magnificent brain that was designed to keep him safe. Fred was given the largest “frontal lobes” on the planet so he could reason his way out of situations and find ways to make his life better. But more importantly, God also gave Fred an emotional system that was at least twice as fast as his logical brain, which was designed to keep Fred safe. 5

In Fred’s time, a “hair-trigger temper” could save his life. Reacting quickly and being wary of anything that was different from him, including other people, could have easily meant the difference between life and death. He did not have time to “reason through his various options” when he was being attacked by a saber tooth tiger. He had to react quickly and his brain was designed to do just that.

To illustrate this point, I will ask my seminar attendees if they have ever been outside in the summer and gotten bit by a mosquito … and have they ever turned to swat and kill the mosquito before they cognitively realized what is happening? THAT is Fred’s emotional brain looking out for you.

5 “Social Intelligence: The Revolutionary New Science of Human Relationships” by Daniel Goleman, page 40, footnote 5: On speed of perception of fear, see Luiz Pessoa et al., “Visual Awareness and the Detection of Fearful Faces,” Emotion 5 (2005), pp. 243-47. genetic relatives the gorillas, chimps, and bonobos have far more. And we humans have the most, close to a hundred thousand of them.
In short, all of these various primal reactions generated by Fred’s brain were designed to keep him safe in a world of saber tooth tigers. Today, our brains act in the exact same way because we have not evolved at all. However, even though our brains have not changed, our world has changed greatly.

Our society in the 21st century is quite different from Fred’s. We are no longer being chased by saber tooth tigers. When we see someone who looks different from us, they are probably not trying to kill us. When we leave the house each day, the chances we will return home alive are much better than they were 5,000 to 10,000 years ago.

The natural state of a human being is not to live in high rises, to drive around in 6-cylinder automobiles or to fly through the air at 300 miles per hour. Humans are animals … just like all the other creatures that roam the planet. However, today we think ourselves “too civilized” to be compared to mere animals. I mean, it’s the 21st century! We are no longer mere animals … are we?

Well, the truth of the matter is that human beings are indeed animals. The natural state of a human is to live in a hut or a cave, to make his/her own fire, to hunt for or grow his/her own food and to fend off wild animals who view us from a very different perspective: LUNCH.

Unfortunately, since we have the same brain structure that Fred had 5,000 to 10,000 years ago, we also have the same primal reactions as Fred. The truth of the matter is that we have not evolved at all from Fred Flintstone’s time. In fact, the nonverbal cues we use today when we are angry, frightened, disgusted, surprised and so on are recognized by humans all over the world without any language barrier at all. These reactions are universal to humans because that is how we are constructed.

In short, those same brain functions that served Fred so well 5,000 to 10,000 years ago are now working against us. Today, allowing these “hair-trigger reactions” to govern our behavior and giving into our various impulses gets us fired, divorced, estranged from our children and thrown in jail. That is the basis of emotional intelligence:

Impulse Control and Self-Restraint

However, there is one huge problem that we have to deal with when we try to conduct ourselves like emotionally intelligent people:

We are HUMAN!

That means we are “hard wired” to react emotionally to various situations and not logically. In other words, we are working against human nature when we try to act like logical “big people.” Basically, we are emotional people who think … once in a while. We are not thinking people who feel.
In short, we are just cavemen in pants.

IQ vs. EQ
The Tale of Two Brains: Logic v. Emotions

Why Are Emotions SO Much Stronger Than Our Logic?
Different parts of our brain do different things, as shown in the following diagram:

Frontal Lobes: Logical Center, & Emotional Thermostat

Thalamus: The Brain’s “Neural Junction Box”

Amygdalae: Emotions
Keep this diagram in mind as we examine what parts of the brain do what.
THALAMUS

The thalamus, which rests in the center of the brain, plays a very important role:

It is the brain’s “neural-junction box.”

Every impulse that comes into the human brain first goes to the thalamus, where it is then redirected to the proper location … hopefully. The thalamus works a lot like the electrical box in your house. The power comes into your home, enters the electrical box, where the wires then branch out to all the different receptacles in the house. That is how your thalamus works too.

Therefore, thalamus is in charge of directing all of the various stimuli that enters the brain. It is the thalamus that decides where the signal should be sent throughout the brain’s billions of connections.

AMYGDALAE

The amygdalae, which resembles two almonds resting on either side of the brain right behind our eyes, is part of what we used to call the body’s “limbic system.” Our amygdalae act as the link between the body’s nervous system and the rest of the brain. They are each about one inch in length, or about the size of your thumbnail.

All of our passions and emotions originate in our amygdalae. It is the body’s emotional center. In other words, it reacts in response to pleasant and unpleasant sights, sounds, smells, taste and touch. Laughter, joy, anger, avoidance, ego and defensiveness are all emotions that are activated by the amygdalae. The amygdalae therefore acts as the brain’s “Emotional Tripwire.”

The amygdalae is also responsible for activating many of the nonverbal reactions we automatically and unconsciously exhibit, such as “tightened lips” and frowning when we are distressed, assuming a lowered defensive posture such as “crouching” when we are attacked, wrinkling our nose when we smell something bad, pursing our lips and pulling away when we taste a lemon, and so on. These are all primal automatic reactions our emotional system uses as it tries to protect us from harm. 6

It is also due to our amygdalae that we are able to read the nonverbals of others … whether the other person wants to reveal them to us or not. Since our emotions are twice as fast as our logical brain, we humans are simply not able to control our nonverbal facial expressions. (A stimulus can enter our emotional system as quickly as 1/33,000ths of a second. Our frontal lobes, or our logical system, can react at best at only half that speed.) 7 Our expressions “flash” across our face in “micro-seconds,” which is much faster than our conscious brain (our frontal lobes) can control them. This is why professional poker players wear sunglasses in the

______________________________

7 “Social Intelligence: The Revolutionary New Science of Human Relationships” by Daniel Goleman, page 40, footnote 5: On speed of perception of fear, see Luiz Pessoa et al., “Visual Awareness and the Detection of Fearful Faces,” Emotion 5 (2005), pp. 243-47. genetic relatives the gorillas, chimps, and bonobos have far more. And we humans have the most, close to a hundred thousand of them.
Mirage. They realize how fast their micro-expressions can rush across their faces and they know they could not possibly control them consciously … so they simply hide their face.  

However, not only are all of our emotions generated in the amygdalae, but it is also one of the foundations for our social skills.

For instance, studies with monkeys have shown that when their amygdalae are impaired before the age of six months, these monkeys had difficulty adapting to social life. This is because the amygdalae are necessary not just for experiencing emotions like fear, but also for modeling the behavior of others and quickly recognizing the presence of these emotions in others. Therefore, problems in the amygdalae have been associated with anxiety, autism, depression, narcolepsy, post-traumatic stress disorder, phobias, and schizophrenia.

The size of an animal’s amygdalae is directly correlated to how aggressively and emotionally that animal will behave. Humans have the largest amygdalae in the animal kingdom, which is why humans are the only animals on the planet who cry.

Interestingly, in humans, the amygdalae is the single brain structure that varies most widely between the sexes, with the males having much larger amygdalae than females. However, when males are castrated, the size of their amygdalae shrinks by 30%. (Don’t try this at home.)

FRONTAL LOBES

The frontal lobes control such functions as our attention span, our ability to focus, to make decisions, organize ourselves, to control our impulses, and so on. Commonly, these functions are referred to as “Executive Functions.” The frontal lobes in human beings comprise 30% of the brain, which is the largest set of frontal lobes in the animal kingdom.

This is the part of the brain that actually makes us human.

(This is also why humans have such steep foreheads, which is why we are able to wear hats. You never see a dog or a cat wearing a hat that their owner hasn’t attached to their heads in some way. Their frontal lobes aren’t big enough.)

The left frontal lobe in particular has a very important job in relation to the amygdalae. While the amygdalae acts as the brain’s “Emotional Trigger,” the left frontal lobe acts as the brain’s “Neural-Thermostat” for our emotions. One of the left frontal lobe’s primary jobs is to keep our emotions in check, so it “battles” with the amygdalae all the time. Humans typically experience approximately 150,000 emotions each year, or approximately 27 emotions every waking hour … all of which must be controlled by the frontal lobes. That is one very important reason why you want to have good healthy blood flow to your frontal lobes:

Actually, the left frontal lobe does a pretty good job of keeping the amygdalae in check most of the time. The left frontal lobe is usually able to control all but the strongest of our emotions. 9

This of it this way:

**What the amygdalae GENERATES … the left frontal lobe REGulates**

Although you need your frontal lobes in order to think, reason, exercise good judgment and make good decisions, you **do not** need your frontal lobes to live. Your body knows that. Your body knows that your frontal lobes are expendable … as far as your survival is concerned. Therefore, when your body needs extra blood, such as when you go into “fight or flight” mode, one of the first places your body takes the extra blood from are your frontal lobes … as well as from our stomachs. (That is why we sometimes faint or throw up when we get nervous. There isn’t any blood left in your stomach to digest your food.)

In short, when we feel we are under attack, we experience the same physical “fight or flight” response that Fred Flintstone did 5,000 to 10,000 years ago. Here is what happens:

**FIGHT or FLIGHT**

What happens in your body?

1. **We hear, see, taste, smell or feel a “danger” or stimulus.** The brain instantly sends an alarm down our “Vagus Nerve” which goes directly to our adrenal glands, located right above our kidneys. We then get that “tightening knot” in our “gut.”

2. **The adrenal glands release epinephrine (adrenaline) into our body.** This release of adrenaline will then speed up our heart rate. When our heart rate hits approximately 145 beats per minute, we go into full fight or flight.

3. **The blood in the body is re-routed to the lungs, arms and legs, leaving the frontal lobes deprived of blood and the face “flushed.”**

---

9 “The Emotional Intelligence Quick Book,” by Travis Bradberry and Jean Greaves, pages 120-121

© 2010 G. Scott Warrick
• As illustrated in the above diagram, a stimulus of some kind enters the brain, either through the skin, eyes, ears, nose, or mouth. Your brain senses a danger from one of these senses, so the “fear” response is initiated. “Fear” is the primary and strongest emotion experienced by humans. This emotion of fear initiates our fight or flight response.

• One set of adrenal glands are located in your brain, or more specifically, your adrenal cortex. Adrenaline, or norepinephrine, is released directly into the amygdalae at lightning speed, possibly as fast as 1/33,000ths of a second. 10

• At the same time, since your body thinks it is under attack, your vagus nerve is immediately activated. Your vagus nerve acts like a kind of “express elevator” that carries sensory messages of impending danger directly to and from the brain and your adrenal glands, or our “adrenal medulla,” which are located just above the kidneys.

• The adrenaline then circulates throughout the rest of the body. This is why you get that tight feeling in your gut when you get nervous, such as when you see a “Troll” coming towards you, or on Sunday evening when you think about going back into that “hell hole” on Monday morning. This is your body going into fight or flight. It senses danger and it is trying to get you ready for battle. This adrenaline speeds up your heart rate and prompts the release of cortisol throughout your body … which thickens your blood. Now you know why we have 20% more heart attacks on Monday morning than any other day of the week. (Outside the brain this adrenaline hormone is “epinephrine.” Inside the brain it is “norepinephrine.”)

• Once enough epinephrine has been released into the body and your heart rate reaches about 145 beats per minute, your body will go into full fight or flight. What does that mean? Your body’s “alarm” will be “sounded” and your amygdalae will commandeer your brain. Your blood will be automatically “re-routed” to the large skeletal muscles in your legs, arms, and lungs, preparing your body to either do “battle” or “retreat.” 11

• When this distress continues to increase and our heart rate hits approximately 175, most of us become temporarily “autistic.” This is when we tend to have our “out of body experiences.” Everything slows down so we can give whatever is threatening us our undivided attention. Time seems to stand still. Everything becomes “surreal.” This reaction is designed to protect us whenever Fred was attacked by a saber tooth tiger. Its purpose is to focus our attention on nothing else but the tiger. 12

As the “epinephrine” builds in our body and “norepinephrine” builds in our amygdalae, then…

**VIOLA! FIGHT OR FLIGHT!**

Think about it. You just automatically re-routed the blood in your body to the large skeletal muscles in your arms, legs and lungs, but your body did not make any more blood.

So … where did the blood leave?

That’s right: THE BRAIN! You are brain impaired!

The blood just left your frontal lobes. Again, it is important to understand that your body does not need your frontal lobes to live. You need your frontal lobes to **think** … but as far as just plain old survival is concerned, they are expendable. So, when you go into “fight or flight,” the body treats your frontal lobes like an extra reservoir of blood.

This is also why our faces “flush” when we become angry. The blood leaves our face to go where the body feels it is needed … which leaves us with a “cold” sensation in our face. This is where we get the feeling that our “blood runs cold.”

If your frontal lobes lack blood, then they will not function properly, which means you lose much of your ability to reason and make good decisions. We then go on “automatic” and “reactive” emotional functioning, which is why we revert to our primal instincts so quickly. This lack of blood in our frontal lobes is why we sometimes kick our cars when we get angry:

**We’re nuts!**

How quickly can you jump into a state of fight or flight? Within a matter of seconds.

Your heart can speed up anywhere from **10 to 30 beats per heart beat!** In other words, we can go into full fight or flight mode and become emotionally hijacked within a matter of seconds.

To illustrate this effect, below are two nuclear SPECT Blood Flow scans of the underside of a human brain. The previous scans I showed you were Activity Scans, which revealed the heat generated from our thoughts, or our feelings. These scans are different. These scans reveal the amount of blood flow we have going to the various parts of our brain. As everyone knows, blood flow to the brain is absolutely critical if we are going to be able to think clearly and function as human beings. That is one of the primary problems with a stroke: A lack of blood flow to the brain.

______________________________

Just like in the Activity Scans I showed you earlier, you will see the forehead at the top of the scan and the base of the brain is at the bottom. This is as if you were lying down in bed with the back of your head resting on the pillow and we are looking up through the bottom of your chin into the underside of your brain.

The scan on the left shows how a healthy normal brain should look. Notice how nice and “full” this scan appears. (Don’t pay any attention to the coloring. That doesn’t mean anything.) There are not any “holes” in this brain, which means it is getting nice even blood flow. Again, if you do not have a nice steady flow of blood into the brain, it will not work properly.

However, the brain scan on the right shows a very different image. In this scan, you will see a person with Attention Deficit Disorder whose brain has become “agitated” and so it does not have the proper amount of blood flow to his frontal lobes … which is what we experience when we go into a “fight or flight” response, to one degree or another.

Now, it is important to understand that these are not really “holes” in the person’s frontal lobes. When there is reduced blood flow to certain areas of the brain, the brain only appears as if it has “holes” in it. What has happened here is that the blood has been “re-routed” to our lungs and large skeletal muscles. As a result, the blood flow to the frontal lobes has been greatly diminished, so this person’s ability to reason and make good decisions is greatly impaired.

Remember: You don’t need your frontal lobes to live … You need them to think!

When this happens to us, our emotions overtake our logic. The amygdalae can much more easily take control of our behavior because it is capable of triggering our emotions long before the frontal lobes even know what is happening. In other words, when we lose our temper and go into a blind rage, we have been “Emotionally Hijacked.” All of this can happen to us humans within a matter of seconds.

In short, this person is … to one degree or another, temporarily “nuts.” In this state, people attack each other, they kick their cars, they punch walls and so on.
Now you know why Kramer did what he did on stage when he had his emotional outburst and directed all of those racial insults against some blacks in his audience one evening. As his anger built and built and built until his heart rate eventually hit 145, which sent his body into fight or flight mode. Automatically, the blood in his body was rerouted from his frontal lobes to his lungs and to the large skeletal muscles in his arms and legs. As a result, the blood rushed from his frontal lobes, so his “Neural Thermostat” turned off and his amygdalae took over, which is what we call an emotional hijacking. 14

In other words, there was nothing standing between his emotions and his mouth.

Michael Richards
(“Kramer” from “Seinfeld”)

In 2006, after being heckled by some African American audience members, Richards went on a three minute tirade during his comedy routine in which he used numerous racial slurs.

Also, when you drink alcohol, since your body knows your frontal lobes are the most expendable part of your brain, they are the first to get “soaked.” Now you know why Mel Gibson went on his anti-Semitic rant against the arresting officer when he was pulled over for drunk driving. Since Mel was drunk, there was nothing standing between his amygdalae (emotions) and his mouth.

Mel Gibson

In 2006, Mel Gibson was pulled over from drunk driving and went on a tirade against the arresting officer, screaming such anti-Semitic insults as:

“The Jews are responsible for all the wars in the world!”

Therefore, when we verbally “attack” someone, it is absolutely ridiculous to think that this person will be able to process and fully understand what we are saying to them. They will become angry. Their heart rate will rise, which will then begin to put them into a fight or flight mode. The blood will then drain from their frontal lobes, so they will not cognitively process what you are saying to them. They simply will not hear it. Consequently, the communication breaks down, tensions will rise, the amygdalae will take over and bad things usually happen.

It is also important to understand that we humans have only one emotional system. We don’t have an emotional system for when someone physically attacks us, like when someone kicks us in the shin, and a different emotional system for when someone insults us. We have one. That is it.

Therefore, it is so obvious that it evades us: Since we only have one emotional system, our brain does not recognize the difference between someone punching us in the face and when they insult us. Our fight or flight response is triggered in both instances. As a result, every time you insult someone, demean them or are intolerant of their opinions, you are really punching them in the gut.

This phenomenon is referred to as “endangerment.” Our fight or flight response does not distinguish between a physical or verbal assault. Instead, it only reacts to danger. So, whenever we feel “endangered,” our flight or flight response kicks into gear. 15

We don’t think of verbal attacks in this manner … but we should.

THE SPEED OF THOUGHT

Now that you understand how blood flow and adrenaline works in your body when you go into a state of fight or flight, you should also understand why your emotions are so much faster than your logic.

FRONTAL LOBES: LOGIC

- Further from Thalamus
- Loses Blood Supply in “Fight or Flight”

AMYGDALAE: EMOTIONS

- Closer to the Thalamus
- Retains Blood Supply in “Fight or Flight”

Location … Location … Location … and Spindle Cells

One of the main reasons our emotional brain is so much faster than our logical brain is because of where they are each located in the brain. As you can see by the diagram above, the amygdalae are positioned very close to the brain’s thalamus, or its “neural junction box,” near the center of the brain. The frontal lobes, on the other hand, are positioned about as far away from the thalamus as they can get. As a result, an impulse can get into the amygdalae in as fast as 1/33,000ths of a second from the thalamus while it takes at least twice that long for the same impulse to reach the frontal lobes. 16

Additionally, scientists have recently discovered an entirely new class of neuron, the “spindle cell.” Since the speed at which a neuron can transmit a signal to other cells increases with its length, the spindle cell’s gargantuan dimensions ensure that it is faster than any other cell in the body. Spindle cells are approximately four times faster than any other type of neuron because they are approximately four times longer. 17

Think of the comparison between regular neurons and spindle cells like runners in a mile relay race in which the runners do not get tired and all of the runners are of equal speed. One runner racing one full mile will be able to easily out distance four runners racing for a quarter mile each who have to take time to hand off a baton three times. The team with the four runners will lose this race every time because the individual runners will have to slow down to transfer the baton to one another. However, the single runner does not have to slow down transfer a baton to anyone.

That is how spindle cells work. Because spindle cells are longer than the other neurons, they are not slowed down by having to transfer its message as often as the shorter cells do.

Common Brain Neuron  Spindle Cell

Thanks largely to these spindle cells, we are able to make quick and even instantaneous decisions before our logical brain, our frontal lobes, even knows what is happening. Actually, neuroscientists now suspect that spindle cells are the secret behind the speed of our “social intuition.” They put the “snap” in our snap judgments.  

Spindle cells are particularly thick and plentiful in the areas around the amygdalae, which also helps to explain the speed at which our emotions surge.

Also, the particular chemicals transmitted by spindle cells only add to their central role in our ability to establish and maintain our social connections. Spindle cells are rich in receptors for serotonin, dopamine, and vasopressin. These brain chemicals play key roles in bonding with others, in love, in our moods good and bad, and in pleasure.

Neuroscientists suspect that spindle cells are crucial to what makes our species unique. We humans have about a thousand times more spindle cells than any other animal on the planet. Apes, for instance, have but a few hundred. No other mammal on the planet has spindle cells. Consequently, neuroscientists believe that spindle cells play a tremendous role in explaining why some people and primates are more socially aware and sensitive than others.

---

**The Power of Emotions: Blood Flow**

If you recall, when we go into fight or flight, our frontal lobes drain of blood. In fact, to one degree or another, this can happen to us several times a day. So, our frontal lobes, or our logic, will frequently shut down.

Our emotional system, on the other hand, never drains of blood. Why? Because it is located right next to our brain stem. If you lose the blood in your brain stem, you die. As a result, our emotions are always turned on.

---

21 “Social Intelligence: The Revolutionary New Science of Human Relationships” by Daniel Goleman, page 66, footnote 8: While most all the hundreds of types of neurons in the human brain are found in other mammals, spindle cells are a rare exception. We share them only with our closest cousins, the apes. Orangutans, a distant relative, have a few hundred; our closer genetic relatives the gorillas, chimps, and bonobos have far more. And we humans have the most, close to a hundred thousand of them.
Therefore, another important aspect to consider in understanding why our emotions are so much stronger than our logic is because although our emotional brain never sleeps ... our logical brain takes frequent naps.

If you look at the following diagrams, you will see the different paths our stimuli take when they travel the ‘‘High Road’’ and the ‘‘Low Road’’ in our brains.

**‘‘High Road’’ Stimulus Route: Approximately 1/16,000th of a second**

1. **Stimulus enters the brain and goes to the brain’s ‘‘junction box,’’ the Thalamus.**

2. **Stimulus is transferred from the Thalamus to the Frontal Lobes.**

3. **Stimulus is finally sent to the Amygdalae from the Frontal Lobes.**

4. **Stimulus exits the brain and sends the message to the rest of the body through the brain stem to act, such as to move your arms, feet, run, etc.**

- Under ordinary circumstances, a stimulus of some kind enters the brain, either through the skin, eyes, ears, nose, or mouth, as previously described.

- When we are not under the influence of a ‘‘fight or flight’’ response, the stimulus enters the brain’s thalamus, which acts as the brain’s ‘‘neural-junction box’’ at the center of the brain. The thalamus then directs this stimulus to the frontal lobes for processing, where the stimulus is interpreted and then sent back to the limbic system and the amygdalae. This route is referred to as the ‘‘High Road,‘’ which takes the stimulus twice as long to reach your frontal lobes as your emotional system. 23
• Although the “High Road” is not very fast, it is very accurate because the frontal lobes are being actively engaged … which is the brain’s logical center. 24

**HOWEVER …**

“**Low Road**” Stimulus Route: Approximately 1/33,000th of a second

1. Stimulus enters the brain and goes to the Thalamus.
2. Stimulus is transferred directly from the Thalamus to the Amygdalae.
3. Stimulus exits the brain and sends the message to the rest of the body through the brain stem to act, such as to move your arms, feet, run, etc.

• … when we are subjected to high levels of distress, the “fight or flight” response is initiated. As a result, an emergency **back door** route is used to alert the brain of the imposing danger. When we are under a fight or flight response, or a “fear response,” the stimulus is still sent to the brain through the thalamus, but rather than going to the frontal lobes first, or our logical center which is much slower, the stimulus goes directly to the amygdalae, our emotional center, through a “back door” entrance. Since the amygdalae are located very close to the thalamus, our emotional center can receive this message of impending danger possibly as fast as 1/33,000ths of a second by using this “back door entrance.” Since our frontal lobes, the center of our reasoning and the “Neurological Thermometer” for our emotions, are located much further away from the thalamus than are the amygdalae, the frontal lobes are at a huge disadvantage. It can take up to twice as long for this message of impending danger to reach the frontal lobes … which is **twice as long** as it took this message to reach the amygdalae through this “back door” entrance. 25


You can also see this entire process occur through computer imaging:

The stimulus enters the brain, goes directly to the thalamus and then goes directly into the amygdalae.

Stimulus then leaves the brain and travels down the vagas nerve to stimulate the adrenal glands.

The stimulus then travels around the thalamus towards the fontal lobes for “logical” processing.
The stimulus travels to the frontal lobe region of the brain.

The stimulus is finally delivered to the prefrontal lobes of the brain, or our “Executive Center.”

Again, we have all experienced this phenomenon when we stand outside in the summer and get bitten by a mosquito. On many occasions, we turn and swat the mosquito long before we cognitively know what is happening. This is Fred Flintstone’s primal brain looking out for us. Our amygdalae, or our emotional and subconscious center, can react as quickly as 1/33,000ths of a second to protect us from harm, while our slower “dumb” brothers, our frontal lobes and our logical brain, are twice as slow.

This phenomenon is also why we get startled. We enter a darkened room, we see something that move …so we instantly go onto full alert. Our body tenses … our pulse races, our heart feels like it I going to jump out of our chest, we gasp a deep breath of air, only to discover that it was Lucy the cat.

Why were we afraid of Lucy the cat? Because Fred’s emotional brain kicked in to save us before our logical frontal lobes could kick in and figure out that it was only Lucy and not a saber tooth tiger. It took that long for our IQ to catch up.
DECISION MAKING IS EMOTIONAL ... **NOT LOGICAL**

Antonio Damasio, a behavioral neurologist, neuroscientist and Director of the Brain and Creativity Institute at the University of Southern California, once had a patient named “Elliot.” Elliot had at one time been a very successful in both his personal and professional lives. He was happily married and held a high ranking position in his law firm. 26

Unfortunately, Elliot developed a tumor about the size of a small orange right behind his forehead. Luckily, he was able to have the tumor surgically removed. 27

However, in order to remove the tumor, due to its location, his surgeons also had to sever the connections between his frontal lobes and his amygdalae. As result, Elliot’s personality changed drastically. 28

After his surgery, Elliot seemed to lose his emotions. He no longer experienced anger, regret, sadness, frustration or any of the other emotions that we humans consistently display. He did not care when he was reprimanded at work. He could also no longer make decisions. In the end, he lost his prestigious position at the law firm, as well as his wife. 29

Elliot then went to see Dr. Antonio Damasio. By the time he saw Dr. Damasio, Elliot was unemployed, broke, divorced and living in a spare room at his brother’s home. 30

Dr. Damasio listened to Elliot describe all of the tragedies that had befallen him in the last few years. Elliot described all of these horrible events in great detail, but without exhibiting any emotion. Actually, just hearing Elliot tell his story upset Dr. Damasio more than it seemed to upset Elliot. 31

Interestingly, Elliot had not seemed to have lost any of his cognitive ability after his surgery. Logically, his reasoning remained in tact. He just could not “feel” what he was experiencing in life. 32

Through extensive testing, it was discovered that Elliot was as “smart” as he had ever been. However, he wasted a tremendous amount of time getting lost in minor details. He could not establish any priorities. As a result, he was fired from a succession of legal positions. Still, Elliot’s testing revealed that he had not suffered any damage at all to his memory, his logic, his

attention span or any other cognitive ability. He was simply oblivious to how he felt about any of his experiences, so much that his own life tragedy did not bring him any pain. 33

In other words, Elliot had become “computer like” in how he dealt with the world. He was able to walk through the decision making process of everything he encountered, but he was not able to assign any level of value to any of the possibilities he was reciting. Every option he considered as he tried to make decisions were of equal value to him. He felt “neutral” about everything. 34

For instance, when Dr. Damasio asked Elliot when he would like to schedule his next appointment, Elliot could reason through all of the pros and cons of the various dates and times that were available … but he could not make a final decision. Although he could reason through all of the various options, Elliot could not choose between these various simple options because he could not differentiate their value from one another. Elliot had lost the ability to understand how he felt about any of these choices. Since he did not have any awareness of how he felt about any of these options, he did not have a preference for any of them. He had lost his ability to decide. 35

Elliot is only one example of how humans make decisions. We use our logical brain to reason our way through various options … but our emotional brain makes the final decision. 36

**Your Neural Thermostat: Your Frontal Lobes**

**The Fascinating Case of Phineas Gage**

By now, you should clearly see the folly of thinking that your brain is separate from your personality. Of course, this begs the question, “What if you injured your brain somehow?” What if you damaged your left frontal lobe, which is your primary “Neural Thermostat” that keeps your emotions (amygdalae) under control? Would you become another person? Would you still be you?

If you damage your brain, will that affect your personality? Can “anger” be a physical problem in your brain? How about “hypersensitivity”? What about “bigotry,” which is a true “self-centered, egotistical” issue?

Absolutely! Consider the plight of Phineas Gage.

In 1848, Phineas Gage was a 26 year old construction foreman for the railroad in Vermont. At this point in his life, Gage was already great a success story. He was energetic, athletic, intelligent and well liked by his crew. His superiors were also very impressed with his abilities, especially with his skill in handling explosives. One of his superiors said Gage was “the most efficient and capable man” the company employed.

On September 13, 1848, Gage’s crew was clearing the ground so the Rutland and Burlington Railroad could lay its new tracks. In order to do this, Gage needed to detonate several large rocks that were in the way. The process for exploding these rocks was rather simple:

- Gage first drilled a hole into the middle of the rock.
- He would then fill the hole with explosive powder. However, the explosive powder needed to be packed down tight into the hole.
- So, the next step in the process was to fill the hole the rest of the way with sand, thus placing the sand on top of the explosive powder. This sand would act as a buffer between explosive powder and the iron tamping rod that was used to pack the powder into the hole tight. The sole purpose of the sand was to keep the sparks that would be generated by the tamping iron striking the rock from hitting the explosive powder, which would cause the powder to detonate.

Gage was very skilled and experienced in this process. In fact, he had his own iron tamping rod custom made to his personal specifications. Gage’s tamping rod was 3 feet 7 inches long and weighed 13 1/2 pounds. At the top, it was 1 1/4 inches in diameter and then tapered down to a diameter of 1/4 inch at the other end.

On September 14, 1848 at about 4:30 pm, Gage drilled a hole into one of the rocks that needed to be cleared and filled it with powder. He signaled to the man helping him that it was time to put in the sand. However, at that point, someone called to Gage and he must have become distracted, so he did not notice that his assistant had not yet added the sand to the hole. Gage then put his iron tamping rod into the hole and began pounding directly onto the explosive powder. An instant later, the sparks from the tamping iron hitting the rock caught fire in the hole and the charge of explosive powder blew up in Gage’s face. The explosion drove Gage’s three foot seven inch long iron rod into his left cheekbone, through the left part of his skull and out through the top of his head. The force of the explosion was so great that the tamping rod traveled all the way through Gage’s head, flew through the air and finally landed nearly 300 feet away. (see following illustrations and photo.)
Incredibly, Gage survived the accident. Witnesses reported that while he was thrown to the ground and experienced a few convulsions, he was alert and rational within just a few minutes after the accident. His men picked him up and took him by ox cart to a nearby hotel, where they summoned one of the town's physicians, Dr. John Harlow.

Gage was still conscious at the time of the exam and was even able to answer questions about his accident.

Although it appeared as if he had fully recovered from his injuries after just a few months, something was quite different about Gage. According to Gage's doctor, Dr. Harlow, where Gage
had always been hard-working, responsible, and popular with the men in his charge, his personality seemed to have been radically altered after the accident.

His doctor reported that:

Gage was fitful, irreverent, indulging at times in the grossest profanity (which was not previously his custom), manifesting but little deference for his fellows, impatient of restraint or advice when it conflicts with his desires, at times pertinacious obstinate, yet capricious and vacillating, devising many plans of future operations, which are no sooner arranged than they are abandoned in turn for others appearing more feasible. A child in his intellectual capacity and manifestations, he has the animal passions of a strong man. Previous to his injury, although untrained in the schools, he possessed a well-balanced mind, and was looked upon by those who knew him as a shrewd, smart businessman, very energetic and persistent in executing all his plans of operation. In this regard his mind was radically changed, so decidedly that his friends and acquaintances said he was ‘no longer Gage.’

By the middle of 1849, Phineas felt well enough to return to work. However, because his personality had changed so much, the contractors who had employed him would not give him his old job back.

In about 1850, he spent about a year as a sideshow attraction and at P.T. Barnum’s New York museum, putting his injury and his infamous tamping iron on display to anybody willing to pay for the show. He later worked as an assistant in New Hampshire and, for nearly seven years, as a coach driver in Chile. When his health started to fail in 1859, he went to San Francisco, where he lived with his mother and worked on his parent’s farm until his death in 1860 at the age of 40.

So, if you lose the functionality of your left frontal lobe, is this what happens to you? Well, since we know that the left frontal lobe acts as our primary “Neural-Thermostat,” then the answer is most likely “yes.”

Consider the situation of those afflicted with mental disorders that affect the left frontal lobe region, such as with ADD.
ADD

REST       CONCENTRATION       CONCENTRATION WITH ADDERALL

Base of Head

In the nuclear brains scans shown above, you can see the blood flow of someone who has ADD, or Attention Deficit Disorder. In the far left scan, you can see “holes” in the frontal lobes. This is ADD, which in this person’s case is a lack of blood flow to the frontal lobes. As a result, the body’s Neural Thermostat is impaired, so people with this type of ADD have trouble concentrating, controlling impulses, their emotions, and so on.

Of course, what we usually tell these people when they lose their focus is, “Concentrate! Just focus on what you are doing here!” At this point, we might even smack them in the head and say, “Snap out of it!” … thinking that will somehow help the situation.

When yelling and smacking the person doesn’t work, which it never will with true ADD, we then pull the trump card and say, “You just don’t want to focus! You don’t have any trouble focusing on those video games and television!”

If you look at the brain scan in the center, you will see someone with ADD that is trying to concentrate “harder.” As you can see, the ADD, or the lack of blood flow to the frontal lobes, actually gets worse when these people try to concentrate harder and focus. So, simply “trying” to focus on an issue actually just makes the condition worse.

But then, why can someone with ADD focus on a computer screen for hours on end or watch movies all day?

_Because ADD should really stand for “Adrenaline Deficit Disorder.”_
People with this type of ADD simply do not have enough adrenaline flowing to the essential parts of their brain, which is often the frontal lobes, to maintain a proper amount of blood flow. There are actually eight different types of ADD. As a result, it is very difficult to diagnose exactly which type of ADD someone has because psychiatrists typically “guess.” Therefore, properly treating someone’s ADD can be very difficult, which is all the more reason for psychiatrists consider using nuclear SPECT scans in their clinical practice. When someone with ADD concentrates on some task that does not really interest them, this increased focus actually restricts the blood flow even further. In other words, it makes the ADD worse.

So, why can people with ADD focus on things they enjoy, such as video games, movies and so on? Because these exciting and enjoyable activities stimulate the adrenaline in their brains. That is one reason why “slasher” movies are so popular. The “rush of excitement” the person with ADD experiences in these movies increases the flow of adrenaline to the frontal lobes … so they enjoy the “high” they get from what they are doing. This is also true with many video games. (This is also why you don’t want your kids playing video games and engaging in exciting video games before they do their homework. They will use up their adrenaline reserves for their frontal lobes … and you really need your frontal lobes in order to do your homework.)

However, if you look at the third brain scan, the one of the far right, you can see the affect “Adderall” had on this person. The Adderall increased the amount of adrenaline flowing into the frontal lobes, so the amount of blood flowing into the frontal lobes increases. On Adderall, this person can focus better, he can control his impulses better, and so on.

Therefore, just like with Phineas Gage, we all need to make sure we have a healthy brain. If you have a mental impairment, as so many people do, then the problem is clinical. That means you will have to “repair” your brain before you will be able to be who you really are … something Phineas was not able to do.

**SELF-CONTROL & “THE MARSHMALLOW TEST”**

How critical is your brain’s health and your level of Emotional Intelligence? You cannot separate the two.

“Self-control” is one of the most fundamental skills in Emotional Intelligence. Self-control allows us to resist our impulses and remain focused on our goals. It allows us to avoid the instant gratification of telling someone “off,” or stealing something because “you want it,” or going out drinking rather than staying home and studying, and so on. If you do not have good blood flow to your brain, the chances you are going to have good self-control are about slim to none.
Therefore, you cannot separate neurology from Emotional Intelligence.

Consider the results of the famous “Marshmallow Test.”

In the 1960s at a preschool on the Stanford University campus involving mostly the children of Stanford faculty, graduate students, and other employees, psychologist Walter Mischel conducted a famous study that is today referred to as the “Marshmallow Test.”

Mischel brought in a group of four year old children and gave them each a marshmallow. He told the children that he was going to leave the room for 15 to 20 minutes, and if they were able to wait and not eat the marshmallow until he returned, then he would reward them with another marshmallow. That would give them a total of two marshmallows to eat. However, if they ate the one marshmallow they were given before he returned, then they would not get the additional marshmallow.

Mischel then left the room and observed the children’s behavior.

Not eating the marshmallow proved to be very difficult for most of the children. In order to take their minds off the tasty little treat, some of the children covered their eyes so they wouldn’t have to look at the marshmallow sitting in front of them. Others hid their faces in their arms. Others talked to themselves, sang and played games with their hands and feet in an attempt to distract themselves. Others just tried to go to sleep.

Some of the four year olds were able to wait until Mischel returned to the room 15 to 20 minutes later. So, they each received an additional marshmallow as a reward. However, some of the other children, the more impulsive ones, grabbed the one marshmallow they were given and ate it within seconds after Mischel left the room.

However, the interesting part of the study occurred years later as these “subjects” were about to graduate from high school.

The difference in the level of emotional and social maturity between the preschoolers who ate their marshmallows immediately and those who were able to wait 15 to 20 minutes until the researcher returned was astonishing. Those who were able to delay their impulse to eat the marshmallow as preschoolers were much more socially competent as teenagers, they were more personally effective, more self-assertive and much better able to cope with the everyday frustrations of life. They were also less likely to fall apart, freeze or become disorganized under stress. They were much more likely to embrace their challenges and pursue solutions to their problems, rather than just giving up when they encountered difficulties. They were more self-

reliant and confident, trustworthy and dependable. More than a dozen years later, these former preschoolers were still able to delay their instant gratification and pursue their longer term goals.

However, those children who were not able to control their impulses and ate their marshmallow before the researcher returned, which was about one-third of the group, exhibited many of the opposite personality traits. As teenagers, these more impulsive children were more likely to shy away from social environments, they were more “stubborn” and “indecisive” and they were more easily upset when things did not go their way. Many of these teens actually became “immobilized” when they were under stress. They tended to think of themselves as “bad” or “unworthy.” They were more distrustful towards others and even resentful if they felt they were wronged in some way, so they tended to overreact and have short tempers. They were more apt to be jealous and envious of their peers, so they would often start fights and arguments with others out of frustration.

In short, years later, these “subjects” were still unable to control their impulses.

The ability to control one’s self affects every aspect of our lives. Can we refrain from eating a donut and stay on a diet? Can we stay home and study in order to graduate from college? Can we turn down lucrative job offers in order to secure a better one later?

However, what perhaps astonished researchers most were the stark differences between how these two groups of preschoolers performed academically. According to the parents of the children who were able to control their impulses and not eat the marshmallow right away, these children performed much better in school than their counterparts. They were better at putting their ideas into words, they could reason their way through various situations rather than panicking, they were better able to focus on what they were doing, to make plans for the future and to then stick to those plans.

These students also enjoyed learning new things, so much that they scored much higher on their SAT tests.

For instance, the children who ate their marshmallows right away had average verbal score of 524 and an average math score of 528. However, the children who waited to eat their marshmallows had average verbal SAT scores of 610 and an average score of 652 for math. 40

Therefore, one’s ability to control their impulses is a much better predictor of one’s scholastic success than IQ. Fortunately, even though it is extremely difficult, if not impossible, for an adult to raise their IQ, raising one’s EQ, or Emotional Quotient, is very probable.

---

40 “Social Intelligence: The Revolutionary New Science of Human Relationships” by Daniel Goleman, page 82, footnote 8: SAT scores of impulsive and self-controlled children: The analysis of SAT data was done by Phil Peake, a psychologist at Smith College
Of course, with the knowledge we have today of the neurology of emotions, as well as the treatments we have for ADD, it makes you wonder if life would have turned out differently for the more impulsive children if they had the advantage of today’s medical treatments.

How FAST Can You Be Emotionally Hijacked?

AROUSAL v. EMOTIONAL HIJACKING

Have you ever noticed that many of us are actually energized and perform much better when we are placed under mild stress? However, when this level of stress continues to increase, which means the adrenaline in our bodies continues to rise, our good thought processes suffer, so we lose perspective and we become emotionally hijacked. So, is stress a good thing or not? Is fight or flight a good thing or not? Well, it depends.

In times of extreme heightened stress, many people have described their experiences as being simply “surreal.” Time stops. Senses become very focused on the immediate danger at hand, so much that police officers have even stated that they can actually slow down time and “watch” their bullets hit someone. This, of course, is impossible. 41

Still, interviews with numerous police officers who have had to fire their weapons in the line of duty tell this same story again, and again and again. They gain extreme visual clarity, even tunnel vision, so they are unable to focus on anything else. The external noise in their surroundings diminishes. They feel like time is actually slowing down ... if not standing still. However, this is actually how the human body is designed to react to extreme stress. When we are faced with what we perceive to be a life-threatening situation, our body drastically limits the amount of information sent to the brain in order to intensify our focus on the immediate danger. 42

According to Lt. Col. Dave Grossman, author of “On Killing,” a book that examines the psychological affects of killing another human being, says that the optimal state of “arousal,” which is the psychological state at which our stress level actually improves our performance, occurs when our heart rate rises to somewhere between 115 and 145 beats per minute. Grossman uses basketball superstar Larry Bird as an example of this heightened state of

41 “Blink,” by Malcolm Gladwell, pages 224-228.
focus. Byrd used to say that at critical moments in the game, the court would go quiet and the players would seem to be moving in slow motion. When this happened, Byrd was clearly operating at an “optimal range of arousal,” which meant his heart rate would rise and settle somewhere between the 115 and 145 beats per minute range. However, very few basketball players were able to see the court as clearly as Larry Bird did, and that’s because very few people are able to play in that optimal range. 43

Unfortunately, Grossman says that most of us get too aroused when we are placed under pressure and pass a certain point. “After 145,” Grossman says, “bad things begin to happen. Complex motor skills start to break down. At 175, we begin to see an absolute breakdown of cognitive processing. The forebrain shuts down, and the mid-brain – the part of your brain that is the same as your dog’s (all mammals have that part of the brain) – reaches up and hijacks the forebrain. Have you ever tried to have a discussion with an angry or frightened human being? You can’t do it. You might as well try to argue with your dog.” 44

In sum, when our heart rate exceeds the 145 beats per minute range, our blood will rush into our lungs and the large skeletal muscles in our arms and legs. We become emotionally hijacked because our brain will become almost exclusively focused on the immediately perceived threat, so our behavior becomes extremely specialized. According to Grossman, this is precisely the reason why so many police departments in recent years have banned high-speed chases. Police departments are not limiting these high speed chases solely because of the danger of hitting an innocent bystander, but these chases are being limited also largely because of what happens after the chase ends. Pursuing a suspect in a high speed chase is exactly the kind of activity that pushes police officers into this dangerously high state of arousal. 45

“The L.A. riot was started by what cops did to Rodney King at the end of the high-speed chase,” says James Fyfe, head of training for the NYPD, who has testified in many police brutality cases. “The Liberty City riot in Miami in 1980 was started by what the cops did at the end of a chase. They beat a guy to death. In 1986, they had another riot in Miami based on what cops did at the end of the chase. Three of the major race riots in this country over the past quarter century have been caused by what cops did at the end of a chase.” 46

“When you get going at high speeds, especially through residential neighborhoods, that’s scary,” says Bob Martin, a former high-ranking LAPD officer. “Even if it is only fifty miles per hour. Your adrenaline and heart start pumping like crazy. It’s almost like a runner’s high. It’s a very euphoric kind of thing. You lose perspective. You get wrapped up in the chase. There’s that old saying – ‘a dog in the hunt doesn’t stop to scratch its fleas.’ If you’ve ever listened to a tape of an officer broadcasting in the midst of pursuit, you can hear it in the voice. They almost yell. For new officers, there’s almost hysteria. I remember my

first pursuit. I was only a couple of months out of the academy. It was through a residential neighborhood. A couple of times we even went airborne. Finally we captured him. I went back to the car to radio in and say we were okay, and I couldn’t even pick up the radio, I was shaking so badly.” Martin says that the King beating was precisely what one would expect when two parties – both with soaring heartbeats and predatory cardiovascular reactions – encounter each other after a chase. “At a key point, Stacey Koon,” one of the senior officers at the scene of Rodney King’s arrest, “told the officers to back off,” Martin says. “But they ignored him. Why? Because they didn’t hear him. They had shut down.” 47

According to Dr. Keith Payne, Assistant Professor of Psychology at the University of North Carolina, we become temporarily autistic in such situations. In short, we simply shut down and focus only the immediate task at hand ... blocking out all other external stimuli. Perspective abandons us, so we become very dangerous individuals. 48

Spotting an emotional hijacking is easy. The person usually says something like, “I just don’t know what came over me.” When this happens, our amygdalae have won. At that point, our amygdalae are controlling our actions and not our frontal lobes ... and bad things usually happen.

Again, our bodies do not do this to harm us. This type of reaction was designed to keep us alive. If Fred Flintstone saw a saber tooth tiger running towards him, it was probably not a good idea to focus on anything other than the saber tooth tiger. So, our bodies are designed to catapult us into a state of fight or flight within in just a matter of seconds. Since your heart rate can speed up anywhere from 10 to 30 beats per heart beat, most humans can hit 145 or 175 beats per minute before they know it. 49 50

This was a great advantage for Fred when he was running from prey. Today, it tends to harm us more than help us.

An exception an emotional hijacking as being a bad thing is uncontrollable laughter. Since the amygdalae are the trigger point for our emotions, and since laughter is one of our strongest emotions, the source of our laughter comes from this region of the brain as well. Remember: The amygdalae control all of our emotions … good and bad. Uncontrollable laughter is a very good type of emotional hijacking, which release endorphins into the body, which is a chemical that is strong as “morphine” with healing properties. It is from the endorphins being released into our bodies where we get the proverbial “runner’s high.”

Again, it is important to note that our emotions and ego are not bad things. We *want* to be excited about our work and our causes, which comes from emotion. This is how we get into a state of “FLOW” in our work. We also want to have self-confidence and high-self esteem, which gives us the courage to try new things. Consequently, both ego and emotions are very good things … but not if you cannot control them.

Think of it this way:

**Is a car a good thing? Yes, of course ... but what if you can’t control it?**