How a Leader's Brain Works

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First, we can view the brain functioning with an overarching *organizational principle* and a fundamental *operational process*. Dr. Evian Gordon, a neuroscientist, developed what he calls the Integrate Model (Gordon et al., 2008). This model describes the brain functioning around a basic organizing principle, *Minimize Danger/threat-Maximize Reward.* The terms, *toward* and *away*, correspond to *danger/threat* and *reward*. The image that comes to mind for a person experiencing an *away* response would be his fists clenched as if to fight, his arms crossed, or his arm stretched out with his palm facing you as if to say, "Stop!" An image for a *toward* response might be someone with her arms extended to you as if to say, "Welcome!"

In other words, our brains tend to operate in a conscious and an unconscious mode that either seeks out reward (a toward response that is open, energized, and willing) or tries to avoid danger/threat (an away response which is defensive, fearful, or closed). I think the apostle Paul practiced this concept as he focused on the future.

> *Brothers, I do not consider myself yet to have taken hold of it. But one thing I do: Forgetting what is behind and straining toward what is ahead, 14 I press on toward the goal to win the prize for which God has called me heavenward in Christ Jesus.*
> -Phil 3.13-14, NIV)

Reflexive: X-system "low road"	Reflective: C-system "high road"
• impulsive	• intentional
• spontaneous	• controlled
• faster processing	• slower processing
• fast learning	• slower learner
• non-thinking	• thinking
• parallel processing	• serial processing
• not affected my mental load	• affected by mental load

The brain's overall *operational process* incorporates two sub-processes: the *X-system*, from the 'x' in the word reflexive and the *C-system*, from the 'c' in the word reflective (Lieberman, 2006). The X-system engages the parts of the brain that act spontaneously and impulsively (our emotional centers). The C-system engages parts of the brain that act with intention and think before acting, our thinking center (the prefrontal cortex). This system also helps regulate emotional reactivity. This chart briefly summarizes the fundamental differences between the two.

When we combine the organizational principle with the operational processes, here's how our brain works, simply described.

When we face danger (a threat), the brain processes information in two directions: the short route, sometimes called the low road, and the long route, sometimes called the high road. The thalamus plays a critical role as a master information relay, or middleman, because all information from and external stimulus (or an internal self-generated one) flows through it. It shuttles the information about this stimulus to other parts of the brain. Here's what happens, all in a split second.

- Information about the threat first enters our brain through our sense organs and travels to the thalamus, the master relay, which shuttles information in two directions, toward the emotional center (short route) and toward the sensory cortex and then to the higher thinking centers (long route). The information gets to the emotional center slightly quicker than it makes it to the thinking centers.

- As the thalamus relays the emotional content to the emotional center it sends the non-emotional content through the memory center (the hippocampus) to the brain's thinking center (the prefrontal cortex) where it assesses and compares the new information to previously stored knowledge.

- If it finds any prior knowledge, it sends it back to the memory center to incorporate this new information.

- New mental maps then get combined with old ones and are then sent to memory storage.

- By this time, the emotional center may have already directed the body to respond. Even so, the thinking center will weigh in at some point to either dampen the emotional center, confirm the emotional center's response, or direct the body to do something in response to the stimulus.

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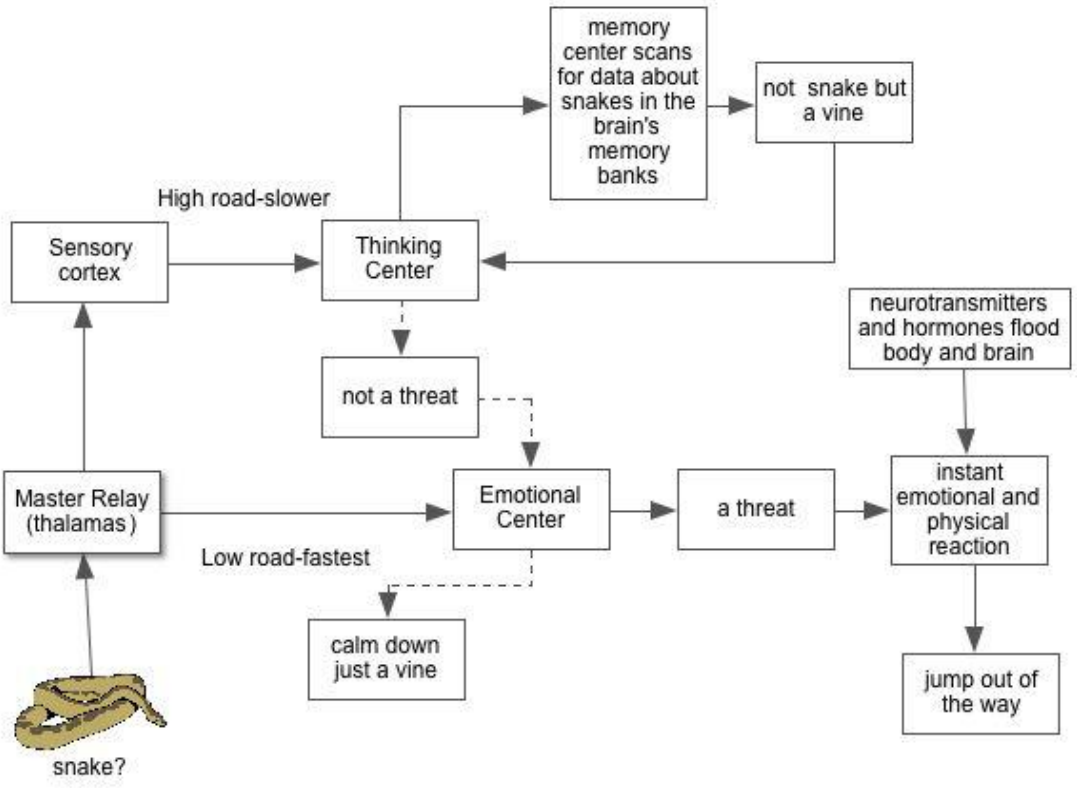
Let's say I'm hiking in the woods, and I see what I think is a snake I'm about to step on. My short route response, called the low road (Foley, 2003) quickly shuttles information to my emotional center (limbic system) and then to my peripheral nervous system. Among many body responses, the peripheral nervous system increases blood flow and respiration and

instantaneously directs the muscles in my foot to avoid stepping on the snake. It helps me quickly respond to the perceived danger.

At the same time the long route process (the high road) sends that signal to my sensory cortex and then to my thinking center. It then recruits the brain's memory center, to check for any data about snakes already stored in the brain's memory. It then sends its assessment back to the emotional center. Because my emotional center processed this as a snake, my body has already instantaneously reacted to direct me to plant my foot in a different place, any place but on the snake.

However, as my thinking center assesses the situation it compares it to maps already in the brain about a snake's color, size, movement, and so on. In relative terms it's slower than the low road, but only a fraction of a second slower. It may determine that the rattlesnake was simply a coiled vine that my emotional center interpreted as a snake. As a result, it begins to down-regulate my emotions and my body's response. I now don't have to worry because vines don't bite. Although my body is still tensed and my heart rate has jumped, my thinking center now tells my body it can calm down and not be alarmed. In diagram form it looks like this.



This same process can happen in a meeting with your board. Someone may say something that immediately feels like a threat (the low road, the X-system). But as your thinking center assesses what he says it helps you realize that his words don't truly present a threat. So instead of internally stiffening up in fear or verbally reacting in defense, your brain can help you calm down (the high road, the C-system) so that you can stay fully engaged in the

conversation. The key is to pay attention to these internal signals. The low road provides the quick response, needed at times, and the high road response, although slower, more accurately assesses the situation.

This same process occurs with any intense emotion. Your brain will act the same way if you unexpectedly bump into Tom Cruise or Gwyneth Paltrow at the grocery store or even meeting someone you don't know someone at a party. As with seeing a snake, your heartbeat will jump, your respiration will increase, and your blood pressure will rise. You brain's emotional center will initiate the stress response even if our 'survival' is not threatened, although not looking dumb in front of Tom might qualify as a survival situation.

In my 33 plus years in ministry leadership I've sometimes taken the low road and reacted in anger to a staff person, become defensive at someone's critical comment, or acted like a jerk in the heat of the moment. In those cases, my brain's X-system overrode its C-system, and I gave in to my emotions. I didn't wait long enough for my thinking brain to inform my actions so that I could respond in a Spirit-directed way.

When the X-system gets overloaded, two processes occur that can suppress the C-system: hormones enter our blood stream and neurotransmitters flood our brain. When that happens, we can respond in these ways.

- Emotional accelerators can diminish our impulse control.
- The reactive parts of our brain can take over and we can become defensive.
- Objectivity can diminish.
- We don't listen well to others because our brains can't concentrate on other's viewpoints without prematurely framing our own responses.

And the writer of Proverb speaks to what happens when we act impulsively rather than respond thoughtfully. (NIV)

- *It is not good to have zeal without knowledge, nor to be hasty and miss the way.* (19.2)
- *It is a trap for a man to dedicate something rashly and only later to consider his vows.* (20.25)
- *There is more hope for a fool than for someone who speaks without thinking.* (29.20)

What indicators in people you've been around evidence that their X-system overruled their C-system? What does the X-system look like in leaders?