

The Writer's Brain: What Neurology Tells Us about Teaching Creative Writing

Rosanne Bane

University of St. Thomas, Minnesota, USA

Abstract

Creative writing instructors who shake their heads and wonder why their students are not performing as expected can find answers in an unexpected source: neuroscience.

Neuroscientists have proven that when an individual is stressed or threatened, a part of the brain stem called the Reticular Activating System (RAS) will shift control from the cerebral cortex to the limbic system. When the limbic system is in the ascendant, behavior is instinctual, based on the fight-or-flight response, or the result of deeply engrained training. Without significant input from the cerebral cortex, the individual is temporarily deprived of the ability to perform nuanced analysis and creative thought. Moreover, the individual is rarely aware of this shift and often attributes the resulting inability to perform her or his usual creative thinking as a lack of willpower, character or ability. What is typically thought of as writer's block or other forms of writing resistance is the result the cerebral cortex being temporarily unavailable. Common forms of writing resistance can be categorized within the three instinctual responses the limbic system relies on: freezing (momentary paralysis), followed by the choice of fighting or fleeing. It is imperative that instructors understand the neurological causes of resistance, recognize resistance in its many guises, and find ways to help students relax in the writing classroom and during out-of-class writing so that their creative cerebral cortex can reengage.

Why Do They Do That?

Why do students wait until the last minute to start a writing project?

Why are they content to turn in such poor drafts?

Why do they ignore suggestions for revisions and refuse to acknowledge that good writing is not merely a matter of opinion?

Why, after we've given them so many techniques for prewriting and generating material, do they waste so much time staring at the blank screen?

Why do they distract themselves with surfing the net, computer games, socializing, watching TV and so many other activities when they should focus on the assignments that determine their grades?

Why are some students apparently incapable of self-reflection while others are paralyzed by self-criticism and perfectionism?

If I Only Had a Brain

There is a temptation to blame the students, and in many cases, they are struggling with problems of their own making. But there is more at play here than lack of discipline, ambition, intelligence or experience. Any writing instructor can attest that some students enter the creative flow state and write effortlessly, creating powerful images and crafting compelling words, while other students (or the same students at other times) are distracted, paralyzed and unable to write.

The reason so many students make their instructors shake their heads and ask “Why?” is because these students don’t have a brain. I’m not being facetious or gratuitously negative. None of us have a brain – we have a brain system.

Just like the digestive system consists of separate organs with discrete functions that work together to make it possible for the body to digest food, process nutrients and get rid of the excess, the brain consists of separate areas, each performing distinct purposes.

As noted neurologist Joseph LeDoux points out, “Although we often talk about the brain as if it has a function, the brain itself actually has no function. It is a collection of systems, sometimes called modules, each with different functions” (105).

The separate yet integrated areas that make up the brain – the thalamus, the cortex, the cingulate system, the amygdala, and so on – are intricately connected and coordinated through a complex circuitry of neurons and an intricate dance of electrochemical activity. The various components of the brain collaborate to achieve amazing feats, all the way from keeping the lungs breathing and the heart beating up to the miracle that is consciousness: using language, making plans, knowing who we are, choosing actions according to our moral code and struggling with the knowledge of our own mortality.

But even with the profound collaboration among brain components, there are times when different parts of the brain compete. It is the potential conflict between the limbic system and the cerebral cortex that is most relevant to questions about writing and resistance to writing.

Triumvirate Brain

The human brain is typically divided into three major systems: 1) the brain stem or “lizard brain,” which is located at the core of the entire brain system and maintains body functions like respiration, digestion and circulation; 2) the limbic system or “leopard brain,” which surrounds the brain stem and provides the capacity for emotion and relies on the fight-or-flight instinct in response to threats; and 3) the cerebral cortex or “learning brain,” which surrounds the limbic system and gives us the ability to solve problems, use language and numbers, create, anticipate the future, motivate ourselves, and reflect on and modify our behavior (Howard 45-46).

The limbic system is sometimes called the “leopard brain” because it is very similar to the limbic system in other mammals. It gives emotion to our sensory experiences so that by the time sensory information is perceived by the cortex, the information has an emotional association. The human cerebral cortex, on the other hand, is significantly different from the cortexes of other mammals. This “learning brain” makes humans truly human.

The brain stem is composed of the midbrain, pons, medulla and the Reticular Activating System (RAS), which monitors information coming in from the senses and filters what an individual pays attention to and what that person ignores (Carter 186-187). In a crowded room, you can't hear what someone ten feet away is saying, but if that person says your name, you'll hear it.

Limbic System Takeovers

The RAS also serves as a kind of toggle switch that determines whether the limbic system or the cerebral cortex is in control (Howard 47-48). When we relax, the RAS flips control to the cortex and we are capable of the symbolic, logical and creative thinking that is the hallmark of human evolution.

With the cortex in control, we're able to focus our attention on and engage in behavior to support creative aspirations. On the other hand, when we perceive a potential threat, the RAS flips control to the limbic system and we rely on our instinctual fight-or-flight response. The amygdala is engaged and triggers the release of stress hormones like cortisol and adrenaline. Heart rate increases, vision tunnels, the palms sweat, the hair on the back of the neck stands up, blood moves from the torso to the large muscles in the extremities to allow fast movement. In this state, our emotional reactions are intense and we can say and do things that we will later

regret, things that seem totally out of character (Jacobs-Stewart 8-9). And in this state, creativity is dismissed as trivial compared to the serious business of staying alive and safe.

When the limbic system has been activated, we react automatically from instinct or training (Howard 47-48). Combat soldiers endure intense training and airplane pilots practice emergency maneuvers in flight simulators so that their training will override their instincts when their limbic system is activated. With the limbic system in control, the cortex is effectively shut down. We are still conscious, we can still speak and calculate, so we often don't know that the cortex has turned off, but what we say and how we act is based on previous training. We are not capable of innovative, nuanced thinking and our choices will be instinctive. None of the higher thinking functions, the "executive functions," are available.

Consequently, writing students and professional writers alike are literally of two minds about creative work. The cortex seeks novelty and wants to be creative. The limbic system cares only about being safe and staying alive. When the limbic system is in control, we respond instinctively with behaviors that cause others to shake their heads and say "Why did you do that?"

I Don't Know

Strangely enough, we often can't explain our own behavior. That is, the cerebral cortex can't explain behavior initiated by the limbic system.

LeDoux (163-166) explains how the cortex is often unaware that control has shifted. For example, if you see a snake, you'll later say something like, "I saw a snake and thought I should get away, so I jumped." However, the faster limbic system made your body jump *before* your cortex had the conscious thought "I should jump."

Moreover, in reviewing a case study written in 1911 by a French physician Edouard Claparede of a woman who had lost her ability to form new memories, LeDoux concludes: "It now seems that Claparede was seeing the operation of two different memory systems in his patient – one involved in forming memories of experiences and making those memories available for conscious recollection at some later time, and another operating outside of consciousness and controlling behavior without explicit awareness of the past learning" (181).

Claparede's own documentation (quoted in Rapaport 68-71) suggests that the limbic system often reacts to threats the cortex is not aware of and prompts action the cortex cannot explain.

I [Dr. Claparede] carried out the following curious experiment on her [the patient who could not form new memories]...I stuck her hand with a pin hidden between my fingers. The light pain was quickly forgotten ...a few minutes later she no longer remembered it. But when I again reached for her hand, she pulled it back in a reflex fashion, not knowing why. When I asked her for the reason, she said in a flurry, "Doesn't one have the right to withdraw her hand?" and when I insisted, she said, "Is there perhaps a pin hidden in your hand?" ... But never would she recognize the idea of sticking as a memory. (Rapaport 69-70)

Clearly, a person doesn't need a conscious memory or a "logical" reason for feeling resistant. And just because the individual don't know why she or he doesn't want to do something, doesn't mean there isn't a good reason for not doing it.

Rather than admit we just don't know why we did something, a profound statement of vulnerability few of us are capable of, we rationalize, make assumptions and draw erroneous conclusions from inadequate evidence. Writers, both student and professional, often assume the worst: that they're lazy, undisciplined, blocked, too busy or lack willpower, intelligence and ambition.

Unfortunately none of these responses helps writers get past the resistance caused by the limbic system's takeover. In fact, negative assumptions and rationalizations often cause further emotional distress, which only reinforces the need to keep the limbic system in control. Unchecked and misinterpreted, resistance can lead to an ongoing cycle where the anxiety of anticipating not being able to write activates the limbic system and reinforces the resistance.

What We Do Know

Since all students have had negative experiences around their writing at some time in their lives, whether they consciously remember these experiences or not, they come to the writing classroom and writing assignments with their limbic systems triggered. It's irrelevant that these students are probably unaware that their limbic systems are activated or why; it is simply impossible to write creatively and well when the limbic system has precedence over the creative cortex. Likewise, it is simply impossible to teach someone whose limbic system is in control.

Until instructors learn how to help students flip the RAS from limbic system to cerebral cortex, all their efforts as educators are futile. None of the higher cognitive functions necessary for writing and learning are available.

It is imperative, therefore, that instructors understand the neurological causes of resistance, recognize resistance in its many guises, and find ways to help students relax in the writing classroom and during out-of-class writing so that their cerebral cortex can reengage.

Recognizing Resistance

In a survey I conducted with 350 professional and aspiring writers, 94% report experiencing some form of writing resistance. The most commonly cited forms of resistance include: distractions (94%), procrastination (84%), initial inertia or difficulty getting started (84%), anxiety or fear (70%) and writer's block (67%). Other forms of resistance cited include: staying too busy to write, self-doubt, self-criticism, fear, perfectionism, feeling overwhelmed, inexplicable exhaustion when sitting down to write. We can reasonably assume that students, who write either because they want to or to fulfill a university requirement, experience resistance at least as often as adults who choose to write as a vocation or avocation.

The many forms of resistance can be categorized by the instinctive actions taken when the limbic system is triggered. When threatened, all mammals will freeze for a moment before choosing to fight or flee.

Freeze: This is usually a very brief reaction. When this "deer in the headlights" response is repeated for more than a few days, it's traditionally called "writer's block." The cortex is turned off and the writer literally cannot think what to write or how to start. The prolonged freeze response can cause emotional numbness or intense anxiety and frustration. This can be quite painful and instructors should remember that this is not a state anyone would willingly put her/himself in.

Fight: The fight response can be directed at the writer her/himself, at another person, or both. Fighting the writer's self includes excessively harsh criticism, negative self-talk, hating the writing or her/himself, perfectionism, and sabotage behaviors such as missing deadlines, losing files, having accidents, etc. Fighting others can include refusing to hear suggestions for revision,

criticizing others (e.g. attacking other student writers in critique sessions) and denying the need for improvement.

Flee: The behaviors that rise from the urge to escape the discomfort associated with writing are the most common forms of resistance. These include: distractions (other classes, other assignments, social life, work and numbing activities like excessive gaming, shopping, drinking, TV watching); the inability to stay in the chair to write (wandering from the desk to seek answers in the mini fridge or common areas); creating other tasks that must be completed first (emails, cleaning the desk, researching beyond what's necessary); overscheduling or overcommitting to other priorities that "must" be addressed before the writing; waiting until the last minute to start and other forms of procrastination.

All forms of resistance are frustrating for instructors because they seem to make students impervious to their best teaching efforts. It helps to remember that students are impervious because their limbic system is in charge, which leaves them incapable of cortical functions like self-reflection, nuanced thought, sophisticated analysis or the ability to foresee future outcomes.

Hope Is Not Lost

The good news is that there is a lot instructors can do to help students identify and manage their responses so that they can write effectively. In my roles as writing instructor, creativity coach and professional speaker, I've helped thousands of writers move beyond their resistance to tap their full creative potential.

An important first step is to bring resistance out of the shadows. Explain the neurology of resistance to students. Talk openly about writing resistance, making it clear that this is not an excuse to avoid writing, but an opportunity to devise strategies to overcome resistance. Instructors who don't feel competent discussing how neurology applies to writing can review the brain books listed at <http://www.rosannebane.com/main/readingresources.htm>.

It is imperative that we find ways to help students relax in the writing classroom and during out-of-class writing. One simple technique is to invite students to notice their breathing and to allow their breathing to become deeper and slower for 5 to 10 minutes. Most people breathe with just

the top third of their lungs; encourage students to breathe all the way down to their belly, hold it for a few seconds and then slowly exhale all the air.

A meditation or yoga instructor guest lecturer can demonstrate simple, effective breathing and meditation techniques students can use both in and outside of class. Research led by Richard Davidson, Professor of Psychology and Psychiatry at UW-Madison, suggests that an on-going meditation practice can make the limbic system less reactive (Jacobs-Stewart 18). Davidson's test group, who practiced mindfulness meditation daily for eight weeks, reported feeling less anxiety and other negative traits and more calm and creative than the control group. Moreover, while the control group's brain scans showed no significant difference, the test group's brain scans showed increased activity in the left prefrontal lobe, an area that has been shown to inhibit the limbic system (Davidson, et al. 565-566).

Instructors can play relaxing music during in-class writing times. Since exercise is also a recognized stress-reducer, instructors can use a variety of interactive teaching methods to give students opportunities to move during class. Point out to students that regular aerobic exercise is not only good for their bodies, it's good for their cortex, and therefore, good for their writing.

Introduce variety into in-class writing techniques. Many writing classes emphasize freewriting, clustering, mind-mapping, brainstorming and other approaches that suggest speed is the solution to self-censorship. But the focus on speed can also introduce stress. Alternate with a technique Robert Olen Butler describes in *From Where You Dream* as: "not brainstorming, [but] dreamstorming. You're going to sit or recline in your writing space in your trance, and you're going to free-float, free-associate, sit with your character, watch your character move around in the potential world of this novel" (87). Many students feel a sense of relief at Butler's suggestion that imagining more and writing less is an effective way to begin crafting a story.

Instructors should consider abandoning traditional critique sessions, which almost always trigger the limbic brain. The belief that critique will help a writer "fix" or "improve" the writing assumes the writing is flawed, as opposed to being in process and developing normally through multiple revisions. Critique also assumes that an outside authority can best determine what to do to "fix" the writing, as opposed to trusting the writer to find solutions on her/his own. For most writers, having their flaws pointed out in public and being corrected by an authority figure is guaranteed

to put the limbic system in control, which makes it almost impossible to hear and process the information no matter how well intended it may be.

Of course, all writers need to know how readers react. Feedback walks a fine line between guiding the writer and deflating the writer. Instead of traditional critique, instructors can focus students' and their own attention on where the writing is strong, where they see potential for development, and offer open-ended questions that prompt the writer to take the writing to the next level. Care must be taken to ensure that identifying 'potential for development' doesn't become just a euphemism for pointing out flaws. (For more discussion on the limitations of and alternatives to traditional critique, consult Carol Bly's *Beyond the Writer's Workshop*.)

Instructors can also help students by promoting writing habits and routines. Writing rituals take advantage of Hebb's Law, which states that neurons that fire together, wire together (Doidge 174). In other words, if students eat a lemon drop every time they write in class, writing in class becomes a pleasant experience and the sight, smell or taste of lemon will cause students to think of their writing. New mental associations like this are formed by what neuroscientists are now calling the brain's plasticity, a recently recognized ability to create new neural connections. A wide range of neurological research demonstrates that the human brain is far more plastic than the old paradigm assumed was possible (Doidge xvii – xx).

Instructors can introduce students to simple writing rituals, like lighting a candle, playing a particular piece of music or handing out lemon drops, every time students write in class. Encourage students to use the ritual in all their writing sessions. In addition to creating new neural pathways, the familiarity of rituals soothes the limbic brain so the cortex can function optimally. Rituals also create "functional fixedness" (Butler 25) so that eventually the mere presence of the object, scent, sound or flavor that has been consistently linked to writing will create the relaxed yet alert brain state conducive to writing.

Instructors are arguably most effective as role models; instructors who recognize the significance and challenge of keeping their limbic system in check and consistently seek ways to relax around their own writing to keep their creative cortex engaged are most likely to give their students the tools that will benefit them throughout their creative lives.

Resources:

Bly, Carol. *Beyond the Writer's Workshop*. New York: Random House, 2001.

Butler, Robert Olen. *From Where You Dream*. New York: Grove Press, 2005.

Carter, Rita. *Mapping the Mind*. Berkeley: University of California Press, 1998.

Davidson, Richard J., Kabat-Zinn, Jon, Schumacher, Jessica, Rosenkranz, Melissa, Muller, Daniel, Snatorelli, Saki F., Urbanowski, Ferris, Harrington, Anne, Bonus, Katherine, & Sheridan, John F. "Alterations in Brain and Immune Function Produced by Mindfulness Meditation." *Psychosomatic Medicine* 65:564-570 2003
<<http://www.psychosomaticmedicine.org/cgi/reprint/65/4/564>>

Doidge, Norman, M.D. *The Brain that Changes Itself*. New York: Penguin, 2007.

Howard, Pierce J., Ph.D. *The Owner's Manual for the Brain*. Austin, TX: Bard Press, 2006.

Jacobs-Stewart, Therese. *Paths Are Made by Walking*. New York: Warner Books, 2003.

LeDoux, Joseph. *The Emotional Brain*. New York: Touchstone, 1996.

Rapaport, David. *Organization and Pathology of Thought*. New York: Columbia University Press, 1951.

Author Bio:

Rosanne Bane, M.A. is a creativity coach, instructor and author of *Dancing in the Dragon's Den: Rekindling the Creative Fire in Your Shadow*. She teaches creative process and fiction at the Loft Literary Center, where she earned the distinction of Loft Teaching Fellow. She teaches and coaches written business communication to MBA students at the University of St. Thomas and, for nearly 20 years, has taught writing at a variety of colleges, universities and adult education programs. Her coaching clients have included over 150 novelists, screenwriters, playwrights, poets, nonfiction writers, songwriters, storytellers, visual artists, musicians, performers and people from a variety of other professions. Rosanne is increasingly recognized as an authority on the neurology of writing resistance and posts a blog on the topic at www.BaneOfYourResistance.wordpress.com. Her website is www.RosanneBane.com.