Drawing and Brain Research

A Special Report

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Introduction

Drawing is an indisputably creative pursuit which can yield benefits in many areas of your life, even those left-brained activities or professions. Creativity is what sets humans apart from the animals, and there are many ways to explore and develop it. It is not only in art and literature that creativity holds sway; even in traditionally "left-brained," analytical professions such as business, economics, architecture, industrial design, science, and engineering, creativity is of paramount importance. It is far too complex a topic to be encapsulated by "crazy paint splotches" or even inspired prose. It is the unearthing of new ideas in ourselves, problem-solving tough circumstances, and efficient consolidation of various factors or assets. As *New World Encyclopedia* asserts, "Despite, or perhaps because of, the ambiguity and multi-dimensional nature of creativity, entire industries have been spawned from the pursuit of creative ideas and the development of creativity techniques."[1]

This book explores not only the brain research that has been conducted concerning the ways the hemispheres of the brain work together, but specifically the ways drawing and painting can help you develop your brain and access right-brain mode. It will summarize for you the thousands of pages of research available on brain research and highlight the ways you can improve your life using that research. You will also find a convenient appendix so you can follow up on points that interest you with your own research.

[1] New World Encyclopedia, *Creativity,* http://www.newworldencyclopedia.org/entry/Creativity (Sept. 2008).

In developing your creativity through drawing and painting, many benefits can come your way:

- You can improve your spatial ability, which is useful when you are planning event seating, rearranging your own furniture, or trying to decide if you can fit your car into that cramped parallel parking space. When you draw, you are constantly gauging the distances between and within objects and then applying what you see onto the paper. This ability to visualize is a result of training, but may come intuitively to certain people. But even if you have struggled in the past, you may find if you learn to draw according to an organized, comprehensive instruction plan, you are able to visualize in ways you never could before!

- You can become more of a "big-picture" person if you are naturally inclined to get tangled up in the details of your life. Adopting this "big-picture" standpoint can give you perspective in steps to take to change a situation and appropriate approaches to difficult problems. Drawing forces you to back up from that mass of details and see the larger lines and broader connections that help you place those details into an orderly composition.

- You can also become more of a "detail-oriented" person if you tend to see the big picture easily but get lost in the "how to" to make that big picture a reality. Drawing trains you not only to see the entire subject you are attempting to draw, but also telescope in on the details that make up that composition.

An insightful article in *New World Encyclopedia* elaborates on the importance of creativity in those analytical fields such as business, economics, science, engineering, and design.

Creativity in science, engineering and design

Isaac Newton's law of gravity is popularly attributed to a *creative leap* he experienced when observing a falling apple.

Creativity is also seen as being increasingly important in a variety of other professions. Architecture and industrial design are the fields most often associated with creativity, and more generally the fields of design and design research. These fields explicitly value creativity, and journals such as *Design Studies* have published many studies on creativity and creative problem solving.[2]

Fields such as science and engineering have, by contrast, experienced a less explicit (but arguably no less important) relation to creativity. Simonton[3] shows how some of the major scientific advances of the twentieth century can be attributed to the creativity of individuals. This ability will also be seen as increasingly important for engineers in years to come.[4]

Creativity in business

Creativity, broadly conceived, is essential to all successful business ventures. Entrepreneurs use creativity to define a market, promote a product or service, and make unconventional deals with providers, partners and lenders. Narrowly speaking, there is a growing sector of "creative industries" — capitalistically generating (generally non-tangible) wealth through the creation

[2] K. Dorst and N. Cross, "Creativity in the Design Process: Co-evolution of Problem Solving," *Design Studies*, 2001, 22 (5): 425-437.
[3] D.K. Simonton, *Origins of genius: Darwinian perspectives on creativity* (Oxford University Press, 1999).
[4] National Academy of Engineering, *Educating the Engineer of 2020: Adapting Engineering to the New Century*, National Academies Press, 2005.

and exploitation of intellectual property or through the provision of creative services.[5]

Amabile[6] argues that to enhance creativity in business, three components were needed: Expertise (technical, procedural, and intellectual knowledge), Creative thinking skills (how flexibly and imaginatively people approach problems), and Motivation (especially intrinsic motivation). Nonaka, who examined several successful Japanese companies, similarly saw creativity and knowledge creation as being important to the success of organizations.[7] In particular, he emphasized the role that tacit knowledge has to play in the creative process.

In many cases in the context of examining creativity in organizations, it is useful to explicitly distinguish between "creativity" and "innovation."[8]

In such cases, the term "innovation" is often used to refer to the entire process by which an organization generates creative new ideas and converts them into novel, useful and viable commercial products, services, and business practices, while the term "creativity" is reserved to apply specifically to the generation of novel ideas by individuals, as a necessary step within the innovation process.

For example, Amabile et al. suggest that while innovation "begins with creative ideas, creativity by individuals and teams *is a starting point for innovation*; the first is a necessary *but not sufficient* condition for the second."[9]

Economic views of creativity

In the early twentieth century, Joseph Schumpeter introduced the

[5] *Creative Industries Mapping Document*, an overview of creative industries in the UK, 2001.
[6] T. M. Amabile, "How to Kill Creativity," *Harvard Business Review*, 1998, 76 (5).
[7] I. Nonaka, "The Knowledge-Creating Company," *Harvard Business Review*, 1991, 69 (6): 96-104.
[8] T. M. Amabile, R. Conti, H. Coon, et al. "Assessing the Work Environment for Creativity," *Academy of Management Review,* 1996, 39 (5): 1154-1184.
[9] Ibid: 1154-1155.

> economic theory of "creative destruction," to describe the way in which old ways of doing things are endogenously destroyed and replaced by the new.
>
> Creativity is also seen by economists such as Paul Romer as an important element in the recombination of elements to produce new technologies and products and, consequently, economic growth. Creativity leads to capital, and creative products are protected by intellectual property laws. Creativity is also an important aspect to understanding entrepreneurship.

Many people have heard the words "left brain" and "right brain." The general perception is that "left brain" equates *analytical* and "right brain" equates *creative*, and while this is true to an extent, there is so much more to it. There is a great deal of brain research that has been done that can affect you directly. Understanding which side of your brain is more dominant and exploring both modalities of your brain can have a positive, possibly remarkable impact on your personal and professional life.

A very effective way of developing your right brain, which has often been shunted to the side in many of our day-to-day activities, is by drawing and painting. Even if your profession is primarily left-brained – analytical, mathematical, organized – drawing can really enrich your life. And beyond drawing, any artistic endeavor, whether it's painting, ceramics, weaving, building, designing, sewing, landscaping, graphic design, website design, or decorating, just to name a few, allows the right brain to take a front seat and use its strengths and processes. A way to accomplish this is to incorporate specific exercises so you can experience the balance between using your left and right brain.

What Is Left-Brain/Right-Brain Research?

Brain Research Pioneer

American psychobiologist, Roger W. Sperry, pioneered brain research in the 1960s with "split-brain" studies on the connection between the brain's left and right hemispheres. It was through these studies that he proved that each hemisphere can operate almost independently of one another, certain parts of the brain are "wired" for specific tasks, and that each side of the brain operates the opposite side of the body.

The brain comprises two distinct halves, separated by a fold running the length of the brain. They are joined by thick masses of nerves at the base of each hemisphere, called the *corpus collosum*. As Dan Eden, who wrote the article, "Left Brain | Right Brain," so aptly put it, "Think of it as an Ethernet cable or network connection between two incredibly fast and immensely powerful computer processors, each running different programs from the same input." Eden summarized a fascinating experiment Sperry conducted and its results:

> We can thank Nobel Prize Winner (1981) **Roger Sperry** for this next contribution. Sperry conducted what are sometimes called the "split-brain" experiments. Here's how it went: A patient suffering from uncontrolled seizures had an area of his brain removed by surgery in an attempt to control his illness. This area just happened to be the **corpus collosum**, which was suspected of having developed lesions (short circuits).

> Following his surgery, Sperry's patient seemed completely normal -- almost. A series of tests were conducted where each "half" of the patient was isolated from the other. Different visual and tactile information could then be presented to the patient's left or right side, without the other side knowing. The results were astounding.
>
> With their communications link severed, each side of the patient's brain was functioning independently. Although this did not prevent his ability to walk, talk and eat, some unexpected findings were encountered in some of the higher brain functions when each side was examined independently of the other.
>
> The right hand and eye could name an object, such as a pencil, but the patient could not explain what it was used for. When shown to the left hand and eye, the patient could explain and demonstrate its use, but could not name it. Further studies showed that various functions of thought are physically separated and localized to a specific area on either the left or right side of the human brain. This functional map is consistent for an estimated 70 to 95 percent of us.

Amazing design, when you think about it. In 1973, Roger Sperry shared his own conclusions:

> The main theme to emerge... is that there appear to be two modes of thinking, verbal and nonverbal, represented rather separately in left and right hemispheres respectively and that our education system, as well as science in general, tends to neglect the nonverbal form of intellect. What it comes down to is that modern society discriminates against the right hemisphere.[10]

Sadly, this statement made in 1973 regarding the widespread prejudice against the right hemisphere still very much speaks to the perception of the

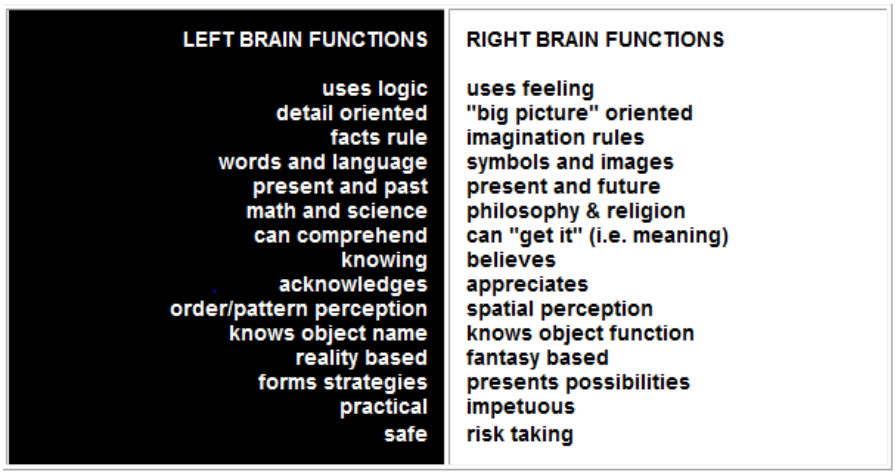
[10] Roger Sperry, GaiamLife, http://blog.gaiam.com/quotes/authors/Roger-Sperry, 2011

right brain today, especially in business and education. More will be explored on that topic later in this report.

Characteristics of the Left and Right Brain

It is the rare person who doesn't experience one hemisphere dominating the other, but even in individuals who exhibit strongly left-brained or strongly right-brained behavior and tendencies, both hemispheres work together.

For years, it has been believed that certain specific functions are unique to each hemisphere. Charts abound to illustrate this and a typical one is seen here.



LEFT BRAIN FUNCTIONS	RIGHT BRAIN FUNCTIONS
uses logic	uses feeling
detail oriented	"big picture" oriented
facts rule	imagination rules
words and language	symbols and images
present and past	present and future
math and science	philosophy & religion
can comprehend	can "get it" (i.e. meaning)
knowing	believes
acknowledges	appreciates
order/pattern perception	spatial perception
knows object name	knows object function
reality based	fantasy based
forms strategies	presents possibilities
practical	impetuous
safe	risk taking

However, according to cognitive scientist, Daniel Willingham, a psychology professor at the University of Virginia, the brain is far too complex to compartmentalize the countless behaviors, tendencies, and functions that make us human beings. An illustrative experiment conducted by Willingham and his team showed that a "learning to sequence" task activated 14 different areas of the brain and interestingly, although "sequential thought" is supposed to be a primarily left-brained activity, five areas of the left brain fired, five on the right, and four bilateral (corresponding areas of both the left and right hemispheres).

Creativity, while largely believed to be the domain of the right-brain, is often far too diverse to be relegated to just one side of the brain. Willingham conceded that the terms "left-brain" and "right-brain" are used more for convenience than scientific accuracy, and as such are not harmful. But it should be understood that the idea of left-brain/right-brain more appropriately describes learning style rather than ability. For instance, in an educational context, "left-brain kids will understand a concept best by talking about it . . . but right-brain kids will want to draw a diagram. Teachers might be urged to engage in whole-brain teaching by including different ways of understanding a concept that honor left brain and right brain differences."[11] So when you observe the chart above or similar charts, it is more accurate to interpret the "functions" as "tendencies" or "learning styles." This theory is supported by an article published in the periodical, *The New Scientist*, "'Right Brain' or 'Left Brain': Myth or Reality?" by John McCrone.[12]

A more complete and accurate representation of the tendencies of each hemisphere of the brain is found below:

> While we have a natural tendency towards one way of thinking, the two sides of our brain work together in our everyday lives. The **right brain** of the brain focuses on the visual, and processes information in an intuitive and simultaneous way, looking first at the whole picture then the details. The focus of the **left brain** is verbal, processing information in an analytical

[11] Valerie Strauss, *Willingham: Left/Right Brain Theory is Bunk*, http://voices.washingtonpost.com/answer-sheet/daniel-willingham/willingham-the-leftright-brain.html (September 2010)
[12] John McCrone, "'Right Brain' or 'Left Brain': Myth or Reality?" http://painting.about.com/gi/o.htm?zi=1/XJ&zTi=1&sdn=painting&cdn=hobbies&tm=14&f=20&tt=14&bt=1&bts=0&zu=http%3A//www.rense.com/general2/rb.htm (2000).

and sequential way, looking first at the pieces then putting them together to get the whole.[13]

LEFT BRAIN FUNCTIONS	RIGHT BRAIN FUNCTIONS
uses logic	uses feeling
detail oriented	big picture oriented
facts rule	imagination rules
words and language	symbols and images
present and past	present and future
math and science	philosophy & religion
can comprehend	can "get it" (i.e. meaning)
knowing	believes
acknowledges	appreciates
order/pattern perception	spatial perception
knows object name	knows object function
reality based	fantasy based
forms strategies	presents possibilities
practical	impetuous
safe	risk taking

[14]

Chances are, you already have an idea which side of your own brain is more dominant. And while brain research hasn't conclusively proven that "left brain" and "right brain" accurately apply more to learning styles than to actual functions, it is a convincing argument, especially considering Sperry's "learning a sequence" experiment and the conclusions of Ned Herrmann, the "Father of Brain Dominance Technology," who developed, inspired by Sperry, the theory of "brain dominance where people develop a dominant mode of thinking preference."[15]

[13] "Left Brain Vs. Right Brain," *UCMAS: Discover the Genius Within*, http://www.ucmas.ca/our-programs/whole-brain-development/left-brain-vs-right-brain/.
[14] http://justageekgirl.com/2010/09/02/right-brain-vs-left-brain/.
[15] Rich Morris, *Left Brain, Right Brain, Whole Brain? An Examination Into the Theory of Brain Lateralization, Learning Styles, and the Implications for Educations*, http://www.singsurf.org/brain/rightbrain.php (2005-2007).

Similar to the myth that it's possible for someone to be wholly dominated by one side of their brain, is the fallacy many of us have heard for years that we only use a fraction of our brains. One reason this idea has put forth has been to explain psychic abilities, but in fact, we *do* use all of our brains, just not at the same time, similar to an athlete or a manual laborer who uses all of their muscles in their task but not all at once.[16]

Now, although creativity cannot be relegated solely to one hemisphere, exploring the arts, such as pencil drawing, can develop your creativity in both hemispheres of the brain. That topic is explored in a later chapter.

[16] *The Ten Percent Myth*, http://www.snopes.com/science/stats/10percent.asp (July 2007).

The Risk of Ignoring the Right Brain

Even though the terms "left brain" and "right brain" more accurately describe learning styles than specific tasks and functions, most of us grew up or came of age in an education system that seemed systematically inclined toward skills that have traditionally been labeled "left-brained skills." As Daniel Pink stated in "Revenge of the Right Brain," "if you were better at English and history, become a lawyer. If blood grossed you out and your verbal skills needed work, become an accountant. Later, as computers appeared on desktops and CEOs on magazine covers, the youngsters who were *really* good at math and science chose high tech, while others flocked to business school, thinking that success was spelled MBA."[17] The analyst – whether in science, medicine, education, or technology – was king. Still is, in many cases.

So what is to become of the "others"? The ones who don't fit into those labels quite so neatly, whose intelligences and ways of learning spill over the precise lines of those skills? It's encouraging to observe that in today's rapidly evolving society, while those logistical skills are still and always will be useful, they are no longer sufficient. The days of the only jobs worth pursuing being limited to the 9-to-5 business route are in decline. Now those very important jobs are increasingly intermingled with more creative jobs and skills that are moving into the mainstream. While your prospective father-in-law still may not be thrilled when you say your job is heading a garage band, so many more

[17] Daniel H. Pink, *Revenge of the Right Brain*, http://www.wired.com/wired/archive/13.02/brain.html (February 2005)

opportunities exist now than in decades and centuries past for creativity in whatever career suits you! Are you a corporate manager, a financial analyst, an accountant? You can explore creative solutions to typical problems that crop up in your field, solutions that are innovative, big-picture-oriented, and imaginative. Keeping your nose to the grindstone, only crunching the numbers your superiors hand you, will get you just so far. But corporations and clients in today's global, competitive society value individuals' keen insights and initiative, as can be seen in changing business infrastructures and the happy melding of refined systematic procedure and innovative ideas incorporated into the business world.

Outsourcing is a modern phenomenon that has had a profound impact on business today in the U.S. and beyond. The main export in the arena of outsourcing is those specific jobs which focus purely on simple analytical or mathematical skills, which leaves us with a challenge: "Now that foreigners can do left-brain work cheaper, we in the US must do right-brain work better." The article, "Revenge of the Right Brain," presents a very interesting theory on how certain left-brained professions have changed and opened up with opportunities for more right-brained approaches.

Dr. Betty Edwards, who taught and conducted brain research at California State University, Long Beach, founded the Center for the Educational Applications of Brain Hemisphere Research. She published a seminal book, *Drawing on the Right Side of the Brain*, which outlines important brain research and the impact it has in the context of art and specifically

drawing. She offers up a delicious tidbit about the misconceptions about brain which have persisted for many years.

> For the past 200 years or so, scientists have known that language and language-related capabilities are mainly located in the left hemispheres of the majority of individuals – approximately 98 percent of right-handers and abut two-thirds of left-handers. Knowledge that the left half of the brain is specialized for language functions was largely derived from observation of the effects of brain injuries. It was apparent, for example, that an injury to the left side of the brain was more likely to cause loss of speech capability than an injury of equal severity to the right side.
>
> Because speech and language are such vitally important human capabilities, nineteenth-century scientists named the left hemisphere the "dominant," "leading," or "major" hemisphere. Scientists named the right brain the "subordinate" or "minor" hemisphere. The general view, which prevailed until fairly recently, was that the right half of the brain was less advanced, less evolved than the left half – a mute twin with lower-level capabilities, directed and carried along by the verbal left hemisphere. Even as late as 1961 neuroscientists J.Z. Young could still wonder whether the right hemisphere might be merely a "vestige," though he allowed that he would rather keep than lose his. [Quoted from *The Psychology of Left and Right,* M. Corbalis and Ivan Beale, Hillsdale, NJ: Lawrence Erlbaum Associates, 1976, p. 101.][18]

Fortunately, such antiquated thinking is no longer the norm, with more precise research being conducted and great strides being made in the last several decades into understanding how the brain functions. Sperry was instrumental in this paradigm shift: through his split-brain research, he found evidence that the right hemisphere, although nonverbal, nevertheless:

> experiences, responds with feelings, and processes information on its own . . . evidence [has] accumulated showing that the

[18] Betty Edwards, *The New Drawing on the Right Side of the Brain* (Jeremy P. Tarcher/Putnam, 1999), 30.

> mode of the left hemisphere is verbal and analytic, while that of the right is nonverbal and global. New evidence by Jerre Levy in her doctoral studies showed that the mode of processing used by the right brain is rapid, complex, whole-pattern, spatial, and perceptual – processing that is not only different from but comparable in complexity to the left brain's verbal, analytic mode.[19]

The right brain is also where inspiration comes to us and have those wonderful "a-ha!" moments when everything seems to come together. When the "light bulb goes off," that's the right brain firing. It is responsible for understanding metaphors, dreaming, and creating new combinations of ideas.[20] To imagine life without the "inferior" right brain is truly a dismal prospect. What this has to do with drawing is explored in the following chapter.

Many people hope education is finally catching up to this storm surge. According to Patrick Bassett, president of the National Association of Independent Schools, "We need kids to be more risk-taking, more entrepreneurial. More than ever, we need the right brain mix with the left." He has been advocating this line of thinking for years and has found the reception has warmed considerably within the last few years. The emphasis on creative problem-solving using methods and approaches that have their source in the right brain, will increase as "traditional jobs in the left-brain world of finance shrink." An interesting perspective concurs with Bassett's argument: Sachin Desai, a software engineer from Britain who attended Bassett's lecture, shared, "Growing up in Britain, it was all about linear thinking. But my kids are American, a place known for coming up with unique

[19] Ibid: p. 32-33.
[20] Ibid: p. 38.

solutions and ideas. I fear we're losing that. So it's critical that these kids become creative thinkers."[21] Bassett was inspired in his stance by Daniel Pink, author of *A Whole New Mind: Why Right-Brainers Will Rule the Future*, who says the obstacle facing children in their development of their right brain is the educational system itself, fired by No Child Left Behind and focused on test-taking to the exclusion of much else.

However, many educators who agree wholeheartedly with this viewpoint find themselves growing discouraged when they attend seminars such as these where the problem is highlighted more than possible solutions. The question of "Well, what do we *do* about it?" echoes frequently among the audiences of these lectures.

Eric P. Jensen, writing for *Phi Delta Kappa International*, draws several conclusions from research conducted by John Bruer, executive administrator of the James S. McDonnell Founation, in a series of articles critical of brain-based research as it relates to education. Bruer postulates that neuroscience and brain-based research bring little to the table in education and educators should instead focus their attentions on what psychologists and cognitive scientists have been telling us for decades. Further, he "predicted it would 25 years before we would see practical classroom applications of the new brain research." Jensen believes many educators take claims such as this as proof that they were "simply not capable of understanding how our brain works. Other educators may have decided that neuroscience has nothing to offer and that the prudent path would be simply to ignore the brain research for now

[21] Marco R. Della Cava, *No Right Brain Left Behind: Must Kids Prep for "Risk-Taking"?*, http://www.usatoday.com/news/education/2009-07-13-right-brain_N.htm (July 2009)

and follow the yellow brick road to No Child Left Behind," the series of educational reforms begun in the 2000's by President George W. Bush that focuses more on test results than most other measures of educational success. As Jensen suggests, "brain-based education is best understood in three words: engagement, strategies, and principles," and any educator should be able to reflect on his or her methodology and articulate *why* they do what they do. Neuroscience's findings are not automatically irrelevant and overly complex. Jensen advocates a balanced approach where brain-based research is incorporated into educational policies, as the brain is so intimately involved in everything we do and in our way of learning, but should not be preached as the only "exclusive discipline for schools to consider."[22]

The bottom line seems to be that both education and brain-based research are monoliths in their own right and the perfect symbiosis of the two is a long time coming. But the research is building and conversations are happening, and we may find that as the traditional approach of left-brain-friendly education is leaving many children (and therefore many adults) out in the cold, changes begin to be implemented. Until then, the balanced development of both hemispheres of your brain may rest in your hands.

[22] Eric P. Jensen, *A Fresh Look at Brain-Based Education*, http://teachers.net/gazette/OCT08/jensen/ (2008).

How Brain Research Relates to Drawing and Painting

> "If one picture is worth a thousand words, can a thousand words [explain] one picture?"
>
> - Michael Stephan[23]

Many adults are convinced they don't have the talent to draw because their previous attempts have appeared shockingly and embarrassingly childish -- looking like a seven-year old did them. But perhaps the reason their drawing ability never progressed beyond that time is because school starts about seven years of age, and the educational system funnels students into left brain modes of analysis, logic, math, verbal, etc and away from the more visual, intuitive right-brain way of processing information. Artists look spatially at and draw the whole picture first before they put in the details: a right-brain process. So while a majority of adults progress in so many other areas in life, the author feels just haven't been taught to see spatially, judging distances, etc. These are things they could do if they were taught to access the right hemisphere of their brain.

But as mentioned earlier, both hemispheres of the brain perform many identical functions such as reasoning, remembering, communication, and problem-solving, but in different ways. But rather like two brothers running a

[23] Michael Stephan, *A Transformational Theory of Aesthetics,* London: Routledge, 1990.

business with one naturally inclined toward keeping the books and the other toward "pressing the flesh" in public relations but both working toward the success of their business, both hemispheres come together and share their respective results to complete the process of learning or doing a particular task.[24] The left brain is perfectly suited toward organized tasks such as listing pros and cons, outlining a paper, and spelling a word correctly to pull up accurate results in Google. By the same token, as psychologist David Galin puts it, "try to describe a spiral staircase without making a spiral gesture."[25]

Most people believe that drawing is a primarily right-brain activity. While some of the most obvious aspects of drawing are indeed facilitated by the right hemisphere of the brain, both hemispheres are integrally involved in creating a completed drawing. As Marion Boddy-Evans explains it,

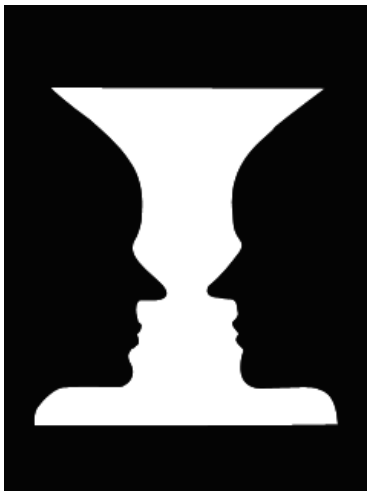
> When you start a painting, you need be able to to visualize the final painting in your mind (right brain, working from the whole), then develop the painting, choosing the elements, matching and mixing colors, placing in the shadows and highlights (right brain, working on various things simultaneously), but at the same time be able to look critically at what you've doing (left brain, being analytical). By finding out whether your thinking is dominated by your right or left brain, you can then deliberately set out to use the 'right brain' way of thinking in your painting or drawing, rather than working on 'auto-pilot'. By trying a different strategy you will probably be surprised by what different results you can produce.

There are specific exercises you can do to activate your right brain so you may find it easier to accomplish your artistic goals. As Marion Boddy-

[24] Ed Sickafus, *A Simple Theory Underlying Structured, Problem-Solving Methodologies – ASIT, TRIZ, USIT and others*, http://www.u-sit.net/auxlib/web07/essays/Keynote.pdf (2006).
[25] Marion Boddy-Evans, *Right Brain and Left Brain Inventory*, http://painting.about.com/library/blpaint/blrightbraintable.htm.

Evans, an expert who writes for the resource site, About.com, so succinctly puts it, "The theory behind right brain exercises for artists is that the left brain easily gets bored and switches off, leaving the right brain 'in charge.'"[26] One of these exercises is *blind contour drawing*. This can be one of the more frustrating exercises to your left-brain thought processes as you are not able to monitor your drawing as you do it. However, people who do this exercise are frequently surprised at how well they drew without looking.

Dr. Betty Edwards developed a right-brain drawing exercise with the *Rubin Vase*, so named for the Danish psychologist, Edgar Rubin, who first developed it around 1915.[27] This exercise (otherwise known as the Vase/Faces image, seen below) which also forces your brain to shift from the left-brain thinking many of us are more comfortable with to the right-brain mode which is required as we draw.



[26] Marion Boddy-Evans, "Right Brain Exercises for Artists: Taking a Line for a Walk," http://painting.about.com/od/rightleftbrain/a/rightbrain_walk.htm (2011).
[27] New World Encyclopedia, *Rubin Vase*, http://www.newworldencyclopedia.org/entry/Rubin_vase (Nov. 2007).

Another exercise is *upside-down drawing*, which can really bend the brain! Similar to blind contour drawing, this exercise jolts the left brain right out of the picture, but also can be one of the more challenging right-brain exercises precisely *because* it silences the left-brain so instantly.

Once you have activated the right-brain, some people find it quite easy to slip back into left-brain thinking without even realizing it. An exercise that can prevent this regression is *speed drawing*. Especially once you have learned certain basic techniques of drawing, speed drawing can keep your right brain so busy the left brain doesn't have much of a chance to intrude.[28] Another version of this is *action drawing* and *gesture drawing*.

The aforementioned exercises are among the right-brain drawing exercises incorporated into "Drawing Secrets Revealed," www.DrawingSecretsRevealed.com, a 12-part comprehensive drawing video series. The course is carefully organized to provide a solid groundwork and then build lesson on lesson, offering valuable instruction both to the brand-new beginner and to the more intermediate artist who may have missed some foundational instruction. It is also critical for students to have their drawing skills down before attempting to learn color (oil, watercolor, pastels, etc.).

What sets this online series apart from others is the brain research that has been integrated throughout. For more information, visit www.DrawingSecretsRevealed.com.

[28] Michael Dance, "Right Brain Drawing Exercises," http://www.ehow.com/way_5215065_right-brain-drawing-exercises.html (2011).

Why Developing Both Hemispheres of Your Brain Can Help You in Business and in Life

As has already been established, purely left-brained thinking simply will not suffice in today's economy and corporate world. An excellent example of how creativity changes the face of business is found in the story of Dorothy Barak, founder of Specialty Showrooms. Dorothy and her family had their roots in her father's hardware store, until her brothers observed that their main customers were builders and management companies buying in bulk for their apartment buildings and other multi-unit housing projects. Because their goal was to furnish homes, Dorothy and her family realized they would sell far more merchandise if they could aid their customers in visualizing how their products would "fit" in the homes.

> Dorothy and her family displayed and sold high-end appliances in a manner revolutionary for its time. Instead of lining up appliances one after the other similar to the competition, this team of entrepreneurs hired a designer to create and accessorize an individual vignette for each appliance, thus prominently displaying the products in a showroom atmosphere. Today, all big-box retailers such as Home Depot and Lowe's replicate the concept. It did not take long for this technique to be noticed, and in 1996 nationwide Wilmark bought the business.[29]

Go to a mall or an office supply store, or watch a TV show and it won't be long before you notice evidence of creative problem-solving coming

[29] Journelism, "Creativity Helps Raise the Margin: The Struggle and Triumphs of Dorothy Barak's Retail Family Business, Specialty Showrooms," http://journelism.org/articles/entrepreneurship/dorothy-bara (2011).

through from store windows and commercials. Magnetic business cards, the variety of day-planners, reinforced plastic handles on shopping bags, water bottles that are indented around the middle for better grip, bobby pins with a crimped design for better hold, facial tissues with lotion and aloe to reduce chafing, heated car seats, the use of Twitter and other social media to address natural disasters, booties and jackets for dogs in very cold weather – the list goes on and on. And this list represents only actual products. What about creativity in advertising and business structure? Trends in advertising continually change in keeping with the modes and popular culture of the day, which is only possible with creativity. Adopting new practices and policies in business wars with the "safe" inclination to keep doing what has been done for years, but only by taking those risks can businesses remain at the forefront of the marketplace. "Necessity is the mother of invention" is true, and it is displayed time and again as we strive to remain competitive in an always-competitive global economy.

Drawing may seem like a very narrow creative venue. Obviously, there are areas of work that depend on artistic talent. But how, you ask, can that possibly translate in business? How many times do you paint your boss' portrait? Any artistic pursuit galvanizes the right brain, pulling it from its comfortable backseat position and bringing its processes and strengths to the forefront. And when you incorporate specific exercises aimed at reactivating the right brain, your right brain begins to grow accustomed to having a more direct role in your thought processes even in areas that generally seem more left-brained.

A question that lingers for many people is how learning disabilities affect their aptitude toward various pursuits. In a conversation about art and drawing such as this one, it turns out that some learning disabilities are actually better suited for right brain pursuits. "Compared to the average person, a dyslexic generally has very strong visual skills, a vivid imagination, strong practical/manipulative skills, innovation, and (so long as the education system doesn't inhibit it) an above average intelligence. Basically the right side of the brain is stronger than the left -- and that's what a good artist needs!"[30] To find out more about how dyslexia relates to artists, visit the Additional Research Resources at the end of this book.

[30] Marion Boddy-Evans, "The Artist and Dyslexia," http://painting.about.com/od/rightleftbrain/a/ArtistDyslexia.htm (2011).

Which Are YOU? Take the Left Brain/Right Brain Quiz!

Quite a few interesting assessments are available online which will indicate the dominance of each side of your brain. One sample question that might illuminate how your brain works is below:

Read aloud, as quickly as possible, the COLOR in which the words are written, NOT the actual words:

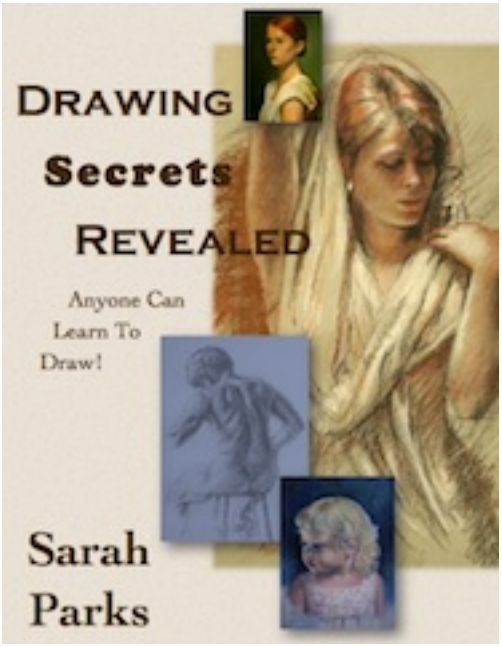
If you merely read the words, you are likely using the left brain. If you read the colors, you are using the right brain.

One of the most thorough assessments can be found on the web site of the Art Institute of Vancouver at http://www.rightbrainleftbraintest.com/.

As an artist, you may be interested in taking this following quiz: http://painting.about.com/library/quiz/blquiz-rightbrain2.htm.

If you find you are more comfortable with the right brain and have difficulty with functions associated with the left brain, some of these exercises might prove useful in balancing the two hemisphere of your brain: http://graphicdesignblender.com/left-brain-exercises-for-creative-people.

One of the best drawing programs you'll find online today is "Drawing Secrets Revealed," which gives you an enormous amount of content in an organized, easy-to-understand framework. It is designed to build from foundational concepts, such as identifying basic shapes in any composition and rendering accurate values (darks and lights) in a drawing, to the more complicated techniques like linear perspective. To explore this innovative drawing series, go to www.DrawingSecretsRevealed.com.



Additional Research Resources

Right Brain / Left Brain: What Is It All About?
A simple explanation of right / left brain theory and its relevance to painters

Split Brain Experiments
NobelPrize.org summary of Richard W. Sperry, Nobel Prize winner

Left Brain/Right Brain
Pathways To Reach Every Learner – focused toward children

A Few Quizzes:

- Right Brain vs Left Brain Creativity Test: The Art Institute of Vancouver
- LifeScript Quiz
- Right Brain / Left Brain Quiz for Artists

17 Left Brain Exercises for Creative People

Right Brain Characteristics
Suite101.com (insightful writers, informed readers)

Revenge of the Right Brain
Logical and precise, left-brain thinking gave us the Information Age. Now comes the Conceptual Age - ruled by artistry, empathy, and emotion.

The Artist and Dyslexia
Why dyslexia in an artist can be a good thing.

Right Brain / Left Brain Painting
A collection of articles and links on the concept of right brain and left brain thinking and how it's relevant to artists.

Left Brain/Right Brain
Info on Roger W. Sperry

The Ten-Percent Myth
Do we really only use 10% of our brains?

Willingham: Left/right brain theory is bunk
Washington Post

Art and the Brain in the Learning Process

Right Brain and Left Brain Inventory
An inventory of the different ways the right brain and left brain process information.

No Right Brain Left Behind: Must Kids Prep for "Risk-Taking"?

Left Brain, Right Brain, Whole Brain?
An examination into the theory of brain lateralization, learning styles and the implications for education.

A Fresh Look at Brain-Based Research
Eric P. Jensen

New World Encyclopedia: Creativity

E-How Article on Right Brain Drawing Exercises