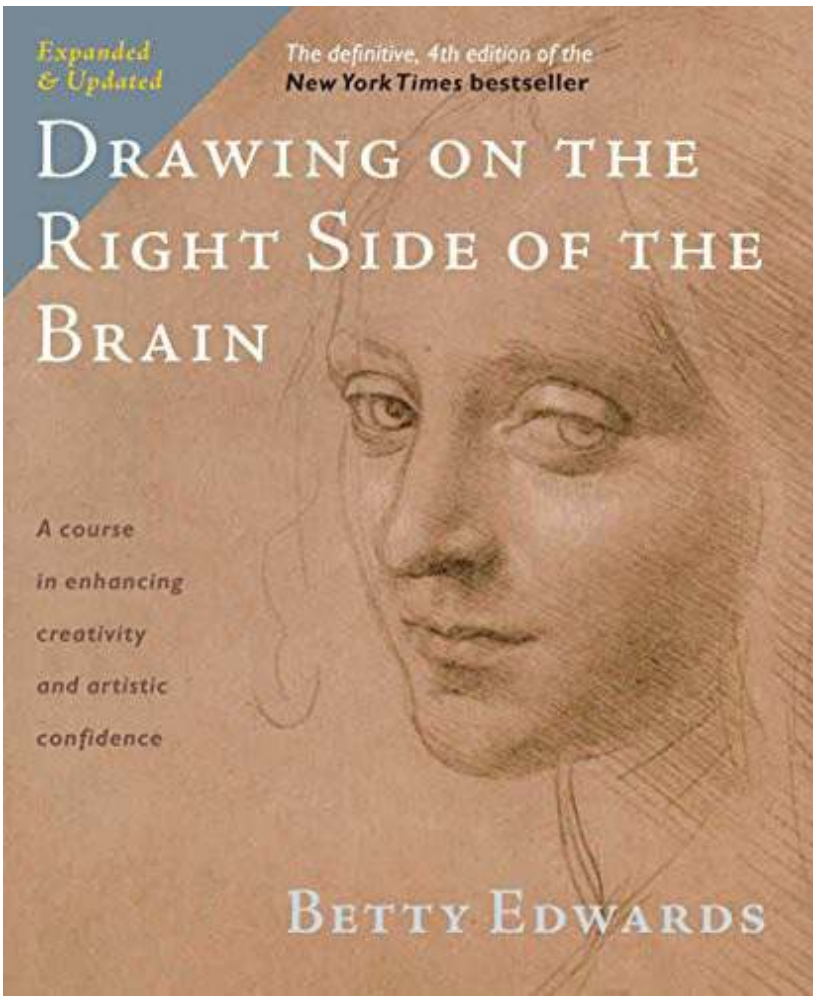
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The definitive, 4th edition of the New York Times bestseller
DRAWING ON THE RIGHT SIDE OF THE BRAIN
A course in enhancing creativity and artistic confidence
BETTY EDWARDS

Drawing on the Right Side of the Brain

Betty Edwards

The Definitive, 4th Edition

Tarcher/Penguin, a member of Penguin Group (USA), New York

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BRAIN

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ALWAYS LEARNING PEARSON

JEREMY P. TARCHER/PENGUIN

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DEDICATION

To my granddaughters, who have taken to drawing the way fish take to swimming and birds to flying, simply by sometimes sitting in on their Dad's drawing workshops.

Dear Sophie and Francesca,

this book is for you,

with thanks for all the joy

you have brought into my world.

Self-portrait by Francesca Bomeisler, July 29, 2010, when she was 8.

Self-portrait by Sophie Bomeisler, July 29, 2011, when she was 11.

CONTENTS

[Acknowledgments]

[Introduction]

[Chapter 1 Drawing and the Art of Bicycle Riding]

[Chapter 2 First Steps in Drawing]

[Chapter 3 Your Brain, the Right and Left of It]

[Chapter 4 Crossing Over from Left to Right]

[Chapter 5 Drawing on Your Childhood Artistry]

Chapter 6 Perceiving Edges

Chapter 7 Perceiving Spaces

Chapter 8 Perceiving Relationships

Chapter 9 Drawing a Profile Portrait

Chapter 10 Perceiving Lights, Shadows, and the *Gestalt*

Chapter 11 Using Your New Perceptual Skills for Creative Problem Solving

Chapter 12 Drawing on the Artist in You

Glossary

Bibliography

Index

Portfolio Components

Portfolio and DVD Ordering

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I shall be forever grateful to Dr. Roger W. Sperry (1913–1994), neuropsychologist, neurobiologist, and Nobel laureate, for his generosity and kindness in discussing the original text with me. At a time in 1978 when I was most discouraged and doubtful about the manuscript I was writing, I summoned the courage to send it to him. Not long after that, I was filled with gratitude to receive his kind response in a letter that began, “I have just read your splendid manuscript.” He suggested that we meet to review and clarify

some errors in my layperson's effort to write about his research. That invitation began a series of once-a-week meetings in his office at the California Institute of Technology, resulting in revision after revision of Chapter Three of the manuscript, the chapter in which I attempted to describe the "split-brain" studies.

Most gratifyingly, when *Drawing on the Right Side of the Brain* was finally published in 1979, Dr. Sperry wrote a statement for the back cover:

". . . her application of the brain research findings to drawing conforms well with the available evidence and in many places reinforces and advances the right hemisphere story with new observations."

I asked him why he had used the ". . ." to begin his statement. He replied, with his usual sly humor, that if any of his colleagues objected to his approval of this nonscientific book, he could always say that something was left out.

At that time, objections to Dr. Sperry's findings were frequent, especially regarding his demonstrations that the right-brain hemisphere was capable of fully human, high-level cognition. These objections diminished over the years, as corroboration of his insights became undeniable. The Nobel Prize in Medicine in 1981 ensured Dr. Sperry's eminent position in the history of science.

Many other people have contributed greatly to my book. In this brief acknowledgment, I wish to thank at least a few.

My publisher, Jeremy Tarcher, for his enthusiastic support over more than thirty years.

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Brian Bomeisler, my son, for his long years of work helping me to revise, refine, and clarify these lessons in drawing. His skills as an artist and as our

lead workshop teacher have enabled countless students to succeed at drawing.

Sandra Manning, who so ably manages the Drawing on the Right Side of the Brain office and workshops. Her wonderful contribution was in researching and obtaining international permissions to reproduce the many new illustrations found in this edition.

My son-in-law, John Farrell, and my granddaughters Sophie Bomeisler and Francesca Bomeisler, who have been my enthusiastic cheerleaders.

My thanks also go to the many art teachers and artists across the country and in many other parts of the world who have used the ideas in my book to help bring drawing skills to their students.

And last, I wish to express my gratitude to all of the students whom I have been privileged to know over the decades. It was they who enabled me to form the ideas for the original book and who have since guided me in refining the teaching sequences. Most of all, it has been the students who have made my work so personally rewarding. Thank you!

INTRODUCTION

Drawing used to be a civilized thing to do, like reading and writing.

It was taught in elementary schools. It was democratic.

It was a boon to happiness. 1

—MICHAEL KIMMELMAN

For more than thirty years, *Drawing on the Right Side of the Brain* has been a

work in progress. Since the original publication in 1979, I have revised the book three times, with each revision about a decade apart: the first in 1989, the second, 1999, and now a third, 2012 version. In each revision, my main purpose has been to incorporate instructional improvements that my group of teachers and I had gleaned from continuously teaching drawing over the intervening years, as well as bringing up-to-date ideas and information from education and neuroscience that relate to drawing. As you will see in this new

version, much of the original material remains, as it has passed the test of time, while I continue to refine the lessons and clarify instructions. In addition, I make some new points about emergent right-brain significance and the astonishing, relatively new science called neuroplasticity. I make a case for my life's goal, the possibility that public schools will once again teach drawing, not only as a civilized thing to do and a boon to happiness, but

also as perceptual training for improving creative thinking.

The power of perception

Many of my readers have intuitively understood that this book is not only about learning to draw, and it is certainly not about Art with a capital A. The true subject is *perception*. Yes, the lessons have helped many people attain

the basic ability to draw, and that is a main purpose of the book. But the larger underlying purpose was always to bring right hemisphere functions into focus and to teach readers how to *see* in new ways, with hopes that they would discover how to transfer perceptual skills to thinking and problem solving. In education, this is called "transfer of learning," which has always been regarded as difficult to teach, and often teachers, myself included, hope that it will just happen. Transfer of learning, however, is best accomplished by direct teaching, and therefore, in Chapter 11 of this revised edition, I encourage that transfer by including some direct instruction on how perceptual skills, learned through drawing, can be used for thinking and problem solving in other fields.

The book's drawing exercises are truly on a

basic level, intended for a beginner in drawing.

"Why not go out on a limb?

That's where the fruit is."

The course is designed for persons who cannot

—Mark Twain

draw at all, who feel that they have no talent

for drawing, and who believe that they

probably can never learn to draw. Over the years, I have said many times that

the lessons in this book are not on the level of art, but are rather more like learning how to read—more like the ABCs of reading: learning the alphabet, phonics, syllabification, vocabulary, and so on. And just as learning basic reading is a vitally important goal, because the skills of reading transfer to every other kind of learning, from math and science to philosophy and astronomy, I believe that in time learning to draw will emerge as an equally vital skill, one that provides equally transferrable powers of perception to guide and promote insight into the *meaning* of visual and verbal information. I will even go out on a limb and say that we mistakenly may have been putting all our educational eggs into one basket only, while shortchanging other truly valuable capabilities of the human brain, namely perception, intuition, imagination, and creativity. Perhaps Albert Einstein put it best:

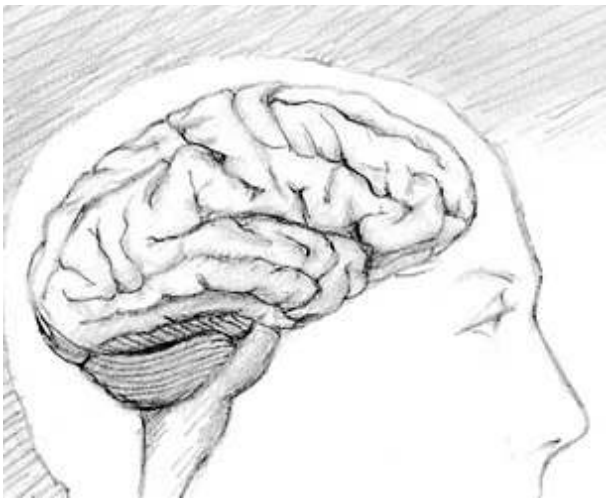
"The intuitive mind is a sacred gift, and the rational mind is a faithful servant.

We have created a society that honors the servant and has forgotten the gift."

The hidden content

About six months after publication of the original book in 1979, I had the odd

experience of suddenly realizing that the book I thought I had written contained another content of which I was unaware. That hidden content was something I didn't know I knew: I had



inadvertently defined the basic component skills of the global skill of drawing. I think part of the reason this content was hidden from me was the very nature of art education at the time, where beginning drawing classes focused on subject matter, such as “Still Life Drawing,” “Landscape Drawing,” or “Figure Drawing,” or on drawing mediums, such as charcoal, pencil, pen and ink, ink wash, or mixtures of mediums.

But my aim was different: I needed to provide my readers with exercises that would cause a cognitive shift to the right hemisphere—a shift similar to that caused by Upside-Down Drawing: “tricking” the dominant left hemisphere into dropping out of the task. I settled on five subskills that seemed to have the same effect, but at the time, I thought that there must be

other basic skills—maybe dozens of them.

Then, months after the book had been published, in the midst of teaching a class, it hit me as an *aha!* that for learning to draw realistic images of observed subjects, the five subskills were it—there weren't more. I had inadvertently selected from the many aspects of drawing a few fundamental subskills that I thought might be closely aligned to the effect of Upside-Down

Drawing. And the five skills, I realized, were not drawing skills in the usual sense;they were rock-bottom, fundamental *seeing* skills: how to perceive edges, spaces, relationship, lights and shadows, and the *gestalt.* As with the ABCs of reading, these were the skills you had to have in order to draw *any* subject.

I was elated by this discovery. I discussed it at length with my colleagues and searched through old and new textbooks on drawing, but we did not find any additional *fundamental* basic components of the global skill of basic realistic drawing—drawing one's perceptions. With this discovery, it occurred to me that perhaps drawing could be quickly and easily taught and learned—not strung out over years and years, as was the current practice in art schools. My aim suddenly became "drawing for everyone," not just for artists in training. Clearly, the basic ability to draw does not necessarily lead to the "fine art" found in museums and galleries any more than the basic

ability to read and write inevitably leads to literary greatness and published works of literature. But learning to draw was something I knew was valued by children and adults. Thus, my discovery led me in new directions, resulting in a 1989 revision of *Drawing on the Right Side of the Brain,* in which I focused on explaining my insight and proposing that individuals who had never been able to draw could learn to draw well very rapidly. Subsequently, my colleagues and I developed a five-day workshop of forty hours of teaching and learning (eight hours a day for five days), which proved to be surprisingly effective: students acquired quite high-level basic drawing skills in that brief time, and gained all the information they needed to go on making progress in drawing. Since drawing perceived subjects is always the same task, always requiring the five basic component skills, they could proceed to any subject matter, learn to use any or all drawing mediums, and take the skill as far as they wished. They could also apply their new visual skills to thinking. The parallels to learning to read were becoming obvious.

Over the next decade, from 1989 to 1999, the connection of perceptual skills to general thinking, problem solving, and creativity became a more central focus for me, especially after publication of my 1986 book, *Drawing on the Artist Within.* In this book, I proposed a "written" language for the

right hemisphere: the language of line, the expressive language of art itself.

This idea of using drawing to *aid thinking* proved to be quite useful in a class

on creativity that I developed for university students and in small corporate seminars on problem solving.

Then, in 1999, I again revised *Drawing on the Right Side of the Brain,* again incorporating what we had learned over the years of teaching the five basic skills and refining the lessons. I especially focused on the skill of sighting (proportion and perspective), which is perhaps the most difficult component skill to teach in words, because of its complexity and its reliance on students' acceptance of paradox, always anathema to the logical, concept-bound left brain. In addition, I urged using perceptual skills to "see" problems.

Now, with this third revision in 2012, I want to clarify to the best of my ability the global nature of drawing and to link drawing's basic component skills to thinking in general and to creativity in particular. Throughout

"The noblest pleasure
is the joy of understanding."
—Leonardo da Vinci

many cultures, both in the United States and worldwide, there is much talk of creativity and our need for innovation and invention. There are many suggestions to try this or try that. But the nitty-gritty of precisely *how* to become more creative is seriously lacking. Our education system seems bent on eliminating every last bit of creative perceptual training of the right side of the brain, while overemphasizing the skills best accomplished by the left side of the brain: memorizing dates, data, theorems, and events with the goal of passing standardized tests. Today we are not only testing and grading our children into the ground, but we are not teaching them how to see and understand the *deep meaning* of what they learn, or to perceive the connectedness of information about the world. It is indeed time to try something different.

Fortunately, the tide seems to be turning, according to a recent news report. A small group of cognitive scientists at the University of California at Los Angeles is recommending something they call “perceptual learning” as a remedy to our failing educational practices. They express hope that such training will transfer to other contexts, and they have had some success with achieving transfer. Discouragingly, however, the news report ended: “In an education awash with computerized learning tools and pilot programs of all

kinds, the future of such perceptual learning efforts is far from certain. Scientists still don't know the best way to train perceptual intuition, or which specific principles it's best suited for. And such tools, if they are incorporated into curriculums in any real way, will be subject to the judgment of teachers."[2]

I would like to suggest that we already have a best way to train perceptual skills: it has been staring us in the face for decades, and we haven't (or wouldn't, or couldn't) accept it. I think it is not a coincidence that as drawing and creative arts in general have steadily diminished in school curricula since the mid-twentieth century, the educational achievement of students in the United States has likewise diminished, to the point that we now rank behind Singapore, Taiwan, Japan, the Republic of Korea, Hong Kong, Sweden, the Netherlands, Hungary, and Slovenia.

In 1969, perceptual psychologist Rudolf Arnheim, one of the most widely read and respected scientists of the twentieth century, wrote:

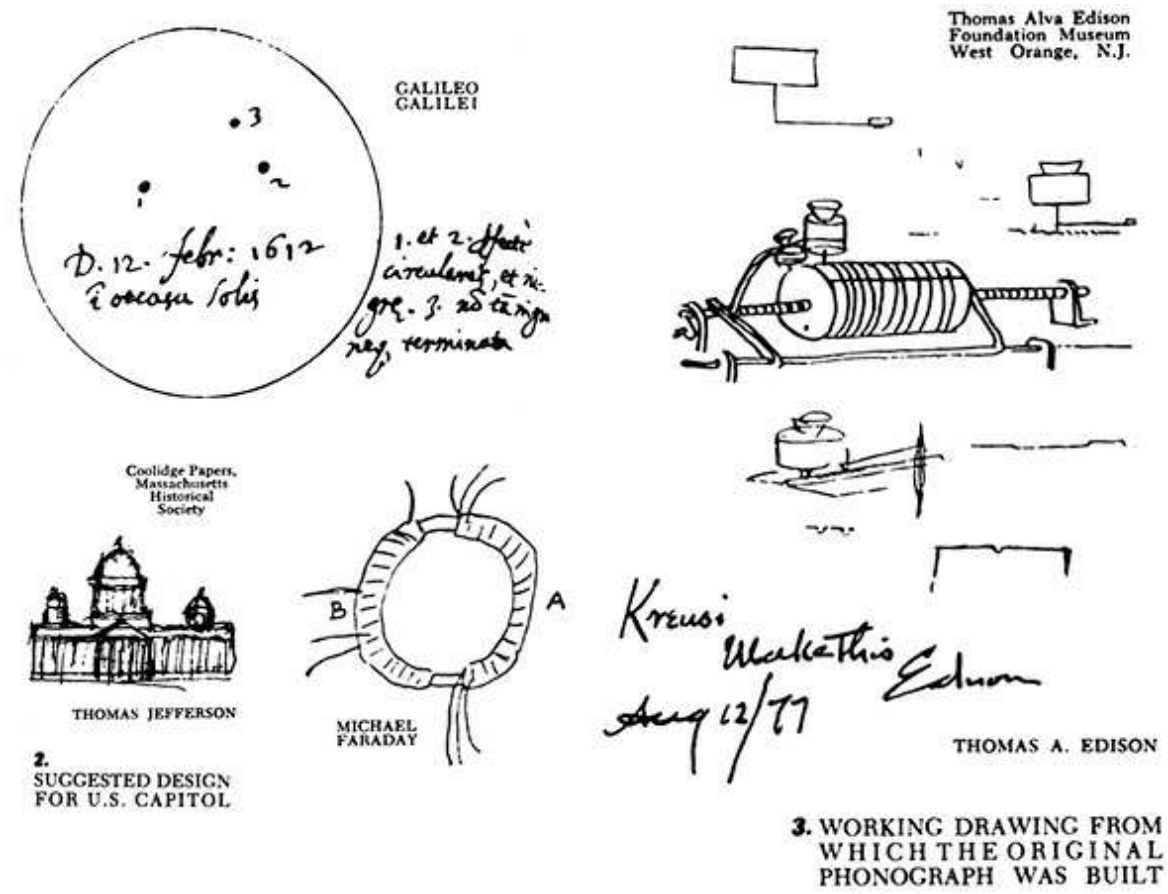
"The arts are neglected because they are based on perception, and perception is disdained because it is not assumed to involve thought. In fact, educators and administrators cannot justify giving the arts an important position in the curriculum unless they understand that the arts

are the most powerful means of strengthening the perceptual component without which productive thinking is impossible in every field of academic study.

"What is most needed is not more aesthetics or more esoteric manuals of art education but a convincing case made for visual thinking quite in general. Once we understand in theory, we might try to heal in practice the unwholesome split which cripples the training of reasoning power."[3]

Drawing does indeed involve thought, and it is an effective and efficient method for perceptual training. And perceptual knowledge can impact learning in all disciplines. We now know how to rapidly teach drawing. We know that learning to draw, like learning to read, is *not* dependent on something called "talent," and that, given proper instruction, every person is able to learn the skill. Furthermore, given proper instruction, people can learn

to *transfer* the basic perceptual components of drawing to other learning and to general thinking. And, as Michael Kimmelman said, learning to draw is a boon to happiness—a panacea for the stultifying and uncreative drudgery of standardized testing that our schools have embraced.



2. SUGGESTED DESIGN FOR U.S. CAPITOL

3. WORKING DRAWING FROM WHICH THE ORIGINAL PHONOGRAPH WAS BUILT

In the history of inventions, many creative ideas began with small sketches. The examples above are by Galileo, Jefferson, Faraday, and Edison.

—Henning Nelms, *Thinking with a Pencil (* New York: Ten Speed Press, 1981), p. xiv

Our two minds and modern multitasking

Today, as research expands and the

In his wonderful book *The Master and*

His Emissary, psychiatrist and Oxford

information-processing styles and proclivities

professor Iain McGilchrist proposes a

telling metaphor to describe human

of the hemispheres become ever clearer,

history and human culture:

respected scientists are recognizing functional

“Over the centuries of history, The

Master (the right hemisphere) has seen

differences as evident and real, despite the fact

his empire and powers usurped and

that both hemispheres appear to be involved to

betrayed by his Emissary (the left

hemisphere).”

a greater or lesser extent in every human

—Iain McGilchrist, *The Master*

and His Emissary (Yale

activity. And there remains much uncertainty

University Press, 2009), p. 14

about the reason for the profound asymmetry

of the human brain, which we seem to be

aware of at the level of language. The expression “I am of two minds about that” clearly states our human situation. Our two minds, however, have not

had an equal playing field: until recently, language has dominated worldwide,

especially in modern technological cultures like our own. Visual perception has been more or less taken for granted, with little requirement for special concern or education. Now, however, computer scientists who are trying to replicate human visual perception find it extremely complicated and slow going. After decades of efforts, scientists have finally achieved facial recognition by computers, but reading the meaning of changes in facial expression, accomplished instantly and effortlessly by the right hemisphere, will take much more time and work.

Meanwhile, visual images are everywhere, and visual and verbal information compete for attention. Constant multitasking linked to information overload is challenging the brain's ability to rapidly shift modes, or to simultaneously deal with both modes of input. The recent banning of texting while driving illustrates the problem of the brain's difficulty in simultaneously processing two modes of information. This recognition that we need to find productive ways to use both modes perhaps explains why replicating right hemisphere processes is only now emerging as important and even, perhaps, critical.

A complication: the brain that studies itself

As a number of scientists have noted, research

An example of extreme multitasking:

For 12 hours a day, a young

on the human brain is complicated by the fact

intelligence officer monitors 10

overhead television screens, types

that the brain is struggling to understand itself.

computer responses to 30 different

This three-pound organ is perhaps the only bit

chats with commanders, troops, and

headquarters, has a phone in one ear,

of matter in the our universe—at least as far as

and communicates with a pilot on a

we know—that observes and studies itself,

headset in the other ear. “It’s intense,”

he says.

wonders about itself, tries to analyze how it

Reported in the *New York Times* by

Thom Shanker and Matt Richtel,

does what it does, and tries to maximize its

“In New Military, Data Overload

capabilities. This paradoxical situation no

Can Be Deadly," January 17,

2011, p. 1

doubt contributes to the deep mysteries that

still remain despite rapidly expanding scientific

knowledge. One of the most encouraging new discoveries that the human brain has made about itself is that it can physically change itself by changing its accustomed ways of thinking, by deliberately exposing itself to new ideas and routines, and by learning new skills. This discovery has led to a new category of neuroscientists, neuroplasticians, who use microelectrodes and brain scans to track complex brain maps of neuronal communication, and who have observed the brain revising its neuronal maps.

Brain plasticity: a new way to think about talent

This conception of a plastic brain, a brain that

"The mystery is the human faculty of

perception, the act of knowing what

constantly changes with experience, that can

our senses have discovered."

—Edmund Bolles, *A Second Way*

reorganize and transmute and even develop

of Knowing: The Riddle of

new cells and new cell connections, is in direct

Human Perception (Prentice

Hall, 1991)

contrast to previous judgments of the human

brain as being more akin to a hard-wired

machine, with its parts genetically determined and unchangeable except for

development in early childhood and deterioration in old age. For teachers like

myself, the science of brain plasticity is both exciting and reaffirming—

exciting because it opens vast new possibilities, and reaffirming because the

idea that learning can change the way people live and think has always been a

goal of education. Now, at last, we can move beyond the ideas of fixed

intelligence limits and special gifts for the lucky few, and look for new ways

to enhance potential brain power.

One of the exciting new horizons that brain plasticity opens is the

possibility of questioning the concept of *talent,* especially the concepts of

artistic talent and creative talent. Nowhere has the idea of the hard-wired

brain, with its notion of given or not-given talent, been as widespread as in

the field of art, and especially in drawing, because drawing is the entry-level

skill for all the visual arts. The common remark, “Drawing? Not on your life!

I can’t even draw a straight line!” is still routinely announced with full conviction by many adults and even more distressingly, by many children as young as eight or nine, who have tried and sadly judged as failures their attempts to draw their perceptions. The reason given for this situation is often

a flat-out statement: “I have no artistic talent.” And yet we know now, from knowledge of brain plasticity and from decades of work by me and many others in the field, that drawing is simply a skill that can be taught and learned by anyone of sound mind who has learned other skills, such as reading, writing, and arithmetic.

Drawing, however, is not regarded as an essential skill in the way the three Rs are viewed as necessary life skills. It is seen as perhaps a peripheral skill, nice to have as a pastime or hobby, but certainly not indispensable. And

yet, somehow, at some level, we sense that something important is being ignored. Surprisingly, people often equate their lack of drawing skill with a lack of creativity, even though they may be highly creative in other areas of their lives. And the importance of perception often shows up in the words we speak, phrases that speak of seeing and perceiving. When we finally

understand something, we exclaim, “Now I see it!” Or when someone fails to

understand, we say the person “can’t see the forest for the trees,” or “doesn’t get the picture.” This implies that perception is important to understanding, and we hope that we somehow learn to perceive, but it is a skill without a classroom and without a curriculum. I propose that drawing can be that curriculum.

Public education and the arts

Drawing, of course, is not the only art that

“Now, more than ever, many of our

elected officials view spending on the

trains perceptual thinking. Music, dance,

arts not just as an extravagance but

also as a drain on resources that are

drama, painting, design, sculpture, and

best used for other purposes. To them,

ceramics are all vitally important and should

the arts are expendable and a

distraction.”

all be restored to public schools. But I’ll be

—Robert Lynch, President,

blunt: even if there were the will, there is no

Americans for the Arts/Action

Fund, December 16, 2010

way that will happen because it would cost too

Ironically, a report from the May 2009

much in this era of ever-diminishing resources

“Learning, Arts, and the Brain”

for public education. Music requires costly

conference sponsored by the Johns

Hopkins University School of

instruments, dance and drama require staging

Education in collaboration with the

Dana Foundation included the

and costumes, sculpture and ceramics require

“preliminary but intriguing suggestion

equipment and supplies. Although I wish it

that skills learned via arts training

could carry over to learning in other

were otherwise, high-cost visual and

domains.”

—Mariale M. Hardiman, Ed.D.,
performing arts programs that were terminated
and Martha B. Denckla, M.D.,
long ago will not be reinstated. And cost is not
“The Science of Education,”
"Informing Teaching and
the only deterrent. Over the last forty years,
Learning through the Brain
Sciences,” *Cerebrum, Emerging*
many educators, decision-makers, and even
Ideas in Brain Science, The Dana
some parents have come to regard the arts as
Foundation, 2010, p. 9
peripheral, and, let’s face it, frivolous—
especially the visual arts, with their
connotation of “the starving artist” and the mistaken concept of necessary talent.

The one art subject that we could easily afford is drawing, the skill that is basic to training visual perception and is therefore the entry-level subject—the ABCs—of perceptual skill-building. Among people who oppose arts

education, drawing doesn't escape the frivolity label, but it is affordable to teach. Drawing requires the simplest of materials—paper and pencils. It requires a minimum of simple equipment and no special rooms or buildings. The most significant requirement is a teacher who knows how to draw, knows how to teach the basic perceptual skills of drawing, and knows how to transfer those skills to other domains. Of all the arts, drawing is the one that can fit into today's rapidly shrinking school budgets. And most parents are very supportive if their children acquire real, substantive drawing skills as opposed to the more usual "expressive" manipulation of materials in vogue in recent decades. At around ages seven to nine, children long to learn "how to make things look real" in their drawings, and they are well able to learn to draw, given appropriate teaching. If educators would find the will, there would be a way.

Trying something new

We could at least give it a try. Our American

In December 2010, the Organization

for Economic Cooperation and

public schools are failing fast. The more we

Development released the highly

regarded results of its 2009 "Pisa" test,
double down on teaching facts and figures, the
the Program for International Student
more we focus on standardized testing, the
Assessment test of fifteen-year-old
students in sixty-five countries in
more left-brained our schools become, the
science, reading, and math.
more our children are failing even our own
Alarmingly, American students came
standardized tests, while the dropout rates rise
in seventeenth in reading, twenty-third
in science, and thirtieth in math, far
ominously. Albert Einstein once defined
behind China, Singapore, Finland, and
insanity as “doing the same thing over and
Korea. The U.S. Secretary of
Education, Arne Duncan said, "We
over again and expecting different results.” He
have to see this as a wake-up call."

also said, “We can’t solve problems by using

the same kind of thinking we used when we

created them.”

In light of the United States' appalling worldwide standing in reading,

math, and science, surely it is time to try something different—namely, to

begin purposely educating the other half of the brain in order to maximize the

powers of both hemispheres. I believe that the goal of education should be

not only to pass necessary standardized tests but also to enable our students to

acquire and apply *understanding* to what they have learned. Ideally, of

course, students should develop rational, orderly thinking processes—left-

hemisphere skills that are compatible with investigation, dissection,

reduction, examination, summary, and abstraction. If we also teach students

right-hemisphere perceptual skills, they will help students “see things in

context,” “see the whole picture,” “see things in proportion and in

perspective,” and observe and apprehend—in short, to intuit, to understand

and bring *meaning* to the fragmented world of the left hemisphere.

Teaching for transfer of learning

To promote understanding, we could teach our

Transfer of learning can be “near

transfer" or "far transfer." An example
children perceptual skills through drawing in
of near transfer of drawing skills
might be students drawing various
elementary school, starting around the fourth
types of bird beaks in a science class
or fifth grade—not with the intention of
to memorize and identify them. An
example of far transfer might be
training future artists, but with the intention of
students extrapolating from that
teaching students how to transfer perceptual
experience to study and understand the
evolution of bird beaks.
skills learned through drawing to general
Alan Kay, famed for his innovative
thinking skills and problem-solving skills.
computer science contributions, has
After all, we do not teach children to read and
stated that the concept of negative

spaces is essential to computer

write with the goal of training future poets and

programming—an elegant example of

“far transfer.”

authors. With careful teaching for transfer,

drawing and reading together can educate *both*

halves of the brain.

A further argument for perceptual training is the ameliorative effect that a

partial focus on right-hemisphere learning might have on our public school

curriculum. To have even a small part of the school day free from continuous

left-brain, verbal discourse might provide some welcome quiet time and relief

from incessant competitive verbal pressure. In days long past, when I

attended ordinary working-class public schools, art classes, cooking classes,

sewing classes, ceramics, woodworking, metal working, and gardening

provided welcome breaks in the academic day, with time for solitary thought.

Silence is a rare commodity in modern classrooms, and drawing is an

individual, silent, timeless task.

Two vital global skil s: reading and drawing

What are the skills you will learn through drawing, and how do they transfer

to general thinking? Drawing, like reading, is a *global* skill made up of component subskills that are learned step by step. Then, with practice, the components meld seamlessly into the smoothly functioning global activities of reading and drawing.

For the global skill of drawing, the basic component skills, as I have defined them, are:

The perception of edges (seeing where one thing ends and another starts)

The perception of spaces (seeing what lies beside and beyond)

The perception of relationships (seeing in perspective and in proportion)

The perception of lights and shadows (seeing things in degrees of values)

The perception of the *gestalt* (seeing the whole *and* its parts)

The first four skills require direct teaching. The fifth occurs as an outcome or insight—a visual and mental comprehension of the perceived subject, resulting from the focused attention of the first four. Most students experience these skills as new learning, seeing in ways they haven't seen previously. As one student put it after drawing her own hand, "I never really looked at my hand before. Now I see it differently." Often students say, "Before I learned to draw, I think I was just naming things I saw. Now it's different." And many students remark that seeing negative spaces, for

example, is an entirely new experience.

Turning to reading, specialists in teaching reading list the basic component skills of reading, mainly taught in elementary school, as:

Phonetic awareness (knowing that alphabet letters represent sounds)

Phonics (recognizing letter sounds in words)

Vocabulary (knowing the meanings of words)

Fluency (being able to read quickly and smoothly)

Comprehension (grasping the meaning of what is read)

As in drawing, the last skill of

comprehension ideally occurs as an

I am not an expert in reading instruction, but it

worries me that “fluency” is consistently listed in

outcome or result of the preceding

educational literature as a *basic component* of

reading. It seems to me that fluency is better

skills.

described as an *outcome* of learning to read. It also

I am aware, of course, that many

worries me that learning syllabification of words is

rarely listed by reading experts as a basic

additional skills are required for

component, nor is basic sentence structure—that is,

finding the subject and verb in a sentence.

drawing that leads to “Art with a

capital A,” the world of artists,

The listing of fluency as a basic reading component

calls to mind the very common practice of art

galleries, and museums. There remain

teachers insisting that beginners in drawing, even

before they have learned the most basic

countless materials and mediums along

components of the skill, draw a perceived subject

with endless practice to achieve

very, very rapidly (this is often called “scribble

drawing"), which can leave students baffled and

mastery, as well as that unknown spark

frustrated. After the fifth or sixth—or tenth—

of originality and genius that marks the

scribble drawing, the left brain will have dropped

out and students may come up with a "good"

truly great artist of any time. Once you

drawing, usually so designated by the teacher. They

don't know why it happened, how to replicate it, or

have learned basic drawing skill, you

why the teacher likes it. It does seem that often in

can move on, if you wish, to drawing

American education, *fast* is judged to be better,

even when it isn't.

from memory, drawing from imagined

images, and creating abstract or

nonobjective images. But for skillful realistic drawing of one's perceptions using pencil on paper, the five skills I will teach you in this book provide adequate basic perceptual training to enable you to draw what you see. The same is true of basic reading, of course. There are many refinements of reading abilities, depending on subject matter and formats other than print on paper. But for both skills, the basic components are the foundation. Once you can read, your plastic brain has been forever changed. You can read anything, at least in your native language, and you can read for life. Likewise,

once you have learned to draw, your brain has again been changed: you can draw anything that you see with your own eyes, and the skill stays with you for life.

Twin skil s and their transfer: L-mode and R-mode

Thus, in a sense, reading and drawing might be

thought of as twin skills: verbal, analytical L-mode

skills as a major function of the left brain, and

visual, perceptual R-mode skills as a major

function of the right brain. Moreover, human

history tells us that, like written language,

portraying perceptions in drawings has been

singularly important in human development.

Consider the fact that the astoundingly beautiful

prehistoric cave drawings and paintings preceded

written languages by more than twenty-five

thousand years. Moreover, writing grew out of

“Perhaps the best way of all ways of

pictographs or word pictures representing, for

learning observation is to draw. Best

not only because you have to look and

example, bird, fish, grain, and ox, thus illustrating look again (there are no hiding places

the profoundly significant role of drawing in

for ignorance between pencil and

paper) but also because drawing

human development. And consider the fact that

demands a more or less methodical

approach: a general sizing up of the

whole subject followed by more and

human beings are the only creatures on our planet more minute inspection of the details."

that write things down and make images of things

—Hugh Johnson, *Principles of*

Gardening (Mitchell Beazley

seen in the world.

Publishers Limited, 1979), p. 36

Language dominates

These two cognitive twins, however, are not

equal. Language is extremely powerful, and

If an art student says, "Well, I am

good at drawing still life, and I am

the left hemisphere does not easily share its

fairly good at figure drawing, but I am

not good at landscape, and I can't do

dominance with its silent partner. The left

portraits at all," it means that one or

hemisphere deals with an explicit world, where

more of the basic component skills has

not been learned. A comparable

things are named and counted, where time is

statement about reading would be, “I
am good at reading magazines, and I
kept, and step-by-step plans remove
am fairly good at instruction manuals,
uncertainty from the future. The right
but I’m not good at newspapers, and I
can’t read books at all.” Hearing this,
hemisphere exists in the moment, in a timeless,
one would know that some reading
components were not learned.
implicit world, where things are buried in
context, and complicated outlooks are
constantly changing. Impatient with the right hemisphere’s view of the complex whole, the competitive left hemisphere tends to jump quickly into a task, bringing language to bear, even though it may be unsuited to that particular task.
This is true in drawing: using symbols from
childhood to quickly draw an abstracted,
I once saw a video of an elephant that
had been trained to paint a rough

notational image, the left brain will rush in to
image of an elephant by holding a
paintbrush in its trunk and painting
take over a drawing task that is best
line by line on paper. This is the
accomplished by the visual right hemisphere.
nearest nonhuman approximation of
human drawing skills I am aware of.
When writing the original book, I needed to
But, as far as I know, there are no
elephants out in the wild
find a way to keep this from happening—a
spontaneously drawing images of
way to enable the right hemisphere to “come
other animals on stone surfaces or in
the sand.
forward” to draw. This required finding a
strategy to set aside the left hemisphere.
Taking my cue from Upside-Down Drawing, and thinking hard, I laboriously arrived at a solution and stated it this way:

In order to gain access to the right hemisphere, it is necessary to present the left hemisphere with a task that it will turn down.

In other words, it is no use going up against the strong, verbal, domineering left brain to try to keep it out of a task. It can be *tricked,* however, into not wanting to do the task, and, once tricked, it tends to "fade out," and will stay out, ending its interfering and usurping. As a side benefit, this cognitive shift to a different-from-usual mode of thinking results in a marvelous state of being, a highly focused, singularly attentive, deeply engaging, wordless, timeless, productive, and

Paleolithic cave painting from

mentally restorative state.

Altamira, Spain.

Recently this strategy has been corroborated

scientifically. Norman Doidge, in his fascinating book on human brain plasticity, *The Brain That Changes Itself* (Penguin Books, 2007), cites Dr. Bruce Miller, a professor of neurology at the University of California, San Francisco, who has shown that people who lose language abilities due to left-

brain dementia damage spontaneously develop unusual artistic, musical, and rhyming abilities, including drawing abilities—skills attributed to the right hemisphere. Doidge reports that Miller argues that "the left hemisphere normally acts like a bully, inhibiting and suppressing the right. As the left hemisphere falters, the right's uninhibited potential can emerge."

Doidge goes on to say of my main strategy: "Edwards's book, written in 1979, years before Miller's discovery, taught people to draw by developing ways to stop the verbal, analytical left hemisphere from inhibiting the right hemisphere's artistic tendencies. Edwards's primary tactic was to deactivate the left hemisphere's inhibition of the right by giving students a task the left hemisphere would be unable to understand and so 'turn down.'"

How the strategy works in the drawing exercises

• The Vase/Faces exercise in Chapter 4 is designed to acquaint students with the possibility of conflict between the hemispheres as they compete for

the task. The exercise is set up to strongly activate the verbal hemisphere (L-mode), but completion of the exercise requires the abilities of the visual hemisphere (R-mode). The resulting mental conflict is perceptible and instructive for students.

• The Upside-Down Drawing exercise in Chapter 4 is rejected by the left hemisphere because it is too difficult to name parts of an image when it is upside down, and, in left-brain terms, an inverted image is too unusual—that is, useless—to bother with. This rejection enables the right hemisphere to jump into the task (for which it is well suited) without competition from the left hemisphere.

• The Perception of Edges exercise (seeing complex edges) in Chapter 6 forces extreme slowness and extreme perception of tiny, inconsequential (in left-brain terms) details, where every detail becomes a fractal-like whole, with details within details. The left hemisphere quickly becomes "fed up" because it is "too slow for words" and drops out, enabling the right hemisphere to take up the task.

• The Perception of Spaces exercise (negative spaces) in Chapter 7 is rejected by the left hemisphere because it will not deal with "nothing," that is,

negative spaces that aren't objects and can't be named. In its view, spaces are

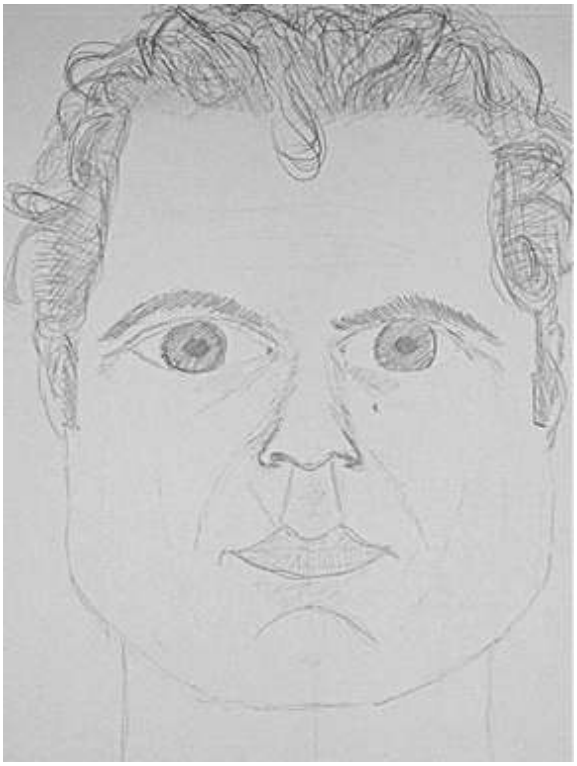
not important enough to bother with. The right hemisphere, with its recognition of the whole (shapes *and* spaces), is then free to pick up the task and seems to take antic delight in drawing negative spaces.

• The Perception of Relationships exercise (perspective and proportion in buildings or interiors) in Chapter 8 forces the left hemisphere to confront *paradox* and *ambiguity,* which it dislikes and rejects ("this is not how I know things to be"), and which are abundant in perspective drawing, with its angular and proportional spatial changes. Because the right hemisphere is willing to acknowledge perceptual reality, it accepts and will draw what it sees ("it is what it is").

• The Perception of Lights and Shadows exercise (values from dark to light) in Chapter 10 presents shapes (of lights and shadows) that are infinitely complex, variable, unnamable, and not useful in terms of language. The left hemisphere refuses the task, which the complexity-loving right hemisphere then picks up, delighting in the three-dimensionality that lights and shadows reveal.

• The Perception of the *Gestalt* occurs during and at the close of a drawing. The main effect is a right-hemisphere *aha*, as though in recognition of the whole that emerges from careful perception and recording of the parts, all in relationship to each other and to the whole. This initial perception of the

gestalt occurs largely without verbal input or response from the left hemisphere, but later the left brain may put into words a response that expresses the right brain's *aha*. I believe that the perception of the *gestalt*



closely resembles the "aesthetic response," our human delight in beauty. This, then, is the essence of *Drawing on the Right Side of the Brain:* five basic component perceptual skills of drawing, and an overall strategy to enable your brain to bring to bear the brain mode appropriate for drawing. In a new Chapter 11, I suggest specific ways you can apply the five basic skills to general thinking and problem solving. Incidentally, for this edition, I have rewritten the chapter on the Perception of Relationships (perspective and proportion, also called "sighting," Chapter 8) with hopes of simplifying and

clarifying this skill. Because the perceptions are complicated with aspects that seem "left-brained," putting this skill into words is something like trying to teach someone in words how to dance the tango. Once sighting is understood, however, it is purely perceptual and most engaging because it unlocks three-dimensional space.

This set of drawings by workshop participant James Vanreusel resulted from his work in a five-day class, November 13–17, 2006. His Vase/Faces drawing and his Pure Contour drawing, both done on the Day 1 of the workshop, were not available. Each workshop day begins with an explanation of the component skill to be explored and a demonstration drawing by the instructor,

after which the students apply the instructions to their own drawings. James Vanreusel's drawings illustrate the instructional

strategies described here.

(See additional Pre- and Post-instruction student drawings, here.)

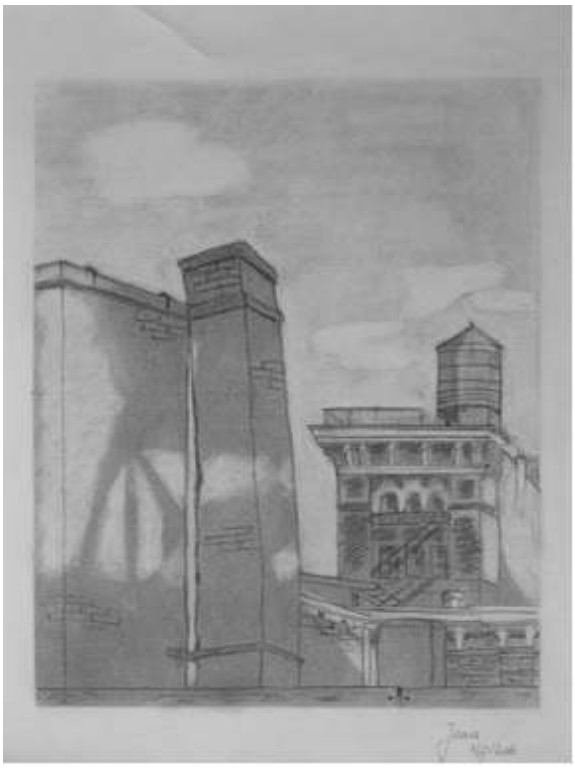
Day 1: James's Pre-instruction "Self-Portrait." November 13, 2006

Day 1: His “Upside-Down drawing of Picasso’s *Stravinski.* ” November 13, 2006

Day 2: His drawing of his hand in “Modified Contour” (edges). The fine detail of edges and wrinkles in this drawing derives

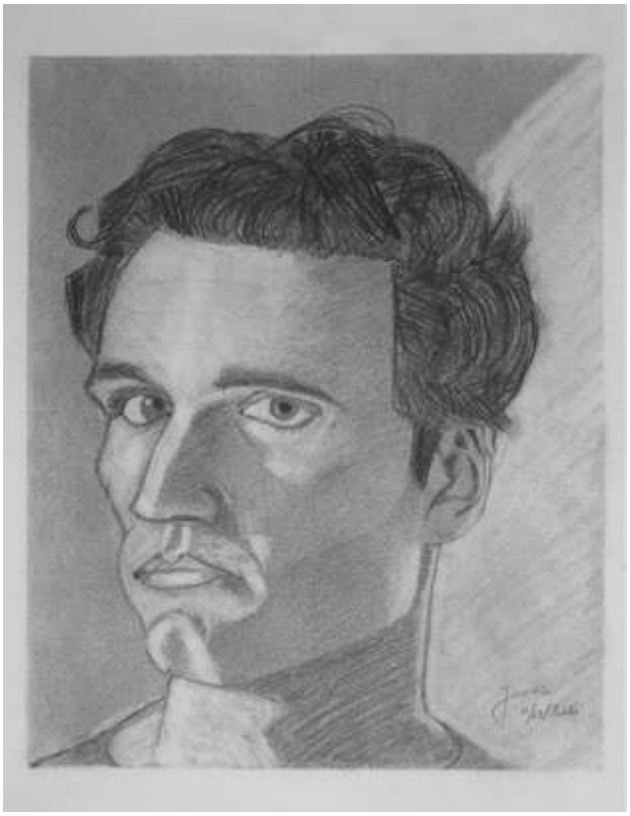
from the Pure Contour Drawing exercise. November 14, 2006

Day 2: His negative space drawing of a stool. November 14, 2006



Day 3: His drawing of an outside view, “Sighting Perspective and Proportion.” November 15, 2006

Day 4: James's profile drawing of a fellow student, summarizing edges, spaces, and sighting relationships. November 16, 2006



Day 5: James's Post-instruction "Self-Portrait," summarizing edges, spaces, lights and shadows, and the *gestalt.* November 17, 2006

The Great Saboteur

A caution: as all of our students discover, sooner or later, the left hemisphere is the Great Saboteur of endeavors in art. When you draw, it will be set aside —left out of the game. Therefore, it will find endless reasons for you *not* to draw: you need to go to the market, balance your checkbook, phone your mother, plan your vacation, or do that work you brought home from the office.

What is the strategy to combat that? The same strategy. Pre-sent your brain with a job that your left hemisphere will turn down. Copy an upside-down photograph, regard a negative space and draw it, or simply start a drawing. Jogging, meditation, games, music, cooking, gardening—countless activities also produce a cognitive shift. The left hemisphere will drop out, again tricked out of its dominance. And oddly, given the great power and force of the left hemisphere, it can be tricked over and over with the same tricks.

Over time, probably due to brain plasticity, the sabotage will lessen and the need for trickery will diminish. I have sometimes wondered whether the left hemisphere becomes alarmed when it is first set aside for a period of time. The right hemisphere state of mind is notably desirable and productive —sometimes called the "zone" in athletic terms. I think it is possible that the left hemisphere may worry that if you get "over there" long enough, you may not come back. But this is a needless concern. The right-hemisphere state is extremely fragile, ending the instant the cell phone rings or someone asks you what you are doing or calls you to dinner. Immediately it is over, and you are back to your more usual mental state.

Teaching methods that work

Over the years, I have been rebuked occasionally by various scientists for overstepping the bounds of my field. In each edition, however, I have made the following statement: The methods presented in my book have proven empirically successful. From my own work with students and letters sent to me by thousands of readers and countless art teachers, I know that my methods work in a variety of environments, taught by teachers with undoubtedly varied teaching styles. Science has corroborated some of my ideas, but we must depend on future science to confirm more exactly the explanations and uses of our still-mysterious and asymmetrical, divided brain.

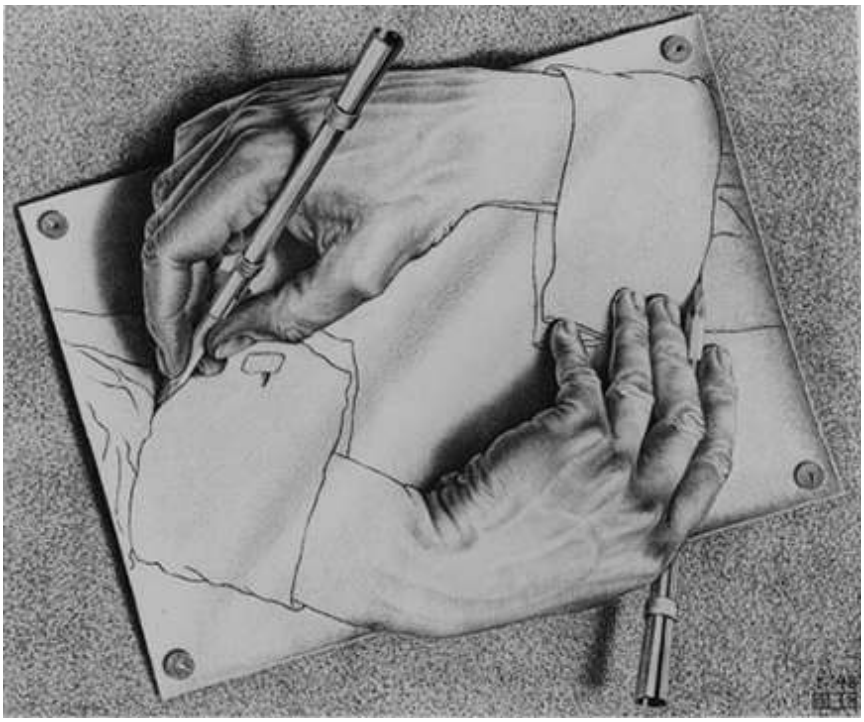
Meanwhile, I venture to say that learning to draw always seems to help and never to harm. My students' most frequent comment after learning to draw is "Life seems much richer now that I am seeing more." That may be reason enough to learn to draw.

1 From "An Exhibition About Drawing Conjures a Time When Amateurs Roamed the Earth," *New York Times,* July 19, 2006.

Michael Kimmelman is an author and chief art critic for the *New York Times*.

2 Benedict Carey. "Brain Calisthenics for Abstract Ideas," *New York Times,* June 7, 2011

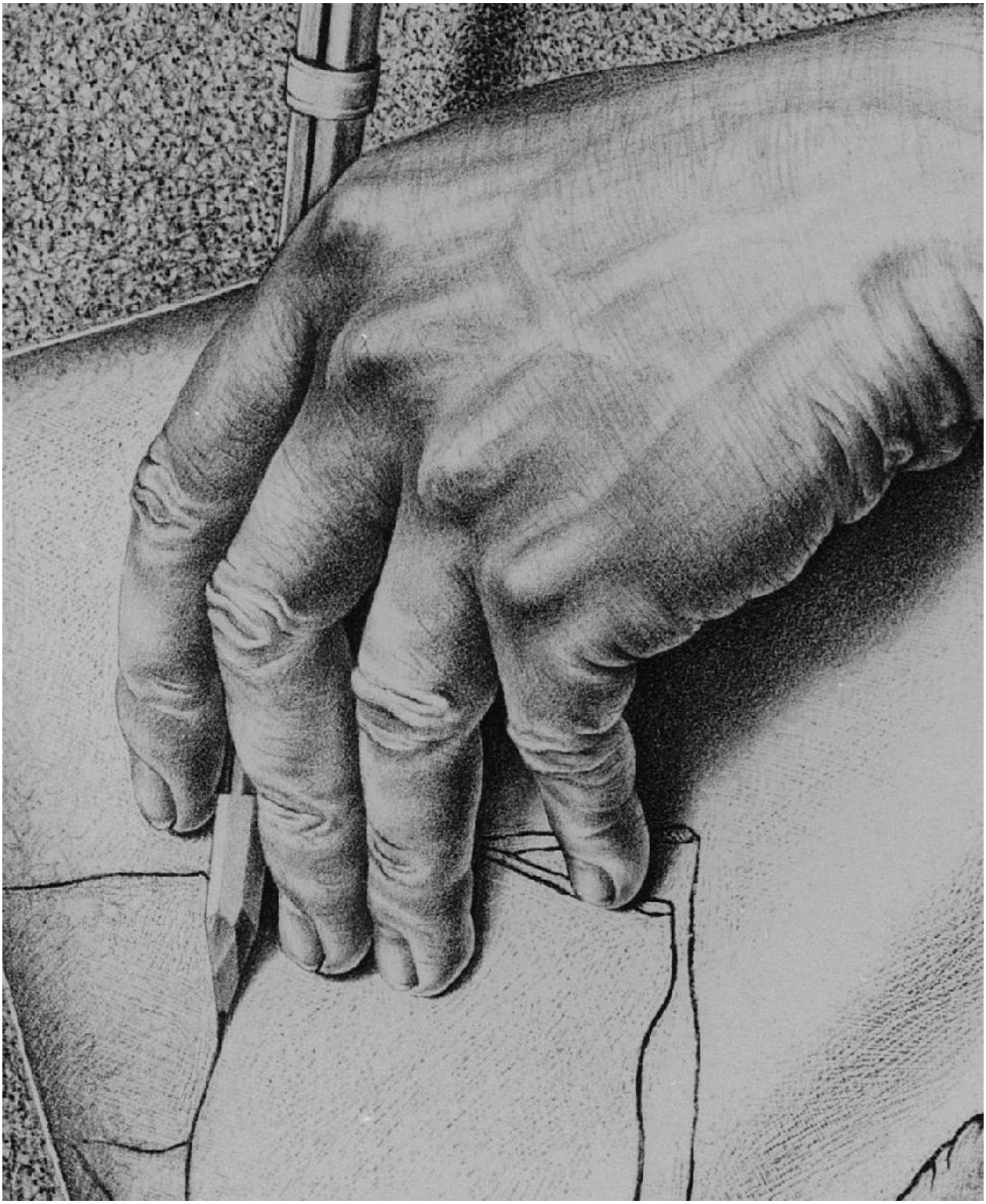
3 Rudolf Arnheim, *Visual Thinking (* University of California Press, 1969).



CHAPTER 1

DRAWING AND THE ART OF BICYCLE RIDING

Maurits Cornelis (M. C.) Escher, *Drawing Hands*, 1948.



Drawing is a curious process, so intertwined

with seeing that the two can hardly be

“Learning to draw is really a matter of

learning to see—to see correctly—and

separated. The ability to draw depends on

that means a good deal more than

merely looking with the eye.”

one’s ability to see the way an artist sees. This

—Kimon Nicolaides, *The Natural*

kind of seeing, for most people, requires

Way to Draw, 1941

teaching, because the artist’s way of seeing is

very specific and very different from the ways

we ordinarily use vision to navigate our lives.

Because of this unusual requirement, teaching someone to draw has some special problems. It is very much like teaching someone to ride a bicycle: both skills are difficult to explain in words. For bicycle riding, you might say,

“Well, you just get on, push the pedals, balance yourself, and off you’ll go.”

Of course, that doesn’t explain it at all, and you are likely to finally say, “I’ll get on the bike and show you how. Watch and see how I do it.”

And so it is with drawing. An art teacher may exhort students to “look more carefully,” or to “check the relationships,” or to “just keep trying and

with practice, you will get it." This does not help students solve the problems

of drawing. And it is fairly rare today for teachers to help by demonstrating a drawing, which *is* extremely effective. A well-kept secret of art education is that many art teachers, having come up through the same system that prevails

today, where real skills in drawing are rarely taught, cannot themselves draw well enough to demonstrate the process to a group of students.

Drawing as a magical ability

As a result, few people are skilled at drawing in twenty-first-century American culture. Since it is rare now, many people regard drawing as mysterious and even somewhat magical. Artists who *can* draw often do little to dispel the mystery. If you ask, "How do you draw something so that it looks real—say a portrait or a landscape?" an artist is likely to reply, "Well, it

is hard to explain. I just *look* at the person or the landscape and I draw what I see." That seems like a logical and straightforward answer, yet, on reflection, doesn't explain the process at all, and the sense persists that drawing is a vaguely magical ability.

This attitude of wonder at drawing skill does little to encourage individuals to try to learn to draw. Often, in fact, people hesitate to take a drawing class because they don't already know how to draw. That is like