

The Art of Critical Making
Rhode Island School of Design
on Creative Practice

Edited by Rosanne Somerson
and Mara L. Hermano
Foreword by John Maeda

WILEY

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Foreword

John Maeda

I spent a large part of the '90s getting a PhD at Tsukuba University Institute of Art and Design, a largely closed-off, pristine educational enclave of Japanese master makers and thinkers. There were no computers to speak of, and the web hadn't really happened yet. It was a happy time, unfettered by the e-mails and other e-disruptions that fill all of our days today. I often found myself in the library—intently learning about the history of design through old publications from Ulm (a kind of post-Bauhaus school) and of course the Bauhaus itself.

Conversely, I had spent the decade prior affixed to a computer, at MIT. The '80s was the time when the first “undo” action was invented. Imagine a world without undo; I remember after I began studying at Tsukuba, I was in an ink-drawing class where I noticed that whenever I made an error, my hand would reach for command-Z on an invisible keyboard in my mind. I had to “unlearn” being digital. In doing so, I learned to truly appreciate the advantages of being a student—to get the chance to unlearn what I knew, in order to learn anew. This wonderful educational experience inspired me to become a teacher myself. I returned to MIT as a junior professor at the Media Lab, where I could bring some of my art and design education to bear.

While I was cloistered in Japan, the computer really started to take off. It was fast. And it kept getting faster, cheaper, and better. Digital art and design were largely panned by the art and design establishment because of their “lack of the human hand.” In retrospect, I can see that this was a normal reaction to a dehumanizing technology going mainstream—much the same as John Ruskin's and William Morris's proud questioning of the Industrial Revolution. What I could see upon my return from Japan, having been traditionally educated in Bauhaus-style thinking, was that there was opportunity in this new medium, which, like others before it, could help harness unbelievable amounts of expressive power and creative energy. I felt that the tool—in this case the computer—had to be mastered for it to do the biddings of the artist and designer's hand, head, and heart.

As an advocate in the late '90s for artists and designers writing their own computer programs, I often got a lot of flack. The prevailing sentiment was, "Why should artists learn to code when there are tools like Photoshop?" My goal was to simply follow what I learned from my materials-based education at Tsukuba—that we needed to treat the computer as a new kind of material, and to master it deeply. This interest led me to develop a variety of systems for teaching computer programming to artists and designers, culminating in the Design by Numbers system in 1999. My graduate students Ben Fry and Casey Reas then built an even better system called Processing, which has vastly eclipsed my own work—suitably and proudly so. Today there are thousands of artists and designers programming with Processing to advance their ideas computationally.

And so, after twelve years teaching at MIT, my post as the 16th President of Rhode Island School of Design has been a homecoming back to the world of rigorous art and design. This book is all about the kinds of things I learned at Tsukuba, and frankly way, way more. Having stood in the same ultra-hot studios of our Glass department where alumnus and teacher Dale Chihuly forged his first physical thoughts, which would come to define evanescence, and in the same drawing studio where alumnus Gus Van Sant came as a RISD freshman, later making major movies like *Good Will Hunting* and *Milk*, I know I stand on the hallowed grounds of a kind of creative education "dojo" unlike any other place on earth.

At RISD, the integrity of the work comes from a place of criticality *and* materiality. Why does it exist? What existed before? What has influenced it? How is it made? Can it be made? Can we will it to be made? I find that the process of making work at RISD involves a kind of questioning that rivals a grand jury combined with a six-sigma manufacturing audit. Every stone, speck of dirt, and atom of oxygen must be turned over and examined in the light of the day in its present, past, and future. It is this kind of intensity that makes our unique brand of "critical making" so relevant to this day and age. We are all hungry for authenticity—the studied touch of a human hand, the

thoughtfulness of a brilliant human mind, and a heart replenished with the warmth of another human heart.

In this digital age, there is a renewed curiosity about humanity, materiality, and all things physical, simply because much of the world has lost sight of them. You see little bits of this in the incongruity of putting faux wood-grain digital veneers on software apps. We are still in the very early days of art, design, and the computer—we have yet to have that “aha” moment when the physical world and the virtual world truly click together. For now, I see tremendous opportunity in studying and understanding traditional media—for in these materials is the root of all that we know and can truly believe.

At the same time, I know that a deeper understanding of computer code and computer-aided design and fabrication is also important. At RISD we have those efforts underway, led by Provost Rosanne Somerson and her advanced critical making initiatives. I’m not surprised by the number of corporations that have begun to knock on our door to ask for what a business or technology school can no longer do for them—which is to help them envision the future by engaging with some of the most creative thinkers and makers of our times.

After a life spent traversing the fields of technology, art, and design, my foremost conclusion is that there is great power in both fields taken separately, and in both fields put together. Reading this book, you will see why RISD is a symbol for art, design, and creativity the world over, and as such, can play a role as their advocate on national and international stages. That is why we have taken a leadership role in the movement to turn STEM (Science, Technology, Engineering, and Math) into STEAM in the United States by adding the “Arts,” broadly defined. STEAM advocates for the federal government to integrate art and design with its growing emphasis on STEM education and research. By doing so, we will develop the creativity needed to drive our innovation economy forward and keep America competitive throughout this century. The critical making we teach here at RISD is

what enables designers and artists to create objects, devices, and services that are more engaging, more efficient, and more human.

So, STEAM is embodied naturally at RISD. Nowhere is this more evident than at the 75-year-old Edna Lawrence Nature Lab. Filled with more than 80,000 samples of animal, plant, and mineral materials, it's a beautiful repository of everything from a taxidermied turkey to Brazilian butterflies to human bones. At RISD we teach students to understand humanity and nature from the core essence and architecture of life—by observing it and reproducing it on paper or in clay. Science is taught the way it was taught centuries ago, when artists and scientists were often the same person.

We have all seen that in the battle over education funding, the arts have been cut to make way for STEM education in public schools. As a lifelong STEM student, I know the possibilities inherent to those disciplines, but I also know that the way they are taught doesn't always lead to creative thinking, nor do they enable vitality and humanity to shine through. STEAM got on the federal government's radar when Rhode Island Congressman James Langevin introduced a House Resolution in 2011 in support of STEAM research and education. Around the same time, a Conference Board study was released, which said that nearly all employers view creativity as increasing in importance in the workplace, yet 85 percent say they can't find the creative applicants they seek. Leaders in both business and policy circles have begun to recognize the criticality of integrating the arts and design with the STEM fields.

Since then, pardon the expression, the movement picked up steam and has found its place on Sesame Street, at South by Southwest, and on the agendas of the National Science Foundation and the National Endowment for the Arts. Please visit <http://stemtosteam.org> to learn more about how you can be a part of this important effort to reveal the importance of art and design. I am proud to lead an institution that knows that art isn't just a "nice to have," but a "need to have."

I believe that art and design have critical roles to play in innovation in this next century, much like science and technology did in the last. The very methods revealed in this book will drive the new ideas, movements, and solutions to help us tackle the complex problems of our day. RISD students understand this: 71 percent of students surveyed from the RISD Class of 2011 responded that they are or want to be entrepreneurs; they are pioneering a new kind of “artrepreneurship” for our country.

It’s heartening to watch our students and graduates rise to this challenge and to witness the ever-growing stream of visitors on campus who recognize that artists and designers will be the next change agents. We have greatly broadened the kind of employers that come to RISD now from our home base of creative industries to include technology companies, financial services, healthcare solutions providers, and even venture capital firms looking for artists and designers to propel new ideas. In 2012, we launched the inaugural class of Maharam STEAM Fellows in Applied Art and Design, which funds RISD students to pursue internships in the public and nonprofit sectors. Michael Maharam, the company’s CEO, himself a visionary in the broader cultural implications of design, expressed it well when he said, “Maharam believes that creativity demonstrated through the arts and design will play an increasingly critical role in America’s ongoing efforts to remain a dominant global force through both culture and commerce.”

So much of RISD’s inspiration and humanity fill these pages—but words pale in comparison to what we experience every day on our campus. So in closing, I invite you to take a train, car, or plane to visit us here in Providence, Rhode Island. If you are a lifelong creative person—knowing that you are if you’ve read this far—you will feel like you are truly at home. It’s my honor to get to see that satisfaction every day in our students’ faces, here at RISD.

Preface

Frank R. Wilson

All humans are born biologically gifted learners—recipients of a host of inheritances from ancestors we will never meet. This claim is not one of those plastic verbal posies tossed lightly from a Preface writer to inspiration-hungry readers. It is a straightforward fact about the strength of every person's connection to genetic heritage, and the reason for our astonishing capacity to acquire skill, knowledge, and understanding through physical experience, fulfilling the deepest instinctive intentions of the human mind itself. No matter who our forebears were or where they lived as individuals, as a group they learned to see beneath surfaces, to read meaning into the unfamiliar, and to adapt and survive not simply as a species, but as living individuals, in a future than could not be foreseen. But how did they do it?

The sources of our readiness are unimaginably remote, as the roots of human physical skill and intelligence extend into the past by millions of years. It seems likely that widespread climate and vegetation changes in Africa at the end of the Miocene epoch, more than 5 million years ago, increasingly forced tree-dwelling apes there to take their chances as bipedal ground dwellers. When this happened, the hand and the brain that we inherit were not what they are today. Much of what we know about the evolution of the human wrist and hand we owe to Lucy, who lived in the Afar region of Ethiopia 3¼ million years ago.¹ A chimpanzee-size ape whose existence became known because her fossilized skeletal remains were discovered by anthropologist Donald Johanson in November 1974, Lucy the matriarch together with the species named after her, *Australopithecus afarensis*, stand very near the dawn of human evolution.²

As chimp-like as she may have looked, Lucy was structurally very unlike the chimp in ways that offer major clues to the early stages of human evolution. The most obvious structural difference was in the design of her pelvis and the bones of her lower extremities, which marked her as a habitual upright walker, or bipedal. Not quite so obvious at first were the un-ape-like anatomic features of her hand. An increase in the length of the thumb compared to the fingers and the ability to rotate the index and middle fingers on

their long axis gave her the biomechanics needed for a variety of new grips and hand movements. For example, the "3-jaw chuck" is a grip that permits an irregularly shaped object (such as a stone) to be held securely between the thumb, index, and middle fingers. This grip is identical to that used by a baseball pitcher for an overarm pitch, and would have been extremely useful if the skill of throwing could be mastered for purposes of hunting or defense.

Lucy's longer thumb retained the muscle and tendon features of the ape hand, allowing enhanced independence of thumb movement. The addition of new rotational movements of the index and middle finger that were absent in the ape hand show Lucy's hand to have put her descendants—our ancestors—solidly on the path toward the functionally far more versatile grasping and handling organ that became the modern human hand. Subsequent structural changes, mainly on the side of the hand opposite the thumb, allowed improved finger-to-finger contact and a greatly expanded range of grips and movements—in effect, the biomechanical platform that paved the way for us to become adept and highly skilled users of an open-ended set of objects and tools.

The hand of tree-living apes who lived millions of years before Lucy was itself highly specialized, but mainly for supporting and transporting the weight of the suspended body, for grooming and fighting, and for handling food and small objects available in the environment. Over time, minor anatomic changes produced a hand whose functions were being radically transformed; it was a hand that traded some of the raw power of the ape hand for a movement profile emphasizing independence of the thumb and greatly increased control of precision finger movements. The other major change (the oblique squeeze grip, which came after Lucy's time) compensated for power loss by increasing the effective power and accuracy that could be delivered by objects securely held and precisely controlled in the hand.

No one knows how much aggressive or defensive overarm throwing the *Australopithecines* actually did, nor do we know exactly when subsequent changes in the anatomy of the hand occurred or how they may have been

exploited by Lucy's descendants, but we do know that over the span of several million years, those of Lucy's descendants who learned to take advantage of the hand came to dominate the bipedal world of the hominids and eventually outlasted all their competitors. When our ancestors came down from the trees, in other words, an upright walking posture had not merely relieved the forelimbs of their primary role in locomotion but had opened the door to a completely novel domain of perception, action, and *interaction* based in the hands. It was *our* ancestors who walked through that door.

The extremely long span of time from the earliest manufacture of stone tools until more complex objects appeared at habitation sites has been puzzling to some experts, but during that time there may have been little need for a more advanced tool "technology," and a significant portion of that time may have passed as the brain was altering its own operations to allow more complex movements of the hand and arm to be added to the already impressive repertoire of skilled upper limb movements that existed in chimpanzees. This is because the brain would not have been capable of controlling the complex movements of the evolving hominid hand *before* the hand itself was physically capable of varying the hand grips and individual finger movements which are now part of our repertoire.

Neural adaptation to a hand whose inner mechanics were in transition must have been extremely complicated for two other reasons: first, significant changes in hand function would have required an open-ended repertoire of adaptive body movements to make hand use effective and dependable—think of a carpenter hammering on a roof, a tennis player running toward the net, a short-order cook juggling pots and skillets on a stove. Second, as pointed out by anthropologist Peter C. Reynolds, human tool use eventually acquired a critical social dimension. As he says: "The essence of human technical activity is anticipation of the action of the other person and the performance of an action complementary to it, such that the two people together produce physical results that could not be produced by the two actions done in series by one person."³

There will always be room for debate about critical events in early human evolution, but it is widely conjectured by anthropologists, archeologists, and cognitive scientists alike that the biologic success of humans has largely been due to evolving hands, an increasing reliance on tools, and a host of behavioral changes associated with a complex communal and material culture. Given all of this, from a neurologic and evolutionary perspective, the conservative position on hand-brain co-evolution must be that the brain developed its enormously enhanced hand control capabilities very gradually and modified them over time as experience defined the long-term role of the hand in hominid survival. Genetic change at the species level assured that each new member of our species would arrive with an inborn potential for skilled hand use, activated by an early-life urge to take things apart and put them back together again, and to gain membership in a team in the process.

So what does Lucy's story have to do with the hands-on critical making at the core of art and design education at RISD? To answer that we must consider the current educational alternative. We live in an age of remarkable technological advances. Yet with all the good technology has done to add to the general prosperity of society, the as-yet-unmeasured cost of our acceptance of these advances in educational settings seems fundamentally at odds with the physicality of human perception, thought, and action. Computer and communications technologies have arrived in classrooms at every level, but the spectacular advances in student achievement widely anticipated from the digital revolution simply have not been realized.⁴ As a society we have not learned how to use powerful new technologies in ways that do not paradoxically subvert the innate power of students to examine and learn that will lead them toward mastery on their own terms. The danger is that today's students, equipped with technologies they did not themselves create and which yield them experiences they are not prepared for or temptations they cannot resist, are at the mercy of the inevitably self-assertive tendencies of

technologies.⁵ Considering our hopes for them, and the inestimable power of resources already provided them by virtue of biological heritage, this seems not merely a tragic but an entirely needless outcome.

There is no such thing as just saying no to technology—there really never was. Lucy and the *Australopithecines* were a species on a very specific path, with a new arm, a new hand, and a brain capable of turning simple stones into a powerful hunting and self-defense technology. But Lucy also put her descendants on a path toward a unique kind of individual intelligence: a marriage of brain, body, and objects waiting to be turned into something better than what was already there. And that was not all: Objects brought to life by a maker return the favor, not only by fostering confidence and vitality but by sharpening personal identity and adding meaning to the experience of consciousness.

That for humans there should be an essential reciprocity between action and identity, mediated by the hand, is neither modern nor merely an interesting idea—it is a signature motif found over and over in the work of late Renaissance artists, elevated to the status of religious iconography in Michelangelo's *The Creation of Adam*. My own relation to this idea grew over many years working as a neurologist with musicians at virtually all stages of their education and their careers, an experience that led me to believe that the desire to achieve an artistic goal is invariably strengthened when the body itself is both the instrument and the focus of the work. There must be many reasons why this is so, but one that should stand out for readers of this book is that when physical skill supports and enlivens the creative process, memories of place, object, movement, and companions will always make their way into the fabric of achievements.

We are now well into the computer revolution and the information age, living with changes in virtually every aspect of ordinary and professional life. The way bankers handle money, armies fight wars, writers get their books published, politicians get elected—everything has changed. Well, almost everything: gymnasts still balance on narrow beams and risk injury from

falling; violinists still perform on violins whose design has been stable for centuries; cowboys still ride real horses; hairdressers still use scissors to cut hair; potters still throw pots on a rotating wheel. What about architects and engineers? What about designers and doctors? What about you and me? No matter what computers do for us, gaining mastery of the body and deploying it as an agent of the mind may be the only way for us as individuals to continue to find the distinctive and emotionally rich forms of creative expression that embodied learning makes possible, and to retain control of the idiosyncratic, mysterious self that came along with the rest of the package.

Notes

1. We also owe a great deal to anthropologist Mary Marzke at Arizona State University, whose contributions to our understanding of the evolution of modern hand function are grounded in her landmark research on Lucy and on the evolution of hand and wrist morphology in relation to hand use and the manufacture of stone tools. See Mary Marzke, "Who Made Stone Tools?" in *Stone Knapping: The Necessary Conditions for a Uniquely Hominid Behavior*, McDonald Institute Monographs, Valentine Roux and Blandine Brill, eds. (Cambridge, UK: Oxbow Books, 2005).

2. The discovery of Lucy and the aftermath of the find are described in Donald Johanson and Maitland Edey's *Lucy: The Beginnings of Humankind* (New York: Simon & Schuster, 1981).

3. Peter C. Reynolds, "The Complementation Theory of Language and Tool Use," in *Tools, Language, and Cognition in Human Evolution*, Kathleen R. Gibson and Tim Ingold, eds. (Cambridge, UK: Cambridge University Press, 1993), 412.

4. It has probably been a full decade since one could have anything approaching a clear idea about the direction and influence of computers and the media on education. The years surrounding the millennium were a time of lively and confident writing on the subject: Stephen Talbott's *The Future Does Not Compute: Transcending the Machines in Our Midst* (Sebastopol, CA: O'Reilly & Associates, Inc., 1995); Jane M. Healy's *Failure*

to *Connect: How Computers Affect Our Children's Minds—for Better and Worse* (New York: Simon & Schuster, 1998); Alison Armstrong and Charles Casement, *The Child and the Machine: Why Computers May Put Our Children's Education at Risk* (Toronto: Key Porter Books, 1998); C. A. Bowers, *Let Them Eat Data: How Computers Affect Education, Cultural Diversity, and the Prospects for Ecological Sustainability* (Athens, GA: University of Georgia Press, 2000). 2000 was also the year *U.S. News and World Report* featured a young girl on its cover, seated rather improbably on a lawn, intently gazing at the screen of a portable computer, next to the title "Why Computers Fail as Teachers: Too Much Screen Time Can Harm Your Child's Development" (September 25, 2000). Probably the last serious book in this genre was Todd Oppenheimer's *The Flickering Mind: The False Promise of Technology in the Classroom and How Learning Can Be Saved* (New York: Random House, 2003). A decade later you know who won the epic battle from today's book titles. From Sherry Turkle, MIT's Professor of the Social Studies of Science and Technology, we have a blunt description of our new way of living: *Alone Together: Why We Expect More from Technology and Less from Each Other* (New York: Basic Books, 2011); and from Kevin Kelly, co-founder and Executive Editor of *Wired* magazine, we have our marching orders: *What Technology Wants* (New York: Penguin Books, 2010). There is a consolation prize, though. Our individual minds may have become a shadow of what our parents had (or vainly thought they had), but they are connected! For a vision of how education will look when the shouting is finally over, see: *Connected Learning: An Agenda for Research and Design, a Research Synthesis of the Connected Learning Research Network* (Irvine, CA: The MacArthur Foundation on Digital Media and Learning Research Hub, January 2013).

5. For an excellent discussion on this topic, see Catherine Dowling's recent paper, "The Hand: Kinesthetic Creation and the Contemporary Classroom," *The International Journal of Learning* 8, no. 18 (2012): 51–66. See also Matthew B. Crawford, *Shop Class as Soulcraft: An Inquiry into the Value of Work* (New York: The Penguin Press, 2009), especially Chapter 6, "The Contradictions of the Cubicle"; and Richard Sennett, *The Craftsman* (New Haven, CT: Yale University Press, 2009), especially "Fractured Skills: Hand and Head Divided."

The Art of Critical Making: An Introduction

Rosanne Somerson

Walk along the riverfront in Providence, Rhode Island, at the foot of “College Hill,” and you may be surprised by what you see. You might easily walk beside someone carrying a hollow six-foot shoe fabricated from woven wire, or alongside a group of students balancing their newly finished chairs on their backs and heads, or pass someone lugging a drawing portfolio so large and unwieldy that you might be tempted to stop and ask to assist. On certain days there could be fashion collections wheeled on hanger racks, or recycled industrial off-cuts of felt and cork spilling out of bags slung over shoulders, or even sculpted metal chopsticks three times the height of the woman hauling them. Someone might have laced delicate woven yarn around trees lining the river walk, preparing their branches with sweater-like covers for winter. Out of sight, inside the studios and labs, a diverse range of projects could likely be developing—investigations into sustainable systems for food transport, or objects designed for extreme climates, or a video that correlates and weaves together two events happening simultaneously in different locations.

Art schools are lively places, but few outside their walls have the opportunity to experience the kind of environment where the new is manifest every day, where paradigms are continually stretched and challenged, and where shock and beauty flourish side by side. What is the “magic” in the art and design school learning model that advances an individual from an interested student into a creative innovator? And how might the creativity and expertise that result from this form of education be accessible to others? While no single philosophy or pedagogy effectively turns developing artists and designers into creative professionals, some shared methods have proven to transform hard-working students into exceptional creative practitioners. In this book, RISD faculty and staff examine these methods to explore RISD’s rationale and approach in developing and enhancing creative learning. Additionally, we explore the efficacy and the *essential need*, in contemporary times, for learning that includes hands-on practice, the processing of enhanced seeing and perception, and contextualized understanding—all elements of “critical making.”

At RISD we develop curricular models through which innovation and originality are coaxed, rendered, and challenged, leading to heightened expression and new ways of thinking. We cultivate intense personal development, deep disciplinary expertise, rigorous skill-building, advanced conceptual reasoning, and attention to both process and execution. We are committed to fostering creative and critical thinkers who innovate with ease, who are not rattled by uncertainty, who move agilely from one form of output to another, and who can communicate in multiple ways with acuity and clarity. We believe that these traits are effective remedies for crumbling systems and structures that no longer work. As educational systems propel us further and further away from physical, tangible experience, how better might learning support nimble, innovative, and imaginative thinking than through models that emphasize the iterative formation of ideas through making? Contemporary times call for contemporary thinkers and makers.

Through these pages, we invite you to enter with us into a world of creative energy and rigorous investigation. Who might benefit from a “peek through the keyhole” into the multifaceted characteristics of RISD’s educational practice? This book will certainly be useful to those who are directly pursuing an art and design education. Prospective students will gather deep insights into their potential futures. Parents who may be skeptical about the benefits of supporting such a path at a time when it seems that key opportunities point toward other areas of study—business, technology, scientific research, entertainment, medicine, and marketing—may be surprised to learn that RISD alumni have succeeded at high levels in remarkable ways in all of these fields. A RISD alumna who later became an attorney still cites her RISD education as the formative basis for complex problem solving required in her law practice; a product designer demonstrates that his education in design process helped him to create one of the most successful online businesses in existence; some of the region’s best restaurants famous for their remarkably innovative cuisine boast RISD alumni as chefs and owners. Our alumni are successful recording artists, medical device inventors, and social

visionaries who have changed and improved lives around the world. And of course the list of distinguished alumni artists and designers representing every form of creative practice is the source of great pride. RISD graduates have made Oscar-winning films (and even hosted the Oscars), popular book and television series, and significant public programming. The number of alumni who have been awarded MacArthur “genius” Fellowships and Fulbrights is unmatched by any other art school. Look at the “Gallery Guide” in any city, attend any global art fair, or visit any of the top design, architecture, fashion, or textile firms, and you will likely find numerous RISD alumni at work. In short, extraordinary results have emerged from the RISD educational experience as it has evolved over some 135 years.

In addition to aspiring young artists and designers and their parents, many others will find this book enlightening and supportive. Many corporations recognize how much more inventive they can be when they apply principles like those framed in our curricula, paying close attention to how they activate innovation and advance opportunity. Businesses of all sorts looking for ways to rethink long-held assumptions and to build greater creativity into their process and outcomes will find illuminating and expansive approaches to familiar questions, which may well generate innovation and new achievement. Practitioners early in their careers looking for ways to build their own strong creative practices will benefit from the insights of the experienced educators who have contributed to this book, gaining deeper understanding of high-level creative learning. Even other systems of education can benefit from echoing the curricular approaches and processes of an art and design institution such as RISD. Indeed, so much about art and design education can benefit a broad audience.

The writers who have contributed to this book—like all of our faculty, staff, and librarians—lead in their disciplines through engaged and ongoing professional practice. These writers do not attempt here to define art or design.

They do not offer a prescription for creative innovation. Instead, they offer observations and examples from direct experience that make up the substance and distinction of a RISD education, untangling the territory of art education, which remains largely unknown outside of arts institutions. Through our contributors' careful telling, RISD's remarkably effective methodologies and tools for transformative education can be accessed by any curious reader.

In the Preface, neurologist, author, and researcher Frank Wilson—the only writer in this book who is not a faculty or staff member at RISD (though he is a frequent RISD visitor and lecturer)—describes the biologic science of the co-evolution of the hand and the brain, and proposes the resulting neurological precedents to thinking and making as collaborators in both human and educational development. He sets the stage for the other contributors, who echo how the artistic mind relies on “making” as a critical activity, one that informs a particular kind of deep intelligence that cannot be learned without real material manipulation and sensory, embodied experience.

Leslie Hirst, Foundation Studies faculty member, presents the “ground-work” of preparing students to become immersive learners in our common undergraduate first year, literally laying the foundation for the commitment it takes to succeed as a creative professional. The first-year experience for freshmen, and, in different ways, for graduate students, is about learning how to reset expectations, to find new ways to begin, and to develop the conceptual and making tools necessary to create works that are significant in composition, presentation, function, or solution. The first year is about devising individual systems for making and breaking one's own rules. As Hirst notes, it is also about learning to live comfortably in uncertainty so as to take new risks and forge new directions, and to push harder through personal limitations than ever imagined. These fundamental and formative experiences contribute to building the experience and bodies of knowledge that shape an artist or designer.

The creative process cannot live independently from the contexts that inform the maker. In his essay, Dean of Liberal Arts Daniel Cavicchi

describes how the rigorous Liberal Arts courses required of every RISD student deepen scholarship, research practices, and forms of expression. Inquiry takes many forms in an art and design environment, and at RISD we believe that multiple research methodologies are paramount to developing innovative thinking and making and to educating informed future citizens—a goal at the heart of RISD’s mission. RISD students draw connections to histories, philosophies, literary forms, and identities—all essential to building ethical, reflective, self-aware, and articulate practices. Cavicchi describes how RISD students thus “develop a familiarity with meta-thinking which, in turn, heightens their ability to see new connections and meanings.” Liberal Arts courses create context that informs studio work, just as art and design students bring into their Liberal Arts classrooms unique and imaginative forms of inquiry.

Three topics in this book—drawing, materials, and critique—are so essential to a RISD education, and yet so diversely implemented, that we chose to present them as guided “Conversations,” incorporating numerous voices to express multiple approaches. The first “Conversation,” led by Dean of Graduate Studies Patricia Phillips, explores drawing. Drawing is fundamental to RISD learning. Drawing helps to develop the intelligence of the hand and its cooperation with the eye and the brain. Drawings are a required component of our undergraduate admissions application, and help to determine who gets accepted into RISD. We use these application drawings, however, not just to evaluate who “draws well” but to help us assess how an applicant *sees*.

To non-artists, drawing is often understood as replicating or representing what is seen—capturing shape and contour, composition, outlines, and shadows in space. At RISD, though mastering various representation techniques may be part of skill-building, drawing is regarded more as what Phillips calls a “flexible instrument,” a developmental tool, a way of mapping thinking that can be circuitous, improvisational, or highly structured. Drawing also helps us to record events and ideas and share them with someone

else. It can be a container for curiosity, banking undeveloped ideas to percolate into something later. I still refer to sketchbooks that I made as a sophomore, many years ago. The “raw” ideas in those pages engender completely new resonance to me today, and in some instances have manifested as projects decades later.

When we turn drawings into things, how do those things emulate or express the thinking that helped to bring them to life? In “Thinking,” Professor John Dunnigan merges thinking and making into one action word, highlighting their symbiotic relationship. Dunnigan proposes that embodied knowledge is a direct result of engaging with real materials and real scale. He articulates a clear philosophy about how both research and conceptual development emerge in physical form, exemplifying curricular outcomes in the work of alumni.

One special place where RISD students and the public encounter extraordinary examples of real-scale objects is in the RISD Museum. RISD is fortunate to have as part of the college a world-class art museum, which contains more than 80,000 objects originating from classical times to the present and representing most regions of the world. These great works serve as fertile sources of knowledge. They help us to understand fabrication methods across millennia, as well as broad aspects of culture ranging from aesthetics to social structures to spirituality. Sarah Ganz Blythe, Director of Education at the RISD Museum, describes the long history of learning from objects as primary sources by looking, analyzing, and contextualizing. Such learning helps us form a language for communicating responses to art and design, and in turn fosters the creation of art and design objects that speak their own language. Suggesting that works of art rarely have finite or singular meanings, Ganz Blythe demonstrates that interpretation is a form of expression open to not only artists and designers but to all museum visitors.

The Museum is a wonderful laboratory in which to look at not just works of art but the materials they are made of, and how those have both changed and remained consistent over time. We are fortunate that our Fleet Library

now includes the Graham Visual + Material Resource Center, an amazing, growing collection of tens of thousands of materials for exploration and research—some commercial materials, some natural materials, and some materials that students have created themselves. Materials have played an essential role in the development of works of art and design throughout time. Indeed, early historic periods were named and designated by materials—the Stone Age, the Iron Age, and so on. Today, material studies are complex and multiply scaled—from molecular investigations to research on the environmental impacts of procurement and distribution. The materials collection provides a platform through which to address these issues, with a particular focus on principles of sustainability.

Materials are deep at the heart of making at RISD, playing key and diverse roles. Their exploration comprises the second of our “Conversations,” this one led by Associate Professor Kelly Dobson, Head of our Digital + Media graduate program. Dobson interviewed three RISD faculty members and the Visual + Material Resource Librarian. Each participant has varied and intimate experience with materials in his or her work and teaching. Dobson and her colleagues’ perspectives challenge us to regard materials both pragmatically and conceptually, showing how material explorations and applications operate in both orthodox and innovative ways. The conversations address not just the application of materials, but how sensitized responses to materials can allow the material, rather than the maker, to lead. Materials can be virtual as well, which means that now, like never before, artists and designers have a wider palette with which to express their ideas.

Lucinda Hitchcock, Professor in Graphic Design, addresses another profound change in our times—the influx of information and the form that makes that information evident. Hitchcock describes how visual narrative, or storytelling, can provide paths to navigate, interpret, and frame the many ways in which we encounter and process unfiltered information. She has been part of a faculty team for many years at RISD that has evolved a signature course called “Making Meaning.” Meaning is at the heart of communication, and

through this course students develop visual forms of expression that facilitate understanding. Providing evocative descriptions of cultural phenomena and examples from the classroom and student work, Hitchcock helps us to understand how today's graphic designers are "cultural curators," producing the information that defines and enhances our experiences every day.

The natural world provides its own kind of meaning. Another of RISD's particular treasures is the Edna Lawrence Nature Lab, an inspiring collection of natural specimens ranging from plants, insects, and skeletons to rocks, shells, and amoebas to various forms of taxidermy animals and even a few live species. A fundamental part of a RISD education for 75 years, the Nature Lab is a center for examination and comparison and for learning from nature's systems. Students study how efficient systems can produce elegant results, and then apply that learning to other contexts. They explore consistencies and inconsistencies at various scales, from galaxies to microscopic worlds. The Nature Lab's Director, Neal Overstrom, a design-scientist with a background in both design and biology, is uniquely adept at guiding artists and designers to draw both information and inspiration from this magical collection. In his essay, "The Nature Imperative," Overstrom describes how the Lab helps students to develop sensitivity, observation, and perception, and why this kind of learning matters.

Throughout the developmental stages of creation, art and design education depends on critiques—or "crits" as they are commonly referred to at RISD—as a unique learning mode. At a crit, students present their work to reviewers, articulate their intentions, and receive feedback. The reviewers might be faculty, students and faculty, or a group that includes external professional reviewers. Often these external critics are from other disciplines, bringing a fresh perspective to the work.

Critiques are core to the development and assessment of creative work. Highly diverse in their methods and outcomes, they adhere to no single formula. In this book's third "Conversation," Professor Eva Sutton asked several faculty, students, and alumni to each make a sketch representative of his or

her experience of critique, then used the sketches as a basis for exploring the various modes of critique. Critiques can be behavioral learning experiences that help participants learn about social interaction, expressions of support, and disagreement. Successful critiques are about perceptive, constructive feedback, not a judgment of good or bad, but an offering of “I experience this—was that your intention?” or “What if...?” Critiques provide a pathway through which students develop a lifelong ability to self-evaluate and to reflect on improving, articulating, and evolving their ideas. The benefits of this kind of conscious awareness of how a work succeeds in communicating an intended outcome and the cultivation of honest response surely have applications not just in art and design but in multiple circumstances.

In “Acting into the Unknown,” Dean of Architecture and Design Pradeep Sharma describes how we take art and design learning out into the world—how various forms of creativity and innovation can influence creative practices of all sorts as well as business models, and ultimately mark culture itself. Sharma describes the various structures of our partnered engagements, from short executive-education salons to long-term partnered research projects that we have run with a range of corporations, industries, and government agencies such as NASA. Partners collaborate with RISD to explore issues using our creative methodologies—to frame new questions and advance opportunities. Our iterative process leads to new directions for exploration, and our ability to manifest ideas in real form through making materializes ideas. As Sharma suggests, this is often where true innovation occurs.

The gifted contributors to this book each articulate an important aspect of a potent, adventurous form of teaching and learning. While this book celebrates the excellence of a RISD education, it is also about showcasing the value of an art and design education in principle, using RISD as a model. Recently there has been a surge of interest in the particular character of art and design education and how its ingredients build both the intuitive

and rational abilities that generate change. Studies and the media are full of examples of creative approaches applied in new contexts, as business schools incorporate “design thinking” into curricula, businesses apply creative processes to planning and decision-making, and companies hire CIOs (Chief Innovation Officers). A plethora of books about creativity, problem solving, and innovation has been published in the past few years. RISD’s President, John Maeda, has worked with government representatives such as Rhode Island Representative Jim Langevin and numerous bi-partisan Congressional representatives to add art and design to the national Science, Technology, Engineering, and Math (STEM) education agenda, incorporating an “A” for “art and design” to turn STEM into STEAM. This platform, supported now in over 30 countries around the globe, recognizes art and design as the “secret sauce” in multiple fields, engaging with creative exploration to reach greater potential—the potential that will help to define advancements in the twenty-first century.

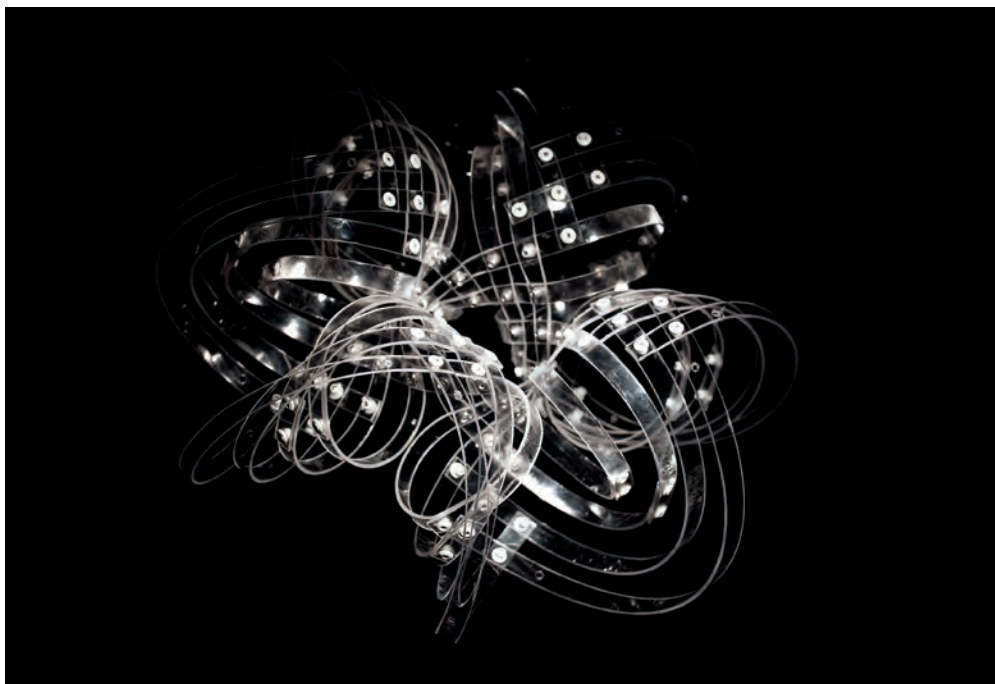
Being Provost of RISD at such a significant time in history is intensely rewarding. As the world grows increasingly complex and fast-paced, with global issues impacting us all, making, materials, and meaning are critical. The kind of essential knowing that we develop at RISD—informed through our hands, through our bodies, and in the creation of works, experiences, and events—is more cogent than at any other time. Artists and designers hone the capacity to generate something from deep inside ourselves to live *outside* of ourselves. By residing in the experiential and the physical, and by developing the “hands-on” as a portal of intelligent learning, we confirm the mind as maker and making as a state of mindfulness. We demonstrate how artists and designers are hosts for enduring creative discovery that is self-initiated and actively engaged. In short, artists and designers manifest what has not existed previously—in many cases, what has never even been imagined.

A group of 34 forward-thinking women—members of the Rhode Island Centennial Committee—envisioned the importance of art and design as the key to progress and to humanizing and enhancing culture when they founded

RISD in 1877. Their early mission was three-fold. First, to teach “artisans in drawing, painting, modeling, and designing, that they may successfully apply the principles of Art to the requirements of trade and manufacture.” Second, they wanted to train “students in the practice of Art, in order that they may understand its principles, give instruction to others, or become artists.” Third, they intended to advance “public Art Education, by the exhibition of works of Art and of Art school studies, and by lectures on Art.” RISD’s current mission reflects all of these goals, with an expanded emphasis on discovering and transmitting knowledge to make “lasting contributions to a global society through critical thinking, scholarship, and innovation.” This recent addition to the mission, while new in some ways, is very much in keeping with the notion of showcasing expertise and innovation through world’s fairs. The form and forum may have changed, but not the intent.

Indeed, the intentions of an art and design education as envisioned in 1877 are still relevant today. RISD remains committed to immersive disciplinary learning as fundamental to evolving basic principles into new contexts. Still, as disciplinary boundaries conflate and overlap, we are emphasizing ways to encourage crossovers and new forms of research and practice. At RISD, as in broader contemporary culture, the familiar delineations between artist and designer are becoming less distinct; disciplinary boundaries are more like placeholders for definition rather than parameters. In the professional world, artists are creating successful design work and vice versa. RISD students are encouraged to integrate diverse practices in developing their work. Architecture students immerse themselves in fine arts courses and painters can learn the techniques and processes of designers. This kind of integrated learning complements disciplinary expertise, in which structured curricula call forth deep, immersive investigation, intensive trial and error, and critical feedback.

Today, new models emanating from art and design are helping us to live and work more flexibly, effectively, and meaningfully in a world that is rapidly changing and economically challenging. We need confident, creative, and nimble thinkers who can navigate circuitous complexity. The meandering



lines of Laura Kishimoto's (BFA 2013 Furniture Design) beautiful object, *Medusa*, symbolically illustrate this kind of agility, where transparent lines still achieve solid form, punctuated by highlights all along the way (fig. 1). Our economies, our cultural entities, and even our own constructed lives require generative contributions that, rather than seek a single answer or follow a mapped path, open many doors of possibility and often benefit from the surprises of serendipity. *The Art of Critical Making* showcases how an education in art and design contributes to just these models and approaches, exploring the core principles that guide this kind of journey, a journey that is not directional, but dimensional.

Fig. 1

Laura Kishimoto,
Medusa, 2013

Graphic Design, Storytelling, and the Making of Meaning

Lucinda Hitchcock

How do critical makers transform today's vast proliferation of information into meaningful visual culture? Lucinda Hitchcock, Professor, Graphic Design, provides a glimpse into her discipline, describing graphic designers as today's scribes and illuminators, as curators and storytellers, and as keen observers of and participants in the making of cultural meaning. Outlining how the Graphic Design department prepares its graduates to shape the future of information design and visual communication, she describes the elements of type, narrative, and visual linguistics that students form and transform in becoming uniquely inventive thinkers and makers.

It's an understatement of course to say that information is everywhere. But it is, and more than ever information has become the currency (as well as the burden) of our times. Since the earliest days of the Renaissance, society's most literate individuals—the scribes, illuminators, printers, and book-makers—have been sorting out how to present and disseminate information in all its forms. Indeed, for as long as there has been an audience capable of reading and affording information, there have been craftspeople dedicated to organizing and presenting the visually complex content of culture.

One could argue that today's graphic designers are cultural curators. We condense society's stories visually—choosing, framing, and presenting what gets seen, reproduced, and disseminated. We organize visual information, shaping complex economic arguments in the form of graphs, charts, maps, and diagrams; we create books, newspapers, websites, and exhibitions. Graphic designers organize and arrange signage, wayfinding systems, commercial spaces, and web spaces. We design learning materials, voter forms, schedules for transit systems, and calendars. We produce charts and medical information and develop brand identity systems. We design user interfaces and interactive experiences. We work with urban planners and new-media developers. Wherever there is information to be presented, spatial environments that need navigating, or written language, form, and image working together in concert, you can be sure a graphic designer is involved.

The term “graphic designer” was coined in the 1920s by William Addison Dwiggins, a prominent book designer best known for the work he did for Alfred Knopf, publisher. Historians say that Dwiggins came up with the term in order to distinguish his activities from that of others dabbling in the typographic arts.¹ Like many of today's multi-skilled designers, Dwiggins was a Renaissance man, designing all manner of things, from books to lampshades, typefaces to marionettes, calligraphy to book bindings. He embraced new technologies while enthusiastically honoring the sheer aesthetic beauty of abstract graphical decoration. He revived the art of book design in America and placed Knopf on the map for the sheer excellence

of their book production. Like others in his cohort of early- to mid-century American graphic designers—Lester Beall, Bradbury Thompson, and Paul Rand come to mind—Dwiggins was a practical modernist who emerged from the Arts and Crafts era with as much interest in decoration and play as in pragmatic purposefulness.

As diverse as Dwiggins and his contemporaries' practices were, graphic designers of the last century were not called on to be as flexible as today's young graphic designers. They had the luxury of time and stillness, and could focus more on the minutiae of their craft. The scope of graphic design then was arguably simpler: surfaces were largely two-dimensional and paper based, and the tasks at hand were perhaps clearer. The absence of motion and screens, digital technology and social media, or even academic programs in graphic design meant the graphic designer's role was narrower compared to today, and relatively unexamined. Notions of "interface design" and "experience design" had yet to surface, and the designer's job was largely about the conjunction of type, image, presentation, and message.

Ever since "graphic designer" came into common use, designers have argued over its ability to accurately describe what it is we do. The term is especially uncomfortable for some practitioners today, as the boundaries of the field continue to expand. Today's graphic designer is a different animal, responsible for so much more territory. With this increase in responsibility comes added awareness of, and accountability for, the power of visual media itself, more theoretical introspection, and far more reflection on what it is we do and how we define ourselves. The more recent, and possibly more descriptive term used to define our field—"visual communication design"—has been adopted by many academic institutions in recent years. While the term might relinquish historical ties to our graphic design predecessors, it nevertheless accurately describes an opening of boundaries as the designer's turf widens.

That openness is evident in RISD's Graphic Design department. Nomenclature aside, those who go through RISD's program might feel entirely

comfortable working in computational programming, user-experience design, public art, data visualization, type design, exhibition design, “environmental graphic design,” book binding, and so on, often simultaneously. A student doing a typography assignment might end up projecting transit schedules onto bus shelters. Others (Emmi Laakso and Robin Davis, both BFA 2011 Graphic Design) might transform an institutional disagreement within the school into a performance piece with life-preservers spelling out prophetic slogans floating on the canal (fig. 38). The careful observation of a singular object—a lock of hair from a nineteenth-century poet for example, found at the John Hay Library at Brown University up the hill—might become a jumping off point for an intensive study of the grotesque, leading a student (Jerel Johnson, MFA 2014 Graphic Design) to the Nature Lab, where insects’ parts are scanned at an incredibly high resolution and turned into posters via an automatic scripting device (fig. 39). A project prompt which leads a student (Kai Salmela, BFA 2006 Graphic Design) to understand the history of our own Market Square results in a large-scale projection that shows thousands of hatch marks indicating the number of slaves who were moved through Rhode Island’s ports (fig. 40).

Bearing in mind this confluence of considerations—the past, with its rich histories of typography, print, language, and reproduction processes; the present, with its insistence on multidisciplinary and technological literacy; and the future, whose aspect is increasingly less predictable but certainly more expansive than ever before—we in the Graphic Design department at RISD enjoy the challenges inherent in staying current and are continuously engaged in reflecting upon and reviewing our curriculum. In this climate of constant change, we remain agile and adaptable, and yet some of our department’s goals have remained essentially the same for more than 20 years, a fact we point to with a good deal of pride. Pedagogically, we work to guide our students toward engaged, conscientious, and socially connected learning while giving them the skills to *see* through *making*. Students exercise their hands and their eyes from the moment they join our department, always



Fig. 38
Emmi Laakso and
Robin Davis, *Sink or
Swim*, 2011



Fig. 39
Jerel Johnson,
Grotesque, 2012



considering the relationship between meaning, form, method, and tool. We guide them to become confident in communication theory and design methods, to decipher and unpack all manner of visual language, and to author and make work with various points of view. We see strength in breadth as well as depth, in the search as well as the discovery.

Perhaps most of all, we foster an ability to think through the *narrative* of a design problem, for regardless of the historical, cultural, and technological moment, the one timeless task that we graphic designers are all charged with is the telling of stories. While a graphic designer's stories might not begin with "once upon a time," we nevertheless use many of the same tools and techniques that writers might use. Like a writer, the conscientious graphic designer gives thoughtful attention to the beginning, middle, and end. A graphic designer considers the frame, the details, and the point of view of each and every visual moment and weighs every dot, line, word, pixel, and image that is put to work to express a point, strike a particular tone, or reach a designated "reader."

It goes without saying that without a reader, or audience, there can be no communication. And like any teller of stories, a graphic designer must consider and hold the attention of an audience, focusing on how delivery and distribution takes place. The designer strives for aptness and believability among audiences. For example, a designer would be unlikely to use a woodcut illustration when designing a complex and authoritative infographic—unless of course the designer were purposefully investigating the properties of "infographic-ness" (which is, ironically, just the kind of thing that happens at RISD all the time). At RISD, such an exercise might lead to a fruitful discussion about objectivity, subjectivity, and universality in imagery and media. Foremost in the discussion would be an effort to unpack the goal of a design's intended use in the first place. Style conveys meaning just as much as material and craft. An emergency "EXIT" sign spray-painted in green paint using a loopy hand-drawn script on a piece of recycled cardboard might be pretty but would fail to convey the authority that such a sign

Fig. 40

Kai Salmela,
Market House
Hatchmarks,
2006

requires. People wouldn't recognize it—they wouldn't *believe* in it. And it likely wouldn't save them in the event of a fire. An overly detailed or excessively ornate icon intended for use on an iPhone or tablet would fail in its intention to simply and clearly communicate the "story" of the app for which it serves as a signpost or stand-in.

A graphic designer also shares storytelling techniques with the filmmaker, considering, for example, the *mise en scène*—"the arrangement of actors and scenery on a stage for a theatrical production," as Webster's defines it. On stage, a director dictates the relational dynamics between actors and set and audience. A designer developing any sort of user interface must also consider the entire scene: How does a tool get used? Where and when is it used? What is the context for use? What are the obstacles? A designer of two-dimensional printed messages, or even of large-scale sign systems, must consider context too. How fast does a driver move past a traffic sign, for example? At what speed can the sign still be legible? What do pedestrians see differently from drivers? All these factors play into how the "story" is framed and delivered. The story is always being served, even if it is as simple as "this way to the nearest off-ramp."

In simple terms, a story is a stand-in or substitute for an event itself. Surrounding any story are the metaphors, tropes, and stylistic devices that make a story more compelling, more understandable, or more contextually relevant to the listener or reader. Likewise, graphic design often produces designed elements that are stand-ins or substitutes for that which cannot be present. A logo is a story that stands in for a company. A picture is a story that stands in for reality. A symbol is a story that represents a larger idea or belief. Such "stories" can be as brief as a simple mark or as complex as an overarching identity system that brands a complex organization or corporation. A story can include not only the content or "point," but also the entirety of its extenuating framework. So, for example, the story of let's say a postage stamp includes not only the design or image on its surface along with its currency designation, it also includes the paper it's printed on, the people

who did the printing, the glue, the person who licked the stamp, the envelope it ends up on, the letter in the envelope, and the mail slot it might pass through. Follow this thread and it can be endless. And yet it is exactly this trajectory—of production, use, and distribution—that makes up the whole story of the postage stamp. These are the “stories,” with all the potential relationships that occur between each stage, that the designer must consider before setting out to shape experience.

Graphic design is the perfect discipline for anyone interested in the convergence of visual form, concept, and story. In my own case it was a perfect fit, not so much because of some early proclivity toward graphic image making, but rather because of my affinity for stories, words, and language. I was an English major and also received a master’s degree in literature before switching careers. I simply loved anything to do with books. Letters. Words. Stories. Grammar. Bindings. Paper. Type. I was then, and still am, a true believer in the power of books (and words for that matter) to transport. And I’ve always been fascinated by the intricacies of story *telling*—the *how* of the story as well as the *what*. In grad school, and before shifting careers, I developed my interest in literary theory (form) and analysis of story (content). I was drawn to the critical and analytic dissection of plot structures and enjoyed investigating and exposing an author’s narrative devices. After a several-year stint in the book industry, I went on to study graphic design in earnest and received my MFA degree at Yale University, where my thesis work, *Visual Poetics: Towards an Understanding of Words in Space*, primed me for teaching at a school like RISD, where a theoretical, conceptual, and pragmatic way of looking at the discipline is embraced.

In the RISD Graphic Design undergraduate program, students progress in their three years from the formal aspects of visual storytelling to the development of more complex and conceptual messages and user experiences. Sophomore courses focus on developing a student’s skill in the formal

and compositional parts of storytelling (the grammar or syntax), while more advanced classes prompt students to play out more complex narratives (the semantics or meaning). To tell a story visually, students learn how to recognize, manipulate, and control the intricacies of visual language. This involves all manner of design skills, processes, and methodologies, including but not limited to: framing, composing, persuading, directing, curating, designating, organizing, sequencing, conducting, condensing, translating, printing, drawing, reading, and writing. This list, though long, is still (and to some extent always will be) incomplete, because the discipline of graphic design, like the term itself, has out of necessity remained elastic. It evolves as culture, commerce, information, and communication evolve—and attendant modes of making and educating evolve too.

In Graphic Design, our “core courses” (supported by a wide variety of electives) are the basis for teaching students to interpret, frame, and present complex ideas in visually accessible forms. Typography—the arrangement of language and letterforms—is the first part of the core sequence, and taught through all three years of the major. An essential tool in the forming of language, typography—defined by Robert Bringhurst as “the craft of endowing human language with a durable visual form”—is almost exclusively the turf of graphic designers, our lifeblood, if you will.² Whether on paper, on screens large or small, in interior spaces, or highway signs, to name just a few examples, designers and typographers orchestrate a correct balance between appropriate typeface, elegance, clarity, and cohesion with other visual elements. We maintain and pass judgment on issues of legibility, grace, and functionality, combining type with image, form, and space.

When learning typography, students are first introduced to the Roman alphabet and its history and evolution, especially in the development of communication, literacy, and printing. They learn that as writing systems developed, letters evolved from ideograms (symbols that contain meaning) to phonograms (marks that convey sound). This knowledge opens up a whole new understanding about how letterforms in and of themselves convey a

kind of meaning, even before being gathered into words, sentences, paragraphs, and pages. Students go on to learn the characteristics of certain typeface classification systems developed in the past five centuries and begin to understand the taxonomies and nomenclature of typography. They learn about the structure and architecture of letterforms, how to create legible and aesthetically appropriate compositions with typography, and to begin seeing that letters and textual material have form and counter-form (figure and ground) (see fig. 41; Lauren Sun, BFA 2009 Graphic Design). Indeed, we teach that conceptually and formally, the art of typography is truly the art of understanding how *space* works to support the conveyance of meaning.

Later in the type curriculum, students analyze and use different typographic techniques in various media (books, film, web, and handheld devices) and through various platforms (digital, letterpress, and handlettering) and learn to consider context, use, and situation and how they invariably influence typographic choices. One significant project asks students to produce a typographic reading experience in the form of a book. Given a text, for example Marguerite Duras's *Writing* or Thomas Pynchon's *Crying of Lot 49*, they are asked to consider the content carefully and then bring to the reading experience a second or even third typographic voice/text of their own choosing, to subvert, support, comment on, or refute the original text. They must figure out, with all the grace and elegance available in the typographic tradition, how to create a *new* reading experience that allows a reader to digest the original text while also appreciating the inter-textual commentary and a nontraditional typographic environment. The results are complex, beautiful, and truly push the boundaries of how we define text in the first place. And of course the students must also print, bind, and produce in multiple copies a small edition (see fig. 42; Aaron Shoon, MFA 2006 Graphic Design).

Typography is about more than just its conventional appearance and choices of font or size or color. Typography is concerned with context, location, surface, user, dimension, and material. So, for example, look around you for some type. Some words—on a sign, a sticker, a poster, this book,



Fig. 41
Lauren Sun, "Type
History" project, 2007

Fig. 42
Aaron Shoon, "Type 2"
book project, 2005



Franklin Gothic (no. 3) Roman
TYPOGRAPHY

Excellence
TYPOGRAPHY

Lithograph (no. Roman)
TYPOGRAPHY

Roman Gothic (no. Roman)
TYPOGRAPHY

Jacks like that other house, the one it once was for the other people before
 us. In an attitude, its grace, it suddenly shows itself as another house that
 might still belong to other people. As if something as immaterial as the
 law of this house could even be imagined.
 The place inside where we put the fruit, the vegetables, the salted hams
 to keep them cool... There was a room like that - dark and cool... I be-
 lieve that's what an expenditure is, you, that's it. That's the word. You stuck
 up for the rest by putting things under cover. The first plan, the one that
 was the core on the window sills at the entry. The one geranium that grew
 from the south of Spain. Pungent like the Orient. The first plan that we
 flowers in this house. It's a habit, not a rule. Never, not even dead ones
 we leave them there. There are some true petals that have been in a jar for
 generations. They are still very pink. Dry and pink.

THE IS LIVING,

REVERSAL

the problem all year round is dusk. Summer and winter alike. There is the
 hot dusk, the summer kind, when you mustn't turn the lights on indoors.
 just then there is true dusk, winter dusk. Sometimes we el-
 at not to see it. There are chores, too, which we put away
 in the summer. The porch is where we stay every summer.
 with friends who come during the day when every summer
 and every time, but not tragic, winter, life, injustice. Always
 main morning. It's only that sad. One doesn't get used to
 The hardest thing in this house is fear for the trees. Always. Every time
 every time there's a storm (and there are a lot of them here), we are with

ENTROPY

anything. Ask yourself: How is it produced? Is it printed with ink, written by hand, or digital? Is it carved in stone or made out of light and pixels? Is the typography (not the words themselves, but the typography) informing, directing, manipulating, or emoting? Is it utilitarian, expensive, formal, or “vernacular”? Does it reveal itself over time or can it be absorbed and comprehended in a single momentary glance? How do you respond to words that are small, printed, and familiar, versus words that are very large, or carved into stone, or in some way monumental? What happens when conventional forms are subverted to convey unconventional messages? We are all used to the little stickers we see on fruit at the grocery store, for example. But what if one day, instead of the usual identification numbers, the bananas you bought had something else stuck to their skins? Little poems perhaps, or texts about child labor in banana plantations? Wasily Davidov (BFA 2005 Graphic Design) sculpted the word “OUCH” and squeezed it between two buildings on RISD’s campus that were soon to be dramatically transformed (fig. 43). This placement was critical to how a reader received the information. Considering such scenarios, you are performing a fundamental research task that becomes second nature to our students—a brief critical analysis of typography, contextual signs, intentions, and even narrative.

Most core courses in the department’s line-up focus on narrative—the structure and manner of presenting story or idea; and visual linguistics—the grammar and mechanics of (visual) language and how it is disseminated and received. The curriculum thus leads from type classes and “Form and Communication” through “Making Meaning,” “Color,” “Visual Systems,” “Relational Design,” and finally “Degree Project.” While each course has its own particular focus, with parameters appropriate to the development of the students, all the classes are profoundly interconnected, all focus on determining the need within a given design situation, and all privilege the story, the message, and the *meaning* to be conveyed.

In “Form and Communication,” students explore how certain visual modes affect meaning and its reception. One project asks students to design

Fig. 43
Wasily Davidov,
OUCH, 2005





Fig. 44
Rebecca Zhang,
pictograms, 2012

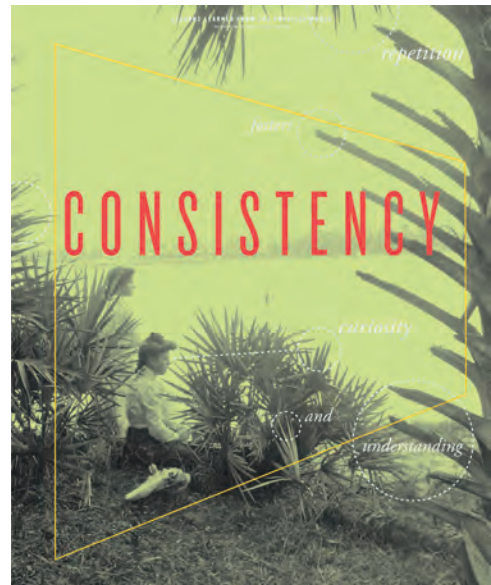
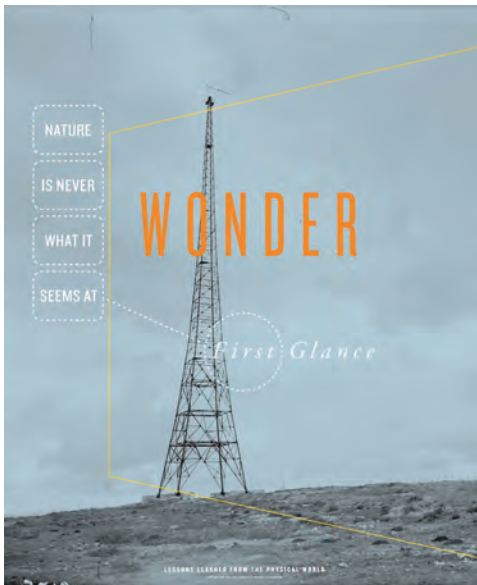
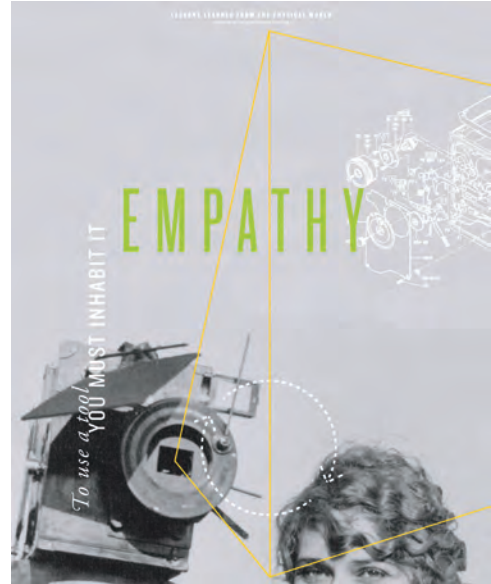
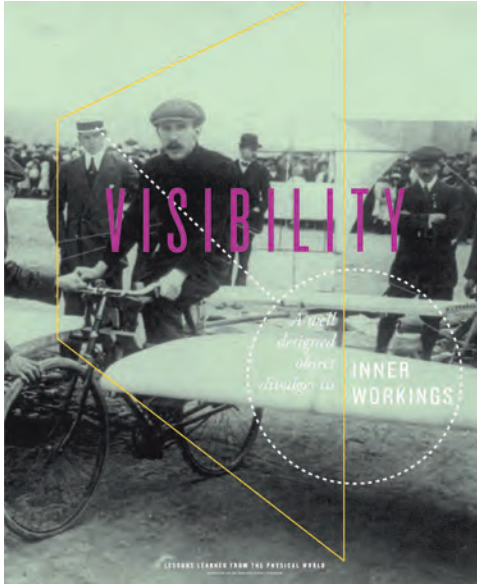
a pictogram for five areas of campus: the auditorium, the museum, health services, the library, and the cafeteria (fig. 44; Rebecca Zhang, BFA 2015 Graphic Design). A pictogram is a utilitarian mark that is used in a variety of ways: in signage, in print, on screen, and in mobile devices. Pictograms may seem simple on the surface, but they are much more complex when you consider the ramifications of making and using them. A pictogram is to a detailed drawing what a haiku is to a novel. It is reduced to its simplest possible representation—and made up of simple, clear, and objective forms. Much goes into that reduction, and when it is done well, the images are poetic, brief, and beautiful. In class, pictograms prompt us to ask: How can an icon hold just enough but not too much meaning for the brief and immediate read it provokes? How can a simple mark represent not only a place but also the experience of that place? And how can formal decisions be made to carry through an entire system of pictograms?

Now, to understand how form (composition, mode, and media) and communication (story, intention, and message) actually work, imagine this simple example: Picture a set of instructions—something ordinary perhaps, like the IKEA diagrams that come with furniture assembly instructions. Think

about that white sheet of paper, with its unembellished, utilitarian, black-and-white images, whose sole purpose is to be accurate, comprehensible, and useful. These kinds of diagrams are made mechanically, drawn to look precise and objective and to impart extremely clear information. Now imagine those same diagrams created in a different way, perhaps with the rough line quality of a woodcut. Or picture them painted in soft watercolors. How would you feel about the diagrams then? Would they still be diagrams? Would they be beautiful? Useful? Meaningful? Easier or more difficult to follow? Occasionally students question this seemingly objective nature of diagrams and line work and use them instead to subvert the notion of truth, complicating an idea purposefully to achieve a deliberate or poetic ambiguity. Indeed, sometimes a situation calls for a viewer to spend a bit more time with a visual message—to *not* absorb or comprehend it instantaneously (see fig. 45; Jessica Greenfield, MFA 2011 Graphic Design).

RISD's graphic design students learn to consciously and critically parse such details. They become aware that not all lines are created equal. A vector line carries with it its own DNA, its own code for expressing meaning and inviting interpretation, while a hand-drawn line carries a distinctly different code and a different set of meanings. A woodcut *means* something—the mode itself carries a story, a vestige of the process that made it. The hand is in evidence. It evokes time, history, and tradition. It highlights a link between the process and the image, between the tools chosen to cut the surface and the final result. The contrastingly thin and ordinary vector lines of diagrammatic language carry the authority of "rightness." They are "correct." Objective. True. There is very little nuance in a diagram, just pure functionality. These visual and formal distinctions evolve over time, derived through context and social agreement, and from consistent application and use.

"Making Meaning," another core, indeed signature course, explores the essential nature of graphic design and directly introduces the notion that storytelling, or "narrative," is a large part of the design enterprise. "Making Meaning" has evolved over many years. While always studio-based, it



was initially theory-driven, focused on models and methods derived from C.S. Pierce's semiotics. Today, it includes a basic introduction to semiotics principles and linguistic theory. The class addresses image-making, framing, and introductory film theory along with the dynamics of type, form, and image. Students work on projects that uncover the distinctions between denotation and connotation and learn to manipulate the visual representation of objectivity and subjectivity. The class is concerned with context, concept, and story, and students are taught to control visual narrative using sequence, photography, and motion. Semantics (meaning), syntactics (form, visual grammar, and the arrangement of elements), and pragmatics (use, practicality, function) are principal tenets. Assignments incorporate concepts such as point-of-view, communication design, and sequence in the act of visual storytelling.

In one assignment, for example, students are asked to develop a strong visual message in the form of a poster about a chosen social issue. Students begin this project with a topic in mind (access to healthy food, climate change, representations of women, and so on) and explore imagery that addresses their chosen areas subjectively, objectively, and even idiosyncratically. They are also asked to write texts that are likewise objective, subjective, and idiosyncratic to accompany the images. The merging of the images and text is the design process, and a meaningful one. After several weeks of this critical-thinking stage, students usually arrive at a clearer position on their subject matter and go on to produce powerful, emotional, and informative posters (see fig. 46; Micah Barrett, BFA 2012 Graphic Design).

Another introductory "Making Meaning" exercise involves the deceptively simple task of pairing an image with a word. Students are given a long list of well-known photographers (Dorothea Lange, Robert Frank, Diane Arbus, Richard Avedon, Walker Evans, and others). Each student also receives three or four words from a magnet poetry set. The physicality of these words is important. I ask them to spend some time in the library looking closely at the photographers' work on the list. Once they choose an

Fig. 45
Jessica Greenfield,
Lessons Learned
from the Physical
World, 2010

[illegible]

23.5
MILLION
AMERICANS
GET THEIR
FOOD
FROM
CONVENIENCE
STORES &
GAS
STATIONS



image, they must select a word or two from among the ones they've received, and simply situate the word(s) on the same surface as the image, with only a scant consideration of placement or "design." They then photocopy the arrangement. Once they have that completed, they take their word-and-image composition and blow it up to poster size. The results are fascinating. A well-known image (think of Arbus's image *Child with Toy Hand Grenade*) with, say, the word "Suddenly" or "Mother" placed within the frame, is utterly altered by the inclusion of the text. The project leads to rich conversations about how meaning is derived from images, the relationship of word to image, and the power of word over image, or vice versa.

"Relational Design" follows on "Making Meaning." Here, students focus on collaborative learning and explore how new media and evolving technologies can serve social as well as informational needs. One remarkable project asks students to invent a new machine or automated process that alters or replaces a typically human-controlled action. They soon discover that the meaning of an object resides not only in its primary use, but in the way that it encourages interaction or collaboration, or even how it might open space for other activities. A newfangled book-binding machine, for example, might simplify a task that design students are often consumed with. While a machine might offer a shortcut to a fairly craft-heavy activity, it also allows for new interactions and discoveries, becoming a device for gathering and connecting not only pages but people.

The senior year for a graphic design student opens up significantly. Students immerse themselves in mature, research-oriented, independent projects that are often astoundingly intelligent and culminating proof of years of simultaneous thinking and making. One project that stands out is that of Nicole Poor (BFA 2011 Graphic Design), who devised an analysis of the three "books" with the largest print run in the world: the Bible, *Harry Potter*, and the IKEA catalog. With deadpan elegance, she derived a series of iterations of a single page from each. From the Bible, she chose page one of Genesis. From *Harry Potter* she chose the copyright page. And from the IKEA catalog,

Fig. 46
Micah Barrett,
Feeding America,
2009

she chose the “sofa info” page. Taking these pages as starting points, she made her own interpretive designs, and developed an entirely new meaning, not only from the individual works but from the collective act of using them for a new purpose—for *her* purpose. In one bold conceptual move she made a statement about mass production, publishing, consumerism, and conformity *and* generated a unique artwork that completely contradicted notions of conformity.

Graduate students at RISD come from a variety of backgrounds. Some have BFAs in graphic design and participate in a two-year track, while others have degrees in science, literature, art, or engineering, to name a few, and take part in a three-year track. Together, these students form a powerful brain trust of ideas and techniques for visualizing meaning. Graduate projects that stand out run the gamut, from Wael Morcos’s (MFA 2013 Graphic Design) visual and typographic translation/reinterpretation of Alan Lightman’s *Einstein’s Dreams* (fig. 47), to Colin Frazer’s (MFA 2013 Graphic Design) *World Wide Web Wilderness*, a site that asks visitors to click on a Paypal button to contribute to the preservation of a virtual wilderness, but where, critically, nothing actually takes place. In 2011, the graduating MFA students decided to present their thesis exhibition in the form of a free newspaper rather than adapt to the “white cube” of the fine art realm. The low-budget printed piece, in stark black, white, and red, along with an accompanying web site, became both a repository for individual projects and a collective, public gesture (fig. 48). As they wrote: “This is the catalog of the show, which is also the show. It is a collection of work from our individual thesis investigations; an index of the physical gallery space; and a record of our collaborative process. The show is a unified work that extends beyond the exhibition space and hinges on its distribution. The work is not complete until it enters circulation.”

It may be clear by now that graduate theses, and indeed many undergraduate degree projects, tread a fine line between pragmatic “design” and work we might more readily identify as conceptual art. This very blur is

Fig. 47
Wael Morcos, *Einstein’s Dreams* project, 2012



perhaps what we're most proud of. Our educational goal is not just to shape the development of a graphic designer per se, but to help shape a whole person who is adept in thinking, making, and seeing and equipped to engage critically in conveying stories and making meaning. We are not interested in teaching a particular set of skills, nor in graduating young designers with a "RISD-style" portfolio. On the contrary, when a RISD student can show, after a few years of critical, conscientious making, that they can engage graphic design tools and processes to author their own positions in service of making information and ideas meaningful, then we know we have done our job.

Notes

1. Steven Heller, *Typographic Treasures: The Work of W.A. Dwiggins* (New York: ITC Corporation, 1986), 3.
2. Robert Bringhurst, *The Elements of Typographic Style*, 1st edition (Vancouver: Hartley and Marks, 1992), 111.

Fig. 48
MFA Graphic Design
Class of 2011,
*This Is the Catalog
of the Show*, 2011