Albert C. Smith and Kendra Schank Smith

DEVELOPING YOUR DESIGN PROCESS

Six key concepts for studio

ROUTLEDGE

Developing Your Design Process

Developing Your Design Process is your primary source for acquiring knowledge of how and why you design. It will help you understand how architects think as well as learn why you should educate yourself about design culture. You'll explore the spark of imagination that leads to a strong concept, realize the importance of sketching and rough drafts, focus your original concept to make your abstract idea visible, and finally step away for a moment to critically question your concept by identifying its strengths and weaknesses. You'll also be introduced to the language of design, architectural terminology, historic precedents, and designers, in addition to the why, what, and how of the design process.

The book is illustrated throughout with international examples of work by professionals and students in the discipline of architecture, and other related design professions.

Albert C. Smith is an Associate Professor in the Department of Architectural Science at Ryerson University, Canada. He holds a PhD, from the Georgia Institute of Technology, in architecture with a subject area of history, theory and criticism, he has a main interest in representation and is author of the book *Architectural Model as Machine*.

Kendra Schank Smith is an Associate Professor in the Department of Architectural Science at Ryerson University. With a PhD in architecture from Georgia Tech, she has written on representation, urbanism, architectural education, and media, and has published two books that explore the representational qualities of architectural sketches.

This page intentionally left blank

Developing Your Design Process

Six key concepts for studio

Albert C. Smith and Kendra Schank Smith

Routledge
Taylor & Francis Group
NEW YORK AND LONDON

First published 2015

by Routledge
711 Third Avenue, New York, NY 10017

and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

Library of Congress Cataloging in Publication Data
Smith, Albert C.
Developing your design process : six key concepts for studio / Albert C. Smith and Kendra Schank Smith.
pages cm
Includes bibliographical references and index.
1. Architectural design. I. Smith, Kendra Schank. II. Title.
NA2750.S575 2014
729--dc23
2013038038

ISBN: 978-0-415-84071-2 (hbk)
ISBN: 978-0-415-84072-9 (pbk)
ISBN: 978-1-315-79665-9 (ebk)

Acquisition Editor: Wendy Fuller
Editorial Assistant: Grace Harrison
Production Editor: Alanna Donaldson

Typeset in Calvert
by Oliver Hutton

Acknowledgments

We would like to thank Jessica Stanford and Mitchell May for their thoughts during early discussions about design process. We want to express special appreciation to Gerald Karaguni for his assistance with digital reproduction, photography, and editing. Our sincere appreciation goes to Hilary Neal, who has drafted passages, edited, and provided helpful insight since the beginning of the project. We would also like to thank Ryerson University for assistance with research funding and an Undergraduate Research Opportunities program grant.

We would like to dedicate this book to our parents and Marco Frascari.

This page intentionally left blank

Contents

List of Illustrations

Manesse, Germany 1305–1315, PD-100

4.2 The Fall of Icarus, Musée Antoine Vivenel, seventeenth century, User: Wmpearl / PD-self

4.3 Fontaine de la Justice, Cudrefin, Switzerland, 2006, Roland Zumbuehl / CC-BY-SA-3.0

4.4 Parc de la Villette, Bernard Tschumi, Paris, France, 1987, User: Reza1615 / PD-self

4.5 New York City subway map diagram, Jake Berman, 2009, User: CountZ / maps.complutense.org / CC-BY-SA-3.0

4.6 Offices for the Delegation of Public Health, Alberto Campo Baeza, Almeria, Spain, 2003, © Alberto Campo Baeza

4.7 A diagram showing the principle of a malqaf or windcatcher for natural ventilation in traditional Arabic architecture, 2010, User: Fellanamedlime/ PD-self

4.8 Marcel Duchamp and John Cage chess match / Reunion Image, Eldon Garnet, Toronto, Canada, 1968, © Eldon Garnet / www.eldongarnet.com/

4.9 Library and office building of Salman Schocken, sketches, Erich Mendelsohn, Jerusalem, Israel, 1937, © Erich Mendelsohn

4.10 Cmdr. Amy Burin, assigned to U.S. Naval Forces Central Command, is fitted to a phoropter, Jason T. Poplin, 2010, PD-US Navy

5.1 Khafre's pyramid from the pyramid of Khufu, Giza, Egypt, 1372 BCE, User: Daaaveee / CC-BY-SA-3.0

5.2 Pyramid Arena at Front Street, Rosser Fabrap International, Memphis, Tennessee, U.S.A., 1991, Thomas R Machnitzki / CC-BY-3.0

5.3 Replica of the Parthenon in Centennial Park, William B. Dinsmoor, Russell E. Hart, Nashville, Tennessee, 1931, MICHAEL BROWN/CC-BY-2.0

5.4 Mona Lisa tagged, 2009, User: Holdinghighco / CC-BY-SA-3.0

5.5 Labyrinth on the portico of the cathedral of San Martino at Lucca, Tuscany, Italy, 2006, User: Beatrice / CC-BY-SA-2.5-IT

5.6 The 2009 Summer Pavilion at the Serpentine Gallery in Kensington Gardens, SANAA, London, England, User: Cjc13 / CC-BY-SA-3.0

5.7 Men with divining rods search for treasure while others dig, in a sixteenth-century woodcut, © Christel Gerstenberg/CORBIS

5.8 Corner detail on TD Centre Towers, Mies van der Rohe, Toronto, Canada, 1969, photograph by Gerald Karaguni

5.9 Land surveyor using odometer in the United States; a private county surveyor, from NOAA's Historic Coast & Geodetic Survey (C&GS), 1850, PD US NOAA

5.10 The power station sketch, Antonio Sant'Elia, Milan, Italy, 1914, PD-Art (PD-old-auto)

5.11 Cutaway view of the high pressured columbian engine water pumping system at Fairmount Water Works, Philadelphia, U.S.A., Ben Franske, images from the Library of Congress

6.1 Students critique each other's work in this graphic design class, Humboldt State University, California, U.S.A, 2010, Humboldt State University / CC-BY-SA-3.0

6.2 Meeting of doctors at the University of Paris. From a medieval manuscript of "Chants royaux", Bibliothèque Nationale, Paris, France, 1540, PD-old

6.3 Tiles with medieval representations of six Trade Union trades: mason, potter, basket-weaver, baker, boatman, and shoemaker, 2012, User: Milartino / CC-BY-SA-3.0

6.4 Bauhaus Dessau main building from the south, 2005, User: Cethegus / PD-self

6.5 Atelier de Gainier, 2008, User: Armorial / CC-BY-SA-3.0

6.6 Socrates teaching Perikles, Nicolas Guibal, Stuttgart, Germany,1780, User: CeCILL / CC-BY-SA-2.0-FR / Self-published work

6.7 The dome of the Florence cathedral, Arnolfo di Cambio and Filippo Brunelleschi, Florence, Italy, 1436, User: Jebulon / CC0-1.0-PD

6.8 Mass assemblage of political leaders on the searchlight-illuminated Zeppelin field, Nuremberg, Germany, 1936, Bundesarchiv, Bild 183-1982-1130-502 / CC-BY-SA

6.9 The Drawbridge, plate VII from the series *Carceri d'Invenzione*, Giovanni Battista Piranesi, Cooper–Hewitt, National Design Museum, New York City, New York, U.S.A., 1745, PD-Art, (PD-old-auto)

6.10 Architecture students from Ryerson University during a trip to Turkey, Albert C. Smith, Kendra Schank Smith, Turkey, 2012, photograph by Authors

C.1 Head of Janus, Vatican museum, Vatican City State, Loudon dodd / CC-BY-SA-3.0, 2.5, 2.0, 1.0 / Self-published work

C.2 Visitors to General Motors' "Futurama" exhibit, New York City, New York, U.S.A., 1939, © Bettmann/CORBIS

Opening

Creativity is a habit.
It's not something that
happens in the shower.

Nick Law

Whether you are a beginning design student or an established professional, understanding the design process can be challenging. Questions about this fascinating process arise as to how designers generate ideas, what techniques they use to develop concepts into usable products and structures, and why design matters to society. Creativity can appear mysterious to the uninitiated, and is not easily explained or taught. To successfully learn about design typically requires years of dedication and it is primarily through experiential learning. It is much like learning to ride a bicycle. You can learn all there is to know about the mechanics of a bicycle, the physics of balance involved, and step-by-step instructions of what to do, but the only way to actually learn is by getting on the bike and trying.

0.1 Students from the Department of Architectural Science, Ryerson University

The purpose of *Developing Your Design Process: Six Key Concepts for Studio* is to explore aspects of the design process and provide thoughts about design culture and the act of making. The topics do not necessarily present a linear description of a method of design, but instead touch on ways to find ideas, techniques for utilizing design media, defining and editing solutions, and evaluating projects along the way. The intention of this book is to help make the experience of the design studio more easily understood for beginners.

Those who would find this book most useful are architectural educators, practitioners, students of architecture, and designers, but since it discusses design in the broad sense, it can be relevant to many fields. An understanding of the basic principles of design is the reason why so many architects are easily able to design chairs, interiors, graphics, and industrial designs, as well as buildings. To design means to create, fashion, execute, and construct something that is intentional, functional, and aesthetically pleasing and constitutes a general broad-based way of thinking of which architecture is but a part. In this way, it is important to not think just in terms of formulistic principles but of how to think like a designer.

In recent years, it has been increasingly acknowledged by society that design matters, and business and industry have been recognizing the value of design to global economies.[1] Governments are beginning to realize that quality design improves the lives of their citizens, be it through a better park bench or a safer road system. Business is learning that good design sells, and the public, through awareness and exposure to competition, are demanding better and better quality in all their products, so much so that courses in entrepreneurial studies often include design exercises. Apple's iPod, iPad, and computers have introduced many to high quality and innovative products that are durable and attractive to

consumers all over the world.[2] To the average layperson, the creativity that envisions these products must seem to emerge almost like magic, but no great thing is created suddenly.[3] Although it is possible to imagine a designer conjuring something seemingly out of nowhere, the creative process, and indeed the design process, are based in effort and trial and error. When in the midst of determining concepts in the early stages of design, designers rely on the manipulation of media, and it is through this transformation of materials that inspiration emerges. Design also relies on broad knowledge, hard work, and observation of the human environment.

Marcus Vitruvius Pollio, the Roman writer, architect, and engineer, writes in his influential *Ten Books of Architecture* that to understand the design process means that you need a broad-based education, knowledge of many fields, and developed skills combined with natural talent.[4] Acquiring this broad knowledge, and learning the skills of the profession, takes time and dedication. Designers and architects also need to be able to persuade influential people to support good design. The areas of knowledge important for designers and architects include anything that involves the human and built environment, as well as a wide range of subjects. Because architecture and the design fields require tremendous skill and knowledge, and because the creative process seems elusive to the general public, success in this mysterious discipline has historically appeared secretive.

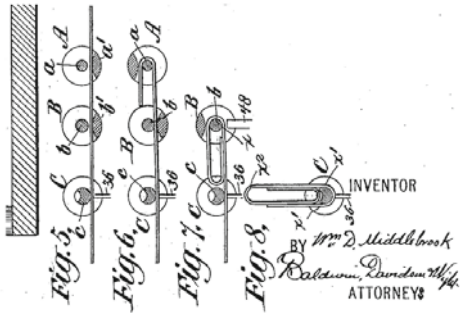
During the Gothic, Romanesque, and Renaissance periods in Europe, architects were members of guilds, specifically organized to safeguard the secrets of builders and designers. In addition to

0.2 Baumeister/Architect

these guilds, the Romanesque and Gothic craftsmen collected design details as templates in sketchbooks as they moved from city to city.[5] Those with the talent and knowledge to produce great designs seemed to possess divine powers.[6] We can look to today's starchitects such as Frank Gehry or Zaha Hadid to offer good examples of this. A contemporary phenomenon, the *starchitect* is a successful practitioner who has reached celebrity status. This ultra-famous professional is world-renowned through a recognizable style and has the status to influence the economies of cities and regions with their designs. These architects have successfully brought the discipline of design and architecture to a wide public audience, but the secrets of their process remain elusive. The public has little knowledge of the process required to develop a design from initial sketches on paper napkins to the resulting complex building.

Design is important to everything we do, buy, and encounter, and is evident on all scales from a paperclip to city and regional planning. If we look to one of the most common and simple office tools, the Gem Paperclip, it is possible to view some important aspects of design as a critical thinking process. Various forms of paperclips have been refined since the late 1800s but in its many versions, the Gem Paperclip's function and effectiveness have not been significantly improved upon. The success of its design emerges from being functional, structurally sound, inexpensive to produce, durable, aesthetically pleasing in its proportions and curves, safe to use, and brilliant in its minimal efficiency. Architectural design can be similarly viewed as not necessarily aesthetics alone, but successful when everything works together in a surprising and striking way – an act of great balance. Comparably, a definition of design from Leon Battista Alberti states that a design is successful and complete when nothing can be added or

taken away.[7] The design process epitomizes critical thinking and involves the "intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning or communication, as a guide to belief and action."[8] This may sound like a complex and involved process – and it is – but it describes the way designers and architects engage their approach to design.



0.3 1899 US patent for paper clip machine

Design concerns imagining the future and visualizing things that have not been seen before. It is a non-linear process, as it tends to move forward and backward between topics. Once again, it is unique in that the process includes different forms of knowledge and experience from imagining conceptual ideas to evaluation and refinement throughout the process. The designer Chuck Green writes that "good design is partially creativity and innovation, but primarily knowledge and awareness."[9] It has been mentioned that design also requires talent because while design techniques can be learned, certain people have a propensity for this type of thinking. Some may suggest that it is entirely intuitive, but most would agree that design requires innate talent combined with hard work and the utilization of knowledge and experience. Solutions to the design of a specific building cannot be taken directly from a book – they are not based in recitation nor can they be copied in their entirety. Finding successful solutions requires discipline, conscious effort,

analytical skills, and talent. Mastering the ability to arrive at a "good design" is elusive[10] and could be compared to the creative process in literature described by Roderich Fuess, where he compares a quick sketch to the uncertainty of design: "For [James] Joyce the first sketch is not the initiation into the process of writing, it is much more comparable to pinning down an almost invisible butterfly with an unsteady stylus."[11]

WHY DESIGN?

The stereotype of architectural education is that of students spending hours at the drawing board making floor plans and many enter into architectural or design programs having taken classes in drafting or computer software. It is no surprise then, that students are often confused when their first assignment in an introductory studio course looks something like this:

> Imagine a salt flats gleaming white in the sun. It never rains in this perfectly flat place that stretches for hundreds of miles in all directions. It is the Tabula Rasa, the blank slate. In the middle of this place are dug two perfectly square pits, each representing the opposite of the other as up/down, black/white, good/evil, etc. Through an unexcavated space between them you will design an entry for humans to travel from one space to the other. Each entry should represent the idea of the other place.[12]

Instead of technical requirements, beginning design students may be faced with ambiguous descriptions of spaces or conditions that require their intervention. There are often no set steps to guide the process, and no correct answer. Instead, this type of assignment forces students to think about the *why* of the environments they are making, in addition to *how* these experiences will be produced. Instructors assign problems like this to get students to

think critically about how their spaces feel and how they can convey a concept through the design of an appropriate intervention. The ambiguity of an assignment like this enables students to start to develop their own design process by coming up with their own ideas and concepts. This type of project also breaks down preconceived notions that students have acquired from their former experiences. The problem for many beginning students is that they are unaware of the uncertainties and potentialities of design.

Developing Your Design Process: Six Key Concepts for Studio can thus be thought of as a primer for students entering the design field or as a reminder for professionals about how to think about their own design processes. Design is a multifaceted process that can remain elusive even after years of practice and while there are no specified methods that guarantee a successful outcome, there are ways of thinking critically throughout the process that when used appropriately, can result in more thoughtful projects. This book aims to give students clear and direct ways to negotiate thinking about design and what to expect from the design studio experience.

0.4 Students from the Department of Architectural Science, Ryerson University

Again, because of its non-linear process, design can be considered ambiguous. Assignments will be ambiguous. Advice will be ambiguous. Professors will be ambiguous. While a designer can use ambiguity to help with the development of conceptual ideas, design also implies a certain precision, so that it is not removed from the realities of life. In other words, it is your responsibility to engage this

ambiguity and make the project clear. It is important for people interested in design to understand the complexities of this process since it reflects a unique blend of research, analysis, synthesis, and innovation.

Part of the act of clarifying is accomplished through designing the way something should look, function, and be constructed. The act of designing usually means establishing boundaries, parameters, or rules to explain what the project will be. A story in the book *Architectural Model as Machine* speculates about a discovery by an early person that may help to illustrate the importance of boundaries.

> Long ago, before anyone built their first dwelling, there lived a very intelligent human. One day the human was walking in the woods and found a marvelous stick. The stick was long – about as long as the human was tall. It was straight, strong, and pointed at one end. There was something about this particular stick that made the human want to pick it up and keep it. Rather quickly the human found that the stick could be used as a staff to facilitate walking. It was also useful in digging for delicious roots and helpful in knocking down berries from high branches. Once the human, when attacked by a vicious animal, found that the stick could be used for defense. The human realized the stick made a wonderful and controllable extension of the hand. The stick was a tool, and a most prized possession. Still wandering, the human arrived in a large pleasant clearing and decided to rest. Not finding a tree close by against which to lean the stick, the human decided to drive it directly into the ground. All day long the human rested and watched the shadow of the stick change. The once controllable stick was beginning to raise wondrous, but not necessarily easily understandable, questions about the universe. The stick took on a life of its own; it presented a better way of understanding the sun, creating questions

about a vast chaotic universe. It changed from a tool into a scaling machine and seemed to encourage the possibility of understanding the measure of things. From then on, whenever the human met other humans, the stick would be ceremoniously thrust into the ground. They, then, were also compelled to think about their relationship to their universe and to make a variety of attempts at further explanation.[13]

The stick represents a mechanism that assists us to understand many of the things in our world that are not easily understood. It offered this early person the ability to begin formulating an understandable measurement for defining the invisible and unknown. In a similar way, the mechanisms we use to design such as models and drawings – and in fact, the buildings that we live in – help us to comprehend more about our culture, society, and the ways in which we live. The unknowns of future buildings must be defined. Thus, boundaries that help us design are like the rules we work within and will be a reoccurring theme throughout the entire book.

By understanding the methods and tools used by others, this book aims to empower you to embrace the unknown, to use ambiguity to challenge what is existing, and most importantly, to allow you to develop your own method for designing. By fostering an understanding of the design process for those interested in design, be it a student, or a client, the aim is to understand why we do what we do, and how we do it.

THE ORDER OF THINGS

There has been a long and illustrious tradition of explaining the importance of design to the unversed. One can think of the great writings of historical figures such as architects Vitruvius and Leon Battista Alberti who attempted to present the importance of the design process to the Emperor of

Rome or the Popes of the Renaissance. This book is not attempting to equal these great texts, but rather present ideas about what goes on in the design process in an accessible way to the beginning design student, professional, design client, or anyone else interested in the creative process.

To understand how the book is organized one should think of a necklace. Think of the chapters and subheadings as separate beads that can be successfully engaged individually. The connecting string, tying the beads together, may be seen as representing the overall importance of the design process, bringing the individual parts together into a cohesive whole. The book is divided into six chapters with each chapter containing a series of thoughts important to understanding the main themes.

The first chapter is entitled, "Beginning." It is intended to offer the reader general thoughts about how and why design is important. The chapter explores the relevance of being educated in the culture of design and discusses how designers develop goals and ideals pertaining to their work. This process involves the ability to educate oneself to look, see, and experience things in the world in order to create better designs. The chapter talks about how students and laypeople might go about learning the verbal and visual language used to communicate design and offers the reader suggestions about how to engage in design thinking. This is particularly important because design thinking is not based in rote learning, but encourages broad consideration of possibilities and a holistic vision of function, efficiency, and aesthetics. Finally, this section explores why designers need to develop a position based on their beliefs about their work.

Chapter two, "Imagining," concerns the development of a clear design concept. It is an exploration of the *eureka moment* stimulating the imagination that may eventually lead to thoughtful concepts. The chapter talks about historical

references such as why and how the ancient Greeks called upon their muses. The chapter will discuss the importance of what can be learned by looking back at the successes and failures of past designs. All design is forward thinking, embracing change and imagining the future, and this chapter discusses why designers must also look forward to better understand their proposed designs. The chapter emphasizes the dialogue and discourse that designers maintain with their concepts to produce successful designs and ultimately concludes with suggestions about how to "light the spark": methods for creating clear and useful design concepts.

The third chapter is entitled "Playing" and investigates the concept of sketching and rough drafts. This section begins with the general idea of what it means to sketch and the creation of rough drafts as a method to explore early ideas. It discusses how sketching a variety of possible concepts is similar to creating a series of rough drafts of a written work. The chapter argues that the act of design, in many ways, represents a serious form of play. A key aspect of understanding sketches, whether physical, computer models, or those completed by hand, is their ability to allow quick views of multiple possibilities.

Chapter four is entitled "Choosing" and touches on the fine-tuning of design concepts. The chapter includes information about the importance of creating initial boundaries around your specific design concept. It presents ways to successfully analyze the strengths and weaknesses of projects, including filtering through various design concepts. Subsequently, after discussing the successful filtering of ideas, it focuses on methods to improve the best initiatives. Finally, it investigates how much of design is making educated guesses to eliminate specific choices in favor of other ones.

The fifth chapter, "Defining," explores how and why architects delineate their proposed design. It describes the importance of the connections between design intentions and the final product. It discusses ways to develop a clear definition of the intended intervention. The chapter talks about smoothing and polishing to reinforce the process of defining as it is related to making the invisible possibilities of design visible. This section concludes with suggestions on ways to clearly describe design intention.

The final chapter, "Assessing," provides suggestions to help critically analyze the faults inherent in concepts and designs. To successfully assess, designers should not become too infatuated with their creations, but instead step back and consider the design with a critical eye. As a designer, it is important to be able identify the strengths and weaknesses of a specific design project by questioning proposed concepts. The chapter offers strategies for reassessing the products of design in order to improve them and talks about making good decisions throughout the design process.

WHERE TO START?

It should now be clear that an understanding of design is uniquely different than assembly by formula or recipe. Because of this, suggestions for improving design depend upon experimenting and manipulating design media. So the question arises, how do we engage this universally understood yet enigmatic process? The techniques and recommendations in the book should be viewed as a companion to experience and discovery. Each chapter reveals thoughts about theory – exploring the why of the process, in addition to the how. Following a discussion of why, each chapter presents studio examples and architects' experience. The method is to propose topics for discussion, using analogies and metaphors to illustrate possible approaches to design. These techniques will assist

you to anticipate how to deal with uncertainty, find ways to challenge yourself, and remind you of ways to think visually. While not intended as a "how-to" book, *Developing Your Design Process: Six Key Concepts for Studio* will explore various aspects of design that provide insight into architecture and design culture, and investigate ways to spark the imagination, techniques for manipulating design media, defining and editing your design solution, and evaluating suitable solutions to your ideas.

Endnotes

1 John Heskett, "Creating Economic Value by Design," *International Journal of Design* 3, no. 1 (2009): 71–84.

2 Laura Sydell. "Steve Jobs' Greatest Legacy May Be Impact on Design," National Public Radio, www.npr.org/2011/10/06/141118621/steve-jobs-greatest-legacy-may-be-impact-on-design.

3 The musician and researcher Charles Limb states that "creativity is magical, but is not magic." Utilizing imagination and inventing new forms requires the ability to recognize and encourage ways to make magical things happen – as it is known that no great thing is created suddenly. While the process of designing and unexpected inspirations may appear like magic, we should never pretend that designs will appear instantaneously; instead design requires effort and hard work. In fact, traditional definitions of magic have been associated with the ability of magic to be productive, the action of "doing," and thus the act of design may seem magical.
Marcel Mauss, *A General Theory of Magic* (New York: W.W. Norton, 1972), 18–24.

4 "He should be a man of letters, a skillful draughtsman, a mathematician, familiar with scientific inquiries, a diligent student of philosophy, acquainted with music; not ignorant of medicine, learned in the responses of jurisconsults, familiar with astronomy and astronomical calculations."
Marcus Vitruvius Pollio, *On Architecture*, trans. Frank Granger (Cambridge, MA: Harvard University Press, 1931), 7–9.

5 See *The Sketchbook of Villard de Honnecourt*, ed. Theodore Bowle (Bloomington and London: Indiana University Press, 1959).

6 Ernst Kris and Otto Kurz, *Legend, Myth and Magic in the Image of the Artist* (New Haven: Yale University Press, 1979), 61–90.

7 Leon Battista Alberti, *On the Art of Building in Ten Books*, trans. Joseph Rykwert, Neil Leach, and Robert Tavernor (Cambridge, MA: MIT Press, 1991), 156.

8 Michael Scriven and Richard Paul, "Critical Thinking" (presentation at the eighth Annual International Conference on Critical Thinking and Education Reform, Summer 1987).

9 Chuck Green, Twitter post, March 28, 2010, 11:34am, https://twitter.com/ideabook.

10 Chapter two will discuss "good" architecture.

11 Roderich Fuess, "Epiphany: To the First Sketch in Modern Literature," *Daidalos* 5 (1982): 26.

12 First year studio project at Ryerson University written by Albert C. Smith.

13 Albert C. Smith, *Architectural Model as Machine* (Oxford: The Architectural Press Elsevier, 2004), xv–xvi.

Beginning
Chapter 1

In order to succeed,
your desire for success
should be greater than
your fear of failure.

Bill Cosby

This first chapter explores what to expect when you begin any design process. In general, before design begins, a need must be identified. This need or desire is a recognized social opportunity, commission, or studio assignment, for example, and can be the impetus to begin a project. As either a student or a design professional the process starts with a *program*, usually a written statement, that presents the parameters of the project and suggests an approach. Some programs can be quite open-ended and others more restrictive, anticipating an intended outcome.

1.1 Thomas Edison and his early phonograph

Studio education, the theme of this book, is experiential in nature. Your professors