

THE
DESIGN
PROCESS
third edition

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"I shall join the creators, the harvesters, the celebrants:
I shall show them the rainbow and all the steps . . ."

-Friedrich Nietzsche, *Thus Spoke Zarathustra: A Book for All and None*

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PREFACE

The altered landscape of professional design continues to require more skills of young designers. Changes in technology, culture, politics, and economics have made remarkable changes in the three decades I have observed, and the rate of change only seems to be accelerating. The blurring of distinctions between high-end and mass-market design has continued to a point where a design aesthetic is to be found at practically every price level. This has caused an enormously increased demand for educated designers who are capable of operating within a much wider spectrum than before.

At the same time, the waning of modernist influence has resulted in a broadening of the stylistic field, allowing designers greater freedom of play. This newfound freedom is reinforced by the advent of Computer Aided Design and Manufacturing (CAD/CAM) to create any designs, no matter how unorthodox they are. With 3D printing now verging on mainstream application, the freedom and opportunities can only increase. Massive improvements in communications and computer technology have imploded our frames of reference and created a wired (and wireless!) world where information moves at the speed of light, and accessibility is everything. Globalized industries now require businesses to view the entire world as their competition, while design, procurement, and manufacturing can be continents away from one another, outsourced and offshore.

While robotics and CAD/CAM have altered manufacturing methods to an astonishing degree, environmental concerns and a demand for sustainable practices are increasingly changing the approach to methods and materials. The greater number of choices, expanded communications, improved technology, and greater distances involved require a greater degree of clarity and a commitment to an idea well in advance of what used to be strictly necessary. In addition, today's climate of speed demands a constant flow of information and availability that requires a designer to be consistently on track, moving a project forward with certainty and knowledge to its goal.

Over the years, it has been my goal to convey to students that designing, regardless of what is being designed, has a clearly definable process. Apparel, artwork, aircraft, book covers, film sets, tea sets, furniture, and websites all follow a remarkably well-delineated path in their creation. The process of design can be broken down into stages, each of which contains its own set of goals. By following a path that arrives at each stage in turn, a project's development becomes clearer, easier to navigate, and more assured. Moreover, focusing on fulfilling the needs of each stage before moving onto the next allows the project to meet its goals and makes revising it much easier. A staged process is also very beneficial to teamwork and helps continue the design's progress, even when the team's energy is not at its peak.

Throughout my career as a designer, I worked on theatrical and film costumes and sets, couture, art direction of fashion layouts and advertising campaigns, exhibition and graphic design, murals, and large-scale public artwork. I have mined my experience heavily for the ideas and methods presented in this text. Varied as these experiences were, they served to confirm the similarities of their processes.

In teaching design, I found that guiding students through a design process over the course of months requires a guidebook that maps out the terrain. It required a book that describes how to travel the path from the World of Imagination to the World of Objects and helps students sustain themselves creatively on this journey. There are numerous books that address the artistic and technical sides of executing and presenting designs. There are other books that address creativity or brainstorming; a few speak to the actual search for ideas, define sources of inspiration, and explain how to stay inspired, which are crucial to a designer's methods. I wished for a book that walked student designers through the process of design from inspiration to production; a book that dealt with a designer's role as a manager, a coordinator, an artist, a performer, a dreamer, a communicator, and a problem solver. It seemed that a book was needed that answers fully, at each stage, the student designer's question, "What next?" While there is no way to quantify and systemize a creative process, there is a way to guide designers through the stages in which they will find themselves and give them the cognitive tools and examples so they can move to each subsequent stage. This book aims to fulfill this need.

ORGANIZATION AND LEARNING FEATURES

The book's main body is divided into one introductory chapter and seven chapters that specifically correspond to the seven stages of design as follows:

1. Inspiration
2. Identification
3. Conceptualization
4. Exploration/Refinement
5. Definition/Modeling
6. Communication
7. Production

The division of the book into these stages allows readers to recognize and discover answers to any design project questions, but the structure should not be taken for the real world. The reality of the process is not quite so linear and clear. Communication, for instance, is a concern throughout the entire design process, but since it is toward the end that communication increases exponentially, it is presented here as a stage in its own right, at the point where clarity becomes completely crucial: before handing a project over to production.

Since the introductory chapter gives an overview of each of the stages, a quick mention of concerns will suffice here.

Stage 1: Inspiration allows readers to examine various sources of inspiration and avenues for becoming inspired. The exercises allow readers to relate to inspiration personally.

Stage 2: Identification allows readers to examine a structured method of identifying concerns and constraints surrounding their projects. This stage also explains the importance of recognizing environmental concerns and working within sustainable practices.

Stage 3: Conceptualization outlines methods of examining and defining concepts through both written and visual means.

Stage 4: Exploration/Refinement encourages readers to examine methods for exploring and experimenting with concepts quickly and efficiently so they can fully reveal the potential of their ideas.

Stage 5: Definition/Modeling teaches readers how to commit to decisions with confidence and how to determine the level of needs their designs should fulfill. Then they will look at issues relating to modeling their designs.

Stage 6: Communication allows readers to explore various techniques for design and provides them with an approach to create samples and prepare presentations. These lessons reinforce the idea of clear communication with clients, colleagues, and production staff.

Stage 7: Production outlines the ideal manner in which to keep track of and convey information at the production stage. The text reviews various prototyping options and discusses issues of collaboration. It also explains how students can, at the close of the design process, analyze what they have learned so they can apply their knowledge to future projects.

Each stage includes the following:

- *Objectives and Key Concepts* that indicate the chapter's content and the goals that students can reach by reviewing the text and completing the exercises.
- *Perspectives* that provide readers with direct insight into the philosophies and experiences of highly regarded professionals, which greatly widens the book's scope. These perspectives profile ten professional artists and designers who have very graciously taken the time to share their thoughts and experiences, three of which are brand new to this edition. Among them is Supreme Court Justice Stephen G. Breyer, who shares his personal experience and thoughts on architecture and design as a contributor to public life.

- *All new “Process into Practice” features* that follow three designs in brief segments through the process. Considering each of these in turn—a jacket, a chair, and a graphic user interface (GUI) for a web application—allows a quick grounding of that design stage’s focus.
- *Exercises* that bolster the material presented in each stage and keep the students’ design projects moving forward. The exercises aim to leave the student designers with a body of work that eventually leads to a completed project. As students complete the exercises, they keep a visual and written journal, which creates a volume of work in their portfolios that will be attractive to interviewers and clients alike.
- *Illustrations* that act as visual aids to better explain each stage. They are therefore of a varied sort, and it is my hope that they will contribute to the enjoyment of the book as well as sparking thoughts beyond the text itself.

Five appendices provide reference material that students can use either as a basis for further research or as supplementary material to increase their awareness of the numerous sources of information and inspiration available to them.

- *Appendix 1* provides a refresher on the elements and principles of design.
- *Appendix 2* is a reference list of books that may be interesting to any student of design, in school or out.
- *Appendix 3* lists in chronological order architects and designers, beginning with William Morris in 1834.
- *Appendix 4* discusses trendspotting and postmodern culture.
- *Appendix 5* contains a timeline of zeitgeist-altering events and significant moments in design.

WHO SHOULD USE THIS BOOK AND HOW?

This book is primarily intended for novices to the world of design, who need a basic operational understanding of the process. This may apply to any approach, for those who wish to find their footing in working with design and designers, as well as design students working on projects in an independent studio or in a classroom setting. The breakdown into seven stages is fairly detailed and results in each stage being carefully explained. Students can therefore refer to specific stages as needed (i.e., each stage is a nearly stand-alone text) or read the entire text step by step.

The manner in which the book is used depends on the course structure and level of supervision students will receive. An Instructor’s Guide and accompanying PowerPoint presentation are available to instructors. The Instructor’s Guide provides suggestions on how to use the text and exercises in different circumstances, as well as points for generating classroom discussions. It also provides rubrics for evaluating the exercises either by peer review or individual critique. The rubrics provide a framework toward possible solutions without spelling out specific answers or predetermined results. The rubrics can also be used as the basis for classroom discussion on the methodology of the project at hand. The guide also contains spreadsheet templates for grading and scheduling. The PowerPoint presentation contains lecture slides related to each stage in the book.

This text serves well as a handbook for professional designers. It can prove to be helpful to designers, as well as those who must manage and coordinate design teams. Because of the rigors and deadlines of professional life, sometimes designers lose touch with the discipline and joy of design work. My own experience has confirmed that revisiting the concepts discussed in this text can be beneficial. It is my hope, and has been my intent, that students who use this book in their classrooms will continue to find it helpful long after they graduate.

NEW TO THE THIRD EDITION

When I began writing the first edition of *The Design Process* 10 years ago, I was aiming to distill 20 years of designing and 13 years of teaching into an accessible volume for students and practitioners alike. The resulting book met with a good response and has been a good companion and guide in my classroom since. A textbook, however, especially in a field such as design, cannot be a fixed entity and must never be considered “finished.” The needs of the students, the program, technology, and the world at large evolve, requiring a new look every few years.

Basic methods of personal inspiration and creativity do not change radically over a decade or two, but in the case of *The Design Process*, two significant areas have experienced dramatic change since the new century began. One is that interactivity and online communication with all manner of handheld devices has changed how we communicate—indeed changing our culture. The other is the level of discussion of ethics and responsibility in the design professions. The discussion of sustainable design was coming to the fore when the book was first being written and has continued to become more prevalent and increasingly urgent in the intervening years. With this in mind, the discussion of sustainability was incorporated throughout the book in the second edition and has now again been updated to reflect the current reality.

I am continually grateful to my students at the University of Rhode Island’s Department of Textiles, Fashion Merchandising, and Design for their contributions to this effort, as well as for their enthusiastic input to my thoughts on how best to teach sustainable design practices.

The initial ideas for this book grew in my classroom, and it has been an interesting and inspiring process to see how what I thought was the “finished” text continues to be a living entity in the hands of students. I hope that this new edition will continue to inspire new questions and further conversations.

ACKNOWLEDGMENTS

The thoughts that have been gathered in this book were inspired, developed, and field-tested in various venues and circumstances for more than 25 years. Each new edition has allowed me to add new visions and experiences. Years of designing and teaching design have allowed me to meet numerous people: collaborators, coworkers, students, clients, and audiences, all of whom have, in some way, shaped the thoughts contained in this text. Some of these people, through their support and faith in my abilities, allowed these thoughts to take root and blossom and should be mentioned.

My four years of teaching at the Reykjavik Technical College were a formative adventure during which my ideas for the book began to take shape. After teaching illustration and design for two years, I was asked to set up and head a department of design for its first year. There, I had the amazing opportunity to design courses and put my ideas of design instruction to the test. Ingvar Asmundsson, the dean; Gudrun Erna Gudmundsdottir, my initial department head; and Sigurdur Örn Kristinsson, the director of programs, deserve my sincere thanks and appreciation. Such trust placed in someone so young required quite a leap of faith—startling in hindsight—for which I am very grateful.

At the University of Rhode Island's Department of Textiles, Fashion Merchandising, and Design, the department heads, Dr. Linda Welters and Dr. Martin Bide, along with the entire faculty and staff deserve my sincere thanks as well. The years at URI have flown by, and the school has been an extremely supportive and enjoyable environment, without which I would not have been able to develop the ideas and methods presented in this book. Dr. Welters, in particular, has my deepest gratitude and appreciation for *her* leap of faith in hiring me when I was newly arrived in the United States.

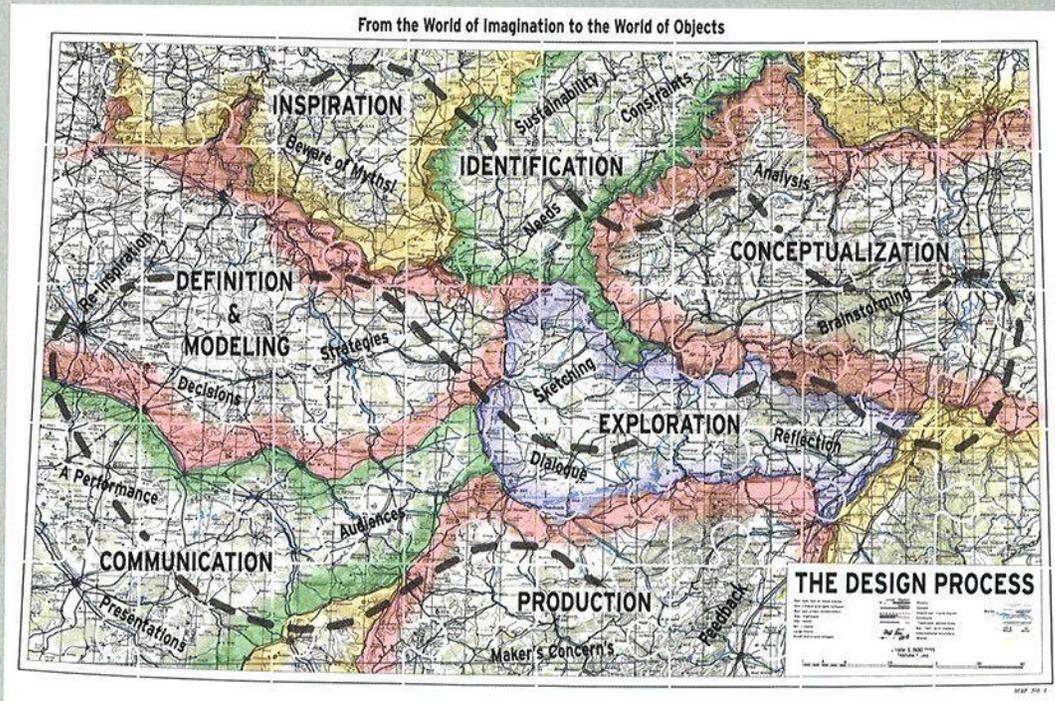
I owe an enormous debt to all my students throughout the years for putting up with the experimentation that was required to explore the ideas presented in this text and appreciate their contribution to the formulation and focus of the exercises. I am very grateful to my students for their perseverance and for giving me the privilege of sharing the joy of their achievements. One student requires special mention: Thanks to Jennifer Penswick for allowing me to use photos of her designs from my classroom as illustrations. Two other illustrators—now college-students themselves, but then in kindergarten—my children Karl and Julia, created wonderful illustrations for the first edition that inspired many thoughts and visions of the creative process. They have, therefore, in this and their continuing growth and development, unknowingly contributed to the views put forward in many of the book's stages. Many thanks to them for both contributions.

Three groups of people have influenced the manuscript directly. The first group is made up of the reviewers of the first draft chosen by the publisher: Abimbola O. Asojo, University of Minnesota; Pam Atilano, William Rainey Harper College; Cotter Christian, Savannah College of Art and Design; and Maureen S. MacGillivray, Central Michigan University. I thank them for their time, careful attention, and illuminating comments that made a great difference in the creation of the book. It is far better for their efforts.

The second group, whose contributions make this a better book than I could ever have written otherwise, consists of the ten interviewees who so generously shared their thoughts, vision, and experiences. Many thanks to Leifur Breidfjörð, Justice Stephen G. Breyer, Ian Cunningham, Pálmi Einarsson, Brower Hatcher, Mari Kussman, Madison Maxey, Jill Pable, Yeohlee Teng, and Mark Zeff for their time and their gracious, sincere, and joyful participation. Their contributions were worth the entire effort of putting the book together, and I have learned much from them.

The third group is the excellent teams at Fairchild/Bloomsbury, without whom there would be no book at all. Much gratitude to Priscilla McGeehon, publisher; Olga Kontzias, former executive editor; Joe Miranda, development manager; Sylvia Weber, former

Introduction



OBJECTIVE

To successfully steer an idea on its journey from the world of imagination to the world of objects, a designer must stay focused on where the idea is going and make a number of important stops along the way. This book examines each stage of that process. This introduction describes the nature of a designer's journey, maps the path a designer will take, and explores the path by explaining what happens at each stop.

KEY CONCEPTS

- A designer's work is concerned primarily with solving problems by developing and explaining ideas. The "look" of a product is just one of many possible problems.
- An idea's evolution is essential to the creative process.
- The design process, regardless of discipline, has seven basic stages: inspiration, identification, conceptualization, exploration/refinement, definition/modeling, communication, and production. These stages are not necessarily linear but can be examined as such.
- Ideas that go through the seven stages will result in a tangible design.

DESIGNING IS UP CLOSE AND PERSONAL

We are surrounded by design. As I sit here at my computer, I can consider the design of its casing and the user interface of the software. I can also consider the design of my clothes. The keyboard, my teacup, the phone, the graphics on a book cover, my backpack, and the window frame are all designed; even my daughter's rock collection on the windowsill has been designed. Each rock has been chosen on the beach as a candidate for the collection and then intentionally placed on the windowsill as decoration. The setup is designed, using the individual rocks as elements to create a rhythmic set of shapes and textures evoking a beach of years ago.

What then is designing? For that matter, what is a design? The answer lies in the decisions made. A landscape designer decides the placement of a line of trees, a dressmaker chooses a fabric, an architect sketches an outline of a building on a napkin, an engineer calculates the need for a gauge of steel and the number of bolts necessary for a structure's base, a software developer creates a diagram of actions that a program will perform. These are all examples of designing. A design is a plan of action, created in response to a situation or problem that needs solving. This plan then often needs to be laid out, so that it may be clearly understood by a viewer. Designing is about forming ideas, planning and explaining the execution of those ideas, and making choices based on the evolution of those ideas that will lead to an end result. Designing is a journey that has a number of stops and detours along the way.

A designer must deal with deadlines and budgets. There are collaborators and clients who need to know what to expect and who must, very early in the process, be informed about a number of details. A designer makes decisions about technical aspects and materials. Tolerances, prices, durability, comfort, and ecological impact may all come into play. All of the decisions that go into a project can delay that project or even completely change its direction. A project evolves as a designer learns more about it and its needs.

While an idea exists only as a possibility in a designer's imagination, it can be anything at all. As soon as a designer makes a decision for the design, the idea has been isolated from an infinite number of other possible ideas. The designer must also determine whether the unexplored ideas contain something that is worth examining. For these reasons designers must grant themselves time to develop their ideas despite deadlines, budgets, and schedules. It is the designer's job to keep an eye on the ideas' development and possibilities. Can we do this to it? Or that? Or both? Or not? By asking questions like this, designers can learn what an idea is capable of and figure out what they ultimately want from it. Perhaps a designer does not want the most obvious solution. Perhaps there are ways of doing something that have never been done before. Perhaps the normal approach is not the best solution. Perhaps changing values, new technologies, and environmental concerns are shifting demands, needs, and constraints before our eyes.

There is a path all designs take on their journey from the world of imagination to the world of objects. By allowing the path to meander and twist without much restriction, making sure that the process makes certain well-defined stops along the way, designers can examine and explain the idea at each step of its evolution without stunting its growth. In this book, you will map and follow such a path. It is a journey that requires a high level of personal involvement.

THE DESIGN PROCESS: A RELATIONSHIP

The design process can be likened to a romantic relationship. In the first stage, *Inspiration*, an idea has taken hold of you. Everything is exciting, and everything about your idea is fun and wonderful. You are infatuated. You stay up all night with your idea, take it everywhere with you, and love being seen with it. Strange behaviors emerge. You find yourself taking risks and acting impulsively.

For a relationship to survive, the energy of the infatuation must be transferred into a more sustainable form. The relationship then enters the *Identification* stage, where the idea becomes an understandable entity with definite parameters. The abstractions of the initial inspiration begin to solidify into recognizable, defined forms. Things have happened that cannot be undone. The identity of the idea is forming and acquiring a character of its own.

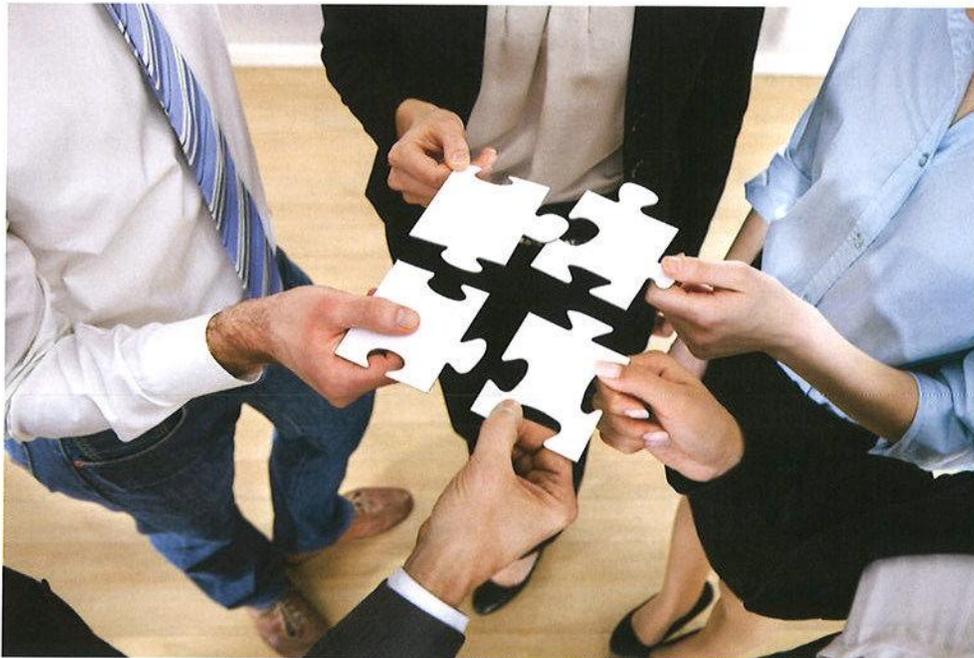
In the *Conceptualization* stage, the idea's constraints and needs become clear. The idea becomes specific—a concept—with its own definite characteristics. It begins to have a shape and a life of its own. The initial parameters are already defined, and they are now developed into a set of loosely understandable outlines. You and the concept are now officially “an item” engaged in a dialogue. You must recognize that there are ways to approach the concept and ways to behave in relation to it. It can be treated certain ways, and it will not accept certain things.

When the *Exploration/Refinement* stage begins, you must establish boundaries and structures. Any implications that exist when the idea is conceptualized become fixed in this stage. If you step outside the boundaries, there may be serious consequences. If these definitions are changed or modified, the relationship changes.

Designers must therefore commit to these structures in order for the relationship with the concept to continue. However, commitment is tricky, and it is very hard to give up the freedom to make choices. It is normal to have doubts about decisions and to wonder whether your choices are excluding future possibilities. To clear this hurdle, a little re-inspiration is necessary. You must remind yourself of why the idea was a good one in the beginning. It is good to revisit the heady first days and recall the impulses you felt at that time and the risks you felt capable of taking. This re-instills confidence and the sense of enjoyment from that initial moment of inspiration.

You must prepare for this and deal with it to move forward to the next stage, *Definition/Modeling*. At this stage you begin to build on what you have discovered so far. Here is where the experiences you've had and the discoveries you've made about your idea are used to create a structure that is the best possible design for the situation. At this stage you also begin to look toward a future that contains your idea as a permanent entity by creating models and examples that allow you to examine the effects of the real world and test your design's viability.

Figure 0.1 Designing is a big puzzle. You have to keep track of all the individual pieces, but all the while keep an eye on the big picture. You are also working with a team, so each team member must be able to assess what is happening and know where their particular effort contributes and how.



In *Communication* and *Production*, the focus turns to all the details involved. In both these stages, designers establish and work with decisions already made. The focus is outward, toward communicating the design to others and leading it through production to its ultimate end as a physical creation in the world. If anything new comes up at this point, it is usually because the requirements of previous stages have not been fulfilled.

There can be numerous details to address. Some of them are difficult, and some require compromise. If the details are approached as a source of inspiration, life gets much easier. One way to do this is to look at the idea from the inside out. Your design can be seen as a sum of its parts. Each detail, each element has something to contribute to the whole design. Designers who continually reaffirm their commitment to the whole concept will find that it isn't difficult to become excited about making all the details work together.

DESIGNING RESPONSIBLY

Unfortunately, the discussion of environmental concerns has been heavily politicized—a development that is as unnecessary and counterproductive as it is sadly inevitable given the economic implications. Whether we look at the problem of diminishing resources or that of environmental damage, the road ahead is becoming clearer every day. The questions of how to manage the resources available on our planet and how to keep our environment in such a state that coming generations may enjoy a life at least as comfortable and interesting as ours is simply a matter of human decency and should—in a perfect world—require no dispute or political alignment to be understood. You will need to begin your journey through the design process with inspiration, and what further inspiration should one need to care for one's environment and be careful in the use of resources than to wish for a future world at least as good as ours is today?

You will see, as you progress through *The Design Process*, that the designer's power of decision-making is great all the way through. But it is immensely more so in the initial stages, when the design problems, concepts, and solutions are being identified and explored. Sustainable practices must be *designed into* the project: The all-too-common practice of tacking "green" onto a product at the end as a branding exercise is not only unethical but also counterproductive in that this renders the entire exercise meaningless. Consumers can do only so much. If a product is not designed with sustainability in mind, what use is lecturing consumers on the importance of being green? Increasing populations, accelerating worldwide market economies, and dwindling resources require that designers become aware of the ripple effect of their decisions throughout the entire life cycle of the product, effects that may reach into the lifetimes of many generations hence. The responsibility of designers, manufacturers, and marketers will need to be realized in the coming decades to a degree that goes far beyond the vague and branding-oriented "greenwash" we see practiced in any number of design fields and marketing. Each stage of the design process must be addressed: The way to really implement sustainable practices into the design process is to consider the entire life cycle of the products, from the harvesting of their raw materials to their reuse and recycling or disposal.

As a designer you are the center of a network of decisions and collaborative efforts. The decisions you make influence a chain of events and inform the actions of people, some of whom you may never meet, some who will be affected in future times. As you progress through a design project, an awareness of the larger context of your actions needs to be present in every design decision you make. How will this decision affect the use of resources? How will it impact the amount of energy or chemicals used? What will need to be transported from where and how? What will be the effect of this product on the environment as it is used? What should be done after it has outlived its intended use or broken down? Will the product be recycled or reused? You, as a designer, have the ability to influence the answers to these questions and many more. You also have the ability—and the responsibility—to inform and educate your clients, collaborators, and anyone else involved with your projects.

DESIGNING IS IN THE MIND

This book does not aim to quantify the design process. Rather, it shows how an idea can travel from the world of imagination to the world of objects in an organized, timely fashion, evolving as it goes, but keeping its original purpose and energy intact.

A designer's job begins with a problem that requires a solution. Unlike a mathematical problem, a design problem is not always clearly stated at the outset. Designers must begin by identifying the problem and determining what they are being asked to do. Ideas begin to form as soon as the problem is examined; the problem's nature, once it is recognized, usually implies where its solution lies. Designing is about ideas: needing and finding ideas, examining and identifying their nature, and, most important, illustrating and explaining them so they can be realized.

It is a common misconception that design deals exclusively with the surface of things and that designers are primarily concerned with the look of their designs. There are also the notions that true design must be the work of one person, that a collaborative effort is less authentic, and that a design arising from practicality does not qualify. Nothing could be further from the truth. No matter what is being designed—clothing, cars, or computers—the design problem exists not only in carrying out a stylistic vision but also (and often more so) in the final product's functionality. Think about all the things around you that are functional first and foremost. Look through your kitchen drawers or toolbox. Think about medical and military devices (usually some of the best functional designs around). How do they work? What are they made of? How are they constructed? How do end users interact with them? In both their training and practice, designers must always ask such questions.

In large-scale global manufacturing, it is possible that there are several designers or even teams working on each level of a product's development. Whether you are the lead designer supervising the creation of an overall vision or a member of a design team working on a specific aspect of a project, you must recognize what needs to be done and communicate and cooperate at each stage.

The movement of an idea from one stage to the next involves an evolution. An obvious truth about designing is that it must involve development. Indeed, the changing and evolution of an idea is highly necessary to the creative process. Designers examine, question, and redirect

PHASE 0
SOMETIMES
DESIGNERS
UNDERSTAND
IS TO IDENTIFY
PROBLEMS.

Figure 0.2 Designing is in the mind. At the beginning of a project, the thinking is as weighty as the doing. A designer maps out the process, the choices and the steps to take as much as possible.



the idea at each stage, as needed. In doing so, they bring it closer to its ideal solution, even if that solution turns out to be very different from what was originally imagined. At the outset, ideas in any creative process are nebulous ghosts, slow to reveal themselves. People are quicker to know what they do not want and what something shouldn't be. As a designer's vision is directed toward what the creation *should* be, rather than what it should *not*, the designer develops a dialogue with the project to learn what it needs. An idea should be allowed to change and evolve until it is as close as possible to what it needs to be. The idea must not become formed before its time, before you know what you want it to be (or what *it* wants to become). But designers must be careful that the idea doesn't evolve beyond recognition. Designers must keep track of the nature of the idea and its details at each stage so that the idea's original purpose is fulfilled. Tracking an idea's development allows designers to be confident that it is developing in the right direction.

THE MAP: FROM THE WORLD OF IMAGINATION TO THE WORLD OF OBJECTS

To formalize the idea of a journey, let us examine a map describing the path you will take. An idea's path from the world of imagination to the world of objects passes through the seven stages described above. By stopping at each of these stages in turn and taking the appropriate actions, you will inevitably arrive at your destination with a set of designs that are ready for production.

The nature of this book requires you to visit these stages in a linear fashion, but be aware that the design process is not quite so linear. The stages do not dovetail neatly into one another. Communication, for example, is a concern throughout the design project because clients and colleagues will need information from start to finish. Also, conceptualizing doesn't end after the initial outlining of a project. A concept will and must evolve. For this reason designers must revisit their thoughts from time to time, making sure they are on track.

INSPIRATION

You will begin your journey at inspiration. Whether it is just one or a series of trips, you need to have something that drives your creativity. Even the most mundane, practical designing requires a positive, energetic attitude.

Finding and maintaining inspiration is an extremely important but often neglected part of the designer's work. It is an emotional, often almost spiritual exercise, and the need for it often arises during times of stress when there is little or no time for reflection. Stage 1 shows readers how to recognize and tap into sources of inspiration.

IDENTIFICATION

In the identification stage, the focus is on examining and defining the project as much as possible. You will create a design thesis for your project that will serve as a guide for the remaining stages. A large part of the designer's concern lies in identifying the project's constraints—the framework within which the solution must operate—which should include environmentally sustainable practices.

CONCEPTUALIZATION

In the conceptualization stage, it is important for designers to explore concepts fully and understand their impact before translating them into workable objects. The best approach is first to visualize an idea without being too concerned about problem solving. Practical problems tie up designers in search for solutions. This can be detrimental to the project if it causes the designer to lose sight of the bigger picture. It is very tempting at the beginning of a project to jump right



Figure 0.3 Designing requires all the steps seen here in this one situation and more. Inspiration is on the wall, identification and concepts can be seen in the sketches as well as the exploration and definition that follows in diagrams and models. Communication is important all throughout, and taking something to production requires precision and clarity.

in and begin to solve everything at once, especially if the deadline is close. It is important to resist this impulse. The time for acute problem solving arrives later.

Designers often create only an impression of the idea at this stage. They create metaphors that become the basis for illustrative models. This occurs, for example, when a fashion model wears something on a runway that would be practically impossible to wear anywhere else and when architects produce fanciful drawings of structures that defy engineering. These metaphorical creations make perfect sense later in the design process, when more usable designs have been developed.

Designers often use collages or “tear sheets” to illustrate their concept. They describe through these means the various aspects of a design with a visual reference that is immediately recognized and understood. In tandem with a thesis statement, this can be a compelling way to introduce a concept to a client or production team. This is also an excellent way for designers to clarify their concept in their own minds.

EXPLORATION/REFINEMENT

At the exploration/refinement stage, designers must begin to explore their solutions in more detail. The outlines created in the previous stages must be filled in by fully defining each element of the design. This step may require changes to the outlines. If certain elements are impractical, this may demand a re-evaluation of the concept. Questions of sustainability and environmental impact require consideration at this stage as well.

All such issues should be carefully reviewed from a practical standpoint, and if necessary, the concept should be adapted to the needs and constraints that come to light. Maintaining the integrity of the concept may be difficult in light of such demands but will only get more difficult if questions of sustainability arise later in the process. At this stage, designers can get bogged down in details, and their overall view dissolves unless they keep their vision clear. Here, again, designers maintain their focus by re-inspiration.

DEFINITION/MODELING

For designers, definition/modeling is often the most difficult stage of the process to get through. It is at Stage 5 that designers commit to their concepts. Unfortunately, things are not always that clear-cut. Practically speaking, design decisions may rely on other decisions that aren't always in the designers' hands. Deciding to include one thing often means excluding another, and this can be confusing and difficult. If an attachment to a certain solution has been formed, it can be difficult to admit that it is not the best one. Designers must rely on their inspiration and be confident in the foundations laid in previous stages to get through this often demanding stage.

COMMUNICATION

From the first meeting with the client through the final presentation of a finished design and even as a design goes into production and marketing, communication is crucial to a project. However, communication becomes a focal point just prior to the production stage, as the challenge becomes to communicate to clients, collaborators, manufacturers, management, and others precisely what has happened so far. Making samples and technical decisions is paramount, and if a production team is involved, it begins to play a larger role. In fact, the art of presenting the design becomes as weighty as the designing itself, and artful illustration and modeling become important communication tools. In this stage designers must be able to communicate about issues concerning a broad range of disciplines, such as engineering, construction, detailing, and texturing.

PRODUCTION

The final stage occurs when the design goes to production. No matter how large or small the production is, designers must communicate with a number of collaborators. Prototypes are made and the feedback from these necessitates decisions, possibly prompting final revisions if materials and construction techniques do not work out as planned. Planning, scheduling, and budgeting loom large, and these tasks begin to take over the project's pace and direction. Finally, production preparation and new knowledge gained can be recycled for future designs.



Figure 0.4 Considering the design elements on site, as this designer is doing, often reveals issues that could not come to light until that very moment. Design decisions may, therefore, not always be completely in the designer's hands. Relying on initial inspiration and having confidence in the groundwork allows you to navigate such moments.



KARL ASPELUND, DESIGNER

The author graduated as a set and costume designer from Wimbledon in London and has had an amazingly varied and fun career in design since then, working in all different kinds of theater, including musical theater, ballet, and opera. He has designed for films, art directed fashion shoots, and worked on graphic design, exhibits, public artworks, and more. He has now added a Ph.D. in anthropology and material culture to the mix and observes design through that lens in his teaching and research.

Working right away in the very professional and deadline-driven atmosphere of repertory theater was a stroke of luck and formed my approach to design since then. The theater process was a quick wake-up call to the extraordinary amount of time designers spend on organizing information in order to communicate it to myriad collaborators and craftspeople. I also learned to listen very carefully

to these craftspeople and learn from them. At the same time, the flexibility and fluidity of the artists on the stage makes it necessary always to be ready to revisit concepts and rework details up to the very last minute.

Theater was a great place to start a career in design. The continual variation in projects, subject matter, historical periods, and personalities helps create a mind-set that is always open to new possibilities and looking for connections. In addition, the theater was a large organization with many projects in operation at once, so my designs had to be presented fully detailed and understandable to each department: costume workshop, set construction, property design and buying, and lighting. This was great training in the art of clarity and precision. There was no fudging of anything, and if there was, I had to be able to justify “winging it.” Production meetings were scary at first, but once I realized that the makers were all just looking to me for simple and clear information about what I wanted, then I could do anything—as crazy as I wanted, as long as the craziness was explained clearly and in detail. The college experience, by its very nature, takes place in a rather protective bubble. Looking back, I’ve come to appreciate that the protection is necessary, but also that it was really after I parachuted into the war zone of theater and film that I really learned the importance of collaboration and learning from literally everyone you work with.

After a couple of years as in-house designer, I went freelance, which has been a great experience for more than 20 years but can be a bit rough at times; it’s a strange tradeoff between the freedom of movement it allows and the nervous obligation to grab projects as they come, in fear of the dreaded gap. Freelancers also find themselves working in new environments all the time, and this can be a bit nerve wracking for the first couple of years. For me, there was always a sense of freedom about it though. I was also very fortunate over the years of freelancing that I always had a project waiting as the one I was working on came to a close.

Sometimes the overlap becomes a problem, especially if you are working on a type of project you haven’t done before, but you get used to that very quickly, and time management is really just a question of knowing what you can do in a given amount of time. It requires a degree of compartmentalization so that you can switch quickly from one project to another, juggling a couple of projects throughout the course of the day, week, or month. If I were a more organized person, I probably would have all sorts of systems in place for the transition itself, but I don’t really. Maybe there isn’t a good way to transition; you just get used to doing it. In fact, I think it just became a normal rhythm, and I shift from one project to the other, using the transition to reenergize and inspire. I find it easier, in fact, to have multiple projects at a time; otherwise the focus becomes too intense, especially if I’m not working on location.

It's not an approach I'd necessarily recommend to everyone, but there's a lot to be said for being able to juggle—it's fun.

I've learned an incredible amount from the people I've been fortunate to work with over the years: tailors, seamstresses, builders, photographers, printers, artists, actors, dancers, singers, directors, editors—not to mention all the students. The list is long and hilariously varied. But all of these had their own individual approach to their work—their own process—and from this I've been able to find commonalities that allow a designer to tap into certain thought processes and methods of working with ideas, no matter whether it is for ballet, a mural, or a photo shoot for a car company or an album cover.

What this varied experience eventually led to was the realization that all design—and by extension all creative work—follows the same process. It's not a terribly rigid process, but there are the seven basic stages a project has to go through, one way or another, in order for an idea to be realized. It can go hither and yon and perhaps even reverse itself, but each stage has to be visited.

I get very focused on the research part of any new project, and I have to be careful not to spend all my time going down increasingly narrower roads of inquiry. However, as these narrow roads have often paid off, it's hard to be very critical of this tendency. It's the same instinct as being a complete magpie in terms of books and magazines. One just can't read enough, I think. Over the years I've been able to really indulge my inner geek. I'm going to end up as one of those people you read about who are found in their apartments with just a narrow trail between the stacks of books and newspapers lining the walls. The geek really came out after I began working with an artist in collaboration with a couple of engineers at Brown University on researching methods to create biomimetic structures for artwork and architecture. However, now that I've gone back to school for my doctorate, I get to indulge the geek wildly, mucking around with philosophy, anthropology, and history. Meanwhile my approach to design has become focused on my teaching.

I absolutely love teaching and was hooked on it after teaching just one course in apparel design at the Reykjavik Technical College in the early 1990s. Soon I was teaching a full course load there and then creating and heading a department of industrial design. This required me to look seriously at theories and philosophies of instruction as well as of design, and started the trains of thought that eventually led to the book *The Design Process*. If I should stop teaching, I fear I would lose a portion of my own creative energy and curiosity. The challenge of being able to motivate a new roomful of students and answer the needs of each individual's creativity requires that one have a good handle on one's own motives and sources of inspiration, as well as a direct route to being able to explain and account for these. There's also nowhere to hide when you're standing up in front of a group of students.

Now, however, I believe I've found a new mission in teaching in that I believe that designers can be instrumental in not only promoting sustainable practices of design and manufacturing, but can make environmentally sound lifestyles the norm by working with the philosophy of sustainable design from the first conceptualization of their designs. The point to reach is where the issues of sustainability become “invisible”—that is, they become so normal that they are not remarkable anymore but become part of the mundane level of things. Design classrooms should be the place to begin this transition. At a basic level, if we are going to send graduates into the world to work in or around design, they need to be prepared according to the trend of their chosen profession, and this is the current trend. However, in a larger context, this is a question of social responsibility and ethics, and it is unfortunate that the discussion has become so politicized in recent years. Part of my mission is to depoliticize the discussion by devoting time both in the classroom and out, to research and discuss issues connected to the future of design in a globalized economy of limited and dwindling resources. I am completely inspired by the possibility of designers becoming agents of this very necessary change.

I switched tracks rather dramatically a couple of years ago when I enrolled in a doctoral program at Boston University, so lately my focus has been of a different nature, but I find an enormous inspiration in these design challenges that have been piling up in the world in recent years. Two major trends are coming together that create a whole slew of exciting and inspiring opportunities. On the one hand, the world has become increasingly globalized in commerce, entertainment, art, and design. This has resulted in an internationalization of both influences and expectations. On the other hand, the amplified discussions of environmental concerns, as well as the call for sustainable practices, offer a whole range of new challenges and constraints to the art of design. I feel that the design classroom needs to become a place of focus and experimentation both for the nature of a global design market and for a way to serve that market that is sustainable and protective of the environment. There are endless opportunities for exciting design projects, both in the classroom and outside, so I'm feeling very inspired these days, simply by thinking about teaching design.

Design has to be about more than just creating more stuff to sell, and this is how designers can contribute to the world in a meaningful way. Art and good design should not be a privileged experience for only a few. Designers should be creating interesting, revolutionary, and environmentally sound products, buildings, and environments for everyone. Design must not be reserved for elites and the wealthy or sequestered in institutions. With that in mind, I have, in the last couple of years, become increasingly fascinated and inspired by traditional craftsmanship by all kinds of artisans: weavers, cabinetmakers, tailors, goldsmiths, and so on. The future of design and sustainable practices lies in a reconnection with crafts. With that will come a relocalization of manufacturing, which will arrive by two doors: the shifting economic levels worldwide and the demand for sustainable production. Unless there is some paradigm-shifting development in energy use and creation very soon, we are going to have to revert to production models of the early decades of the 20th century if not earlier. By that, I don't mean a return to any "golden age" or even back to a preindustrial mode. It is as a change of scale and a revitalizing of local economies balancing out the globalized and corporate lack of identity that all design came to at the beginning of the twenty-first century.

It's always the thought of what to do next with what I've learned so far that inspires me most, and this is what's happening next: I'm going to throw myself headlong into research on crafts and preindustrial methods and fill my toolkit with resources on sustainability. Then I'm going to spend time figuring out how all this connects to a world of constantly miniaturizing and cost reduction of computer technology and CAD. My most recent efforts focus on the design needs and constraints of long-term space exploration, so I literally have new worlds to consider. The future looks good; I'm really looking forward to it.

THREE PROJECTS TO FOLLOW: APPAREL, FURNITURE, GUI

In each chapter, this feature will present three projects that will be modeled and tracked through the stages of the design process: a garment, a chair, and a graphic user interface (GUI) such as for a website or app. This feature will present a quick look at the application of each stage's concerns to these projects. The choice of projects reflects a concern that they will have a familiar applicability to the reader. Garments, chairs, and GUIs are likely to be closer to the reader's experience than any larger or more complex projects, but the process is applicable to any level of design, and by following along these three examples, the approach to any project will become clearer. It will become apparent that thinking our way into the designing of a garment, a piece of furniture, or an information delivery system can serve as a way to understand the thought processes involved in designing habitats, vehicles, or public spaces. Designing *is* a process and by investigating the process of three familiar projects, the road traveled toward what seem like more complex problems will become that much clearer.

THE FIRST JOURNAL ENTRY, A REVERSE DESIGN

THE DESIGN JOURNAL

This exercise is the first installment of your design journal. Each subsequent chapter in this book will include exercises that contribute to the journal, creating an illustrated account of the design process. Journals such as these serve well not only in job interviews and presentations, but also as a way to refresh and inspire designers for future projects.

Before beginning this exercise you should decide on a format for the journal. The journal can be physical or digital. Physical journals allow inclusion of material samples and three-dimensional objects as well as images and texts. Digital journals allow the quick gathering of images and texts via handheld devices and laptop computers.

Either way, it should also be constantly available. If you are unable to access the Internet, you can still sketch. If you are unable to sketch, a quick snapshot and upload may come in handy. A parallel file of digital material may be kept as well. In any case, decide on which format is your primary format and make a point of printing the digital and scanning the physical, so that the primary journal contains as much as possible. A dedicated external drive is not a bad idea, and you should choose a sketchbook or folder of standard size to hold sketches and clippings. Anything larger than 11" x 17" becomes unwieldy and difficult to pass around at meetings or interviews. Anything smaller than 8.5" x 11" requires care because sketches may be too small to include significant detail. Choosing standard sizes and dedicated drives matters because these journals can be used for years and may be added to a portfolio at a later date.

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EXERCISES

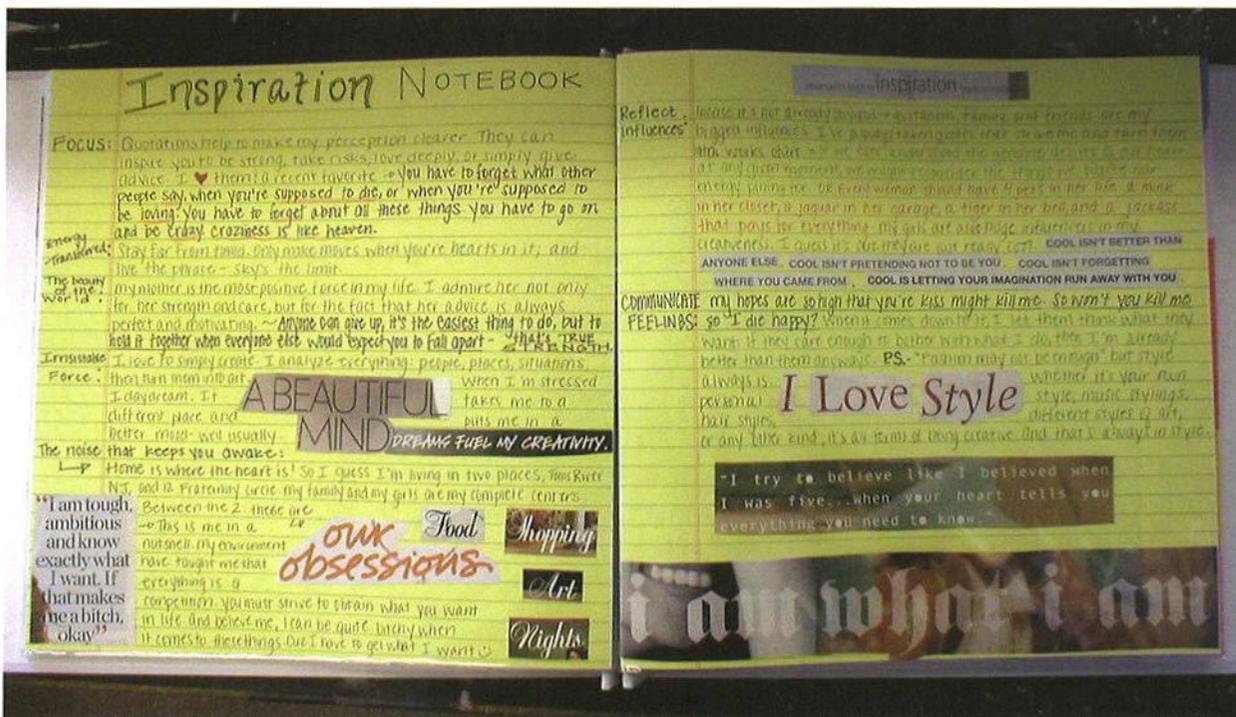


Figure 0.5 A design journal: It's impulsive, but also organized. It's almost scrapbooking but with a more focused vision and direction.

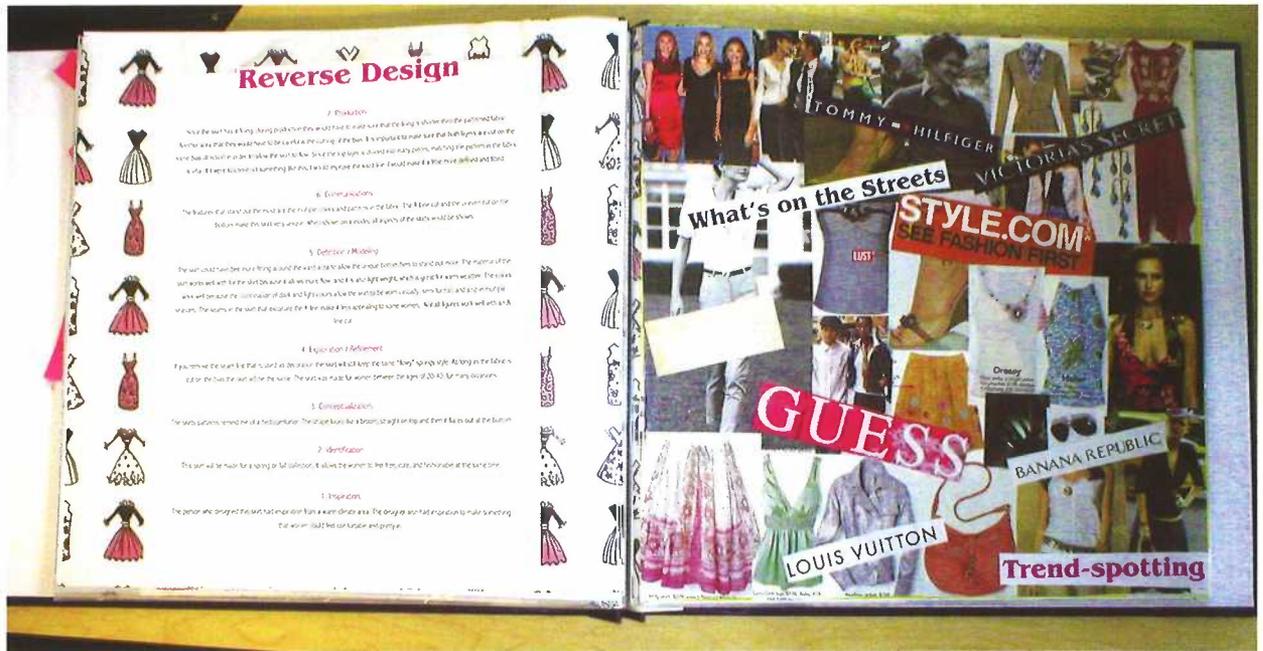


Figure 0.6 A design journal.

REVERSE-DESIGNING

Reverse-designing an object requires you to choose an object as close as possible to the one you intend to design—graphic, garment, furnishing, room, website and so on—and then trace its progress backward through the seven stages. Reverse-designing an existing design is meant to create questions and give you points of reference for your own process. Once this exercise is completed, you will have a very good general idea of the path you will take.

Consider each of the design stages and write down any thoughts that come to mind. Use illustrations as much as possible to explain your conclusions. Use sketches and clippings; print downloaded images and anything else you need. Write about whatever you can't illustrate. Eventually, attempt to illustrate these writings. It is important at this time not to slow down but rather to let the thoughts flow. Include anything and everything you can think of at this point. You can always edit later. A designer's job is to solve problems and answer questions, so the more questions you create, the more material you have to work with.

STAGE 7: PRODUCTION

Consider the product you have chosen to reverse-design. Imagine the creation of the final designed object in its construction stage. What do you think are the main issues in the construction and production? Is anything unusual or innovative? What does the designer have to communicate very clearly to the production team? If you were to create something like it, what might be improved or different?

STAGE 6: COMMUNICATION

How would you create a model or sample to explain a design to a production team? What materials and methods would you use? What features would you highlight? Is there anything that cannot be adequately illustrated or modeled? How might a designer deal with this? What would be a good way to present the sample (i.e., two-dimensional representation, full-scale mock-up, scale model, or computer-generated model)?



Figure 0.7 The reverse-designing of an object or system requires considering its elements, components, structures, and production methods, as well as the inspiration and motives for its design. This x-ray of the astronaut Alan Shepard's extravehicular space suit shows the intricacy of its design and construction, but also the surprising logic and simplicity of its nature. X-ray vision may not be available, but this kind of insight can be had by focusing on each stage of the process involved.

STAGE 5: DEFINITION/MODELING

Consider the following for the design of your choice:

Form

Why do you suppose it has the form that it does or uses the forms involved? What requires this? Is anything superfluous? How much of its overall form is derived directly from its function? How much of its constituent forms?

Materials

What prompts the choices of materials or media? What are the practical constraints? What are the decorative decisions?

Color

What do you suppose might influence the choice of colors? How much does the choice of materials influence the color choices? Is there any sense of practicality in the choices? What is purely decorative?

Detailing and Decoration

What, if anything, serves to decorate this object? Why do you suppose it is decorated this way? Why would it be unadorned? Why not? Are the decorative elements applied, or do they arise from the functionality or nature of the design? Is the decoration relevant to the total design, or can you separate the style of decoration from the style of the object itself? What happens to the design if you remove all decoration? If it is undecorated, how might you add decoration?

Function

Having considered form, materials, color, detailing, and decoration, how many of these features are influenced by the functionality of the design and how? Conversely, how do aesthetic decisions affect the functionality? Would it *work* better without aesthetic considerations?

STAGE 4: EXPLORATION/REFINEMENT

Simplify the object so that it is in its most basic state. Consider the environmental impact of its production and use. Strip it of details and embellishments. When does this begin to impair its functionality? When does it begin to lose its identity? Having removed as much as possible without transforming it into another class of objects, describe the design in the simplest way.

STAGE 3: CONCEPTUALIZATION

Describe the object metaphorically (using language that refers it to other concepts: "It is (like) a . . .") Then think of ways to describe its individual parts or components. How would you describe it if you had never seen anything like it before? Illustrate your thoughts on the design so far. Create a collage of found images (from magazines, websites, photos of your own, and such) to describe the design. Refer to form, color, texture, detailing, functionality, environment, and emotional response.

STAGE 2: IDENTIFICATION

Use the results from your examination of Stages 7 through 3 to write a design thesis for the final object. The design thesis is a way of establishing a starting point for a project, creating guidelines for the process. Describe the various design elements and discuss the intent of the design. Use the following guidelines:

1. What did you design? Describe briefly the object or product.
2. What is its nature? What is the function of this design?
3. What is the target market or audience for this product?
4. Why is it necessary? What was the problem that required the design as its solution?
5. What are the benefits of the design? How does this design solve any problem that may have been identified in the previous question?
6. Why is this interesting? What challenges do you suppose this project presented?
7. What could you have brought to it had you been working on its design? What is your vision for this product? What new solution could you come up with?
8. How would you proceed? What methods would you use? Where would you begin?

STAGE 1: INSPIRATION

Considering all of the above, what would have been a good source of inspiration throughout the design process of this object? Why?

You have traced the steps backward and begun your design journal. You should now be familiar with the material covered in the remaining chapters. Take a moment to review your thoughts and make note of questions you have or gaps in your knowledge. As you go through the seven stages, revisit this exercise and see whether your questions can be answered.



Figure 0.8 Having traced the design process backward, you can now see the way forward for any project. Before starting, find out what you need to know and what you need to do.