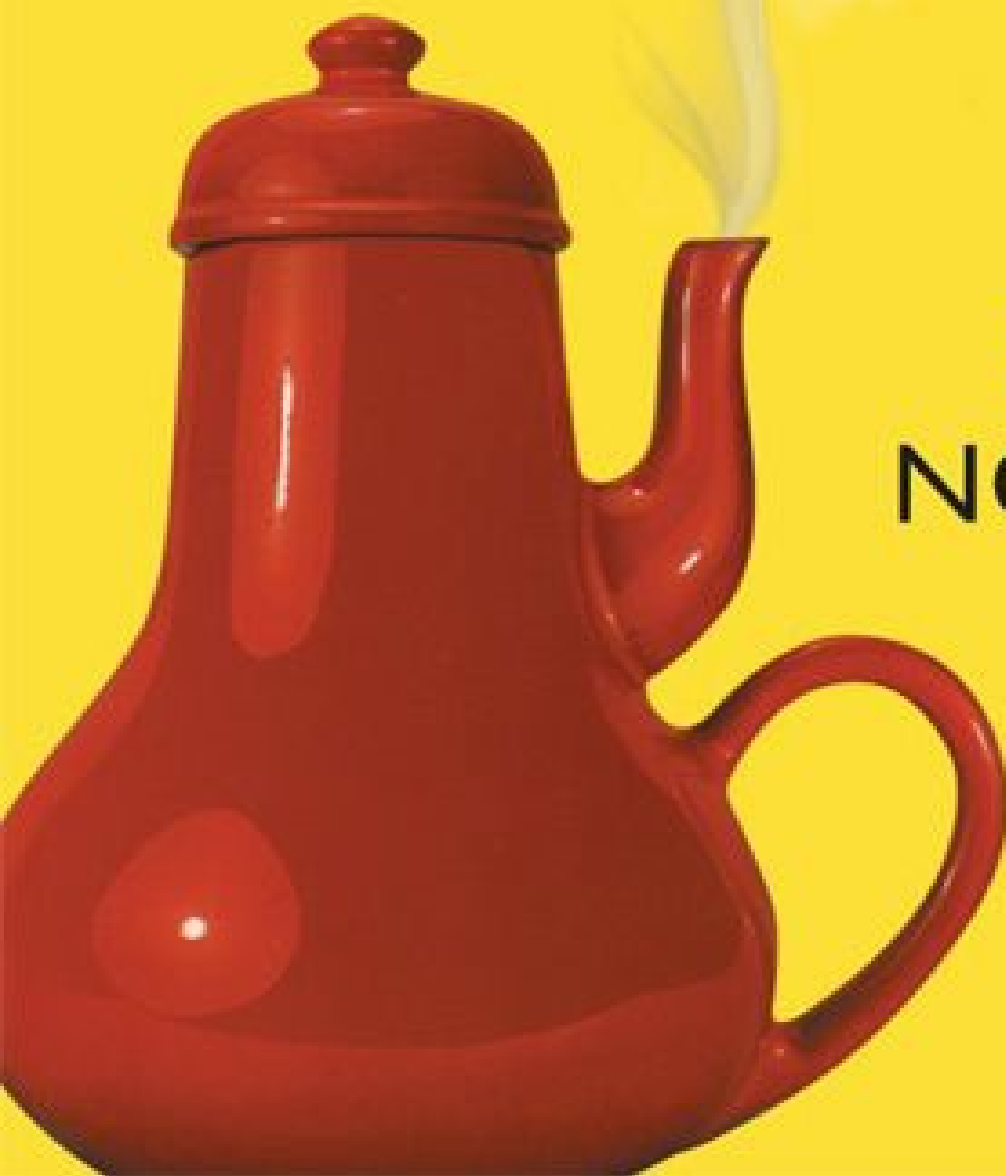


REVISED & EXPANDED EDITION

The DESIGN
of EVERYDAY
THINGS

DON
NORMAN



THE
DESIGN
OF EVERYDAY
THINGS

ALSO BY
DON NORMAN

TEXTBOOKS

Memory and Attention: An Introduction to
Human Information Processing.

First edition, 1969; second edition 1976

Human Information Processing.

(with Peter Lindsay: first edition, 1972; second edition 1977)

SCIENTIFIC MONOGRAPHS

Models of Human Memory

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User Centered System Design: New Perspectives on Human-Computer Interaction

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TRADE BOOKS

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The Psychology of Everyday Things, 1988

The Design of Everyday Things

1990 and 2002 (paperbacks of The Psychology of Everyday Things with new prefaces)

The Design of Everyday Things

Revised and Expanded Edition, 2013

Turn Signals Are the Facial Expressions of Automobiles, 1992

Things That Make Us Smart, 1993

The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and
Information Appliances Are the Answer, 1998

Emotional Design: Why We Love (or Hate) Everyday Things, 2004

The Design of Future Things, 2007

A Comprehensive Strategy for Better Reading: Cognition and Emotion, 2010

(with Masanori Okimoto; my essays, with commentary in Japanese, used for teaching English as
a second language to Japanese speakers)

Living with Complexity, 2011

CD-ROM

First person: Donald A. Norman. Defending Human Attributes in the Age of the Machine, 1994

**THE
DESIGN
OF EVERYDAY
THINGS**

REVISED AND EXPANDED EDITION

Don Norman

BASIC BOOKS

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For Julie

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PREFACE TO THE REVISED EDITION

In the first edition of this book, then called POET, The Psychology of Everyday Things, I started with these lines: “This is the book I always wanted to write, except I didn’t know it.” Today I do know it, so I simply say, “This is the book I always wanted to write.”

This is a starter kit for good design. It is intended to be enjoyable and informative for everyone: everyday people, technical people, designers, and nondesigners. One goal is to turn readers into great observers of the absurd, of the poor design that gives rise to so many of the problems of modern life, especially of modern technology. It will also turn them into observers of the good, of the ways in which thoughtful designers have worked to make our lives easier and smoother. Good design is actually a lot harder to notice than poor design, in part because good designs fit our needs so well that the design is invisible, serving us without drawing attention to itself. Bad design, on the other hand, screams out its inadequacies, making itself very noticeable.

Along the way I lay out the fundamental principles required to eliminate problems, to turn our everyday stuff into enjoyable products that provide pleasure and satisfaction. The combination of good observation skills and good design principles is a powerful tool, one that everyone can use, even people who are not professional designers. Why? Because we are all designers in the sense that all of us deliberately design our lives, our rooms, and the way we do things. We can also design workarounds, ways of overcoming the flaws of existing devices. So, one purpose of this book is to give back your control over the products in your life: to know how to select usable and understandable ones, to know how to fix those that aren’t so usable or understandable.

The first edition of the book has lived a long and healthy life. Its name was quickly changed to Design of Everyday Things (DOET) to make the title less cute and more descriptive. DOET has been read by the general public and by designers. It has been assigned in courses and handed out as required readings in many companies. Now, more than twenty years after its release, the book is still popular. I am delighted by the response and by the number of people who correspond with me about it, who send me further examples of thoughtless, inane design, plus occasional examples of superb design. Many readers have told me that it has changed their lives, making them more sensitive to the problems of life and to the needs of people. Some changed their careers and became designers because of the book. The response has been amazing.

Why a Revised Edition?

In the twenty-five years that have passed since the first edition of the book, technology has undergone massive change. Neither cell phones nor the Internet were in widespread usage when I wrote the book. Home networks were unheard of. Moore's law proclaims that the power of computer processors doubles roughly every two years. This means that today's computers are five thousand times more powerful than the ones available when the book was first written.

Although the fundamental design principles of The Design of Everyday Things are still as true and as important as when the first edition was written, the examples were badly out of date. "What is a slide projector?" students ask. Even if nothing else was to be changed, the examples had to be updated.

The principles of effective design also had to be brought up to date. Human-centered design (HCD) has emerged since the first edition, partially inspired by that book. This current edition has an entire chapter devoted to the HCD process of product development. The first edition of the book focused upon making products understandable and usable. The total experience of a product covers much more than its usability: aesthetics, pleasure, and fun play critically important roles. There was no discussion of pleasure, enjoyment, or emotion. Emotion is so important that I wrote an entire book, Emotional Design, about the role it plays in design. These issues are also now included in this edition.

My experiences in industry have taught me about the complexities of

the real world, how cost and schedules are critical, the need to pay attention to competition, and the importance of multidisciplinary teams. I learned that the successful product has to appeal to customers, and the criteria they use to determine what to purchase may have surprisingly little overlap with the aspects that are important during usage. The best products do not always succeed. Brilliant new technologies might take decades to become accepted. To understand products, it is not enough to understand design or technology: it is critical to understand business.

What Has Changed?

For readers familiar with the earlier edition of this book, here is a brief review of the changes.

What has changed? Not much. Everything.

When I started, I assumed that the basic principles were still true, so all I needed to do was update the examples. But in the end, I rewrote everything. Why? Because although all the principles still applied, in the twenty-five years since the first edition, much has been learned. I also now know which parts were difficult and therefore need better explanations. In the interim, I also wrote many articles and six books on related topics, some of which I thought important to include in the revision. For example, the original book says nothing of what has come to be called user experience (a term that I was among the first to use, when in the early 1990s, the group I headed at Apple called itself “the User Experience Architect’s Office”). This needed to be here.

Finally, my exposure to industry taught me much about the way products actually get deployed, so I added considerable information about the impact of budgets, schedules, and competitive pressures. When I wrote the original book, I was an academic researcher. Today, I have been an industry executive (Apple, HP, and some startups), a consultant to numerous companies, and a board member of companies. I had to include my learnings from these experiences.

Finally, one important component of the original edition was its brevity. The book could be read quickly as a basic, general introduction. I kept that feature unchanged. I tried to delete as much as I added to keep the total size about the same (I failed). The book is meant to be an introduction: advanced discussions of the topics, as well as a large number of important but more advanced topics, have been left out to maintain the

compactness. The previous edition lasted from 1988 to 2013. If the new edition is to last as long, 2013 to 2038, I had to be careful to choose examples that would not be dated twenty-five years from now. As a result, I have tried not to give specific company examples. After all, who remembers the companies of twenty-five years ago? Who can predict what new companies will arise, what existing companies will disappear, and what new technologies will arise in the next twenty-five years? The one thing I can predict with certainty is that the principles of human psychology will remain the same, which means that the design principles here, based on psychology, on the nature of human cognition, emotion, action, and interaction with the world, will remain unchanged.

Here is a brief summary of the changes, chapter by chapter.

Chapter 1: The Psychopathology of Everyday Things

Signifiers are the most important addition to the chapter, a concept first introduced in my book *Living with Complexity*. The first edition had a focus upon affordances, but although affordances make sense for interaction with physical objects, they are confusing when dealing with virtual ones. As a result, affordances have created much confusion in the world of design. Affordances define what actions are possible. Signifiers specify how people discover those possibilities: signifiers are signs, perceptible signals of what can be done. Signifiers are of far more importance to designers than are affordances. Hence, the extended treatment.

I added a very brief section on HCD, a term that didn't yet exist when the first edition was published, although looking back, we see that the entire book was about HCD.

Other than that, the chapter is the same, and although all the photographs and drawings are new, the examples are pretty much the same.

Chapter 2: The Psychology of Everyday Actions

The chapter has one major addition to the coverage in the first edition: the addition of emotion. The seven-stage model of action has proven to be influential, as has the three-level model of processing (introduced in my book *Emotional Design*). In this chapter I show the interplay between

these two, show that different emotions arise at the different stages, and show which stages are primarily located at each of the three levels of processing (visceral, for the elementary levels of motor action performance and perception; behavioral, for the levels of action specification and initial interpretation of the outcome; and reflective, for the development of goals, plans, and the final stage of evaluation of the outcome).

Chapter 3: Knowledge in the Head and in the World

Aside from improved and updated examples, the most important addition to this chapter is a section on culture, which is of special importance to my discussion of “natural mappings.” What seems natural in one culture may not be in another. The section examines the way different cultures view time—the discussion might surprise you.

Chapter. 4: Knowing What to Do: Constraints, Discoverability, and Feedback

Few substantive changes. Better examples. The elaboration of forcing functions into two kinds: lock-in and lockout. And a section on destination control elevators, illustrating how change can be extremely disconcerting, even to professionals, even if the change is for the better.

Chapter 5: Human Error? No, Bad Design

The basics are unchanged, but the chapter itself has been heavily revised. I update the classification of errors to fit advances since the publication of the first edition. In particular, I now divide slips into two main categories—action-based and memory lapses; and mistakes into three categories—rule-based, knowledge-based, and memory lapses. (These distinctions are now common, but I introduce a slightly different way to treat memory lapses.)

Although the multiple classifications of slips provided in the first edition are still valid, many have little or no implications for design, so they have been eliminated from the revision. I provide more design-relevant examples. I show the relationship of the classification of errors, slips, and mistakes to the seven-stage model of action, something new in this revision.

The chapter concludes with a quick discussion of the difficulties posed by automation (from my book *The Design of Future Things*) and what I consider the best new approach to deal with design so as to either eliminate or minimize human error: resilience engineering.

Chapter 6: Design Thinking

This chapter is completely new. I discuss two views of human-centered design: the British Design Council's double-diamond model and the traditional HCD iteration of observation, ideation, prototyping, and testing. The first diamond is the divergence, followed by convergence, of possibilities to determine the appropriate problem. The second diamond is a divergence-convergence to determine an appropriate solution. I introduce activity-centered design as a more appropriate variant of human-centered design in many circumstances. These sections cover the theory.

The chapter then takes a radical shift in position, starting with a section entitled "What I Just Told You? It Doesn't Really Work That Way." Here is where I introduce Norman's Law: The day the product team is announced, it is behind schedule and over its budget.

I discuss challenges of design within a company, where schedules, budgets, and the competing requirements of the different divisions all provide severe constraints upon what can be accomplished. Readers from industry have told me that they welcome these sections, which capture the real pressures upon them.

The chapter concludes with a discussion of the role of standards (modified from a similar discussion in the earlier edition), plus some more general design guidelines.

Chapter 7: Design in the World of Business

This chapter is also completely new, continuing the theme started in [Chapter 6](#) of design in the real world. Here I discuss "featuritis," the changes being forced upon us through the invention of new technologies, and the distinction between incremental and radical innovation. Everyone wants radical innovation, but the truth is, most radical innovations fail, and even when they do succeed, it can take multiple decades before they are accepted. Radical innovation, therefore, is relatively rare: incremental innovation is common.

The techniques of human-centered design are appropriate to incremental innovation: they cannot lead to radical innovations.

The chapter concludes with discussions of the trends to come, the future of books, the moral obligations of design, and the rise of small, do-it-yourself makers that are starting to revolutionize the way ideas are conceived and introduced into the marketplace: “the rise of the small,” I call it.

Summary

With the passage of time, the psychology of people stays the same, but the tools and objects in the world change. Cultures change. Technologies change. The principles of design still hold, but the way they get applied needs to be modified to account for new activities, new technologies, new methods of communication and interaction. The Psychology of Everyday Things was appropriate for the twentieth century: The Design of Everyday Things is for the twenty-first.

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THE PSYCHOPATHOLOGY OF EVERYDAY THINGS

* ?! * If I were placed in the cockpit of a modern jet airliner, my inability to perform well would neither surprise nor bother me. But why should I have trouble with doors and light switches, water faucets and stoves? “Doors?” I can hear the reader saying. “You have trouble opening doors?” Yes. I push doors that are meant to be pulled, pull doors that should be pushed, and walk into doors that neither pull nor push, but slide. Moreover, I see others having the same troubles—unnecessary troubles. My problems with doors have become so well known that confusing doors are often called “Norman doors.” Imagine becoming famous for doors that don’t work right. I’m pretty sure that’s not what my parents planned for me. (Put “Norman doors” into your favorite search engine—be sure to include the quote marks: it makes for fascinating reading.)

How can such a simple thing as a door be so confusing? A door would seem to be about as simple a device as possible. There is not much you can do to a door: you can open it or shut it. Suppose you are in an office building, walking down a corridor. You come to a door. How does it open? Should you push or pull, on the left or the right? Maybe the door slides. If so, in which direction? I have seen doors that slide to the left, to the right, and even up into the ceiling. The design of the door should indicate how to work it without any need for signs, certainly without any need for trial and error.



FIGURE 1.1. Coffeepot for Masochists. The French artist Jacques Carelman in his series of books *Catalogue d'objets introuvables* (Catalog of unfindable objects) provides delightful examples of everyday things that are deliberately unworkable, outrageous, or otherwise ill-formed. One of my favorite items is what he calls “coffeepot for masochists.” The photograph shows a copy given to me by colleagues at the University of California, San Diego. It is one of my treasured art objects. (Photograph by Aymin Shamma for the author.)

A friend told me of the time he got trapped in the doorway of a post office in a European city. The entrance was an imposing row of six glass swinging doors, followed immediately by a second, identical row. That's a standard design: it helps reduce the airflow and thus maintain the indoor temperature of the building. There was no visible hardware: obviously the doors could swing in either direction: all a person had to do was push the side of the door and enter.

My friend pushed on one of the outer doors. It swung inward, and he entered the building. Then, before he could get to the next row of doors, he was distracted and turned around for an instant. He didn't realize it at the time, but he had moved slightly to the right. So when he came to the next door and pushed it, nothing happened. “Hmm,” he thought, “must be locked.” So he pushed the side of the adjacent door. Nothing. Puzzled, my friend decided to go outside again. He turned around and pushed against the side of a door. Nothing. He pushed the adjacent door. Nothing. The door he had just entered no longer worked. He turned around once more and tried the inside doors again. Nothing. Concern, then mild panic. He was trapped! Just then, a group of people on the other side of the entranceway (to my friend's right) passed easily through both sets of doors. My friend hurried over to follow their path.

How could such a thing happen? A swinging door has two sides. One contains the supporting pillar and the hinge, the other is unsupported. To

open the door, you must push or pull on the unsupported edge. If you push on the hinge side, nothing happens. In my friend's case, he was in a building where the designer aimed for beauty, not utility. No distracting lines, no visible pillars, no visible hinges. So how can the ordinary user know which side to push on? While distracted, my friend had moved toward the (invisible) supporting pillar, so he was pushing the doors on the hinged side. No wonder nothing happened. Attractive doors. Stylish. Probably won a design prize.

Two of the most important characteristics of good design are discoverability and understanding. Discoverability: Is it possible to even figure out what actions are possible and where and how to perform them? Understanding: What does it all mean? How is the product supposed to be used? What do all the different controls and settings mean?

The doors in the story illustrate what happens when discoverability fails. Whether the device is a door or a stove, a mobile phone or a nuclear power plant, the relevant components must be visible, and they must communicate the correct message: What actions are possible? Where and how should they be done? With doors that push, the designer must provide signals that naturally indicate where to push. These need not destroy the aesthetics. Put a vertical plate on the side to be pushed. Or make the supporting pillars visible. The vertical plate and supporting pillars are natural signals, naturally interpreted, making it easy to know just what to do: no labels needed.

With complex devices, discoverability and understanding require the aid of manuals or personal instruction. We accept this if the device is indeed complex, but it should be unnecessary for simple things. Many products defy understanding simply because they have too many functions and controls. I don't think that simple home appliances—stoves, washing machines, audio and television sets—should look like Hollywood's idea of a spaceship control room. They already do, much to our consternation. Faced with a bewildering array of controls and displays, we simply memorize one or two fixed settings to approximate what is desired.

In England I visited a home with a fancy new Italian washer-dryer combination, with super-duper multisymbol controls, all to do everything anyone could imagine doing with the washing and drying of clothes. The husband (an engineering psychologist) said he refused to go near it. The wife (a physician) said she had simply memorized one setting and tried to ignore the rest. I asked to see the manual: it was just as confusing as the