



Understanding Context

ENVIRONMENT, LANGUAGE, AND INFORMATION
ARCHITECTURE

Andrew Hinton
Foreword by Peter Morville

Understanding Context

To make sense of the world, we're always trying to place things in context, whether our environment is physical, cultural, or something else altogether. Now that we live among digital, always-networked products, apps, and places, context is more complicated than ever—starting with “where” and “who” we are.

This practical, insightful book offers a powerful toolset to help product and service designers understand and solve the challenges of contextual ambiguity. Information architects, interaction designers, and other software and UX professionals will discover not only how to design *for* a given context, but also how design participates in *making* context.

- Learn how people perceive context when touching and navigating digital environments.
- See how labels, relationships, and rules work as building blocks for context.
- Find out how to make better sense of cross-channel, multi-device products or services.
- Discover how language creates infrastructure in organizations, software, and the Internet of Things.
- Learn models for figuring out the contextual angles of any user experience.

Andrew Hinton is an information architect at The Understanding Group, and a founding member of the IA Institute. He helps organizations—from Fortune 500s to small non-profits—make better, more habitable places with information.

For more about Andrew and the book, visit andrewhinton.com.

“Andrew takes us on a journey from not knowing to knowing; he asks good, interesting questions about the role context plays in the design and architecture of understanding.”

—Richard Saul Wurman

“...come away better situated in a world remade (but not replaced) by technology, and get ready to give it better architecture.”

—Malcolm McCullough
author, *Ambient Commons*

“Andrew’s book helps us perceive, make sense of, and engage with the contexts that surround us...”

—Louis Rosenfeld
founder, Rosenfeld Media

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Praise for *Understanding Context*

“Engaging, never shying away from tackling and unraveling the complexity that lies behind the simplest turns of language, this book explains plainly and clearly why designers should pay attention to much-misused concepts such as sense and place, and simultaneously provides sound and elegant foundations for a new and embodied approach to the architectures of information spaces. A necessary read for both those who want to understand the interplay of language, place, information architecture, and design practice and for those who create products and services spanning the digital and the physical, where context is everything.”

ANDREA RESMINI, PHD—AUTHOR, *PERVASIVE INFORMATION ARCHITECTURE*; SENIOR LECTURER IN INFORMATICS, JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL

“For all those times when someone says something like, “this is not my beautiful life” when they’re using your design, you’ve probably ignored their context. Andrew masterfully makes the case for meeting users where they are, and putting context in its proper place: at the center of making meaningful design.”

DANA CHISNELL

“Andrew Hinton has created a rigorous and wide-ranging framework for thinking about how we perceive and interact with our linguistic and digital environments. This framework is based on cutting edge cognitive science, and the result is an invaluable guide and common language for all the different people who create and want to understand these relatively new human environments places.”

ANDREW D. WILSON, PHD—SENIOR LECTURER IN PSYCHOLOGY, LEEDS BECKETT UNIVERSITY, LEEDS UK

“Understanding Context is a door to knowledge that will allow an entire generation of digital designers to more properly consider the context in which their work is used. This book is easy to read, but also full of important academic concepts more designers should be talking and thinking about in this messy cross-channel world. Hinton’s writing is like attending a master’s program in Gibsonian psychology while having the smartest kid in class sitting next to you explaining what the heck is going on in everyday language. I applaud O’Reilly in bringing this work to the world and Mr. Hinton for pouring his heart into writing it.”

ABBY COVERT—AUTHOR, *HOW TO MAKE SENSE OF ANY MESS*

“Context is hard for humans. It’s even harder for the machines that we oddly hope will guide us through the growing chaos and complexity of modern life. Andrew is a better guide; his book helps us perceive, make sense of, and engage with the contexts that surround us—from cities to kitchens to Minecraft.”

LOUIS ROSENFELD—AUTHOR, *INFORMATION ARCHITECTURE FOR THE WORLD WIDE WEB*; FOUNDER OF ROSENFELD MEDIA

“Andrew Hinton’s well-organized, useful, conversational approach makes this vast ontology of context not only accessible, but indeed like a long walk with J.J.Gibson himself. Come along for a day, come away better situated in a world remade (but not replaced) by technology, and get ready to give it better architecture.”

**MALCOLM MCCULLOUGH—
PROFESSOR OF ARCHITECTURE, UNIVERSITY OF MICHIGAN;
AUTHOR, *AMBIENT COMMONS AND DIGITAL GROUND***

“As computers become smaller they are becoming more ubiquitous. Computers and computing are not only in our mobile phones, but they are rapidly being embedded in everything. Cars, kitchens, street corners and shopping malls are becoming smart and connected. In this connected world, understanding context is more important than ever before. Andrew Hinton has written a thoughtful, well-researched and insightful book, full of key ideas to help you navigate the connected future.”

DAVE GRAY—AUTHOR, *THE CONNECTED COMPANY AND GAMESTORMING*; FOUNDER, XPLANE

Understanding Context

*Environment, Language, and
Information Architecture*

Andrew Hinton



Beijing • Cambridge • Farnham • Köln • Sebastopol • Tokyo

Understanding Context

by Andrew Hinton

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Foreword

IT'S IMPOSSIBLE TO UNDERSTAND context. There's always something we're missing. Not long ago, during a rim-to-rim hike of the Grand Canyon, I was thinking deep thoughts about two-billion-year-old rocks. They made me feel small. Although we're more stable than a tornado or a sandbar, we belong in the same category. We are delicate, imperfect patterns that come and go in the blink of an eye. Yet, we're also more ancient than rocks. We are made of stardust, indestructible matter as old as the universe.

That's when I heard the rattle.

Lost in thought, I nearly stepped on a snake. In unfamiliar territory, it's impossible to understand context, but it's still vital that we pay attention.

In the 1990s, I helped to grow a company called Argus. Over the course of seven years, we pioneered the practice of *information architecture* and bootstrapped our way from two to forty souls. Unfortunately, when the tech bubble burst at the end of the decade, we sunk the ship. We didn't see it coming. Later, while packing books into boxes, I suddenly realized what I'd lost. It wasn't just a company; Argus was a part of me. We'd built an organization of people, systems, and information that embodied and extended ourselves. That's the thing about context. It's impossible to see until it's gone.

A year after we closed Argus, I met Andrew Hinton. A group of us were gathered on the beautiful conference grounds of Asilomar to discuss how we might advance the practice of information architecture. At the time, our work was tied to websites, but Andrew told us to embrace "the structural design of information environments." So, we wrote those words into the bylaws of the *Information Architecture Institute* and into the new edition of the "polar bear book," and that became the definition

of information architecture that's celebrated by thousands of people in dozens of countries each year on *World IA Day*. Our words and actions have unforeseeable consequences beyond our current context.

There's a new ship in town by the name of TUG. It's reframing information architecture. The Understanding Group was founded by Dan Klyn and Bob Royce, and I'm a strategic advisor. It's the perfect place for Andrew to be an information architect. He gets to tackle massive projects while surrounded by amazing people. And he's able to continue what he began in Asilomar: building out the "architecture school" of information architecture.

In articles and talks and in this book, Andrew is helping us all to realize that we're not designing software or websites. Because "language is infrastructure" and "the map is the territory," the things we build and inhabit are "places made of information." From the perspective of experience, these digital ecosystems are as real as the Grand Canyon. This unfamiliar territory can engage, inspire, or overwhelm. It's easy to become lost, and there are snakes. That's why this book is important. It's a map for mapmakers. It won't explain everything from here to there. That's impossible. Still, if you're brave enough to hike its crags and canyons, you will be better at making places and understanding contexts. This book is not a straightforward journey, nor is it short, but it's one I highly recommend.

—PETER MORVILLE

[Preface]

A PREFACE CAN BE MANY THINGS; this preface is *two* things. First, it gives a practical introduction to what this book is and what you can learn from it. Second, it tells a personal story about my reasons for writing the book and what I hope it will mean to you.

The Practical Bit

This book is about how information shapes and changes the way people experience context in the products and services we design and build. It's not only about how we design *for* a given context, but how design participates in *making* context. It begins with how people understand context in any environment. Then, it explores how language takes part in that understanding, and how information architecture helps to shape context, and to make it better. It's also an exploration, where "understanding" is more verb than noun; it's less about defining the right answers than discovering the right questions.

Context is an abstract idea, but it brings concrete challenges. What defines the "place" a customer is in, if he's shopping "online" and "in a store" at the same time? What determines the boundaries of a user's identity if her social network has multiple layers of privacy controls? How does a user know if something is a button and not just a label? What does it mean if you put something "in the cloud," but it's also "on your phone" and "in your laptop"? When we say we are "here" what does that actually mean now that we can be interacting and talking in many places at once? From accidentally hitting Reply All to an email, to discovering that Facebook shared embarrassing photos with your in-laws, we're facing the challenges of being immersed in contextually confusing environments.

Design needs handles we can grasp and manipulate to make context do what we intend: form understandable environments where users can meet their needs. To get there, we need to do some digging to understand what those handles are and what we're changing in the world when we use them. So, although the book does cover a lot of *theory*, there's nothing more *practical* than understanding the nature of our materials. If context is a material or medium that we can affect in user experiences, we should know what it's made of and how it works.

Who Should Read This Book?

If you design or make products or services that connect one part of our lives to another part, you will get value out of this book. In coming years, context is going to be an increasingly critical part of any design project. And yet, we don't have a mutual understanding of what context is, or what happens to context when we design something one way versus another. We talk a lot about "information" and "experiences" and "environments" and even "context," but they're amorphous, fuzzy concepts. We've reached a point in design practice at which we can't rely on such foggy notions anymore. This book provides a way to understand and work with context, using information as a medium for making.

That said, I did write this book with an assumption that you have some experience as a designer and are interested in exploring these strange, complex questions that underlie the surface of our work. If you're a beginner, you can get a lot out of it, but you won't get "the basics"—even though the concepts here are, in some ways, more foundational than what we usually think of as "basic" theory and practice.

So This Book Teaches Methods for Designing Context?

Not really. This is definitely an "understanding how it works" book more than a "how to make stuff" book. It touches on methods and materials and has a lot of concrete examples. But really it's meant to inform the methods we already use and to suggest some new ways of looking at them or doing them.

I also hope the book helps reframe some important aspects of what and how we design. For myself, the process of researching and writing this book has fundamentally rewired the way I see the world, especially when I plan and design environments for my clients. I've found this new perspective to be immensely valuable in my own work.

Why Information Architecture?

Although “information architecture” is in the title, this book isn't only for self-described “information architects.” The structures we make and depend on for all sorts of design work involve information architecture. Architecture is the starting place for figuring out foundations, boundaries, and connections. Still, the book discusses areas of focus for other disciplines in some detail throughout, especially in the first half. If you're an interaction designer, content strategist, usability engineer, researcher or other such profession, you will find plenty here that relates directly to your main work. And in the second half, hopefully it becomes clearer how intermingled and interdependent these practices are with one another and with information architecture.

Additionally, the reason why I became interested in context to begin with was information architecture, which is also my “home” community of practice. As a community (and as a relatively young, forming discipline) we have a complicated history of figuring out what information architecture is, what it actually does in the world, and what all that means. Although context is a much bigger topic than information architecture, and information architecture is about more than context, I decided the concerns of information architecture were where I'd spend most of my time in this exploration.

What Will You Learn from This Book?

Here is a sampling of the sorts of things you should take away from reading this book:

- How people experience and comprehend context
- Principles for designing environments in which context is more understandable and trustworthy
- How *affordance* works, and how it informs everything users perceive and do

-
- What *placemaking* and *sensemaking* mean, and how digital information can both enhance and disrupt how they work
 - How language, in all its forms, works as an important “raw material” for context design
 - Also how language has *semantic function* similar to the way that physical things have affordance, and what that means for digital interfaces and other environments
 - Models for understanding the personal context users bring to the environments we design—their situations, motivations, and narratives

These are just some highlights. Overall, the main take-away from this book will be a fresh perspective on what it means to design in a time when digital technology is saturating everything around us.

A Tour Through the Book’s Six Parts

The book is made up of 6 parts, each a sort of small book in itself. The parts build on each other through 22 continuously numbered chapters.

Part I The Context Problem: What It Is and How To Think About It

This first part explains what the book means by “context” and introduces some core ideas about context that will be explored throughout. Using an everyday travel scenario and a bit of historical background, it explains what the challenges are and how they came to be. It also sets up the three-part model we work with through the rest of the book.

Part II Physical Information: The Roots of Context

This part provides a foundation for how users comprehend environments. It explains the theory of affordance, the essential dynamics of perception and embodied cognition, and a framework for describing the structural elements of environments, including the Principle of Nesting, and how Surfaces, Objects, and Events combine to make Places. Although this part is mainly about non-technological topics, it includes examples to show how these concepts are relevant to designed products and services.

Part III Semantic Information: Language as Environment

In this part, we investigate how language (speech, gestures, text, and pictures) works as an additional environmental layer of “semantic function,” and how that affects context. This part touches on essential concepts about signs and symbols and how we use forms of semantic information for simulating physical environments in user interfaces. It also discusses placemaking and sensemaking and how language structures our contextual experience.

Part IV Digital Information: The Pervasive Influence of Code

Part IV shows how digital information is, at its core, meaningful to computers more than humans. It also shows how that dynamic influences how we experience physical and semantic information. This part demonstrates how digital information makes it possible to create environments and places that don’t behave like the physical world, and how that can be both good and bad.

Part V The Maps We Live In: Information Architectures for Places and People

This part brings the ideas from the previous four parts together to show how information works as systems of meaning. The chapters within it explore examples from different kinds of placemaking, using “maps” as a framing device for how we change our territories, or make new ones. It explains how these environments affect our social relationships, conversations, and identities. This part focuses more on the architectural concerns of how *place* works and less on the object-level concerns of a particular interaction.

Part VI Composing Context: Making Room for Making Meaning

The last part introduces *composition* as a useful way of looking at how we use information to shape context, including how the composed environment requires a stable ground to build and act upon. Part VI describes how we use materials of semantic function in the form of Labels, Relationships, and Rules—aligned with ontology, taxonomy, and “choreography.” It explores how people construct their experience through narrative and story, and how they participate in creating those narratives. And finally, Part VI looks at some principles for accommodating meaning-making, and some techniques for understanding context and modeling new environments.

The Personal Bit

When I began this writing project, my aim was to make a slender, deft volume of focused essays. A “thoughts about context, for design” kind of book. Three years later, I’m putting the final touches on a tome collecting, in essence, six little books, trying to solve the mysteries of the universe.

Funny how things like this work out.

* * *

Here’s what got me started:

For a long time—since before I worked with technology for a living—I’ve wondered about how it is that language makes experience. How is it that a novel can captivate us and make us feel as if we’ve lived through those events? How does a table-top game construct a shared place in which events occur that we might remember and talk about years later, even though nothing “real” happened? Why is it that a poet can break a line—in just such a way that it breaks the reader’s heart?

When I eventually found myself in a software-related profession, my obsession only grew. When logging in to a system to move files around, what is it I’m affecting with commands such as “get” or “put.” It’s just bits, being rearranged on the same disc, but somehow those words make it relevant to my body. When exploring early social architectures such as UseNet, Internet Relay Chat, or later, LiveJournal, I noticed how deeply I sometimes felt about my conversations there, and how these places were meaningful *as places*. How is that possible? They’re just virtual marks on virtual surfaces, which aren’t even as real as the printed type in a paper book.

Soon, I found a community where many people were wondering similar things. They were talking to one another under a loosely shared label: *information architecture*. Something about that phrase clicked for me—yes, I thought, that’s what’s going on: information that somehow feels as if we live in it; structures, rooms, passageways. Not virtual reality, exactly. It’s information that shares some of the qualities of space, whose places become as meaningful for us as any other places in our lives.

As someone who now identifies as an “information architect,” I kept working at these questions, until it occurred to me that so much of what I was doing for a living was repairing problems with *context*. Software is doing something to the world that is detaching and rupturing context from whatever helped it make sense before we had computers, networks, and hyperlinks. Eventually, with encouragement, and after many conference talks and articles, I decided to write a book about that.

* * *

When you start writing a book about something, suddenly ideas that you thought you had all figured out seem flimsy and unformed. After finishing what I thought was the first third of the book, I grew worried—what if none of what I think about this is true? So, I did some further research to validate my hunches.

I discovered my hunches were sometimes on track, and often really wrong, and that this thing we call context is actually not well understood. Among academics, there is rigorous work being done, but it isn’t exactly settled science. Yet, even the best of that work wasn’t making it into the general conversation of design practitioners and in the popular “UX” literature.

I realized that if I were to take this book seriously, I couldn’t just think aloud on the page about what the answers *might* be. So, six months into my work, I had to set aside the chapters I’d already drafted and take the time to really learn the subject as best I could, while writing about what I was discovering. A couple years and quite a few pages later, here I am revising the preface for publication.

Here’s the thing: I’m not finished. The more I learned, the more I saw there would be to discover. Hence, as I mentioned at the beginning, “understanding” is something I hope we can do together, both in this book and beyond it. To that end, I invite you to visit this book’s home site (www.contextbook.com), where additional content and links will accumulate, including a bibliography.

My wish for these ideas isn’t that they be absolutely right (though some of that is nice), but that they help move along the work we do together toward making better places, good and human places, for the people who dwell in them.

So, now, let’s dig in.

Acknowledgments

I WANT MOST OF ALL TO THANK MY WIFE, Erin, who has been a patient supporter through the long, often angst-ridden process of writing this book. She not only went without a husband for many weekends, evenings, and so-called vacation days; she then weathered my verbose ruminations and bouts of self-doubt when I was in her presence. She doesn't believe it, but it's true that I could not have done this without her.

Thanks also to Madeline, my daughter, who has also endured my authorial tribulations, and who has been such an inspiration to me as I've watched her grow up, tackle huge challenges, and already become so much more than I could've imagined.

Thanks to Peter Morville, who told me a long time ago, regarding a completely different subject, "you should write a book," and who then helped me find a path to get it done, with wise counsel along the way. Also thanks to Lou Rosenfeld, who has also given me such generous encouragement and advice over the years. And thanks to Christina Wodtke, especially for that email invitation circa 2001, and all the invaluable conversations since.

A special thanks to Dan Klyn and Bob Royce, who both have enriched and influenced my perspective on this book's subject, and who invited me along on their joint mission to bring "making things be good" to the world—something they called The Understanding Group. I can't imagine any other vocational home giving me the room to work out these ideas and be the self I needed to be while writing this book.

There are many other wonderful people who have contributed their energy and care in ways large and small toward making this book happen; some have been sources of conversations and knowledge that have become part of the book's fabric, and some have even taken time out of

their lives to review drafts and help make the book better. I can't possibly list them all, but I should especially mention, Jorge Arango, Andrea Resmini, Abby Covert, Marsha Haverty, Andrew Wilson, Sabrina Golonka, Karl Fast, Dave Gray, Christian Crumlish, Richard Dalton, Lis Hubert, Malcolm McCullough, and Don Norman.

Thanks also to a mentor from what seems like a previous life, poet and teacher Jeffrey Skinner, for telling me I'm a writer and showing me what it means to be one. When I catch myself just talking about something I could make or do, I hear his rightfully impatient voice from decades ago, saying, "Stop talking about it and just do it!" He also taught me it's better to be done than perfect, advice without which I would still be researching, writing, and revising this tome.

Thanks to my publisher, meaning everyone there who played a part in making this book a reality. When I started working with O'Reilly, I wasn't sure how it would turn out. I knew I wasn't writing something that fit a standard "technology book" mold, but I also knew that O'Reilly was one of the first publishers that really mattered to me—starting with the copy of *The Whole Internet User's Guide and Catalog* I found in 1992—and that O'Reilly's deeply humanist vision would make a good home for my wandering, philosophical ideas about information technology. Sure enough, I found everyone involved to be thoughtful and welcoming, patient with my journey but responsible in prodding me along. So, in particular to Mary Treseler, Simon St. Laurent, Amy Jollymore, and Meghan Blanchette, I want to thank you all for your belief in this project, your encouragement when I struggled, and your kind guidance through the entire process.

Finally, to my mother, Mary; my dad, George; and (in memoriam) my stepfather, Paul: thank you for getting me to adulthood, showing me what was possible if I took the time to do something right, and teaching me that—with hard work—I could accomplish what I set out to do.

The Context Problem

What It Is and How to Think About It

PEOPLE HAVE BEEN TRYING TO FIGURE OUT HOW WE UNDERSTAND THE WORLD FOR A VERY LONG TIME; and from all evidence, there are no certain answers for many of the most important questions. So, it would seem that writing a book about “context” would be a fool’s errand. Why try to tackle it to begin with? What do we mean by it when we say it? And after going to all this trouble, what real-world problems will it help us to solve?



FIGURE I-1

A seventeenth-century illustration by Robert Fludd, illustrating his somewhat occult, prescientific ideas on metaphysics, bodily senses, thought, and inspiration*

* *Utriusque cosmi maioris scilicet et minoris [...] historia, tomus II (1619), tractatus I, sectio I, liber X, De triplici animae in corpore vision* (from Wikimedia Commons)

Part I helps to answer these questions. It introduces the basic challenges of a growing “context problem” to establish reasons why we should bother with understanding context at all. It also presents common scenarios to help illustrate those challenges. Finally, it introduces a working definition of context, and some models we will use to explore how information works to create and shape context in the chapters to come.

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