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SECOND EDITION

Erika Hall

JUST ENOUGH RESEARCH

FOREWORD BY Kio Stark

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FOREWORD

YOU, LUCKY READER, are about to learn everything you always wanted to know about research but were afraid to ask. With her trademark deadpan wit and incisive clarity, Erika Hall walks you through what research is (and isn't), how to convince your team to dedicate money and effort to it, how to work on it collaboratively, and—here's the part you could spend a whole MBA semester on and still not have all the answers—how to actually *do* it.

Erika recommends that her readers "make friends with reality," which may be the most perfect definition of what it means to do design and product research I've ever heard. The reality you are invited to make friends with is that the world is full of people who are different from you. And, as a person who designs products and experiences for people, it is your job to understand their perspectives, needs, and desires in their real-life contexts.

Opening yourself and your work up to what total strangers have to say can be scary stuff. It may challenge your entire worldview, cause you to question closely held beliefs, even lead you to change the way you move through the universe.

I would argue that this is a good thing. Talking to people to find out what the world looks like, sounds like, and feels like to them—what it *is* to them—should be your standard operating procedure.

For the work of inventing, adapting, and improving the products you make for people—as Erika will deftly convince you—such questioning is absolutely necessary.

—Kio Stark

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ENOUGH IS ENOUGH

THROUGHOUT 2001, the internet buzzed with rumors of "Ginger" or simply *it*, the revolutionary future of personal transportation. *It* would change everything. Jeff Bezos was into *it.* Bono was into *it.* Tens of millions of dollars in venture investment had been poured into *it.*

Finally, in December of that year, *it* arrived—and the Segway debuted with a counterrevolutionary thud.

These days, Segways seldom appear outside of warehouse corridors except as a novelty, miracles of engineering conveying awkward gaggles of tourists as they hum serenely by. It's as though the finest minds of the late twentieth century envisioned a brave new world ushered in by amphibious duck tour.

Transportation is a complicated system with strong conventions. The more industrialized the society, the more people traveling faster, the stronger the conventions. Otherwise, more collisions and chaos. There are currently four fundamental personal ground-transportation options: walking (or wheelchair), bicycle, motorbike, and automobile.

For these options, there are two basic paths: the sidewalk and the street. Pedestrians and individuals in wheelchairs get to use the sidewalk. Vehicles, including bicycles, go in the street. A

transportation journey has a beginning and an end. If you travel by personal vehicle, you have to store your vehicle at each end, either inside or outside. Bikes go on racks outside or wherever they fit inside. Cars and motorbikes go into authorized zones on the street, parking lots, or garages. Reliable transportation is essential to daily life, as a flat tire will quickly confirm.

No matter what our personal transportation preferences, we all share the rules and conventions of our locales, and most people share very common needs. People need to get to school or work on time. They need to carry groceries or children. They need to travel through sunshine and rain.

This established system is used with relatively small regional variations by billions of people around the world. But the Segway didn't fit. It was slower than a car and at least ten times the price of a decent commuter bicycle. Even those who could afford it weren't sure what to do with it. You couldn't take the kids to school on it. You couldn't commute twenty miles on it. You couldn't pack the family into it or make out in its back seat.

Critics jumped on the dorky aspect and the high price, but those weren't the dooming factors. Early adopters often put up with cost and ridicule for innovations that meet real needs. But no one needs a Segway.

What does the failure of the Segway have to teach design research? That where humans are concerned, context is everything.

ENOUGH!

A little learning is a dangerous thing.
—ALEXANDER POPE

You like a little danger, don't you?

To design, to code, to write is to embrace danger, to plunge ahead into the unknown, making new things out of constantly changing materials, exposing yourself to criticism and failure every single day. It's like being a sand painter in a windstorm, except Buddhist monks probably don't have to figure out how to fit IAB ad units into their mandalas.

You work one pixel or line or phrase at a time, and every strategy shift or miscalculation leads to rewriting and reworking and revising. Yet you're shadowed by the idea that the best designers and developers and writers are self-motivated, self-inspiring, hermetically sealed units of mastery. The myth of the creative genius makes it very difficult to say "I don't know."

You may be on a team that sees enthusiasm as a substitute for knowledge, high-fiving your way along a primrose path of untested assumptions. Or maybe you are driven before the whip, no time to stop or even breathe. You may not be going the right way, but who cares because you need to get there fast. Or you might be in an organization where everything is done in response to marketing, sales, and the competition. Every day brings a new buzzword or trend.

In such settings, "research" can be a very scary word. It sounds like money you don't have and time you can't spare, like some egghead is gathering wool in a lab or library when you could be moving forward and building something. Scariest of all, it means admitting you don't have all the answers. You may have a vague idea that research is a good thing, but the benefits are fuzzy while the costs are all too clear.

This book is for you.

Research is a tool—a periscope offering you a better view of your surroundings. It can be very powerful if applied thoughtfully. Rather than piling on the costs, research can save you and the rest of your team a ton of time and effort.

You can use the techniques and methods I'll describe to:

- determine whether you're solving the right problem
- figure out who in an organization is likely to tank your project
- discover your best competitive advantages
- learn how to convince your customers to care about the same things you do
- identify small changes with a huge potential influence
- see where your own blind spots and biases are preventing you from doing your best work

By the end of this book, you will possess just enough knowledge to be very dangerous indeed. Because once you start get-

ting answers, you'll keep asking more questions. And that skeptical mindset is more valuable than any specific methodology.

RISK AND INNOVATION

A few years ago, one of the world's largest insurance companies hired my company, Mule Design, to identify new product and service opportunities enabled by emerging personal technologies. This is fun stuff. Thinky. Lots of meaty problems to solve with our minds. We said, "Great, can we talk to some of your salespeople and agents to better understand how you operate and serve customers now?"

They said, "No."

The reason? "We don't want the way we do things now to inhibit your creativity. We want blue-sky thinking!"

Now, I like to think we have a clever group of people. We stay on top of technological advances. We have good imaginations and read comic books and speculative fiction. We have well-considered opinions about monorails, vat-grown meats, and how to defend a space station from a zombie attack. (Lure zombies into the air lock with vat-grown meat while escaping on a monorail.)

None of this tells us where the insurance business might be in ten years. And while we enjoy speculating about the future, we felt irresponsible taking our client's money for guessing.

We ended up doing a lot of secondary research to learn their business, but reading reports and articles is more work and less fun than talking to live humans and hearing about their specific situations. And we didn't get any information about our client's business, which means that while our work was solid, it could have been better.

Businesses and designers are keen on innovation, as well they should be. But the better you know the current state of things and why they're like that, the better you will be positioned to innovate.

WHAT RESEARCH IS

Research is simply systematic inquiry. You want to know more about a particular topic, so you go through a process to increase your knowledge. The type of process depends on who you are and what you need to know.

A lot of *personal research* these days begins with a Google query ("Who is Mihaly Csikszentmihalyi?") and ends on a Wikipedia page. ("Oh, so *that's* how you pronounce it.") Finding information is relatively easy. The knowledge already exists. You just have to find a trustworthy source for it. Assessing credibility is the hard part. ("Is the Malabar giant squirrel real?")

Pure research is carried out to create new human knowledge, whether to uncover new facts or fundamental principles. The researcher wants to advance a particular field, such as neuroscience, by answering a particular question, such as "Why do humans sleep?" Pure research is based on observation or experimentation. The results are published in peer-reviewed journals. This is *science.* Rigorous standards and methodologies exist to preserve objectivity and ensure the credibility of conclusions. (Things get squishy when corporations fund ostensibly pure research, as they frequently do.)

Applied research borrows ideas and techniques from pure research to serve a specific real-world goal, such as improving the quality of hospital care or finding new ways to market pork-flavored soda. While ethics are just as important, methods can be more relaxed. Maybe this means changing up the questions you ask partway through a study or making the most of an imperfect sample group because you're tight on time. The research is successful to the extent that it contributes to the stated goal. As with pure research, sometimes you accidentally discover something valuable you weren't even looking for.

And then there is design research.

Design research is a broad term with a long history. In the 1960s, design research referred to the study of design itself, its purpose and processes. This is still how the term is used in academia today. There are various institutes of design research around the world, mostly involved in large existential or small theoretical questions couched in highly specialized academic

language. If you're interested in transformative concepts of spatial intelligence or the poetics of the sustainable kitchen, this field is for you.

However, when practicing industrial or interactive designers refer to design research, they typically mean research that is integral to the design work itself—inquiries that are part of designing, not *about* design. This research focuses largely on understanding the people for whom we're designing, often referred to by the dehumanizing but instrumental term *end users*. Research is a core part of user-centered design.

Jane Fulton Suri, executive design director at IDEO, offered this elegantly phrased statement of purpose in her 2008 article "Informing Our Intuition: Design Research for Radical Innovation:"

> *Design research both inspires imagination and informs intuition through a variety of methods with related intents: to expose patterns underlying the rich reality of people's behaviors and experiences, to explore reactions to probes and prototypes, and to shed light on the unknown through iterative hypothesis and experiment. (http://bkaprt.com/jer2/01-01/, PDF)*

For a design to be successful, it must serve the needs and desires of actual humans. Strangely, simply being human is insufficient for understanding most of our fellows. Design research requires us to approach familiar people and things as though they are unknown to us to see them clearly. We need to peel away our assumptions like an extraterrestrial shedding its encounter suit.

Asking your own questions and knowing how to find the answers is a critical part of being a designer. If you rely on other people to set the agenda for inquiry, you might end up caught between fuzzy focus groups and an algorithm that chooses a drop shadow from among forty-one shades of blue. Discovering how and why people behave as they do and what opportunities that presents for your organization will open the way to

more innovative and appropriate design solutions than asking how they feel or merely tweaking your current design based on analytics.

When you ask the hard questions, your job gets much easier. You will have stronger arguments, clarity of purpose, and the freedom to innovate that only comes with truly knowing your constraints.

WHAT RESEARCH IS NOT

Uttering the word "research" in some environments may elicit a strange reaction, arising from fears and false preconceptions. Be ready for this.

Research is not asking people what they like

As you start interviewing people involved in business and design decisions, you might hear them refer to what they do or don't like. "Like" is not a part of the critical thinker's vocabulary. On some level, we all want the things we do to be liked, so it's easy to treat likability as a leading success indicator. But the concept of "liking" is as subjective as it is empty. It is a superficial and self-reported mental state unmoored from any particular behavior. This means you can't get any useful insights from any given individual reporting that they like or hate a particular thing. I like horses, but I'm not going to buy any online.

Quash all talk about liking. Hating, too. Plenty of people habitually engage in activities they claim to hate.

Research is not about looking smart

Having the right answer feels really, really good. Most of us have been rewarded for right answers our whole lives, in school and at work. Along with the good feeling comes a deep terror of having our ignorance revealed. It's hard to trade away warm, comfortable certainty, no matter how delusional. So, both humility and courage are a prerequisite for learning. You need to admit you lack all the answers. The more honest you

are about what you don't know, the more you will learn. Don't let your approach be guided by a desire to appear smart or to create a superficial appearance of rigor.

Research is not about being proven right

Some organizations allow a little research, but only under the guise of "validation." This means cracking the window open just enough to let some confirmation bias in. It is all too easy to give more weight to findings that support what you already believe—especially when that belief has a lot of previous investment behind it.

A "right" answer is an ephemeral thing. Commit instead to continuous learning, and embrace being proven wrong as quickly as possible. An ego is a beautiful thing to incinerate.

Research is not better just because you have more data

In addition to executives who prefer the authoritative appearance of controlled experimentation, you may run into sample-size queens who dispute the validity or utility of qualitative research. These people are often well-intentioned quants who are just applying the wrong standard of confidence because it's what they know. Other times they are pollsters or marketers who make their money running surveys or peddle some sort of branded analytics. Avoid arguments about statistical significance; you will not win. Instead, focus on gathering useful insights in order to meet real-world goals.

More data doesn't automatically create more understanding. Often, the sheer amount of information obscures meaning and enables cherry-picking data points to support any proposed plan of action. If you find yourself in a power struggle over data sets, take the conversation back to first principles and shared success.

WHY WE STILL NEED A BOOK LIKE THIS

There are hundreds of books about applied qualitative research and related techniques out there. Many were written by professional researchers for professional researchers. Very thorough individuals, professional researchers. Most of them are quite charming at parties.

You, however, may not be a professional researcher, which means you need a book written for you—a book that covers a lot of useful ground in few words and makes some of the basic concepts and techniques more accessible. That's this book.

People who make design decisions at any level benefit from asking more and better questions. Many of them also need a little guidance on what to do with the answers. In this book, you'll find ideas and techniques that you can use to make your projects and design solutions better and more successful. It is a sampler rather than a survey—and a biased sampler in that I have included only the topics and approaches I personally have found most useful in my design career.

It is also a pointed book. That point will help you cut through the laziness, arrogance, and internal politics that prevent more research.

Research is just another name for critical thinking. With a little encouragement, everyone on your team can open their minds and embrace learning. And together, we can fix it so no one facing an important decision ever mentions focus groups again.

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THE BASICS

RESEARCH IS A DISCIPLINE with many applications. This chapter introduces the core practices and fundamental ideas and techniques you will use repeatedly in many situations. We'll cover who should do research, different types of research and when to use them, and roles within each set of research activities. To help counter any skepticism about the business value of research, we'll also review some common objections and how to overcome them.

WHO SHOULD DO RESEARCH? EVERYONE!

Ideally, everyone who is on the product or design team should also participate in the research.

If you are a sole practitioner, well, that's easy. You will have excellent direct experience and can tailor the process and documentation to suit your needs. (Be particularly mindful of your personal biases, though.) If you work with other people, involve them from the start. Presenting them with the world's most stunning report will give them a terrific reference document,

but it's far less likely to inspire them to approach their work differently. (Do you disagree? Perhaps you are an economist.)

When you find yourself making a case for a skeuomorphic, bronze astrolabe interface based on the research you've all done together, you'll be able to spend less time explaining the rationale and more time focused on the merit of the conclusion. "As you saw in the interviews, we found that our target group of amateur astronomers exclusively uses nineteenth-century equipment for stargazing..."

People who have a hand in collecting insights will look for opportunities to apply them. Being one of the smart people is more fun than obeying the smart person, which is how the researcher/designer dynamic can feel if designers are merely the recipients of the analysis.

At my first design-agency job, the research director was a charming PhD anthropologist with a penchant for vivid, striped shirts. Despite being fresh out of academia, he was much more of a scout troop leader than a fusty professor. Interviews and usability tests became scavenger hunts and mysteries with real-world implications. Unlike heinous, contrived team-building activities—rope courses and trust falls—doing research together actually did make our team more collaborative. We were learning interesting, valuable new things, and everyone had a different perspective to contribute, which helped us overcome our biases. The content strategist noticed the vocabulary real people used; the developer had good questions about personal technology habits. The visual designer was just really into motorcycles, and that helped sometimes, too.

Someone needs to be the research lead—the person who keeps everyone on track and on protocol and takes ultimate responsibility for the quality of the work. If you take this on, it might mean you're the primary researcher, gathering the data for others to help you analyze, or you could have more of an ensemble approach. The most important thing is that everyone involved understands the purpose of the research, their role, and the process.

Find your purpose

Every design project ultimately amounts to a series of decisions. What is the most important problem to solve? What is the best solution to that problem? How big should the logo be?

For any given project, you need include only the research activities that support the specific decisions you anticipate. If the client has only identified an audience and wants to explore ways to better serve them, your research will be more open-ended than if the design problem is already well defined.

Now that digital design is moving from "mobile first" to multimodal interfaces and incorporating machine learning, organizations must be particularly careful about letting technology drive design decisions. To paraphrase a prescient fictional chaos theorist, just because we can do something doesn't mean we should.

There are many, many ways of classifying research, depending on who is doing the classification. Researchers are always thinking up more classifications. Academic classifications may be interesting in the abstract, but we care about utility—what helps get the job done. Research is a set of tools. We want to make sure we can find the right one fast, but we aren't too concerned with the philosophy of how the toolbox is organized.

To choose the best research tool for your project, you'll need to know what decisions are in play (the purpose) and what you're asking about (the topic). Then you can find the best ways to gather background information, determine the project's goals and requirements, understand the project's current context, and evaluate potential solutions.

Generative or exploratory research: "What's up with...?"

Generative research is the research you do before you even know what you're doing. You start with general curiosity about a topic, look for patterns, and ask, "What's up with that?" The resulting insights will lead to ideas and help define the problem to solve. Don't think of this as just the earliest research. Even if you're working on an existing product or service, you might be looking for ideas for additional features or other enhance-

ments, or new products you could bring to an audience you're already serving.

Generative research can include interviews, field observation, and reviewing existing literature—plus feeling fancy about saying "generative research."

Once you've gathered information, the next step is to comb through it and determine the most commonly voiced unmet needs. This sort of research and analysis helps point out useful problems to solve. Your thinking might lead to a hypothesis, such as "Local parents of young children would value an app that offers ideas for events and activities based on their child's developmental milestones." Then you can do further (descriptive) research on how parents recognize and commemorate those milestones.

Descriptive and explanatory: "What and how?"

Descriptive research involves observing and describing the characteristics of what you're studying. This is what you do when you already have a design problem and you need to do your homework to fully understand the context to ensure that you design for the audience instead of yourself. While the activities can be similar to generative research, descriptive research differs in the high-level question you're asking. You've moved past "What is a good problem to solve?" to "What is the best way to solve the problem I've identified?"

At Mule, we've done a lot of design work for eye-health organizations. Despite the fact that several of us have really terrible vision (and very stylish glasses), none of us had any expertise beyond whether the chart looks sharper through lens number one or lens number two. The Glaucoma Research Foundation offered a clear design problem to solve: how to create useful, accurate educational materials for people who had been newly diagnosed with an eye disease. So, a round of descriptive research was in order.

To inform our design recommendations, we interviewed ophthalmologists and patients, and reviewed a large quantity of frankly horrifying literature. (Please, have your eyes examined regularly.) By understanding both the doctor and patient prior-

ities and experiences, we were able to create online resources full of clear information that passed clinical muster and didn't provoke anxiety.

Evaluative research: "Are we getting close?"

Once you have a clear idea of the problem you're trying to solve, you can begin to define potential solutions. And once you have ideas for potential solutions, you can test them to make sure they work and meet the requirements you've identified. This is research you can, and should, do in an ongoing and iterative way as you move through design and development. The most common type of evaluative research is usability testing, but any time you put a proposed design solution in front of your client, you really are doing some evaluative research.

Causal research: "Why is this happening?"

Once you have implemented the solutions you proposed and have a website or application up and running out in the world, you may start noticing that people are using it in a way that isn't exactly what you'd hoped. Or perhaps something really good starts happening and you want to replicate the success in other parts of your operation. This is your prompt to do some causal research.

Establishing a cause-and-effect relationship can be tricky. Causal research often includes looking at analytics and conducting multivariate testing (see Chapter 10). You might review user paths to see how visitors are entering and moving around your site and what words they might be searching for, as well as trying design and language variations to see which ones are more effective. Causal research might indicate that you suffered from changes to search engine algorithms, or a site that sent you a lot of traffic shut down. Or, you might have to look beyond site performance to see what's going on in the wider world. Maybe unusual weather patterns are affecting your customers or John Oliver mentioned you.

As long as you're clear about your questions and your expectations, don't fret too much about the classification of the research you want to undertake. Remain open to learning at every stage of the process. And share this love of learning with your team. All of your research will benefit from a collaborative approach.

Roles

Research roles represent clusters of tasks, not individual people. Often one person will cover multiple roles on a study, or a single role can be shared. Always be explicit about roles and responsibilities in advance.

Author

The author plans and writes the study. This includes the problem statement and questions, and the interview guide or test script. Ideally, this is a team activity. Having a shared sense of what you don't know is often even more critical than sharing what you learn.

Recruiter

The recruiter screens potential participants and identifies the respondents who would be good subjects. Although many organizations outsource recruiting, knowing how to find representative users and customers is tantamount to knowing how to reach actual users and customers, so it's a good skill to develop in-house.

Coordinator/Scheduler

The coordinator plans how time will be used during the study and schedules sessions, including arranging times with the participants.

Interviewer/Moderator

If the research includes interviews or moderated tests, the interviewer or moderator is the person who interacts directly with the participants.

Observer

It's often useful for clients or any available team members to watch the research in progress. This is appropriate as long as the presence of the observers will not influence the research itself. You can also make raw recordings available, if you can ensure confidentiality.

Notetaker/Recorder

Record sessions whenever possible, but have someone take notes as a fallback, and to keep an eye on the time. A separate notetaker allows the interviewer to devote full attention to the participant, and makes it possible to tag out to avoid fatigue.

Analyst

The analyst reviews the gathered data to look for patterns and insights. More than one person should have this role in order to reduce bias in the analysis and promote collaborative learning.

Documenter

The documenter reports the findings once the research study is complete.

You can either change roles with each set of activities if that works best, or develop a routine that allows you to focus on the information gathering. Just as with design and coding, every time you complete a round of research, you'll have ideas for how to do it better next time and you'll have found new ways to incorporate learning into your work.

Listen. Be interested. Ask questions. Write clearly. And practice. Whatever your day job is, adding research skills will make you better at it.

The research process

We'll cover ways to organize research activities in extensive detail in Chapter 3. For the purposes of this section, what matters is that everyone working together has a shared understanding of how the work will proceed. This can be as simple as a checklist.

In addition to organizing the efforts of your immediate team, you may need to get approval to do research at all, either from the client or from decision-makers in your organization. Handle this as early as possible so you can focus on the work rather than on defending it.

OVERCOMING OBJECTIONS

In many organizations, there are still those who consider research somewhere between a threat and a nuisance. You might have to get a certain amount of advance buy-in to proceed.

The whole point of doing research is to have a stronger basis for decision-making; if another level of decision-making, such as executive fiat, trumps your findings, you will have wasted your time. Get ready to advocate for your research project—before you start.

Research "proves" nothing

"All I have to do is get enough of the right kind of data and I can prove they should pay attention to research." I've heard this one a lot. It leads to heartache and wasted effort.

You, as a level-headed seeker and proponent of evidence, will need to muster the courage to stare one awful truth in the face. No matter how much research you do, facts will never change minds. Most people most of the time operate on beliefs and back them up with hand-selected anecdotes. We see magical

thinking and rampant bias in business and design every day, whether it's copying the surface of a competitor's success without looking at the underlying operation or giving more weight to experts whose opinions we find flattering.

In order to influence decisions with evidence, you have to work *with* existing beliefs, not against them. You need to create interest and establish credibility before the results come in, or your findings will pile up and gather dust. And you don't even have to get people to care about "research" as a concept, as long as you can get them to embrace reality as a constraint. I like "evidence-based design" as a rallying cry, because if your design isn't based on evidence, then what is it based on? Keep the focus on shared goals and decisions.

Objections you will hear

Here is a handy list of common objections to research, and their responses.

We don't have the time

You don't have time to be wrong about your assumptions and you don't have time to argue about whose version of reality wins. What are your key assumptions? What if they're all wrong? How much work would you have to redo? How long would that take?

Upfront and continuous research can provide a basis for decision-making that makes the rest of the work go much faster. Nothing slows down design and development projects as much as arguing over personal opinions or wasting effort solving the wrong problem. And you can start small. A couple of weeks can mean very little to your overall schedule while adding significantly to your potential for success.

We don't have the money

Doing a project without research is a great way to end up with even less money and nothing to show for it. Objections about time and money are always a smokescreen using a bad model of

what research is. Even with little or no budget, you can usually locate some related research online, wrangle representative users to interview, and do a little usability testing. Applying some critical thinking to your assumptions costs nothing, but changing your habits can offer tremendous returns.

We don't have the expertise

You have what it takes, thanks to this book! It's strange to think that you have the expertise to build something, but not to figure out whether you are building the right thing. Yes, research is a craft and a set of skills, but above all it's a mindset. If you would rather be proven wrong quickly and cheaply than make a huge investment in a bad idea, then you have the right attitude.

We need to be scientists

This isn't pure science we're talking about here. This is applied research. You just need to have (or develop) a few qualities in common with a good scientist:

- Your desire to find out needs to be stronger than your desire to predict. Otherwise you'll be a mess of confirmation bias, looking for answers that confirm what you already assume.
- You need to be able to depersonalize the work. There are no hurt feelings or bruised toes in research, only findings.
- You need to be a good communicator and a good analytical thinker. Otherwise questions and reports get muddy, and results will be worse. This is just a set of skills that most people can develop if they have the right attitude.

The CEO is going to dictate what we do anyway

You're going to fight to change that dictatorial culture. Not with facts, but with questions. The first step to better decision-making is understanding how the people in charge make decisions and what sources of input they trust. And if the leadership really does have a "damn the facts, full speed ahead" attitude, get a different job.

**One research methodology is superior
(qualitative vs. quantitative)**

What you need to find out determines the type of research you need to conduct. It's that simple. If you have a qualitative question, you need a qualitative method, and your data will come in the form of narrative insights. If you have a quantitative question, you need a quantitative method, and you'll end up with measurements. As Douglas Adams pointed out, "42" is not a very useful answer to the meaning of life.

Often your questions will indicate a mixed-methods approach. You want to know what is happening (qualitative), how much it's happening (quantitative), and why it's happening (qualitative).

We don't have the infrastructure

You don't need special tools. Whatever tools and processes you use for the rest of the work, you can use to gather information. Google Docs and Hangouts will get you very far for free. I suspect you own or can borrow a laptop and have access to the internet. That is all you need.

We can find out everything in beta

Or are we calling it User Acceptance Testing now? There are a lot of things you can find out in beta: what functionality is working, whether users have a hard time finding core features. But there is also a lot that is helpful to know before you ever start designing or coding, and you can find it pretty fast: what your target audience is doing right now to solve the problems your product or service purports to solve, whether people want this product at all, and whether your organization has what it takes to support it.

Again, it's a matter of where you want to invest and what you have to lose. Don't waste anyone's time or effort on untested assumptions if you don't have to.

We already know the issue/users/app/problem inside and out

Unless this knowledge comes from recent inquiry specific to your current goals, a fresh look will be helpful. Familiarity breeds assumptions and blind spots. Plus, if you are familiar with your users, it will be easy for you to find some to talk to.

And who is the "we" in this case? In the absence of a mind meld, the client's experience with the users or the business problem doesn't transfer to the designer. Talking to someone who has done research just gets you their interpretation of the research. Shared understanding is key.

Research will change the scope of the project

It's better to adjust the scope intentionally at the start than be surprised when new information pops up down the road like one of those fast-moving zombies. Research is an excellent prophylactic against unexpected complexity.

Research will get in the way of innovation

Relevance to the real world is what separates innovation from invention. Understanding why and how people do what they do today is essential to making new concepts fit into their lives tomorrow.

Actual reasons behind the objections

At the root of most of these objections is a special goo made up of laziness and fear.

I don't want to be bothered

Unless you are naturally curious about people, research can seem like annoying homework at first. Once you get into it, though, you'll find it totally fun and useful. A little knowledge opens up a whole world of new problems to solve and new ways to solve the problems at hand. That makes your work more rewarding. If research is one more thing tossed on your

already overfull plate, then someone needs to ask the "Who should be doing this?" question again—but the problem is you being too busy, not research being unimportant. Research needs to be integrated into process and workflow or it will get shoved in a corner. If your project has a project manager, talk with them about finding ways to make it work.

I am afraid of being wrong

The cult of the individual genius designer/developer/entrepreneur remains strong. In certain "rockstar knows best" cultures, wanting to do research can come across as a sign of weakness or lack of confidence. Fight this. Accept that asking questions is both terrifying and a sign of courage and intelligence. The faster you are proven wrong, the less time you will spend *being* wrong.

I am very uncomfortable talking to people

You are creating a system or a service actual people are going to have to use. This system will be talking to people on your behalf, so it's only fair that you talk to people on its behalf. That said, some people on your team will have more comfort and skills when it comes to interacting with your research subjects, so consider that when you're deciding who does what.

Having to respond to challenges and objections before you can get to work may feel like a waste of time, but it can be useful in its own right. Describing the goals and potential of your research to people who aren't sold on the value will actually help you focus and better articulate what you hope to uncover.

Research provides just a subset of inputs. Informed, purposeful iteration is the key to a successful design.

RESEARCH REQUIRES COLLABORATION

Successful design projects require effective collaboration and healthy conflict.
—DAN BROWN, *DESIGNING TOGETHER*

A design project is a series of decisions. And research leads to evidence-based decisions. But making evidence-based decisions requires collaboration—everyone involved working together towards a shared goal. Organizations that don't put in the effort to clarify goals, socialize understanding, and resolve conflicts will continue to make critical decisions based on the personal preferences of the most influential person in the room—no matter how "good" the research is.

It is as common as it is counter-productive for companies to plant a research practice in a non-collaborative environment. The learning happens in one area and the design decisions in another, often in separate team cultures, sometimes even in separate buildings. Research reports and presentations appear, then fade into obscurity. When managers claim that they tried research and nothing came of it, the real culprit is usually poor collaboration.

The better the collaboration, the better equipped the organization is to incorporate continuous learning—and the lower the risk of placing large bets on bad assumptions.

The virtues of collaboration

Collaboration doesn't just happen on its own. You can work alongside someone every day for a decade and never truly work together. It takes intention and incentives for behavior change. Most importantly, you need clear, shared objectives.

In his book *Designing Together*, Dan Brown outlined four virtues of collaboration as guiding principles:

- **Clarity and Definition:** Expressing and articulating thoughts clearly
- **Accountability and Ownership:** Understanding and taking responsibility
- **Awareness and Respect:** Empathizing with your colleagues
- **Openness and Honesty:** Stating and accepting the truth

Your environment is collaborative to the extent these principles are represented in day-to-day interactions. If work proceeds without fundamental clarity, if mistakes generate blamestorms,

if coworkers act disrespectfully, if people are afraid of saying what's true—you aren't truly collaborating.

Several behaviors Brown cites as necessary for embodying these virtues are identical to those that are essential for doing useful research. Embrace these habits in all research and design work:

- Have a plan
- Provide a rationale for decisions
- Define roles and responsibility
- Set expectations
- Communicate progress
- Reflect on performance

Anyone can encourage these behaviors simply by asking clarifying questions. If you're coming in as a freelancer or a contractor to work as part of an internal team, ask about the approach to collaboration and decision-making before getting started; it's the only way to make sure that you'll have the information you need to do your job. If you occupy a position of influence, remember issuing an edict is not enough; these are habits that require ongoing recognition and reward. It is much more comfortable for people to keep their heads down and produce. The point is not to remain comfortable.

The fear of confrontation

One of the arguments against working collaboratively is that it will lead to groupthink and design by consensus. This is not true. Groupthink happens when a team optimizes for the *appearance* of agreement to avoid dealing with a shared fear of confrontation. As Brown puts it, conflict allows teams "to acknowledge their lack of alignment and to work together to achieve a shared understanding." Healthy conflict is essential to collaboration. Challenging design decisions makes them stronger. Just think of all the bad design that made it out into the world because no one asked, "Is that really a good idea?"

In a functional organization, people work through conflict without feeling personally attacked because the conflict

is grounded in mutual respect and a desire for shared success. Good design requires good decision-making; good decision-making requires shared understanding.

Better products, faster

The myth that research slows things down persists, especially in high-growth startups or any company anxious about rapid innovation. But, in truth, working in a shared reality based on actual evidence makes for faster decisions. Nothing is slower than rushing to ship the wrong thing and having to clean up afterwards.

You can't talk anyone into caring about research. Don't try. Start from a place of agreement: everyone wants to create better products, faster. Once you rally around that, then you can talk about how to achieve it—by making sure everyone on the team has clear goals, clear roles, reasonable timelines, and a strong sense of what you know and what you don't about your potential customers and their needs. In order to reduce risk, continuous questioning and learning needs to be baked into your process from the start.

Working with an Agile development team

Agile is a popular software development philosophy with the goal of building better software faster in a productive, collaborative working environment. Many short iterations of two or three weeks replace the traditional approach of multimonth or multiyear projects broken into distinct phases.

On the surface, Agile seems antithetical to design. The Agile Manifesto explicitly values "responding to change over following a plan." Design is planning. However, any work with complex ideas and dependencies requires holding some ideas outside the development process. You can't cave in completely to the seductive solipsism that Agile offers, or you'll be tunneling efficiently and collaboratively toward the center of the earth. While flexibility and responsiveness are certainly virtues that many project teams could use more of, let's not discount the importance of having some sort of plan.

From a user-experience perspective, the primary problem with Agile is that it's focused on the process, not the outcomes. It doesn't offer guidance on *what* to build, only *how.* Perhaps your team is more efficient and happier making a lot of stuff together, but how do you know that stuff is the best it could be, meeting real user needs and fit to compete in the marketplace?

If you're always reacting without a framework, you need some guiding mandates. Which customers do you listen to and why? Which user stories do you prioritize? What are you ultimately building toward?

Research is not antithetical to moving fast and shipping constantly. You'll need to do some upfront work for background and strategy and the overall framework. Then, as the work progresses, do continual research.

It might sound counterintuitive, but the most effective approach may be to decouple the research planning from the development process—that is, don't wait to start coding until you've answered all your research questions. Once you have some basic tools and processes in place, such as observation guides, interview guides, recording equipment, and questions for analysis, you can take a Mad Libs approach and fill in your actual questions and prototypes on the fly.

Jeff Patton describes this continuous user-research process in his article "Twelve Emerging Best Practices for Adding UX Work to Agile Development" (http://bkaprt.com/jer2/02-01/). He offers a tidy three-point summary:

> *Aggressively prioritize the highest-value users.*
> *Analyze and model data quickly and collaboratively.*
> *Defer less urgent research and complete it while the software is being constructed.*

In other words, focus only on the essential user types, deal with your data as soon as you get it, involve your team in the analysis, and do the less important stuff later.

This of course opens up the questions of who the highest-value users are and what the more or less urgent research activities are. Prioritize those user types whose acceptance of

the product is critical to success and those who least resemble the software developers on your team. Go learn about them.

Recruiting and scheduling participants is the most difficult part, so always be recruiting. Set up windows of time with different participants every three weeks. When you have them, you can either conduct an ethnographic interview (see Chapter 5) to understand their behavior before the next round of development or do some usability testing on the current state of the application.

Use what you learn from the initial user research and analysis to create personas that inform high-level sketches and user stories. Then, when the team is working on a feature that has a lot more engineering complexity than interaction design complexity, you can fit in additional evaluative research.

Throughout the development cycle, the designers can use research to function as a periscope, keeping an eye out for new insights about users and competitive opportunities while doing usability testing on whatever is ready.

JUST ENOUGH RIGOR

Professional researchers are not unlike journalists. While many people have sufficient skills to observe, analyze, and write, it's allegiance to a set of standards that sets the pros apart. In addition to being professional and respectful in your work, there are just a few responsibilities to keep in mind.

Cover your bias

Wherever there is research, there is bias. Your perspective is colored by your habits, beliefs, and attitudes. Any study you design, run, or analyze will have at least a little bit of bias. Your group of participants will be imperfectly representative. Your data gathering will be skewed. Your analysis will be colored by selective interpretation.

Don't give up!

You can't eliminate it completely—but the simple act of noting potential or obvious bias in your research process or results

will allow you to weigh the results more appropriately. In lieu of a trained eye, use the following bias checklist, or make your own. Grade hard.

Design bias

Design in this case refers to the design of the studies themselves, how they are structured and conducted. This is the bias that creeps into studies when you don't acknowledge bias, or if you include or leave out information based on personal goals or preferences.

Sampling bias

If your app for science-minded new parents is intended to serve men and women in equal numbers but all of your subjects are women, that's a biased sample. If you offer an optional post-visit survey, the people who choose to take it are a self-selected biased sample of all visitors—often the angry ones. If you only interview the happy customers who show up in your contact database, that is a wildly biased sample.

Some level of sampling bias is unavoidable; even random sampling isn't truly random. (See Chapter 9 for a deeper exploration of sampling.) You can counter sampling bias by being mindful about how you generalize from your findings.

Interviewer bias

Conducting unbiased interviews is difficult. Inserting one's opinions is easy. Make sure that interviewers remain as neutral as possible.

This is something to watch out for particularly at the beginning of interviews when you are trying to establish rapport. Maybe the interviewer is super enthusiastic about one aspect of the project. Practice interviews and critiques with an internal team are the best way to develop a neutral interviewing style.

Sponsor bias

Sponsor bias is one of the biggest issues with onsite lab usability tests, because going onsite feels special and can be exciting or even daunting to a participant. If an organization is inviting you into their facility, offering you snacks, and writing you a check, it is very possible you will be gentler in your evaluations. To decrease sponsor bias without being deceptive, use a general description of the organization and goals of the study without naming the specific company until and unless it appears in materials you are evaluating.

Social desirability bias

Everyone wants to look their best. People want to be liked. It can be hard to admit to an interviewer that you don't floss or pay off your credit card bill every month, so participants will sometimes give the answers that cast the best light. Emphasize the need for honesty and promise confidentiality. Also, be mindful of asking specific questions too soon or at the wrong time. Often, asking about a general topic (such as household routines) will naturally lead into more sensitive topics without triggering a defensive response.

The Hawthorne effect

The behavior of the people you are studying might change just because you are there. Staff who typically goof around and chat during the day might clam up and shuffle files if you're hanging about to observe their workflow. Do your best to blend into the background and encourage research participants to go about their normal day. This bias is named for the Hawthorne Works in Cicero, Illinois, where the productivity experiments that led to the discovery of this effect were conducted in the early twentieth century.

The curse of knowledge

Once you know something, it's impossible to imagine what it's like not to know the thing, which makes it difficult to communicate about a topic with people who know less. A doctor might ask whether you've experienced a vasovagal syncope, forgetting that most people just call it fainting. This is both a reason to do research and a caution when creating interview questions.

The curse of knowledge sounds like a malediction out of Doctor Strange, but this term was coined by Colin Camerer, a behavioral economist who also started a record label as an economic experiment and signed the Dead Milkmen. So, that's even better.

Seeking validation

References to "validation" get thrown around design and development like everyone is stressed out about overpaying for lunchtime parking. The term has specific meanings depending on the context, but in practice it often translates to "I would like to go through the motions of learning so that I can check a box and keep moving."

If you are following software-engineering quality-management standards, *verification and validation* is a set of procedures for checking that a product, service, or system meets specifications and fulfills a defined set of end-user or stakeholder expectations. This sort of validation is often summarized as the question, "Am I building the right product?" Waiting to answer this question until you have the actual product seems mighty risky.

As part of hypothesis-driven design, you might turn a core assumption into a hypothesis, such as, "We believe our customers would make different spending decisions if they were aware of the carbon footprint of each product." There are several ways to test that hypothesis to validate it, such as interviewing customers about spending habits or testing a prototype catalog.

However, when it comes to UX, avoid the phrase *validate the design*. These three words set the expectation that your goal is to be proven right, not to learn. This may seem like a small thing,

but if you equate negative feedback with failure or not meeting your goal, everyone on your team will strive to accentuate the positive, and this will weaken the resulting work.

Kara Pernice of the Nielson Norman Group makes the following excellent suggestion:

> If "validate" is a permanent fixture for you or your team, consider balancing the possible priming by pairing it with "invalidate," as in "Let's test the design to validate or invalidate it." (*http://bkaprt.com/jer2/02-02/*)

It feels too good to be proven right. Confirmation bias lurks around every corner. (Positive publication bias is a huge issue in scientific research. Studies with positive results are over-represented in the literature.) Don't explicitly invite it into your process. Stay strong. Aim to be proven wrong. And you'll be far more right in the long run.

The ethics of research

What harm can come of asking people how they decide what to have for dinner or how they use their phones to find directions? We aren't talking about clinical trials of dangerous, new cancer drugs, but all research that includes people and their personal information must be conducted ethically and conscientiously. It's our responsibility as professionals to proceed without deceiving or injuring any of the participants.

What follows is a starter set of ethical concerns you should keep in mind whenever you are doing research. (For more thorough guidelines, take a look at the ICC/ESOMAR Code on Market and Social Research, which is available in fifteen languages: http://bkaprt.com/jer2/02-03/.)

The project as a whole

Maybe this goes without saying, but it is worth saying nevertheless. Is your overall goal, the project that the research supports, ethical? Will your success lead to harm for others? If it will, don't participate in it. You should be intentional about

your position. Conducting an otherwise aboveboard study on women to induce them to buy a diet aid with dangerous side effects doesn't make it right.

The goals or methods of the research

Some research requires keeping certain facts from the participants. Usually this is benign, such as hiding the name and description of the product you're designing, but sometimes it's a problem. Will concealing these facts lead those users to participate in anything they might not otherwise agree to? Are you tricking them or setting some unrealistic expectation about the real world? Are you presenting false information as true?

Consent, transparency, and privacy

Informed consent is the rule. This means that participants must understand and agree in advance to the overall goals of any study and how their information will be recorded, used, or shared. Let them know if they are being watched by unseen observers. Make sure that research participants are of sound mind and able to give consent to participate.

The use and abuse of user data has emerged as one of the most critical issues in internet technology. Much of this has involved Facebook. In 2014, they conducted a psychological experiment in which researchers manipulated the news feeds of 689,003 users to highlight positive or negative posts to see whether the content viewed affected the mood of subsequent status updates. The resulting paper was titled "Experimental evidence of massive-scale emotional contagion through social networks" (http://bkaprt.com/jer2/02-04/). Cool. The experiment was conducted before Facebook changed their data use policy to include "research." Cool. Cool.

The commercial web runs on implied consent. Every site and app has policies no one reads. There is a fine line between A/B testing and showing different information to different audiences in order to study their reactions to manipulated or discriminatory material. In one case, you are testing the perfor-

mance of the system; in the other, you are studying the changes the system caused in human beings.

And because minors cannot legally agree to these sorts of implied contracts, conducting research on underage subjects requires the consent of a parent or guardian. In the United States, the age below which minors require parental consent to participate in research varies from state to state, so it's a good idea to get explicit consent from the parents of anyone under eighteen. This is true whether you are asking children directly about their feelings and experiences through an interview or survey, observing the behavior of children, or analyzing information about individual children in unpublished sources.

Basic safety

Ensure that participants know what is required of them in advance and will be comfortable and not fatigued. Verify that your presence in a home or workplace will not lead to any risks or danger. For example, if you're observing someone taking care of small children, make sure your actions don't distract in any way that would interfere with proper care.

And for the love of all humanity, never, ever agree to do telephone interviews when anyone involved is driving. Not participants, not interviewers, not passive observers. No one. As soon as you learn that someone is on the phone while driving, end the call, and follow up by email or another means to reschedule if necessary.

Staying out of judgment

Researcher Vivianne Castillo has spoken and written about the relationship between empathy and shame in UX research. In "Ethics & Power: Understanding the Role of Shame in UX Research," she points out that the word *empathy* is too often a shallow cliché because the unexamined privilege of the researcher leads to pity being labeled as empathy:

> [Pride] keeps us from recognizing that some user research "war stories" are excuses to ridicule and mock, as if empathy is only

practiced when you're with a participant. (http://bkaprt.com/jer2/02-05/)

According to Castillo, in order to connect with research participants and practice true empathy, it is every researcher's responsibility to be aware of their own experiences of pride and shame, and to recognize when participants might be experiencing shame. Only by slowing down and being open to vulnerability can we build rapport and fulfil our responsibility to the participants.

A handy checklist

The noted sociologist Michael Quinn Patton's ethical research checklist is a good starting place. The following is adapted from *Qualitative Research & Evaluation Methods*:

- Explain the purpose of your research and your methods in clear, plain language the participant will understand.
- Describe the benefits of participating, for the individual participant and for the greater good (e.g., "help us design better products for people like you").
- Note any risks to the participant (social, physical, psychological, financial, and so on).
- Make mutual promises of confidentiality to the extent they are possible, and do not promise more than you can deliver.
- Obtain informed consent for participation, if necessary.
- Determine who will have access to the data and for what purpose.
- Discuss how the interviewer might be affected by conducting the research.
- Identify the source of expertise and advice about ethical matters you will go to when questions arise.
- Decide how hard to push for data if the participants become uncomfortable with answering.
- Define your professional code of ethics and philosophy to ensure that you are proceeding ethically in spirit, and not just following the minimal rules.

This might seem like overkill when you are just talking to a few customers about their use of project-management software. However, given the complexity of the systems many of us are working on, it's easy to stray into gray areas very quickly when you aren't paying attention. Turns out there is a short distance between creating a platform to share cat photos and participating in surveillance capitalism. So it's best to follow good practices from the beginning, when everything seems the most straightforward.

Be a skeptic

Not only do you need to be ethical about gathering information from individuals' online activity, you need to remain vigilant and remember that not everything posted online is true or represents reality.

Get in the habit of asking a lot of questions. Question all your assumptions and determine whether you need to check your facts. If you're constantly on the lookout for threats and potential points of failure, you and your products will be stronger.

This is a type of critical thinking that will serve you well at all times. You need to be aware of how much you don't know and what that means. Awareness of your own limits will allow you to be as effective as possible within them.

BEST PRACTICES

There are many good reasons why people get master's degrees and PhDs and become professional analysts and researchers, and there are plenty of reasons why companies benefit from hiring those people. Specialized, educated, and trained researchers cultivate a deep curiosity, have a broad base of relevant knowledge, and gain academic and professional experience conducting ethical and methodical studies.

As a designer or developer, you might have good reasons to avoid DIY and hire a trained professional. These include:

- a large, complex project

- a large, complex organization
- highly specialized or sensitive subject matter
- a very specialized or challenging user base, such as children, hedge fund managers, or prisoners
- heinous organizational politics
- lack of team members with the time or inclination to acquire additional skills and duties

Skilled, trained professional researchers have rigor. They can apply precise critical thinking in the face of common distractions and pressures, such as the enthusiasm of their team or their manager's personal preferences. The best researchers also have enough humor and humanity to roll with imperfect circumstances. You want rigorous, not rigid.

But in the absence of a trained professional, how do you ensure you are being sufficiently rigorous? You're an amateur attempting these stunts on the open road instead of a closed course; how do you make sure you and your work don't go up in flames?

You borrow the methods of America's greatest amateur, Benjamin Franklin: discipline and checklists.

Discipline requires you to be ever watchful for bad habits, shoddy thinking, and other human frailties that will undermine your efforts. Checklists substitute the experience of others for your own, and give you access to cool thinking in the midst of a hot mess. Discipline also requires that you don't deviate from your checklists without good reason.

Here is the first checklist, that of best practices. Go over the items again and again until you know them by heart, and then post them where you can see them. (Why rely on memory when you don't have to?)

1. Phrase questions clearly

This refers not to the questions you're asking, but to the big question you're trying to answer. Unless you know and can clearly state what you're trying to find out and why, applied research is a pointless exercise.

2. Set realistic expectations

A successful study is preceded by expectation-setting for everyone involved, including the questions to be answered, the methods to be used, and the decisions to be informed by the findings. This is particularly important when you need to request time or budget for the work. If your research doesn't meet the expectations of the stakeholders, they will treat you like you've wasted time and money. Ask team members and managers what they hope for. Tell them what to expect.

3. Be prepared

Research is like cooking: the better you prep, the faster and cleaner the work goes. If you don't prepare, you end up with a huge mess and a kitchen in flames. Get your process and materials in order before you start. Set them up so they're easy to reuse as needed.

4. Allow sufficient time for analysis

You need a little time for things to click into place. After doing the research—or while still in the middle—it's tempting to just forge ahead to solutions without giving yourself enough time to digest. Again, a bit more time here can save lots later on.

5. Make it memorable and motivating

Notes or it didn't happen. Effective research requires effective reporting and sharing your results and recommendations with others. A good report doesn't have to be arduous to compile or read. It needs to be sufficiently informative and very clear to anyone who needs to make decisions based on the research. A single page could be enough.

The whole point of research is to inform decisions. You don't necessarily need specialized communication channels and documentation. You need to get the insights in front of the decision-makers when they need them. Look at the types

of communication that are most effective in your organization and copy what's already working.

You may be doing your own research to save time and money, but be honest with yourself and your team about your capacity. Otherwise you risk wasting both time and money, as well as spreading misinformation and decreasing the overall reputation of research as a necessary input into the work.

Can you commit?

Good. Onward.

HOW MUCH RESEARCH IS ENOUGH?

There are things we know that we know. There are known unknowns—that is to say, there are things that we now know we don't know. But there are also unknown unknowns—there are things we do not know we don't know.
—DONALD RUMSFELD, FORMER US SECRETARY OF DEFENSE

In addition to offering the clarity and confidence necessary to design, research is essential to reducing your risk—the risk you incur by relying on assumptions that turn out to be wrong or by failing to focus on what's most important to your business and your users. However, some assumptions pose greater risk than others.

To make the best use of your time and truly do just enough research, try to identify your highest-priority questions—your assumptions that carry the biggest risk.

For example, given your stated business goals, what potential costs will you incur—what bad things will happen—if, six months from now, you realize:

- you are solving the wrong problem,
- you were wrong about how much organizational support you have for this project,
- you don't have a particular competitive advantage you thought you had, or you didn't see a particular competitive advantage before your competitor copied you,

- you were working on features that excited you but that don't actually matter much to your most important customers,
- you failed to reflect what is most important to your users,
- your users don't really understand the labels you're using,
- you missed a key aspect of your users' environments,
- you were wrong about your prospective users' habits and preferences, or
- your product, service, or system can be misused in ways you didn't consider?

If there is no risk associated with an assumption—if, say, you are working on a technical proof of concept that really, truly doesn't have to satisfy any real-world users—then you don't need to spend time investigating that assumption.

On the other hand, maybe the success of your new design depends on the assumption that many people who shop online value the ability to publicly share their transactions. You could conduct research to understand the social sharing practices and motivations of people who shop online before diving into design and development. Or you could go ahead and design based on an optimistic assumption and then see what happens. At risk are the time and money to design and build the functionality, as well as your organization's reputation.

A better understanding of online shoppers mitigates the risk by validating the assumption and informing your design with real user priorities. In addition, you might uncover opportunities to provide something of even greater value to that same audience.

All it takes to turn potential hindsight into happy foresight is keeping your eyes open and asking the right questions. Failing isn't the only way to learn.

That satisfying click

No matter how much research you do, there will still be things you wish you'd known, and there are some things you can only learn once your design is out there in the world. Design is an iterative process. Questions will continue to crop up. Some of them you can answer with research; some you can only

answer with design. Even with research, you'll need to create a few iterations of the wrong thing to get to the right thing. And then something out in the world will change and your right thing will be wrong again. There is no answer to the question of enough, other than the point at which you feel sufficiently informed and inspired. The topics in this book can only offer a starter kit of known unknowns.

That said, one way to know you've done enough research is to listen for the satisfying click. That's the sound of the pieces falling into place when you have a clear idea of the problem you need to solve and enough information to start working on the solution. The click will sound at different times depending on the problem at hand and the people working on it.

Patterns will begin to emerge from the data. Those patterns will become the answers you need to move forward. This will be very satisfying on a neurochemical level, especially when you start out with a lot of uncertainty. Since human brains are pattern-recognition machines, you might start seeing the patterns you want to see that aren't actually there. Collaborating with a team to interpret the data will reduce the risk of overly optimistic interpretation.

If you don't have enough information, or what you're finding doesn't quite hold together, the pieces will rattle around in your head. Ask a few more questions or talk to a few more people. Talk through the results. The pieces will fall into place.

Learn to listen for that click.

3 THE PROCESS

THIS IS THE "SYSTEMATIC" in the systematic inquiry. Whether the research requires a month or a single morning, being just a bit methodical will be the "extra" step that saves your precious time and brain. Whatever type of research you're doing, and wherever it falls in your schedule, follow these six steps:

1. Define the problem.
2. Select the approach.
3. Plan and prepare for the research.
4. Collect the data.
5. Analyze the data.
6. Report the results.

With practice, the first three steps will become muscle memory and you can focus on collecting, analyzing, and sharing the data.

1. DEFINE THE PROBLEM

Just as you need a clearly articulated problem to create a solid design solution, a useful research study depends on a clear *problem statement*. In design, you're solving for user needs and business goals. In research, you're solving for a lack of information. A research problem statement describes your topic and your goal.

You want to know when you're finished, right? So base your statement on a verb that indicates an outcome, such as "describe," "evaluate," or "identify." Avoid using open-ended words like "understand" or "explore." You'll know when you have described something. Exploration is potentially infinite.

For example, if your topic is working parents of school-aged children and your research question is, "How do they select and plan weekend activities?" then your problem statement could be, "We will describe how parents of school-age children select and plan weekend activities." Or, if your topic is your competitors and your research question is, "What are their competitive advantages and disadvantages relative to our service?" the corresponding problem statement might be, "We will analyze the relative advantages and disadvantages of a set of identified competitors."

The most significant source of confusion in design research is the difference between *research questions* and *interview questions*. This confusion costs time and money and leads to a lot of managers saying that they tried doing research that one time and nothing useful emerged.

Your research question and how you phrase it determines the success and utility of everything that follows. If you start with a bad question, or the wrong question, you won't end up with a useful answer. We understand this in daily life, but talking about research in a business context seems to short-circuit common sense. Everyone is too worried about looking smart.

Your research question is simply what you want to find out in order to make better evidence-based decisions. A good research question is specific, actionable, and practical. This means:

1. it's possible to answer the question using the techniques and methods available to you, and
2. it's possible (but not guaranteed) to arrive at an answer with a sufficient degree of confidence to base decisions on what you've learned.

If your question is too general or just beyond your means to answer, it is not a good research question. "How's the air on Mars?" may be a practical question for Elon Musk to answer, but it isn't for most of us.

You might have a single question, a question with several subquestions, or a group of related questions you want to answer at the same time. Just make sure they add up to a clear problem statement. That discipline will help you figure out when and whether you've learned what you set out to learn.

Now that you've identified *what* you want to find out, you can move on to *how.*

2. SELECT THE APPROACH

Your problem statement will point you toward a general type of research. The amount of resources at your disposal (time, money, people) will indicate an approach. There are a lot of ways to answer a given question, and they all have trade-offs.

If your question is about users themselves, you'll be doing user research, or ethnography (see Chapter 5). If you want to assess an existing or potential design solution, you'll be doing some sort of evaluative research (see Chapter 7). As a single question comes into focus, you might conduct multiple studies or take one of several potential approaches (FIG 3).

Once you've selected the approach, write a quick description of the study by incorporating the question. For example: "We will describe how parents of school-age children select and plan weekend activities by conducting telephone interviews and compiling the results."
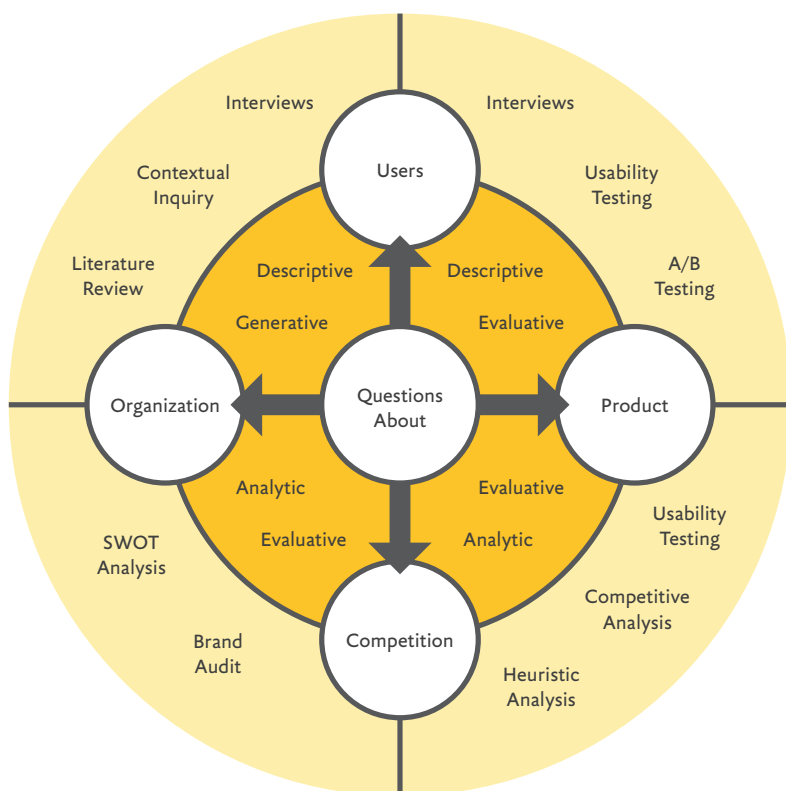
FIG 3: The topic and nature of your questions will guide your choice of research activities.

3. PLAN AND PREPARE FOR THE RESEARCH

First of all, identify the point person—the person responsible for the plan, the keeper of the checklist. This can be anyone on the team, whether or not they're participating in the research; it just has to be one person. This will help keep things from falling through the cracks.

Sketching out an initial plan can be very quick if you're working by yourself or with a small group. Decide how much time and money you will be devoting to research, and who will be involved in which roles. Identify subjects and, if necessary, decide how you're going to recruit them. Include a list of materials.

In the beginning, don't worry about getting everything right. If you don't know, go with your best guess. Since research is about seeking out new information, you're going to encounter new situations and unpredictable circumstances. Make friends with the unexpected. And prepare to change the plan you've made to adapt once you have facts.

You might plan for sixty-minute sessions but find that you're getting all the information you need in half an hour. Or you might find that the name of a particular competitor keeps coming up during an interview, so you decide to add fifteen minutes of competitive usability testing to the interview so you can observe your target customers using your competitor's service.

Just be very clear about the points at which changes to your research plans might affect your larger project. It's easy to be optimistic, but it's more helpful to think about trade-offs and fallback plans in a cool moment before you get started. What will you do if recruiting and scheduling participants looks like it's going to take longer than you've planned? You can push out the dates, relax your criteria for participants, or talk to fewer people now and try for more later. There's no one right answer—only the best way to meet your overall project goals at the time.

In addition to answering your research questions, you'll continue to learn more about research itself. Each activity will make you smarter and more efficient. So much win.

Your research plan should include your problem statement, the duration of the study, who will be performing which roles, how you will target and recruit your subjects, plus any incentives or necessary tools and materials.

This is just the start. You can always add more details as they become helpful to you or your team.

Recruiting

Once you know what you need to know, you can identify whom to study to help fill in those gaps. Recruiting is simply locating, attracting, screening, and acquiring research participants.

Good recruiting puts the quality in your qualitative research. It is tempting to take shortcuts, but these add up to a bad practice over time. You need the individual participants to be as good as they can be. Participants are good to the extent that they represent your target. If participants don't match your target, your study will be useless. You can learn valuable things by asking the right people the wrong questions. If you're talking to the wrong people, it doesn't matter what you ask. Bad participants can undermine everything you're trying to do.

A good research participant:

- shares the concerns and goals of your target users,
- embodies key characteristics of your target users, such as age or role,
- can articulate their thoughts clearly, and
- is as familiar with the relevant technology as your target users.

Remember, there is no such thing as a "generic person." You can be more or less specific, depending on your line of business and your goals. At the same time, don't make the mistake of going too narrow too quickly—be intentional, not lazy.

In theory, recruiting is just fishing. Decide what kind of fish you want. Make a net. Go to where the fish are. Drop some bait in the water. Collect the ones you want. It isn't actually that mysterious, and once you get the hang of it, you'll develop good instincts.

In practice, recruiting is a time-consuming pain in the ass. Embrace it. Get good at it and all of your research will be faster and easier, plus this part of the process will get progressively less unpleasant.

When designing web applications or websites, the web is a terrific place to find potential test participants. If you happen to have a high-traffic website you can put a link on, that's the easiest way to draw people in (unless you need to recruit people

who have never been to that site). Otherwise you can email a link to a screener—a survey that helps you identify potential participants who match your criteria—or post the screener where it will be visible.

Go anywhere you're allowed to post a message that might be seen by your target users or their forward-happy friends and family. Twitter. Craigslist. Facebook. LinkedIn.

If you need people in a certain geographic area, see whether there are local community sites or blogs that would announce it as a service. Referring to it as "design research" rather than "marketing research" goes a long way in the goodwill department.

There are such things as professional recruiters, but it's best to recruit your own participants unless you have no alternative. Why should the recruiting agency learn the most about your audience?

Screeners

The net is your screener. The bait is the incentive.

A screener is simply a survey with questions to identify good participants and filter out anyone who would just waste your time. This is incredibly important. You can tell a good recruit immediately when you test. Good test participants care. When presented with a task, they get right into the scenario. You could offer a greasy piece of paper with a couple of rectangles scrawled on it and say, "How would you use this interface to buy tickets to a special exhibit?" If you're talking to someone who buys tickets, by God they will *try.*

Mismatched participants are as obvious as a bad blind date. Their attention will drift. They will go off on irrelevant tangents about themselves. ("I shoplift for fun.") You could show them a fully functional, whiz-bang prototype and be met with stares and unhelpful critiques. ("Do all the links have to be blue? I find that really dull.") And you will find a way to politely shake their hand and send them packing as soon as possible. (*With* the incentive promised, by the way. It's not their fault they didn't get properly screened.)

The most efficient method of screening is an online survey. (See the Resources section for suggested tools for creating sur-

veys and recruiting participants.) To write the screener, you and your team will need to answer the following questions, adapted from an article by Christine Perfetti (http://bkaprt.com/jer2/03-01/):

- **What are all of the specific behaviors you're looking for?** Behaviors are the most important thing to screen for. Even if you're designing something you believe to be totally novel, current behaviors determine whether your design has a chance of being relevant and intelligible to the participants. If you're designing an app for cyclists, you need to test the app with people who ride bikes, not people who love bikes and wish they had time to ride.
- **What level of tool knowledge and access do participants need?** Be realistic about the amount of skill and comfort you're targeting. And if participants need certain equipment or access, make sure to mention that. For instance, to usability-test a mobile app, you need people who are sufficiently familiar with their device to focus on the app's usability. Otherwise, you might end up testing the phone and get nothing useful.
- **What level of knowledge about the topic (domain knowledge) do they need?** If you're truly designing something for very general audiences in a familiar domain—say, reading the news—you should verify that they actually do the activities you're asking about, but you don't have to screen for knowledge about the subject matter. On the other hand, if you're making an iPad app that helps mechanics work on cars, don't test with brain surgeons.

Writing a screener is a good test of your empathy with your target users. To have reliable results, you need to screen in the right potential participants, screen out the bad matches, and prevent professional research participants from trying to read your mind to get the study incentive. Even a $25 Amazon gift certificate will attract wily dissemblers. Be vague about the contents of the actual test. If you recruit people from the site you are testing, then just refer to "an interview about this website."

Asking age, gender, and location allows you to avoid certain biases, but you also need to get at differences in behavior patterns that may have implications for your design.

For example, say you're recruiting for a usability study for a science museum. You might ask the following question:

How frequently do you engage in the following activities? (Answers: never or rarely; at least once a year; a few times per year; at least once a month; at least once a week.)

> • *Go to the movies.*
> • *Go hiking.*
> • *Go to an amusement park.*
> • *Try a new restaurant.*
> • *Visit a museum.*
> • *See live music or go to a club.*
> • *See other local sights.*
> • *Go out of town for the weekend.*

This question serves two purposes: it gauges museum-visiting frequency without giving away the topic of the study, and it offers a way to assess general habits around getting out of the house.

At the same time, you should make the screener as short as possible to reduce the possibility of potential participants bailing before they get to the end. Don't ask anything on the screener that you can find out searching the web. It usually takes two minutes to look someone up online to see whether they are really a teacher who lives in Nebraska or a crafty scammer trolling for gift cards.

For in-person studies, it's best to follow up by phone with everyone who made the first cut. Asking a couple of quick questions will weed out axe murderers and the fatally inarticulate and may save you from a very awkward encounter. For example: "I just want to ask a couple more questions to see whether you're a good match for our study. Could you tell me how you typically decide what to do on your days off?"

If the answer is a terse "I don't," or a verbose description of cat-hoarding and revenge fantasies, just reply that you'll

be in touch and follow up with an email thanking them for their interest.

Just like formulating queries in Google, writing screeners and reviewing the results you get makes you better and more accurate at screening. And even if it takes a little time to get it right, all the available online tools sure beat standing on the corner with a clipboard like market researchers still sometimes do.

4. COLLECT THE DATA

It's go time—the research part of the research. Find your research subjects. Conduct your interviews. Do your field observation. Run your usability tests. (We'll get into the particulars of each activity later on.)

Research makes data. You might have photos, videos, screen captures, audio recordings, and even handwritten notes. This data will originate with an individual. Get the information onto a shared drive as quickly as physics allows. Every researcher has at least once experienced the tragic loss of good data.

If you are in the field and away from internet access, keep a small backup drive with you. Redundancy worked for the space program and a little bit certainly helps here.

The more organized you are in gathering and storing your data, the more effective and pleasant the analysis will be. Any system you're already using should work as long as it can accommodate files of the size you're anticipating.

Use a consistent naming convention, such as "Study-Subject Name-Year-Month-Day." This is another one of those practices that seems obvious, but is easy to forget when you're in the throes of discovery.

Take a few moments between sessions to check your files and make sure they're named correctly and saved in the right place, and note your initial impressions while you're at it. A few quick thoughts while you're fresh will give you a jump start on your analysis.

Materials and tools

Design researchers used to have to walk up hills both ways in the snow and rig up a forensics lab to do a half-decent study. No more! It's so easy now. It's likely the essentials are scattered around your office, or already inside your messenger bag.

Use what you already have first, and go for familiar tools. The trickiest parts of research used to arise from technical difficulties and equipment learning curves. (The saddest research moment is accidentally erasing a session recording.) Over the past few years, a plethora of online research tools and services have cropped up. Be mindful of choosing services that promise to make the whole process effortless. It's too easy to become addicted to cheap, bad data. And the rush to scale and automate processes can eradicate the very human, somewhat messy interaction you are trying to understand.

Applications and devices are popping up and disappearing every day, so it's difficult to create a definitive list, but my favorite (currently available) research tools are listed in the Resources section in the back of the book.

Interviewing

A simple interview remains the most effective way to get inside another person's head and see the world as they do. It is a core research technique with many applications. Once you are comfortable conducting research interviews, you can apply this skill to any situation in which you need to extract information from another person.

Being a good interviewer requires basic social skills, some practice, and a modicum of self-awareness. Introverts might want to start out as observers and notetakers, while extroverts may need to practice shutting up to let the other person talk.

In the research lingo, the type of interview covered in this book is a *semi-structured interview*, meaning that you will have prepared questions and topics, but not a strict script of questions to ask each participant in the same order and manner. This allows more flexibility to respond to the individual perspective

and topics that come up. You might find out some very useful things you would have never thought to ask.

A successful interview is a comfortable interaction for everyone involved that yields the information you were looking for. The keys to success are preparation, structure, and conduct. (For more on interviewing, see Chapter 5.)

Usability testing

Usability testing is simply the process of conducting a directed interview with a representative user while they use a prototype or actual product to attempt certain tasks. The goal is to determine to what extent the product or service as designed is usable—whether it allows users to perform the given tasks to a predetermined standard—and to uncover any serious, resolvable issues along the way.

The sooner and more often you start doing it, and the more people on your team are familiar with the process, the more useful it is. You shouldn't even think of it as a separate activity, just another type of review to ensure you're meeting that set of needs. Business review. Design review. Technical review. Usability review.

What usability testing does

If you have a thing, or even a rough facsimile of a thing, you can test it. If your competitor has a thing, you can test that to figure out what you need to do to create a more usable alternative. If you're about to start redesigning something, usability-testing the current version can provide some input into what works and what doesn't work about the current version. The test will tell you whether people understand the product or service and can use it without difficulty. This is really important, but not the whole story where a product is concerned. As philosophers would say, usability is necessary, but not sufficient.

Usability testing *can*:

- uncover significant problems with labeling, structure, mental model, and flow, which will prevent your product from succeeding no matter how well it functions;
- let you know whether the interface language works for your audience;
- reveal how users think about the problems you purport to solve with your design; and
- demonstrate to stakeholders whether the approved approach is likely to meet stated goals.

What usability testing doesn't do

Some people criticize usability testing because aiming for a usable product can seem tantamount to aiming for mediocrity. But remember, usability is absolutely necessary, even though it is in no way sufficient. If your product isn't usable, then it will fail. However, usability testing won't absolve you of your responsibilities as a designer or developer of excellent products and services.

Usability testing absolutely *cannot*:

- provide you with a story, a vision, or a breakthrough design;
- tell you whether your product will be successful in the marketplace;
- tell you which user tasks are more important than others; or
- substitute for QA-testing the final product.

If you approach usability testing with the right expectations and conduct it early and often, you will be more likely to launch a successful product, and your team will have fun testing along the way. A habit of usability goes hand-in-hand with a habit of creating high-quality products that people like.

No labs, no masters

We live in the future. There is no reason to test in anything called a "usability lab" unless there's a danger your experiment will escape and start wreaking havoc. A usability lab gives you the illusion of control when what you are trying to find out is

how well your ideas work in the wild. You want unpredictability. You want screaming children in the background, you want glare and interruptions and distractions. We all have to deal with these things when we're trying to check our balances, book travel, buy shoes, and decide where to go for dinner—that is, when we use products and services like the one you're testing.

Go to where the people are. If you can travel and do this in person, great. If you can do this remotely, also good. If you're testing mobile devices, you will, ironically, need to do more testing in person.

Just like the corporate VP who is always tweaking the clip art in presentation slides rather than developing storytelling skills, it's easy for researchers to obsess about the perfect testing and recording setup rather than the scenarios and facilitation. Good participants, good facilitation, and good analysis make a good usability test. You can have a very primitive setup and still get good results. Usability issues aren't preferences and opinions, but factors that make a given design difficult and unpleasant to use. You want to identify the most significant issues in the least amount of time so you can go back to the drawing board. (For more on usability testing, see Chapter 7.)

Literature review

Recruiting and observing or interviewing people one at a time is incredibly valuable. It can also be time-consuming. If it's not possible to talk to representative users directly, or if you're looking for additional background information, you can turn to documented studies by other researchers. Both qualitative studies and surveys can increase your knowledge of the needs and behaviors you should consider.

Look for preexisting research done by your own company or your client, and anything you can find online from a reputable source. Organizations that serve specific populations, such as journalists or senior citizens, often sponsor research and make it publicly available.

The Pew Research Center's Internet & American Life Project is a free and reputable source of data (http://bkaprt.com/jer2/03-

02). As the name implies, the work focuses on Americans, but it's a terrific place to start. Pew's work is typically survey-based, and good for thinking about trends. (Also, their reports offer a model of good communication about findings.)

You can use these studies in a few ways:

- to inform your own general understanding of your target users and help you formulate better questions
- to validate general assumptions
- to complement your work

When working with third-party literature, take these grains of salt:

- Note the questions they were asking and determine to what extent they align with your own.
- Check the sample and note the extent to which it maps to your target user base.
- Check the person or organization conducting and underwriting the study, so you can note their biases.
- Check the date to note whether anything significant has changed since the research was done, such as a new product launch or shift in the economy.

5. ANALYZE THE DATA

What does it all mean? Once you have collected the data, gather it all together and look for meaningful patterns. Turn the patterns into observations; from those, recommendations will emerge.

Refer to your initial problem statement and ask how the patterns answer the questions you originally posed. You can use the same qualitative data in different ways and for different purposes. For example, stakeholder interviews might yield business requirements for a redesign and a description of the current editorial workflow that you can use as inputs to the content strategy. Usability testing might indicate issues that

need to be fixed, as well as data about current customers that you can use to develop personas.

Returning to data from previous studies can yield new insights as long as the conditions under which they were conducted remain relevant and new questions arise.

Get everyone involved

If you are working with a design team, get as many members as possible involved in the analysis. A group can generate more insights faster, and those insights will be shared and internalized far more effectively than if you simply circulate a report.

Rule of thumb: include people who are able to contribute to a productive session and will benefit from participating. Exclude people who will be a distraction, or who will benefit more from reviewing the results of the analysis.

At a minimum, include everyone who participated directly in the interview process. In the best-case scenario, involve the entire core project team—anyone who will be designing or coding. Working together to examine specific behaviors and concerns will help your team be more informed, invested, and empathetic with users from the start. At the end of the session, you can decide which outcomes from the analysis would be most useful to share up and across.

Structuring an analysis session

Analysis is a fun group activity. You get into a room with your team, review all the notes together, make observations, and turn those into actionable insights. Expect this to take anywhere from half a day to a few days, depending on the number and extent of the interviews. It will save time if you give all of the participants advance access to the notes or recordings so they can come prepared.

Even if the session includes only one interviewer and one notetaker, it's useful to follow an explicit structure to make sure that you cover everything and work productively. Here's a good baseline structure. Feel free to modify it to suit your project's needs:

1. Summarize the goals and process of the research. (What did you want to find out? Who from your side participated and in which roles?)
2. Describe whom you spoke with and under which circumstances (number of people, on the phone or in person, etc.).
3. Describe how you gathered the data.
4. Describe the types of analysis you will be doing.
5. Pull out quotes and observations.
6. Group quotes and observations that typify a repeated pattern or idea into themes. For example, "participants rely on pen and paper to aid memory," or "parents trust the opinions of other parents."
7. Summarize findings, including the patterns you noticed, the insights you gleaned from these patterns, and their implications for the design.
8. Document the analysis in a shareable format.

This work can get a little intense. To proceed smoothly and stay focused, require everyone who participates to agree to the following ground rules (and feel free to add house rules of your own):

- Acknowledge that the goal of this exercise is to better understand the context and needs of the user. Focus solely on that goal.
- Respect the structure of the session. Refrain from identifying larger patterns before you've gone through the data.
- Clearly differentiate observations from interpretations (what happened versus what it means).
- No solutions. It will be very tempting to propose solutions. Stick to insights and principles. Solutions come next.

What you'll need

Sufficient time and willing colleagues are the most essential assets for solid analysis. Once you have those, gather a few more additional office supplies:

- a big room with a lot of whiteboard wall space
- sticky notes (in different colors if you want to get fancy)
- pens
- a camera so you can take pictures of the whiteboard, walls of notes, etc., rather than copy everything down (Also, photos of the session are fun for project retrospectives and company stock photography. "Look, thinky collaborative work!")

Feel free to group your observations in a number of different ways until your team reaches agreement on the best groupings—by user type, by task type, by importance for product success, etc. The most useful groupings are based on patterns that emerge, rather than those imposed or defined before beginning analysis. If necessary, assign a time limit and take a vote when the time is up.

What is the data?

You are looking for quotes and observations that indicate the following ideas:

- goals (what the participant wants to accomplish that your product or service is intended to help them with or otherwise relates to)
- priorities (what is most important to the participant)
- tasks (actions the participant takes to meet their goal)
- motivators (the situation or event that starts the participant down the task path)
- barriers (the person, situation, or thing that prevents the participant from doing the task or accomplishing the goal)
- habits (things the participant does on a regular basis)
- relationships (the people the participant interacts with when doing the tasks)
- tools (the objects the participant interacts with while fulfilling the goals)
- environment (contextual factors influencing the participant's motivations and abilities)

Outliers

No matter how rigorous your screening, some outliers may have slipped through. You will know a participant is an outlier if their behaviors and attributes rule them out as a target user or customer. If you have interviewed people who don't match your design target, note this fact and the circumstances for future recruiting and set the data aside.

For example, imagine that as a part of a research project about enthusiastic sports fans you interview "Dan," a math teacher who doesn't follow sports. It turns out that he clicked on the screener while doing some research for a class activity about statistics.

If your target users are sports fans, and Dan doesn't represent a previously unknown category of usage, there is no reason to accommodate Dan's stated needs or behaviors in the design. And that's okay.

Some people will never realistically use your product. Don't force fit them into your model just because you interviewed them. Do give them the incentive for participating.

6. REPORT THE RESULTS

The point of research is to influence decisions with evidence. While the output of the analysis is generally a summary report and one or more models (see Chapter 8), you need to be strategic.

The type of reporting you need to do depends on how decisions will be made based on the results. Within a small, tight-knit team, you can document more informally than at a larger organization, where you might need to influence executive decision-making. (And remember that no report will replace the necessary rapport-building and initial groundwork that you should have done at the very beginning.)

Given good data, a quick sketch of a persona or a photo of findings documented in sticky notes on a whiteboard in a visible location is far superior to a lengthy written report that no one reads. Always write up a brief, well-organized summary

that includes goals, methods, insights, and recommendations. When you're moving fast, it can be tempting to talk through your observations and move straight to designing, but think of your future self. You'll be happy you took the trouble when you need to refer to the results later.

AND REPEAT

The only way to design systems that succeed for imperfect humans in the messy real world is to get out and talk to people in the messy real world. Once you start researching, you won't feel right designing without it.

4 ORGANIZATIONAL RESEARCH

Hell hath no fury like a bureaucrat scorned.
—MILTON FRIEDMAN

YOU'RE AN INDIVIDUAL WITH A GOAL. If you're a designer, you probably want to create something new that delights other individuals and becomes personally important to them. Designs that change the world do so because millions, or billions, of individuals adopt them.

Design doesn't happen in the deep, cold vacuum of space. Design happens in the warm, sweaty proximity of people with a lot on their minds. People create and join organizations to accomplish greater things more efficiently. As an organization grows, it becomes more complex. The oral culture of how to get things done begins to outstrip the documentation. Various internal groups might develop different perspectives on high-level goals, or even different goals entirely. Essential relationships develop that don't map to any org chart.

A design project is a series of decisions, and making sure the right decisions get made can seem tricky in a complex organization. Take heart. You have more influence than you might

think, as long as you take the opportunity to understand the inner workings.

The design process is inextricably bound with the nature of an organization. Budgets, approvals, timing, and resource availability can all depend on successfully negotiating an organization. The ultimate success of a product or service depends on how well it fits into everything else the organization is doing and how well the organization can and will support it.

The habits of organizations and the people within them can be powerful. You'll be working directly with specific individuals, but your interactions will be more or less successful depending on your understanding of the organization as a whole. As much as managers talk about data, organizations are the social context in which decisions are made, and that context matters more than most want to admit.

Think of an organization as physical terrain. A small startup is like an island. It might spring up out of nowhere and sink down under the waves just as quickly, but for the duration of its existence, you can get a clear view of the landscape pretty fast. A large corporation is more like Australia: it's impossible to see the whole landscape at once and there are so many things capable of maiming or killing you.

Fortunately, at any size, an organization is just a set of individuals and a set of rules, explicit and implicit. Once you understand that environment, you'll be able to navigate it and create the best possible product.

PUT AN MBA OUT OF WORK

Organizational research—determining what drives a business, how all the pieces work together, and the extent of its capacity for change—is traditionally the purview of business analysts. However, researching an organization is very similar to traditional user research and can be incredibly helpful to interactive design and development projects.

Many external agencies interview client stakeholders—people whose jobs or roles will be directly affected by the outcome of the project—as a part of the standard requirements-gathering process. Doing this is essential when you're coming in cold to work with an unfamiliar organization.

Internal teams may have to do a bit of role-playing to gather the same information: "Talk to me about how you interact with other members of the marketing team as though I don't work here and we're speaking for the first time."

In organizational research, the *observer effect* (how an observer's presence can alter what is being observed) can actually be a force for positive change. Asking hard questions of people throughout an organization will force those people to come up with answers, leading to at least a modicum of reflection. Asking the same question of different people will reveal crucial differences in motivation and understanding. And listening to people who might not feel heard is a tremendous source of goodwill. Asking a lot of questions will also make you sound quite smart. Or get you fired. No guarantees.

If you are at a smaller, more nimble organization, such as a very early-stage or rapidly growing startup, the enemies aren't complexity and stasis. Rather, you may have to contend with the desire to maintain momentum and "fail fast," as well as pressure to avoid questioning the core assumptions that attracted funding in the first place.

To support "not failing at all, if we can avoid it," identify the assumptions that pose the greatest risk and suggest activities to address those assumptions. The GV Library (http://bkaprt.com/jer2/04-01/) is your ally. The GV (formerly Google Ventures) team has assembled this collection of design and product articles specifically for startups, including the handy "Field Guide to UX Research for Startups" (http://bkaprt.com/jer2/04-02/).

As for how to go about organizational research, it's pretty straightforward and adheres to the same principles discussed in Chapter 3. The major difference is that you're talking to current stakeholders instead of potential users or customers.

WHO ARE STAKEHOLDERS?

The *stakeholder* concept emerged in a 1963 internal memorandum at the Stanford Research Institute (http://bkaprt.com/jer2/04-03/). It defined stakeholders as "those groups without whose support the organization would cease to exist." Your research should include anyone without whose support your project will fail.

Be generous in your stakeholder selection. A few additional hours in conversation will help ensure you're both well informed and protected from an overlooked stakeholder popping up too late. Include the following groups:

- **Leaders** will help you understand the overall company mission and vision and how your project fits into it.
- **Managers** will frequently be concerned with resource allocation and how your project affects their incentives, monetary or otherwise, and their ability to do the work.
- **Subject matter experts** will provide you with essential background information. You can find them by identifying those design-critical areas where you have the least background knowledge and by asking for introductions. The expertise you need may be outside the building.

Make sure you balance out the executive perspective with people who do the day-to-day work. In particular, find anyone who has knowledge of the end users. Customer-service representatives and salespeople can offer valuable insight.

It is essential to talk to a broad swath of the staff, making sure to cut across silos. Some of the most useful information is the degree to which goals and beliefs are shared or in conflict with one another in various disciplines and departments.

In some organizations, the board members are either influential or highly knowledgeable. In others, they are more removed and therefore less useful. Inquire about their level of interest or concern with the project before arranging a conversation. Especially at nonprofits, board members can be tremendous allies, or the other thing. You want them on your side *before* you find yourself presenting an exciting new direction to them, trust me.

INTERVIEWING STAKEHOLDERS

Interviews with project stakeholders offer a rich source of insights into the collective mind of an organization. They can help you uncover areas of misalignment between a company's documented strategy and the attitudes and day-to-day decision-making of stakeholders. They can also highlight issues that deserve special consideration due to their strategic importance to a business.

—STEVE BATY, "CONDUCTING SUCCESSFUL INTERVIEWS WITH PROJECT STAKEHOLDERS" (http://bkaprt.com/jer2/04-04/)

The term *stakeholder* is a bad bit of jargon, but there really isn't a better alternative. Think of stakeholders as people who could potentially put a sharp stick in your back unless you win them over. But don't fear them! Stakeholder interviews—sitting down individually with people who will be directly affected by the project—have many benefits.

What stakeholder interviews are for

Hearing the same issues considered by people in different roles relative to your work will give you great insights and a more complete perspective. Some individual interviews are valuable on their own, and some higher-level insights are only possible in the aggregate.

Stakeholder interviews will help you understand the essential structure of the organization, how your work fits into the organization as a whole, and the approval process for various aspects of your project. They'll also provide you with some less obvious opportunities to influence your project's chances of success.

Neutralizing politics

Organizational politics are a depressing reality in most companies. If you pretend they don't exist, you'll be in for a world of pain. A significant benefit of organizational research is political. You don't want your hard work to get trampled in a turf war you didn't know existed.

You may find that someone in the organization is deeply opposed to your work. If you know why, you may be able to get them on your side. Talking with stakeholders is an excellent opportunity to sell people on the value of your work in terms that matter to them.

Better requirements gathering

Business requirements are frequently defined as though the project were taking place in a frictionless ideal state, but the product or service you're developing doesn't exist in a vacuum. You have your own reasons for wanting to build or design it in a certain way. Similarly, you need to understand how your work might solve or create problems throughout the organization, and how the organization will prioritize those problems and solutions.

A list of business requirements should include the rationale and objectives from the perspective of every group in the organization whose work will be affected by the project at hand. Creating this list requires thorough internal discovery and clear definition.

Don't forget to inquire into technical requirements and constraints. Many beautiful visions crash into functionality and performance issues that might have been anticipated just by talking to the right people early.

Understanding organizational priorities

How important is the work to the organization, really? The answer might surprise you. It makes a big difference whether the project at hand is genuinely valued by the organization. Many years of design consulting have taught me this: the more important a project is to an organization, the more successful it will be. The stress level might be higher among people working on an absolutely critical, number-one-priority project, but they will be giving it their full attention.

Tailoring the design process

"Let's not reinvent the wheel" is a popular cliché, but make sure you're using the right tires for the terrain. During interviews, ask about the typical workday as well as how decisions are made within the team and the organization. This is especially critical if the project at hand brings together cross-functional teams, or teams who have never worked together before, or a new set of external partners. Since the design team might be in a place to define the decision-making structure that everyone has to follow, your life will be a lot easier if you adapt your process to existing work styles rather than try to change ingrained habits. Your project manager will thank you.

Getting buy-in from stakeholders

For the definitive word on making influential people feel heard, I encourage you to read Paul Ford's excellent essay "The Web Is a Customer Service Medium" (http://bkaprt.com/jer2/04-05/). Here is the heart of it:

> *"Why wasn't I consulted," which I abbreviate as WWIC, is the fundamental question of the web. It is the rule from which other rules are derived. Humans have a fundamental need to be consulted, engaged, to exercise their knowledge (and thus power).*

Asking someone for input before you get started is a peerless prophylactic against that person rearing up late in the game with insurmountable objections. Inquiry is flattery. Inviting people to participate empowers them.

Take it from internet trolls. Never underestimate the ability of a single individual—no matter how seemingly unimportant or obscure—to really fuck things up for you once they set their mind to it.

What are your assumptions about how the organization functions, about how different disciplines interact, about what the workflow is and how well it's working, about how much people know or need to know about what you're doing? Now

think of the worst-case scenario if you're wrong. What happens if marketing doesn't understand how your work supports the brand, if the salespeople can't see the benefits, if the production team has no incentive to give you any of their time? This is your opportunity to educate as well as listen, and to get everyone on board.

Understanding how your work affects the organization

If you are creating something new, the very existence of the new system will require everyone in the organization to change. Similarly, those people will affect what you're creating. Even if you're the sole author of an application, you require the participation of others for it to succeed.

You'll benefit from learning the perspectives and priorities of everyone who will be affected, even those who don't directly use the product, service, or system you're designing. Executives will have to defend it as a part of the overall strategy. Customer service will have to support it. Salespeople will have to sell it. Production staff will have to maintain it. Founders may be using it as a proof of concept to raise more capital from investors. Company representatives might expect to field questions about it when they're out at conferences.

Don't wait for people inside the organization to come to you, and don't rely on a higher-up to tell you whom to talk to. It's up to you to evaluate the project's goals and then determine whose input you need.

You can identify which people or departments will have to put in the time, effort, money, and other resources to cope with the changes. You can learn whether enough resources will be available or whether the organization will need to buy more servers or hire more writers.

Understanding how what you propose to build relates to the organization responsible for it means that you can anticipate changes to workflow and minimize them where possible, or prepare people for changes when they're necessary.

Once you inform the organization how much work it will take to accommodate your project, you'll find out whether you in fact lack the organizational support you need and thought

you had. Then you can make decisions based on that knowl-edge, rather than have good work wither on the vine, neglected.

Sharpen your tact

Build a wide list of people to interview: founders, executives, managers, technical staff, customer service, and so on. Then prioritize it. In addition to people who are directly valuable to the project, you will likely have to speak with some for purely political reasons. This is also an opportunity for learning.

The maximum number of interviewees is the number you actually have time to talk to. In some large organizations where the project touches on many types of expertise, you might find yourself on an exciting voyage of discovery, talking to dozens of people. Have a firm idea of how much time you have and stick to it.

Once you have your list of people, find out as much about them as possible, just as you would in preparing for a job inter-view. Use the information you find to inform your line of dis-cussion, but avoid leading with any tidbit your subject would not expect and welcome to be common knowledge. "So, you transferred to this department because you were passed over for a promotion..." will not make you any friends.

Individual interviews

As a rule, and as time permits, it's best to interview stakehold-ers individually. The more political an organization, the more important private conversations are to get an accurate picture. You may have to fight a manager who "just wants to sit in." This sentiment indicates some combination of fear and curios-ity—fear that you'll be gossiping behind that person's back, and curiosity about what will be said. Explain the observer effect and hold your ground. This is non-negotiable if you want to gather true, useful facts. You'll need to assure the interviewee that their answers will not be directly attributed, and assure the interested parties that they will get the information they need in an aggregated report.

Group interviews

If there's a group of people of roughly equal influence who work together closely and share the benefits and risks of the project at hand, you may save time by talking to them together. During the discussion, take care to note whether anyone seems particularly reticent. Follow up with that person with a quick note to give them an additional opportunity to give you information.

Email interviews

For a stakeholder who is remote or impossible to get time with, try for a quick video chat or voice call. In a pinch, it's better to send a few key questions via email than not get any information from them at all.

Interview structure

Each interview should last from thirty minutes to an hour. Make sure to talk in a private place.

The interviewer should be a calm and confident person, preferably someone who is genuinely very interested in what these people have to say. The conversation should flow naturally. If you don't quite understand something, ask for clarification, or ask the subject to repeat what they said.

Have someone else taking notes so the interviewer can focus on the conversation. If you need to record the conversation, ask the interviewee's consent first; recording may make the subject more nervous about speaking freely. The most important thing is for them to feel comfortable talking honestly and openly.

Put the participant at ease and demonstrate respect for their time. Send an agenda and the key questions ahead—not all the questions, but the ones the participant will benefit from knowing in advance. More complex topics might require some forethought. It's best to avoid making people feel ambushed or unprepared.

The basic flow of a stakeholder interview is as follows:

- Introduce yourself and restate the purpose of the meeting. It should be something like: "We're starting to work on a complete redesign of our website and we want to get your input. We'll use it to make sure that the design meets your needs as well as those of other visitors."
- Explain to what extent the information will be shared, by role or business function. "Please feel free to be totally frank. Honest answers are essential to this process. We're talking to people throughout the organization, and will group answers together rather than focus on what one person said. If we use a direct quote, we will not attribute it to you personally."
- Like a good journalist, don't narc on your sources. Get something in writing from the person directing or approving this research, stating that people can speak freely without fear of reprisal.

Ask questions and let the conversation follow its natural course. It's very important to keep the interview feeling informal. It's not an interrogation.

At the end of the interview, restate how you'll use the information and verify the level of the interviewee's participation throughout the project. You definitely want to make sure that your expectations match. Make sure it's okay to follow up if you need more information or clarification.

In addition to name and title, these are the basic questions you'll want to ask:

- *How long have you been in this role?*
- *What are your essential duties and responsibilities?*
- *What does a typical day look like?*
- *Which people and teams do you work most closely with? How well is that relationship working?*
- *Regarding the project we're working on, how would you define success? From your perspective, what will have changed for the better once it's complete?*
- *Do you have any concerns about this project?*
- *What do you think the greatest challenges to success are? Internal and external?*

- *How do you expect your interactions with other people inside or outside this organization will change based on the outcome of this project?*

Then, there are the more specific questions that depend on the project. Stakeholders may themselves be users, often of backend systems or administrative functions:

- *What are your most common tasks with the system?*
- *What problems have you noticed?*
- *What kinds of work-arounds do you use?*
- *Do you have any concerns about this project?*
- *Is there anyone else I should talk to?*

Dealing with a hostile witness

It's in the name—stakeholders have a personal stake in the process or outcome of the project. They may be in competition for resources, or they may wind up with a larger or smaller workload if the project is successful.

Stakeholder interviews tend to be interesting when they go well. People enjoy being consulted and treated as experts. However, sometimes stakeholder interviews take a turn for the ugly. This can be very unpleasant, particularly when you're interviewing in person. The participant you're interviewing will turn the tables and start attacking the process, or you personally. They may start questioning the value of what you're doing or even say they don't understand the questions you're asking.

If this happens, remain calm, take a deep breath, and attempt to get the interview back on track. Restate your goal, and then try asking a general, open-ended question about what the participant thinks is most important for you to know in the service of this goal. Depending on the reason for the hostility, you may just want to cut the interview short.

Common reasons for stakeholder resistance or hostility:

- The stakeholder wasn't sufficiently informed or prepared for the process and is suspicious of the motives, or just confused about why they were asked to participate.
- It's a power move. This individual wants to establish dominance over you or, by extension, the person who authorized the interview or the project as a whole.
- The stakeholder is under pressure to perform in some other area and doesn't see a benefit from participating. This is common when interviewing salespeople who think they are wasting precious time when they could be selling and earning commissions. You have taken them "off the floor."

Try to determine in advance whether any of the stakeholders you plan to interview are at risk for a hostile reaction. Make sure they know why you're asking them to participate, how they need to prepare, how long it will take, and the reasons why their participation is essential to the process. Flattery usually goes a long way.

Remaining calm and confident is essential. Never let anyone bully you when you're gathering information that's essential to your work. Make sure you're prepared to describe the process and justify its value.

Never let anyone take control of the interview from you. Listening to someone go on a rant about what isn't working can be interesting and useful, but it's up to you to guide the conversation.

Practice, practice, practice. If you're new to doing these sorts of interviews, practice with members of your team before doing it for real. Have them throw in some challenging or unproductive responses:

- "Why are you asking me this?"
- "I don't understand that question. It doesn't make any sense."
- "I don't feel comfortable talking to you about that."
- "No one pays attention to anything I have to say, so I don't know why I should bother talking to you."
- "How much more time is this going to take?"

Documenting interviews

For each stakeholder, note the following:

- What's their general attitude toward this project?
- What's the goal as they describe it?
- To what extent are this person's incentives aligned with the project's success?
- How much and what type of influence do they have?
- Who else do they communicate with on a regular basis?
- To what extent does this stakeholder need to participate throughout the project, and in which role?
- Is what you heard from this stakeholder in harmony or in conflict with what you've heard from others throughout the organization?

Just enough

You've interviewed enough people when you feel confident that you know:

- who all the stakeholders are
- their roles, attitudes, and perspectives
- their levels of influence, interest, and availability over the course of the project
- how they stand to benefit or suffer with the success or failure of your work
- the likelihood that any of them have the power or potential to prevent project success
- all the ways the workflow will have to change to make your project a success
- the resources you have available for your project process
- the resources required to support your project once it's complete
- all the business requirements and constraints
- whether your team and core stakeholders agree on the goals and definition of success

- whether the stated goals are the real shared goals, or whether anyone has a hidden agenda
- how people outside the project team view this project

Once you're done making new friends, it's time to reflect on what you've learned and integrate all the individual perspectives into a cohesive narrative.

STAKEHOLDER ANALYSIS

Stakeholder analysis itself is often straightforward, while sharing what you've learned takes savvy and finesse. (If you're interviewing members of the organization as users of the system, refer to the ethnographic methods in Chapter 5.) Create a clear statement of what you need to accomplish in order for the organization to consider the project a success. Look across disciplines and departments for themes that contribute to a unified narrative. And, flag any challenges or questions for further study.

Depending on the political situation at the company for which you're conducting the research, you may have one version for the core team and a more succinct (or polite) report for broader distribution.

Key points

Your goal is to incorporate the specific concerns of everyone you spoke with into a shared understanding of the organization, its priorities, and the path forward. Easy! If you do this well, it provides the foundation for strong decision-making and collaboration.

Problem statement and assumptions

What needs to be solved or improved from a business perspective?

Goals

Every project begins with a rough set of goals, or concepts of success. Every individual in an organization sees them a little bit differently. Gathering these and reconciling them is essential to a functioning project.

Success metrics

What are the qualitative and quantitative measurements that tell you whether the project is hitting the mark? These should be meaningful criteria for evaluation that support the goals. Often, you will discover that part of the work to come is defining metrics. That is okay, and far better than picking the wrong ones because it's easy.

Completion criteria

How will you know you're done? It may seem obvious, but it's always good to validate. Otherwise, the project will never be finished!

Scope

Scope refers to the amount of work included in any project. "Scope creep" is what happens when more work just keeps getting tacked on and the scope grows uncontrollably. The best way to avoid scope creep is to document what is included in as much detail as possible and in language everyone understands. And note who is responsible for what. Scope is a boundary, so it's also very useful to note that which any of the stakeholders might assume to be included but is out of scope. Not touching the branding this time around? Write it down. Detailed scope documentation makes for happy teams and functional projects.

Risks, concerns, and contingency plans

Want to increase your chances of project success? Then acknowledge anything you've uncovered that might lead to failure or unmet expectations.

A designer conducting organizational research might pick up on a lot of information that matters to the project process as well as to the design approach. Some organizations are more functional and well-resourced than others. Maybe key decision-makers will have limited availability. Or perhaps two departments who need to collaborate very closely have historically had a poor working relationship. Every organization has its challenges. If the team understands and acknowledges these, they will be able to work around them more effectively.

All of this information gathering will allow you to anticipate potential problems before they arise. This is an area in which the practitioners (designers, writers, developers, and project managers should collaborate closely. If these challenges are not openly acknowledged (which sometimes happens), be very sensitive in how you talk about them. For your work to succeed, you have to address them.

Getting everything done on a tight schedule is often a major shared concern. A clear, simple—and, most important—publicly documented process for gathering feedback and making decisions helps everyone stay on track. And, if you have heard different concerns from different groups, it's best to address that head-on. The need to keep the total project cost down might be what you heard from operations, while the product team mentioned the need to have a user experience that compares favorably to a major competitor. The most appropriate solution will address both.

Verbatim quotes

The specific words used are highly valuable in revealing an individual's perspective and attitudes. Quotes that represent the perspectives of research participants are often the most powerful, portable output of user research. If possible, omit identifying information when sharing quotes.
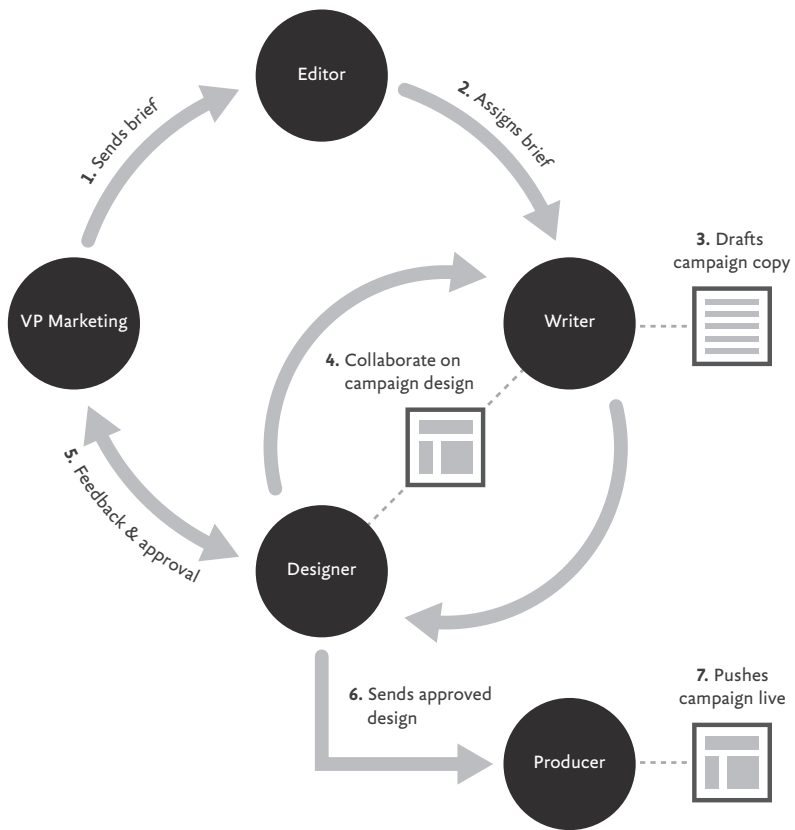
Workflow diagrams

Who will need to be told about how things have changed, and in what format? A workflow diagram is a good companion to this document (**FIG 4**).

If you're working on an internal project or a new customer-facing product that's likely to change internal workflow, diagram the current and proposed workflows. Throughout the project, you can use these diagrams to track any workflow ramifications and make sure the organization is changing sufficiently to accommodate the new design.

UNPACK THE BAGGAGE

A solid understanding and honest assessment of an organization and its business is necessary for the success of any significant design project. Organizational habits and capabilities are just as relevant as target-user behaviors and needs, although they're less frequently included as fundamental topics of design research. And the true nature of workflow and interpersonal relationships is just as ripe for ethnographic exploration.

Even just the process of conducting research can be beneficial, if only because it provides the motivation to open atrophied or nonexistent communication channels. Performed with tact and rigor, organizational research can neutralize politics, clarify requirements, and improve the odds that changes will be fully understood and take hold.

FIG 4: A workflow diagram can describe the current situation or illustrate your recommendation based on what you've learned about the organization.

5 USER AND CUSTOMER RESEARCH

Doctor: What are you doing here, honey? You're not even old enough to know how bad life gets.
Cecilia: Obviously, Doctor, you've never been a thirteen-year-old girl.
—*THE VIRGIN SUICIDES*

AS A DESIGNER, you have an enormous, exciting responsibility. You define the human world, one object or system at a time. Every delightful and every frustrating artifact, every unseen algorithm that governs interactions, every policy constraining choices, exists because of a series of design decisions.

Design as a job is similarly delightful and frustrating. Whatever you create or specify has implications for a diverse array of people who may not be anything like you. Your work must be sufficiently novel to attract attention or provide value while fitting into each user's existing world of objects and situations, over which you have no control. How do you identify one design that solves a problem for an endless combination of people and environments?

You do user research to identify patterns and develop empathy. From a designer's perspective, empathy is the most useful

communicable condition: you get it from interacting with the people you're designing for.

When we talk about *user research* as distinguished from *usability testing*, we're talking about ethnography, the study of humans in their cultural and social contexts. We want to learn about our target users as people existing in their habitual environments. We want to understand how they behave and why.

This is very different from gathering opinions. It isn't just surveying or polling. And it's definitely not focus groups.

Ethnographic design research allows your design team to:

- understand the true needs and priorities of your customers/readers/target audience/end users;
- understand the context in which your users will interact with what you're designing;
- replace assumptions about what people need and why with actual insight;
- create a mental model of how your users see the world;
- create design targets (personas) to represent the needs of your users in all decision-making; and
- hear how real people use language to develop the voice of the system and ensure that the interface is meaningful to them.

EVERYTHING IN CONTEXT

For you to design and develop something that appeals to real people and reflects their priorities, you'll need to talk with or observe representative users directly in their contexts—their physical environments, mental models, habits, and relationships. This reduces your risk of making bad assumptions based on your own experiences, hopes, or subjective preferences.

Physical environment

This is the physical context in which someone will use your product or service. This could be in an office at a standing desk, at home on the sofa, outside at a job site, or on the train in an unfamiliar city. Is your target user likely to be alone, or

surrounded by others, subject to interruptions? Needs—and the best ways to meet them—can change vastly with setting.

Mental model

A mental model is an individual's preexisting internal concept of, and associations with, any given institution, system, or situation. Every one of us has an imperfect, idiosyncratic map of reality in our head. Without it, we would be utterly lost. With it, we rely on assumptions based on previous experiences we consider analogous. The better the analogy, the more useful the map. This is why interfaces that strive for novelty are often unusable. With no hooks into an existing mental model, we have to figure things out from scratch. And that is very difficult. Designers often make it unnecessarily so.

Habits

How does the user already solve the problem you are trying to solve for them (if indeed they do)? What are their physical and mental habits around the problem, and their relevant beliefs and values? We frequently hear from entrepreneurs who are trying to create a habit around a new product. Habits are hard to change, as anyone trying to kick one will attest; inserting a new hook into an existing habit is much easier.

Relationships

Social networks are merely the most obvious intersection of human relationships and digital products. People are social animals and every interactive system has an interpersonal component. Despite the solo nomenclature of "user experience" design, the use of your product or service will likely involve a web of human relationships.

ASSUMPTIONS ARE INSULTS

There are over seven billion people on the planet. According to a 2018 report by the International Telecommunications Union, about half of them have no internet access (http://bkaprt.com/jer2/05-01/). Wrap your head around that. That's nearly four billion people who have never even received the $500 chocolate chip cookie recipe. You probably start getting itchy two minutes after your iPhone dies at TED and you can't text your husband anymore.

See what I did there? I just made some assumptions about you. If they were correct, maybe you nodded slightly and moved on without noticing. However, if you don't have an iPhone or don't go to TED or don't have a husband with whom you're constantly exchanging messages, or if you have no idea what the $500 cookie recipe is, you probably got a little annoyed.

When you make assumptions about your users, you run the risk of being wrong. When you embed wrong assumptions in the design of your product or service, you alienate people—possibly before they even have a chance to hear what you have to offer. The more obvious that wrong guess is, the more annoying it is.

"Annoying" might be a generous description. By designing for yourself or your team, you are potentially building discrimination right into your product. Your assumptions about the age, gender, ethnicity, sexuality, and physical or cognitive abilities of your users might lead to barriers you don't actually intend—barriers that don't serve your business goals or ethics.

Not all products need to be all things to all people. However, every design decision should be well-informed and intentional, welcoming your intended users rather than alienating or upsetting them. That's why identifying and understanding your target audience or user base is the most important design research you will do.

As the original motivational speaker, Dale Carnegie used to say (while getting rich saying it):

*You can close more business in two months by becoming inter-
ested in other people than you can in two years by trying to
get people interested in you.*

GETTING GOOD DATA FROM IMPERFECT SOURCES

It seems like a simple formula:

1. If your goal is to make things people buy and use, you should design what people want.
2. To do that, you need to know what people want.
3. So just find some people and ask them what they want.
4. Then go off and make what they tell you.

No. This does not work. The first rule of user research: never ask anyone what they want.

You know what people want? People want to be liked. When you ask someone directly what they want, it is very possible the answer you receive will be what they think you want to hear, or the answer that reflects how they like to think of themselves. And because it's impossible to want what you can't imagine, you risk the scope of your ideas being limited by the imaginations of others.

The television show *House M.D.* actually makes a terrific case for ethnographic research, as long as you ignore certain ethical and medical realities. In each episode, Dr. Gregory House and his diagnostic team tackle a mysterious, challenging, life-or-death case. Examining and directly questioning the patient leads only to one false diagnosis and subsequent dramatic defibrillation after another, until finally a couple of comely physicians resort to breaking into the patient's home and snooping around to discover evidence of undisclosed habits and behaviors. They return with artifacts. House has an epiphany. Patient lives! Awkward conversation with loved ones about habitual talcum powder huffing or previous traveling circus career ensues.

"Everybody lies" was the perennial theme and occasional tagline of the show. Not only are most people straight-up craven dissemblers, but even those we would call perfectly honest lack sufficient self-knowledge to give a true account.

It may seem a harsh maxim for the designer who genuinely wants to empathize with users, but it is far more succinct and memorable than "most people are poor reporters or predictors of their own preferences and behavior when presented with speculative or counterfactual scenarios in the company of others."

Your challenge as a researcher is to figure out how to get the information you need by asking the right questions and observing the right details.

You won't be breaking into anyone's house. You need to figure out how to break into their brain—only after being invited, of course, like a vampire of the mind. If you go in through the front door, asking direct questions, you'll run into defenses and come up with pat, and potentially useless, answers.

The questions you ask directly and the questions you want answered are two different sets of questions. If you ask "Would you spend $50 on my product?" you'll be truly misled.

If you want to know what people might do in the future, you need them to tell you true stories about what they've done in the past. To create a good fit between what you're designing and what your target users need, you have to know about the aspects of their habits, behaviors, relationships, and environment that are relevant to your work, and then turn that knowledge into insights you can act on. These insights will allow you to design with more confidence and less guesswork.

WHAT IS ETHNOGRAPHY?

Ethnography is a set of qualitative (descriptive rather than measurable) methods to understand and document the activities and mindsets of a particular cultural group who are observed going about their ordinary activities in their habitual environment.

Radically simplified, the fundamental question of ethnography is, "What do people do and why do they do it?" In the

case of user research, we tack on the rider "...and what are the implications for the success of what I am designing?"

We already observe people regularly, if only to determine how we should interact with them ourselves. ("Is that guy on the bus trying to get my attention or having a loud conference call on his headset?") And many of us are quite experienced at reporting interesting behaviors. ("You should have seen this guy on the bus...") To do user research, you'll need to make a slight mental shift to "How should what I'm designing interact with this person?" and then do your best to be totally nonjudgmental. That's all it takes to stoke the human data-gathering machine.

The four Ds of design ethnography

Humans and their habits and material culture are endlessly complex. Ethnography is an equally deep and nuanced field. The practices outlined in this chapter are merely a pragmatic simplification of a few core ideas intended to help you apply useful insights about people to your product design.

It's easy to get caught up in the specific techniques and terminology, so try to keep the following key points in mind for more successful user research.

Deep dive

You want to get to know a small but sufficient number of representative users very well. We're typically talking a Vulcan mind meld with a handful of individuals, not a ten-question survey of a thousand families. Walk in their shoes. live in their skins, see through their eyes...choose the creepy spiritual possession metaphor that works for you.

Daily life

Fight the urge for control and get into the field where things are messy and unpredictable. (The field is wherever your target users generally are, anywhere from a cube farm to the London Tube.) As you're probably well aware from how your day is going so far, life for everyone is messy and unpredictable in

ways both good and bad. It's very easy to think up ideal scenarios in which everything is smooth and simple. These are as useful to your work as a game of SimCity is to allocating actual resources in New York City.

Participant observation, whether done in person or remotely, is the name of the game. Everyone's behavior changes with the context and the circumstances. Soak in your subject's actual environment. It's of limited utility to learn how people behave in your conference room. No one is going to act naturally in there. Even calling them in their own home or office is better. The most interesting insights will come when you keep your eyes open and go off script.

Data analysis

Gathering a lot of specific observations in the field is just the first part. Once you have all of this data you need to do a thorough job of sifting through it to figure out what it means. Systematic analysis is the difference between actual ethnography and just meeting interesting new people at a networking event. You can use a light touch and a casual approach, but take enough time to gain some real understanding, and get your team involved in creating useful models.

Drama!

Lively narratives help everyone on your team rally around and act on the same understanding of user behavior. From the mundane realities of real people, personas emerge—fictional protagonists with important goals—along with scenarios, the stories of how they use the product you're designing to meet those goals. Personas keep you honest. You design for them, not for you or for your boss.

INTERVIEWING HUMANS

The goal of interviewing users is to learn about everything that might influence how they will use what you're creating. Good

interviewing is a skill you develop with practice. The great myth is that you need to be a good talker. Conducting a good interview is actually about shutting up.

Remember, the people you're interviewing want to be liked. They want to demonstrate their smarts. When you're interviewing someone, you know nothing. You're learning a completely new and fascinating subject: that person.

Preparation

Once you have established whom you want to talk to and what you want to find out, create your interview guide. This is a document you should have with you while you're interviewing to ensure that you stay on topic and get all of the information you need.

The interview guide should contain:

- **The goal and description of the study:** This is for you to share with the participant and use to remind yourself to stay close to the topic.
- **Basic demographic questions:** These are for putting the participant's answers in context. They will vary depending on the purpose of the interview, but often include name, gender, age, location, and job title or role.
- **Icebreaker or warm-up questions:** These are to get the participant talking. Most people know this as "small talk." Feel free to improvise based on the demographic information.
- **The actual questions or topics:** You know, the primary focus of the interview.

You should also gather a bit of background information on the topic and people you'll be discussing, particularly if the domain is unfamiliar to you.

Interview structure: three boxes, loosely joined

An interview has three acts, like a play or a spin class: the introduction and warm-up, the body of the interview, and the conclusion.

Introduction

Introduce yourself with a smile, expressing genuine gratitude that the person you are interviewing has taken the time to talk (even if they're getting a large incentive and especially if it's a busy staff member who has taken time out of their workday).

Describe the purpose of the conversation and the topic without going into so much detail that you influence the answer. Explain how the information will be used and shared. Obtain their explicit permission to record the conversation.

Ask whether they have any questions about the process.

Move on to the demographic information or facts you need to verify. Use the collection of this information as the basis for the warm-up questions. "Oh, you live in San Diego. What do you like to do for fun there?"

Body

Once you've covered the formalities and pleasantries, it's time to dig into the interview. With a sufficiently talkative subject, you might get all of the answers you wanted and then some without asking more than the initial question directly.

Ask open-ended questions that encourage the subject to talk, not closed questions that can be answered with "yes" or "no." (Closed question: "Do you communicate with the marketing department often?" Open question: "Tell me about the internal groups you communicate with as part of your job.")

If the subject doesn't offer enough information on a topic, ask a follow-up or probing question, such as "Tell me more about that."

Allow pauses to let the story through. Silence is uncomfortable. Get used to it and don't rush to fill gaps in the flow of conversation. You want your subject to do that.

Use your list of questions more as a checklist than as a script. If you read the questions verbatim, you'll sound like a robo-call survey.

Conclusion

Once you have the information you were looking for, and ideally even more, make a gentle transition to the wrap-up. Say something like "That's it for my questions. Is there anything else you'd like to tell me about what we discussed?"

Thank them for their time and cover any administrative topics such as incentives or next steps on the project.

Don't be afraid to shut it down early if you find yourself in an unproductive interview situation. Sometimes an interview subject goes taciturn or hostile. The best thing you can do is move on to the next one. No rule says you need to hang in there until you've attempted to have every single one of your questions answered. Just do your part to remain friendly and respectful to the end.

Conducting the interview

You, the interviewer, play the dual role of host and student. Begin by putting the participant at ease with your demeanor. The more comfortable a participant feels, the more and better information you will get. A relaxed participant will open up and be more honest, less likely to worry about putting on a good impression.

Once you've done your part to get the subject talking, get out of the way. You should strive to be a nearly invisible, neutral presence soaking up everything the other person has to say. Think of them as the world's foremost expert on themselves, which is the all-absorbing matter at hand. Insert yourself only when necessary to redirect back on topic or get clarification. You will know when your interview is going particularly well because you won't be able to get a word in, but you will be getting answers to all your questions.

Breathe

It's easy to feel like you're on stage and tense up without realizing it. Your own tension can be contagious, so remind yourself to breathe and remain relaxed and observant.

Practice active listening

As long as you're breathing, make interested "mm-hmm" sounds. If you're interviewing in person, make sure to look at the speaker directly and nod. Unrelated thoughts might start to pop up, especially if an answer goes on at length. Stay alert and focused on the other person.

Keep an ear out for vague answers

You want details and specifics. Always be ready to bust out a probing question such as "Tell me more about that."

Avoid talking about yourself

Sometimes, what starts as active listening turns into "Let me tell you about a similar experience I had..." The interview isn't about you or your opinions. This can be very hard to remember and takes practice to avoid. So, if you find that you've inserted yourself into their narrative, just stay relaxed and steer the conversation back on track.

Handy checklist

This checklist for effective user research was adapted from the *Ethnography Field Guide* produced by the Helsinki Design Lab, powered by Sitra, the Finnish Innovation Fund (http://bkaprt. com/jer2/05-02/):

• Create a welcoming atmosphere to make participants feel at ease.
• Listen more than you speak.
• Try to capture the thoughts and behaviors of your participants accurately.
• Go to your participants' environments—wherever they'll be engaged in the behavior you're studying.
• Tell them the goal of your study briefly, being careful that it doesn't direct their responses.

- Encourage participants to act naturally and share their thoughts aloud.
- Do not ask leading or yes-or-no questions. Follow up with more questions to clarify their responses.
- Write out your questions in advance, but feel free to deviate in the moment.
- Take pictures to create visual notes of your observations.
- Pay attention even after you stop recording—you might be surprised by what gets said.

Try to be as conversational and natural as possible. If the user volunteers the information in the course of your conversation without you having to ask, that's terrific. Your questions are just prompts to help the participant tell you a story that reveals situations, attitudes, and behaviors you didn't even think to ask about. Offer enough information to set the scope for the conversation, but not so much that you influence the responses.

Here is a sample set of questions for you to modify to meet your needs:

- *Walk me through your day yesterday. Tell me about your job.*
- *Walk me through your last day off from work.*
- *How do you stay in touch with people close to you?*
- *What computers or devices do you use?*
- *Tell me about the last [category] thing you bought?*
- *Tell me about your household.*

What to do with the data you collect

The interview is the basic unit of ethnographic research. Once you've completed your interviews, analyze them all together to find themes, including user needs and priorities, behavior patterns, and mental models. Note the specific language and terms you heard so you can better reflect the way users think and talk in the actual interface.

If you are doing generative research, look to the needs and behaviors you discover to point out problems that need solving. Turn the clusters around user types into personas that you can

use for the life of the product or service you're working on. (See Chapter 8 for detailed examples.)

CONTEXTUAL INQUIRY

Once you're comfortable doing ethnographic interviews, you can take your skills into the field. If you like watching reality shows, you will love contextual inquiry, also called site visits or consensual home invasion—except instead of *Project Runway*, you'll be enjoying Project Conference Call, Home Office Experience, or Saturday Morning Grocery Shopping. You enter the participant's actual environment and observe as they go about the specific activities you're interested in studying. By doing this, you will be able to see actual behaviors in action and learn about all of the small things you might not hear about in an interview, such as a janky workaround so unconscious and habitual the individual has completely forgotten it.

Contextual inquiry is a deeper form of ethnographic interview and observation. It is particularly useful for developing accurate scenarios, gathering stories about how users might interact with potential features, and identifying aspects of the user's environment that will affect how someone might use a particular product.

Scott Cook, the founder of financial software giant Intuit, started the "Follow Me Home" practice very early in the company's history (http://bkaprt.com/jer2/05-03/). He would quite literally hang out in Staples office supply stores waiting for someone to purchase Quicken, and then follow them home to observe them using the software. He learned where they had difficulty setting up the program, which allowed him to make improvements to the initial experience.

Things to keep in mind with contextual inquiry:

- **Travel**. Allow plenty of time to get to the site and set up.
- **Get situated**. Find a comfortable spot that allows you to talk to the participant without interrupting their normal routine.

- **Interview**. Establish trust and learn about what you will be observing. Find out when it will be least disruptive to interrupt and ask questions.
- **Observe**. It's a show. You're watching. Note everything in as much detail as possible. The relevance will become apparent later. Pause to ask questions. Stay out of the way.
- **Summarize**. Conclude by summarizing what you learned and asking the participant to verify whether your observations were correct. Note: even if the participant disagrees with your assessment, you might still be correct; the contradictory description makes for an interesting data point.

Contextual inquiry can be very inspirational. You might observe problems and opportunities you had no idea existed and open the door to some innovative and surprising ideas. Be ready to learn that people don't need what you thought they need at all, but that they do need something totally different. Joyfully release all of your preconceived plans and notions.

FOCUS GROUPS: JUST SAY NO

Scene: a handful of "ordinary" people around a conference table engaged in a lively discussion about how various brands make them feel. A cheerful but authoritative moderator. Observers wielding clipboards behind a two-way mirror. Focus groups are synonymous with qualitative research in popular culture, and it isn't uncommon to hear all user research reduced to "focus groups."

Focus groups evolved from the "focused group interview" developed by American sociologist Robert K. Merton. Merton himself deplored how focus groups came to be misused:

> There's so much hokum in focus groups, at times bordering on fraud. There are now professional focus-group subjects who get themselves on lists. Even when the subjects are well selected, focus groups are supposed to be merely sources of ideas that need to be researched. (http://bkaprt.com/jer2/05-04/, subscription required)

Focus groups are the antithesis of ethnography. Unlike interviewing participants individually or observing people in their natural environment, the focus group creates an artificial environment that bears no resemblance to the context in which what you're designing would actually be used. The conversation is a performance that feeds social desirability bias and blocks true insight into what people need and how they behave outside of this specific, peculiar group dynamic. And one bad recruit in the group can take down the entire session.

Some group activities may yield useful insights as part of the design process. However, focus groups are simply wildly expensive research theater. And your research time and budget are too precious to squander on a sideshow.

THE TALKING (AND WATCHING) CURE

Accept no substitute for listening to and observing real people who need to do the things you're designing a thing to help people do. A few phone calls might completely change how you approach your work. Or, maybe you'll find out your instincts were right all along. In any case, the information you gather will keep paying dividends as you continue to gather and examine it, grounding your design decisions in real human needs and behaviors.

And as you develop the skill of stepping out of yourself to become an effective design ethnographer, you will develop powerful empathy that can inspire you to find creative, effective solutions.

6 COMPETITIVE RESEARCH

WHO IS THE COMPETITION?

a) "No one! No one is doing anything that even comes close to what we are doing!"
b) "The top five companies by market share in our vertical."
c) "The first page of search results for '[relevant term]' on Google. All of them."

The correct answer is *b* plus *c* plus Facebook, Twitter, Hulu, Wikipedia, K-pop YouTube channels, everyone who ever had an idea for a startup, the nosey neighbor who offers unsolicited advice, all the people at the dog park, inertia, insecurity, fear, corporate bureaucracy, sunk infrastructure costs, memory lapses, duct tape, bubble gum, ADD, marijuana, the sofa, some hacker in Serbia you've never heard of, what all the kids are doing these days, one weird fruit this gut doctor begs Americans not to eat, and anything else that anyone does with their time or money.

The hardest competitor to beat is the one your potential customers are using right now. If they have to stop using that one to start using yours, they may incur a switching cost. People

are lazy, forgetful creatures of habit. Your target customers have to love you more than they hate change.

This chapter follows the one on user and customer research for a reason. You need to know not only who your competitors are from the perspective of the business (that's generally obvious), but also who competes for attention in the minds of your target users. Attention is the rarest resource and the one you need to survive. Unless your goal is to sell one very expensive item to a small number of people, you need to convert attention into habit.

This is not the place for wishful thinking. It's a jungle out there, a hostile and constantly changing ecosystem, and you want the thing you're building to have the best chance to adapt and survive—like the creature from *Alien,* but with a more pleasant user interface. You need to know the landscape and the competition.

So now that we've cast the doors wide open, how do we narrow down the field?

By taking a hard look at the role you want to play in your target customer's life and the advantages and disadvantages that affect your ability to do so.

Competitive research begins with a broad perspective on the competition. You may be looking for things to steal, like approaches and customers. You need to see how other people are solving similar problems, and identify opportunities to offer something uniquely valuable. You need to do this frequently and quickly; get in the habit of constantly asking not only "What matters to our customers?" (the user question) but also "How are we better at serving that need than any competitor?" (the product question) and "How can we show our target customers that our product is the superior choice?" (the marketing question).

When you look at what your competitors are doing, you only see what is visible on the outside, unless you have a mole. That's what your users see as well, so user research won't help you here. It will take some deeper digging, critical thinking, and extrapolation to determine (or make a good guess at) why your competitor is doing things a certain way.

SWOT ANALYSIS

Albert S. Humphrey was a management consultant who devised something called SWOT analysis (http://bkaprt.com/jer2/06-01/, PDF): strengths, weaknesses, opportunities, and threats. You arrange them in a handy 2 × 2 grid and use them to guide your strategy (FIG 6). Your work with your own organization (or the research you've done into your client's organization) should have provided you with a good sense of your (or their) internal strengths and weaknesses.

Once you've enumerated these characteristics, you can identify the aspects of the user experience that serve to amplify strengths and exploit opportunities as well as those that mitigate weaknesses and counteract threats.

Your strengths and opportunities add up to your competitive advantage. Knowledge is a competitive advantage. If you do competitive research and your competitor doesn't, you have an advantage. Specifically, your research should focus on competitive opportunities and threats.

COMPETITIVE AUDIT

Once you have identified a set of competitors and a set of brand attributes, conduct an audit to see how you stack up. In addition to those organizations you think of as competitors, conduct a web search to see who else comes up. Add in any product or service that was mentioned repeatedly in user interviews and anyone you admire as a leader solving a similar type of problem.

Study this list and identify which aspects of your competitors' work are most relevant and accessible. This might include things like marketing websites, mobile applications, information kiosks on site at the actual location, Facebook groups, or third-party storefronts.

For each competitor and each site, product, service, or touchpoint, answer the following:

	POSITIVE	**NEGATIVE**
INTERNAL	**Strengths** Reputation Excellent staff	**Weaknesses** Internal design resources are more exhibit-focused than online technology-focused
EXTERNAL	**Opportunities** Community desire for family-friendly weekend activities More dads are in charge of Saturday activities	**Threats** Competition for attention Schools are cutting back on field trips

FIG 6: A SWOT analysis organized in a simple grid can help you grasp your competitive position.

- How do they explicitly position themselves? What do they say they offer?
- Who do they appear to be targeting? How does this overlap or differ from your target audience or users?
- What are the key differentiators? The factors that make them uniquely valuable to their target market, if any?
- To what extent do they embody each of your positive/negative attributes?
- How do the user needs or wants they're serving overlap or differ from those that you're serving or desire to serve?
- What are they doing particularly well or badly?
- Based on this assessment, where do you see emerging or established conventions in how they do things, opportunities to offer something clearly superior, or good practices you'll need to adopt or take into consideration to compete with them?

BRAND AUDIT

In addition to looking at how your competitors position and differentiate themselves, take a good, hard look at your own brand. Is it doing the work it needs to and setting the right expectations for the overall experience? Do you need to do some work on it?

Your brand is simply your reputation and those things that signify your identity and reputation to your current and potential customers. That reputation offers a promise of all the good things you do for your customers, most of which exist only in the customer's mind. The stronger the brand, the more awesome associations pop up in more people's minds. Coca-Cola is a phenomenal brand, producing positive emotional associations across the globe on a product that is fundamentally caffeinated sugar water. Tremendous continuous effort goes into brand marketing. You probably don't need that.

For many interactive products and services, there is no "brand" apart from the service itself. The brand experience is the user experience. The visual design of the interface is the brand identity. The brand personality is the voice of the interface language.

Here are the questions you need to ask about your brand:

- **Attributes:** Which characteristics do you want people inside and outside the company to associate with the brand or product? Which do you want to avoid?
- **Value proposition:** What does your product or service offer that others do not? How does your brand communicate this?
- **Customer perspective:** When you conduct ethnographic interviews with existing or potential customers, what associations do they have with your brand?

The significance of the different aspects of your brand will vary tremendously with your marketplace. If you're a local business providing an essential service with no competition—for example, the only dry cleaner in town—you just need a name so your potential customers know you exist. Given a wider audience, stronger competition, or a "premium" product or ser-

vice (which just means it's less necessary to daily life), branding becomes more important. This is why branding is critical for Pepsi and Tiffany.

Keep all of this in mind as you do a competitive brand analysis. Make sure you're comparing apples to apples, not Apple to Starbright Cleaners.

Name

The name is the single most important aspect of a brand. What makes a good name varies from market to market like everything else. At a minimum, though, a name needs to be unique, unambiguous, and easy to spell and say. Now that .com domain names are far less important than they used to be, there's less pressure to find that short name.

Logo

An internet mogul with a penchant for dramatic pronouncements once swept into our office and declared, "The logomark is dead. The only thing that matters now is the URL. That's how people find you."

He was wrong, of course. But the right answer isn't that a logo is incredibly important to every single internet-based business. The right answer is, "It depends." This is why a logo can cost between $99 and $5 million.

Your logo is simply the illustrative manifestation of your brand, which can take several forms: wordmark, bug, app icon, favicon, etc. Which logo you choose and how much you spend on it depends on the contexts in which people are going to have to identify your stuff and distinguish it from your competitors.

The logos of established athletic equipment brands are incredibly valuable because of their power to imbue otherwise undifferentiated shoes and shorts with the godlike virtues of associated sports stars and generate billions. And yet, when Nike was new, a student designed the Swoosh for a pittance (and a chunk of stock).

The logo of a new web app is less important. Customers won't typically need to use the logo standing by itself to distin-

guish one service from another. The name and functionality matter more until brand marketing becomes necessary.

Native mobile apps represent a new level of challenge, since the app icons are so constrained in size and dimension and do have to work very hard in that small, uniform space to help a user distinguish one app from another. You don't want to look at your phone's home screen and get confused about which icon opens which app.

To conduct an effective logo assessment, list all of the contexts in which the target users are likely to encounter it, and review your competitors' logos in the same contexts. Also note whether the logo will ever appear on its own or will always be connected to a larger brand or product experience. This will indicate the relative importance of the logo as an expression of your overall brand.

Putting it all together

Once you've identified the core attributes of your brand (both positive and negative), assess the product name and brand identity for how well they reflect and communicate that personality.

USABILITY-TESTING THE COMPETITION

Don't just test your own product—test your competitor's! You can use task-based usability testing (described in Chapter 7) to evaluate a competitor's website or application. This allows you to understand their strengths and weaknesses directly from the user's point of view, identify opportunities to develop your advantages, and gain insight into how target users conceptualize core tasks and key features.

A NICHE IN TIME

The competitive landscape and how what you're designing fits into it may be the fastest-moving target of all research topics. New options appear—and product categories collapse—every day. Just taking a user-eye view at how your company, product, and message measure up will give you some competitive advantage. The accurate, user-centered perspective of your comparative strengths and weaknesses will help you focus your message and hone your image.

EVALUATIVE RESEARCH

Within 30 minutes I realized, Oh my God, it's broken. Holy shit, we totally fucked up.
—BILL NGUYEN, FOUNDER OF PHOTO-SHARING SERVICE COLOR (http:// bkaprt.com/jer2/07-01/)

YOUR INITIAL FORAYS INTO clarifying requirements, understanding users, and checking out the competition helped you think up an appropriate design solution. Awesome! Now it's a good idea to assess how well it works for the intended audience and its intended purpose before you stage a splashy public launch.

Evaluation is assessing the merit of your design. It's the research you never stop doing. There are several ways to go about it, depending on where you are in the project.

In the early stages, evaluation takes the form of heuristic analysis and usability testing. You can test an existing site or application before redesigning. If you have access to a competitor's service or product, you can test that. You can test rough sketches, or test a friend on speaker pretending to be a voice app.

Once a site or application is live, even if it's in private alpha, you can start looking at quantitative data and use site analytics to see how people are actually interacting with the system and whether that meets your expectations.

The best way to assess a functional design is through a combination of quantitative and qualitative methods. The numbers will tell you what's going on; humans will help you understand why it's happening.

HEURISTIC ANALYSIS

Despite its fancy name (which comes from the Greek *heuriskein,* to find out), heuristic analysis is the most casual method of evaluating usability. "Heuristic" in English simply means "based on experience"; a heuristic is a qualitative guideline, an accepted principle of usability. The more you know about using and designing interactive systems, the better you'll be at heuristic analysis.

Godfather of usability Jakob Nielsen and his colleague Rolf Molich came up with the idea for heuristic analysis way back in 1990 (http://bkaprt.com/jer2/07-02/). The method is very simple: evaluators (at least two or three, ideally) individually go through a site or application with a checklist of principles in hand and score the site for each one.

Nielsen's ten heuristics (http://bkaprt.com/jer2/07-03/) are:

- **System status visibility.** The system should provide appropriate feedback.
- **Match between system and real world.** Use language familiar to the user and follow conventions.
- **User control and freedom.** Provide emergency exits, undo, and redo.
- **Consistency and standards.** Things that appear the same should behave the same.
- **Error prevention.** Don't just let users escape from errors: help users avoid them.

- **Recognition rather than recall.** Options should be visible. Instructions should be easy to find. Don't make the user have to remember information.
- **Flexibility and efficiency of use.** Support shortcuts for expert users.
- **Aesthetic and minimalist design.** Avoid providing irrelevant information.
- **Help users recognize and recover from errors.** Error messages should be helpful.
- **Help and documentation.** Ideally, the system should be usable without documentation, but help should still be available and task-oriented.

Several of these heuristics focus on error prevention and recovery, which remains the most neglected area of system design. Every time an application displays "Unknown Error" or an unhelpful error code number with no instruction, you know someone should have done a little heuristic evaluation.

The advantage of heuristic analysis is that it's a quick and cheap way to identify potential issues. You don't need to recruit users. You can just get two colleagues to sit down and do it in an hour. It's a good way to deal with obvious issues in early prototypes before bringing in users.

The downside is that it's very simplistic and may not catch every issue that would come up in context. Less experienced evaluators may not see all the problems. Different evaluators will find different issues. Some expert evaluators may find issues that don't present a problem to actual users. It focuses on the system itself rather than the relationship between the user and the system. The advantages were greater back in the day when fewer people were familiar with technology and recruiting people was much more difficult.

Heuristic inspection is not a substitute for usability testing, but it can be a good sanity check. The number of sites and applications that launch with major usability flaws is evidence of its continued usefulness.

Every internal design review is an opportunity for a mini heuristic evaluation. If you're about to embark on a major

redesign, it makes a tremendous amount of sense to identify key issues through usability testing.

USABILITY TESTING

Usability is the absolute minimum standard for anything designed to be used by humans. If a design thwarts the intended users who attempt the intended use, that design is a failure from the standpoint of user-centered design.

Despite the vast amount of knowledge we possess about usability, unusable objects are all around us: the completely unintelligible "universal" remote, the spiteful web form that discards every piece of entered data, the deceptive door that only appears to open outward until you walk into it. Each interaction brings a little more sadness into the world.

This amounts to basic manners. As a designer or a developer, you either care about usability or you're a jerk. And the easier it is for your customers to switch to an alternative, the more important usability is to the success of your product or service.

The more complex a system is to design and build, the more work is required to make sure it's usable—but that work is always worth doing. (This is also an argument for keeping feature sets simple.) If the desire to rush to market trumps usability, you might see your first-mover advantage dissolve as soon as a competitor copies your functionality and leapfrogs your ease of use. Barriers to usability are barriers to sales.

Don't make me drink

Usability testing can save you from introducing unnecessary misery into the world—or having it associated with your brand.

According to Nielsen (http://bkaprt.com/jer2/07-04/), usability is a quality attribute defined by five components:

- **Learnability:** *How easy is it for users to accomplish basic tasks the first time they come across the design?*
- **Efficiency:** *Once users have learned the design, how quickly can they perform tasks?*

- **Memorability:** *When users return to the design after a period of not using it, how easily can they reestablish proficiency?*
- **Errors:** *How many errors do users make, how severe are the errors, and how easily can they recover from the errors?*
- **Satisfaction:** *How pleasant is it to use the design?*

Every aspect of a digital design that thwarts an intention it purports to fulfill may as well be a shard of glass. Would you offer a broken glass to a guest? All of your users are your guests. It is your job to make sure they don't cut themselves on the stuff you make.

Cheap tests first, expensive tests later

Usability testing can be more or less expensive. Don't use expensive testing—costly in money or time—to discover what you can find out with cheap tests. Find out everything you can with paper prototypes or quick sketches before you move to a prototype. Find out everything you can in the comfort of your own office before you move into the field. Test with a general audience before you test with specific audiences who take more time and effort to find.

In fact, start even earlier than that. Test a competitor's product before you even put pencil to paper. Then test some sketches. And then test at every stage as much as you can.

How often you test depends on how frequently significant design decisions are being made. You can test every two weeks in conjunction with development sprints, if that's how you roll. I'm not going to tell you when to do usability testing in your design and development cycle, but I will tell you when not to do it: right before you are about to launch. A good rule of thumb:

- The second-most-expensive kind of usability testing is the kind that you put off until late in the process, when you risk discovering huge usability problems that will be very difficult to fix.

- The most expensive usability testing of all is the kind your customers do for you after launch by way of customer service. Try to avoid these situations.

Preparing for usability testing

The most difficult part of usability testing is determining how it fits into your process as a decision-making input. There is no one way, but there are a few essential principles:

- Build usability practices into your workflow from the start, the same way you account for internal reviews of work in progress.
- Create a testing process and checklist that includes all of the information and equipment you need.
- Always be recruiting. Maintain a database, even just a Google doc, of potential participants and their contact information.
- Decide who's in charge of this stuff. A point person makes everything operate more smoothly.

What you will need

- A plan.
- A prototype or sketch.
- Four to eight participants of each target-user type based on personas (ideally) or marketing segments.
- A facilitator.
- An observer.
- One or more methods of documentation.
- A timer or watch.

Usability test plans

A usability test revolves around tasks. Ideally, you have personas you have been using throughout the design process and you can use them and their core tasks as a jumping-off point for usability. The features you want to test should likewise have associated scenarios and tasks. For each feature, write a very

brief story that offers background on how the user arrived there and what they are trying to accomplish.

Not all tasks are created equal. When you go into a usability test, you should have a clear idea which failures are a bigger deal.

The ur-example of a deal-breaker task is using an online shopping cart. If a user can do anything at all on your site, they need to be able to successfully give you money. For websites with the goal of marketing a physical location, finding the address and operating hours is generally the most essential task.

Once you have your tasks, create a test plan to run and document each round of testing. According to the sages of usability at the Nielsen Norman Group (http://bkaprt.com/jer2/07-05/), your test plan should include:

- *Name of the product or site being testing*
- *Study goals*
- *Logistics: time, dates, location, and format of study*
- *Participant profiles*
- *Tasks*
- *Metrics, questionnaires*
- *Description of the system (e.g., mobile, desktop, computer settings)*

Reducing the time you spend on planning will save your precious brain cells for analyzing and reacting to the results.

Recruiting

Participants are the fuel that makes usability tests go, and they are single-use, so you need a good supply of them. You can bring people back to see if your improvements have really improved things for them, but they might be tainted—influenced by their previous experience with your design—and won't necessarily give you an accurate depiction of how someone is going to approach this system for the first time.

Recruiting for usability testing is substantively the same as for ethnographic interviews. It is essential that the people you select for the test share some key goals with your target

users. Otherwise, they won't be able to immerse themselves sufficiently in the scenarios you give them.

Facilitating

Once you have your prototype, your plan, and your recruits, it's time to run the test. This is the fun part. As long as you have an open mind, nothing is more interesting and valuable than seeing your precious theories of how people will interact with a design crash against the rocky shoals of reality.

The first step is to choose a facilitator. Facilitating a usability test isn't hard, but it does take the right temperament. Since a usability test is a guided journey of the imagination (imagine you're using a fully realized application to do something personally meaningful), a bad facilitator will tank the whole test, no matter how on-target the participants are. It's up to the facilitator to present the scenarios and tasks that are being tested. Unclear tasks can't be tested.

A good facilitator is personable and patient. A good facilitator can warm the participant up like Conan O'Brien and then dispassionately observe as the participant flails about with no idea what to do next, probably also just like Conan O'Brien.

This requires a balance of sociability and self-awareness. Making small talk is fine and helpful up front. Once the test starts, you'll need some self-control so you don't intervene. It's one of those things that gets easier with practice.

The greatest danger inherent in the actual designer or developer of the system facilitating the test is that they will not be able to sit idly by while their creation fails to perform or elicits derision from the participant. Small hints and leading questions will begin to creep into the program. Follow the general guidelines for user interviews in Chapter 3. In particular, avoid leading the user and helping them when they get lost. Embrace uncomfortable silences.

Frequently, participants who encounter a usability issue are quick to blame themselves rather than the system. This is how people have been conditioned by frequent exposure to less-than-usable products. If this happens, ask the participant

to describe how they expected the system to work and why they had that expectation.

Be honest with your team about who should be facilitating. If you don't have a good facilitator on your team, you can always contract with someone or try to get a volunteer from another department. And again, practice.

Observing and documenting

Even if you are set up to record, it's very important to have a second person observing the tests and taking notes. This allows the facilitator to be responsive and observers to be as observant as possible, creating the smallest number of distractions.

Audio recording is fantastic. Designers should record everything all the time (with consent). We are all unreliable witnesses and it's useful to have a reference for anything the notetaker misses. Audio files are easy to store and share. You can listen to them on the train home.

Make sure that if you promise anyone on your team video, it's the right video for the right purpose. As any episode of *RuPaul's Drag Race: Untucked* will show you, the value of video is frequently a matter of good editing, and good editing takes vast amounts of time. And take care that your archives of research notes and recordings comply with any confidentiality agreements you made with the participants.

If you are testing a tricky device, such as a smartphone or ereader, you may have to make a tricky little sled for it. A *sled* is simply a framework that holds the device you're testing along with necessary peripherals and cameras.

Usability testing applications on mobile devices remains awkward, so it's a terrific place for innovation. There is a great need for evaluating the usability of mobile interfaces, particularly in their context of use (walking around outside, rather than seated in your conference room), but there is no one clear, comfortable way both to observe the user over their shoulder and to capture the activity on their screen.

UX researcher Jenn Downs' solution to this conundrum is to have a user set up a video chat on a MacBook and then hug it from the back so the iSight camera catches video of their

FIG 7: A little awkward, but effective: remote-test mobile usability by having participants hold their devices in front of a laptop webcam.

interaction on the phone and the audio through the microphone (**FIG 7**) (http://bkaprt.com/jer2/07-06/).

The observer will need to note the following:

- the participant's reaction to the task
- how long it takes to complete the task
- if the user failed to complete the task
- any terminology that presented a stumbling block

The notetaker should work from a copy of the test script with space to insert annotations. The most important items to note are areas where the user exhibited nonverbal frustration, verbatim quotes, and any features that were particularly successful or unsuccessful. If the notetaker can manage an approximate time code, that will make analysis easy.

Eye-tracking

Eye-tracking measures where someone is looking, for how long, and in what direction. Observation and analytics can tell you where a user taps with a finger or hovers with a mouse, but where that user directs their gaze is a mystery only a non-trivial amount of cash can reveal. Whether paying top dollar for this data is worthwhile remains a deeper mystery still.

As the sci-fi future of controlling interfaces directly with our eyes encroaches, eye-tracking may become more commonplace. Some decent headsets have now become relatively affordable, but the amount of expertise and time required to create, administer, and analyze a study remains substantial. If the calibration isn't perfect, precision is an illusion.

Only consider eye-tracking when questions remain after you have exhausted less finicky and expensive research and testing methods, or if you're testing with populations who are unable to articulate what is drawing their attention on a page.

Analyzing and presenting test data

The aim of usability testing is to identify specific, significant problems in order to fix them. The outcome is essentially a ranked punch list with a rationale. Keep your source materials (e.g., session recordings or notes) organized so you can easily refer to them or provide more detail to anyone who is either interested or skeptical. Focus your written documentation on the issues, their severity, and recommended fixes.

How bad and how often?

Rate each problem users encountered during the test on each of the following two scales: severity and frequency. You must look at both to ensure you're prioritizing real obstacles, rather than chasing a fluke.

Severity:

- **High:** an issue that prevents the user from completing the task at all

- **Moderate:** an issue that causes some difficulty, but doesn't prevent the user from completing the task
- **Low:** a minor problem that doesn't affect the user's ability to complete the task
Frequency:

- **High:** 30% or more participants experience the problem
- **Moderate:** 11–29% of participants experience the problem
- **Low:** 10% or fewer of participants experience the problem

It'll end in tiers

Once you've conducted the tests and rated the issues, sort them into three tiers. Each represents the combination of severity and frequency. Also take into account how core the related task is to your application. (For example, confusion over changing a profile picture may be less core than obstacles to entering payment information.) Rename the tiers if it will make things more fun for you.

- **Tier 1:** high-impact problems that often prevent a user from completing a task. If you don't resolve these, you have a high risk to the success of your product.
- **Tier 2:** either moderate problems with low frequency or low problems with moderate frequency.
- **Tier 3:** low-impact problems that affect a small number of users. There is a low risk to not resolving these.

Now, get to work

As soon as you have usability-test results, you can take action. Start with Tier 1 issues. Identify potential fixes with the lowest level of technical effort. Implement these fixes; then test again.

Need to convince someone before you can make changes? Watching actual users struggle with the system is more convincing than reading a report, and offers all the agitation of a suspense film. ("Why doesn't he see the button? It's right there!") If you're starting to see frequent repeated usability issues, try to schedule sessions when it's convenient for important people to

observe. Verbatim quotes and video clips of failure presented in conjunction with a report can also be effective. Just make sure to connect the tasks you tested and the problems you found to high-priority business goals.

Put the competition to the test

In addition to conducting usability testing on your own site or application, you can also conduct it on those of your competitors (presuming that you have access and that competitive evaluation isn't prohibited by the terms and conditions).

To conduct a benchmark usability study, identify a small common set of tasks to test across your website and those of your competitors. Use a common scoring system across all sites and tasks to identify which of the competitive group was most usable overall, and most usable per key task. Following a redesign, you can run the study again to verify improvement relative to competitors.

8 ANALYSIS AND MODELS

QUALITATIVE ANALYSIS CAN SEEM LIKE a mysterious process. A group of people enters a conference room with interview notes and stickies and emerges with recommendations for creating or changing the functionality or interface of a system.

For us humans, this is actually the most natural thing possible. We're social creatures and pattern-recognition machines. Getting people together to analyze qualitative data is like throwing a party for our brains.

This is where design truly starts. You take all this messy data and begin to organize it, and group it, and label the groupings. Through conversation, clarity will start to emerge. Clarity in the data analysis will translate to clarity of concept, content relationships, navigation, and interactive behaviors.

Best of all, if you work collaboratively, that clarity and deep understanding will be shared. Any models or maps you create will simply serve as documentation of what everyone already knows.

AFFINITY DIAGRAMS

Your first pass—and if you don't have a lot of time, your only pass—should be to extract general design mandates from your interviews. Then you can prioritize those mandates based on business goals. This also requires the least diagramming skill.

The process is pretty simple:

1. Closely review the notes.
2. Look for interesting behaviors, emotions, actions, and verbatim quotes.
3. Write what you observed on a sticky note (coded to the sourcethe actual userso you can trace it back).
4. Group the notes on the whiteboard.
5. Watch the patterns emerge.
6. Rearrange the notes as you continue to assess the patterns.

You will end up with a visual representation—an affinity diagram—of your research that you can apply toward your design work in a few different ways (**FIG 8.1**).

The participants in the analysis build clusters of related observations. Once a cluster starts to take shape, you can extract the insights and the overarching mandate or recommendation.

The act of creating an affinity diagram will allow you to distill patterns and useful insights from the many individual quotes and data points you gather through interviews and observation. The diagram itself can be a handy visual reference or a tool for communicating with a larger team about your research and the principles you've uncovered.

Write down observations

As you review the notes or recordings, write down anything interesting you observed on a sticky note. An observation is an objective description of what the user did or said, such as:

- "Participant's four-year-old daughter interrupted three times during the thirty-minute interview."

Design Mandates	Design for multi-device access
	Break information into small chunks
	Build in low-effort/high-value reminders
	Support collaborative decision-making
	Include the voices of parents and educators to validate user engagement

Insights	**Many Interruptions/ Short Memory**	**Relies on Mobile Device**	**Being a "Good" Parent is a Top Priority**
Observations	*"I see signs for events when I'm driving, but never remember them."*	*Checks email on phone first thing in the morning.*	*"I take care of the kids on Saturday to give my partner a break."*
	Four-year-old daughter interrupted interview frequently.	*"Without my iPhone alarm, I'd never get the kids from school on time."*	*"I like to start the weekend with some good activities in mind."*
	"The week rushes by and then I wake up Saturday with no plans."	*Texts partner to coordinate daily activities.*	*"I want my kids to keep learning even when they are not in school."*

FIG 8.1: An affinity diagram helps turn research into evidence-based recommendations.

- "Participant reports checking email on her phone every morning before getting out of bed."

Pull out all of the compelling quotes. Flag those that seem to represent the particular needs of each user type. These will be useful for your personas. Also note the vocabulary that participants used to describe their goals and the elements of the tasks or systems you are working with, especially if they differ from those used in your organization. Example quotes:

- "I reset my password every time I visit the website because I never remember it."

- "I take care of the kids for the whole day every Saturday to give my partner some alone time."

Note all stated or implicit user goals. Implicit goals can be found in quotes or actions that indicate a particular desire—for example, starting the weekend with some good activities in mind. In particular, flag goals that you didn't anticipate, but that your product might readily satisfy. For example:

- "I like to start the weekend with some good activities in mind."
- "I want my kids to keep learning even when they're not in school."

Create groups

Start grouping the notes on a whiteboard. You should start seeing patterns pretty quickly. Name the pattern and identify the user need that emerges from it. Quotes like "I see signs around town for events that look interesting, but I never remember before it's too late" and "The week rushes by and then I wake up on Saturday morning with no good ideas" could be evidence of a pattern like "Needs reminders for organized activities."

Identify next steps

The final step of the analysis is to identify the actionable design mandate or principle, like:

- *When announcing an event, offer the ability to sign up for a reminder.*
- *Allow customers the option of digital access to all services.*
- *Improve promotion of and navigation to premium features.*
- *Create a stronger voice for the brand based on the attributes potential customers value the most.*

In addition to serving as a useful input to other tools (like personas) and as a nifty visual representation of your research and analysis, the affinity diagram helps you make decisions. You can decide which features and functionality to prioritize based

on the patterns of needs you recognize. You can decide to do additional research based on the questions it raises. And it can serve as a common reference point for your team in discussing those decisions.

CREATING PERSONAS

A persona is a fictional user archetype—a composite model you create from the data you've gathered by talking to real people—that represents a group of needs and behaviors.

Personas exist to represent the user in user-centered design, because there is no generic user. They embody the behavior patterns and priorities of real people and act as a reference point for decision-making. A persona is a tool for maintaining an empathetic mindset rather than designing something a certain way just because someone on the team likes it.

Good personas might be the most useful and durable outcome of user research. Design, business strategy, marketing, and engineering can each benefit in their own way from a single set of personas. If you're following an Agile process, you can write your user stories based on a particular persona.

Some tips for working with personas:

- Design targets are *not* marketing targets. (Stamp that on every persona document you create.) Market segments do not translate into archetypes.
- The user type with the highest value to your business may not be the one with the most value to the design process. If you design for the users with less expertise, you can often meet the needs of those with more.
- A truly useful persona is the result of collaborative effort following firsthand user research. Otherwise you're just making up a character that might be as relevant to the design process as any given imaginary friend. If you have interviewed some real people and worked collaboratively with your team to identify some patterns, you should be able to create some useful personas.

- You can create a vivid individual with just a few key details (**FIG 8.2**). It's better for the team to keep a handful of attributes in mind than to have to refer to a lengthy CV or complex scenarios for every design decision.

Capturing the character

A persona description should have just enough detail to capture those aspects of a target user most useful and inspiring for the designers and decision-makers to keep in mind. Consider your personas as a set—you don't have to capture all concerns in a single one.

Personas can be a great tool for capturing accessibility concerns that otherwise might get lost in the process. Depending on the specific population and needs of your audiences, include factors such as low literacy in the primary interface language, the use of assistive technology, and temporary mobility impairments.

The persona must be plausible and representative (no teenage marketing VPs who model and fight crime on the side). Ideally, the attributes you list reflect those of actual users you've interviewed. However, recruiting can be unpredictable, and the lack of a complete match needn't stop you from creating a suitable persona. Increase your knowledge by finding people online who match the roles and behaviors. Try searching local news stories and social media posts to for representative background details and quotes. Create a representative composite. Don't just copy a profile from LinkedIn.

For the artifact itself, start with the conventional "place mat" layout and go from there. Make a movie or a poster or an animated GIF, as long as the essential information about context of use and patterns of behavior are in a form you can integrate into your workspace and refer to repeatedly.

Name

Be intentional about how you name your personas. The name you choose can help to thwart stereotypes across your organization by resetting expectations. Or, if you're not careful you

Diane McAvoy
Local parent

"I have so much going on between my job and taking care of the kid, I can't remember a damn thing without my iPhone."

Stats
33 years old
Married with a five-year-old child
Lives in Chicago, IL
Account manager for a large health care company

Goals
Find a few places for reliable family outings that don't require a lot of planning.

Entertain her family members when they are in town.

Keep learning throughout her life.

Behaviors and habits
Works from home two days a week. Does most of her shopping online. Weekend routine is one day for "fun" and one day for errands and chores.

Technology and skills
Diane is a multidevice user. Has a work-assigned Windows laptop that she carries between home and the office, as well as an older MacBook and an iPhone for personal use. The family share an iPad. Because she is pressed for time, she has strong habits, no patience, and little motivation to explore.

Relationships
Lives with husband and son. Has large extended family. Sisters often visit and bring their children.

FIG 8.2: A persona document should feel like the profile of a real individual while capturing the characteristics and behaviors most relevant to your design decisions.

may end up reinforcing existing biases. While general descriptors, like "Power User" might seem less fraught, they are also less concrete and evocative. Give each persona a realistic name that helps frame thinking around the behavior pattern. The Random Name Generator ("Rare" setting) is a good source of

inspiration (http://bkaprt.com/jer2/08-01/). The *Game of Thrones* Name Generator is not.

Photo

Use a real photo of a real, relatable person, not a stock photo. Creative-Commons-licensed photos from Flickr or other photo-sharing websites are very useful for this. Don't use a photo of anyone who is known to the design team, or that has any distracting elements.

Demographics

It's easy to overvalue demographic data, since this can be some of the easiest information to collect. As with your choice of name, careless use of demographic stats risks reinforcing stereotypes and decreasing the utility of the persona. After all, the same individual might get older, change gender identification, move to a new town, and get married, but still remain your customer with the same needs. Or not. Do age and gender really matter? Or can you refer to life phase and use a gender-neutral name?

Role

For the most accurate personas, select a role that closely matches that of one of the participants you interviewed and is also one of the identified target user types.

Quote

Use an actual quote from a user interview that embodies a core belief or attitude that is essential to keep in mind to meet their needs. The most useful quotes are those that could be answers to questions that reveal both behaviors and mindset, such as "What's going through your head when you're making plans for the weekend?"

Goals

Goals and behavior patterns are the core of a persona. Identify three to four key goals for that persona based on what you heard in your user research. These will be the goals that the product or website will serve or relate to.

Behaviors and habits

Note the specific and habitual behaviors that constitute the pattern that defines the persona. Parenting. Teaching. Researching activities online. Switching among multiple devices. Making decisions with another person. Making plans at the last minute. Real life is imperfect and complicated. Capture this. Maybe you spoke with a dad who is torn between wanting to relax on the sofa and wanting to get out and find new things to do on Saturdays. Does he have a habit of checking Facebook over coffee to see what his friends are up to with their kids? This detail could open up a whole conversation about social media.

Skills and capabilities

Capabilities include the level of technical expertise and experience this persona has as well as their physical and cognitive abilities. How much experience do you expect them to have based on their profession and educational background? It's crucial not to make assumptions here. One of your target personas might be a successful physician who's a relative technology novice because she is in surgery all day and gets very little time to learn expert features or acquaint herself with the latest applications. She could be a good proxy for everyone who has a lower skill level, but absolutely doesn't want to be made to feel stupid.

Environment

Note all aspects of the environment that will affect this persona's interaction with the product. Include the relevant hardware, software, and internet access. Do they go online at work, at home, or at a public library? Surrounded by people or in

private? Using voice interfaces while working alone or texting in a crowd. Is their time online continuous or does it happen in specific chunks? A restaurant owner might have five minutes on their phone here and there. An accountant might have a browser window always open on the desktop.

Relationships

Note any relationships this persona has that will affect their interaction with your product. Is there a partner who influences decisions? Will children or coworkers be present or otherwise influence the use of your design? Relationships should be based on real-world data, either from your study or other research. Information from the census or from the Pew Center's Internet & American Life Project is often useful in this regard. You can create some interesting multipurpose scenarios with personas that are related to one another.

Scenarios

If personas are your characters, scenarios are your plots. Each scenario is the story of how a persona interacts with your system to meet one (or more) of their goals. Running a persona through a scenario helps you think through your design from the user's point of view. You can use scenarios at several points in your process:

- to flesh out requirements
- to explore potential solutions
- to validate proposed solutions
- as the basis for a usability test script

As long as a scenario hews closely to actual data gathered in user research, the actual format can be flexible. You can start from a specific answer to an interview question, such as "I wake up at 8 a.m. on Saturday and read a local news website while the kids run around the house making noise."

While personas should remain reasonably constant in their characteristics and priorities, scenarios can evolve and deepen

over time, and change as your understanding of the system changes. Your personas are the Simpsons, your scenarios are the couch gag.

You can write a scenario as a short text narrative, a step-by-step flow, or even a set of comic panels—whatever is easy for your team to create and use to keep each persona represented in design and technology decision-making. If you find anyone on your team resenting the effort required to work with personas and scenarios, you're doing it wrong. Simply drawing out scenarios on a whiteboard can work.

Scenarios are not themselves use cases or user stories, although they can influence each. A *use case* is a list of interactions between a system and a user, and is typically a way to capture functional requirements. Scenarios are from the perspective of the individual human user represented by the persona, not the perspective of the system or business process.

For example: Diane and her family just moved to the area. Her job as an account manager is very demanding during the week, but weekends are family time.

- **Goal:** She wants to find local activities that will be entertaining for her son and relaxing for her and her husband.
- **Motivation:** When driving home from the office on Friday evening, Diane saw banners for a new museum exhibit on superstorms. Sitting in her driveway, she Googles the exhibit on her iPhone.
- **Task:** She needs to determine whether visiting the exhibit will meet her needs.

Stay on target

Developed with care, personas can be the most useful and lasting output of user research. They are the users in "user-centered" and an incredibly efficient and even fun distillation of your ethnographic work.

You will know your personas are working when they become the first people you want to see any new idea. Rather than asking "Does this work for me?" or "Does this make my boss happy?" you can ask "Does this address Dana's concerns

about privacy? Would Neven understand what to do? Would Chiamaka find time for this in her busy schedule?"

MENTAL MODELS

All of us carry around a library of mental models in our heads. Without them, every new experience would be a complete surprise and we would have to painstakingly figure out each situation. Using a term from cognitive science, a *mental model* is an internal representation of something in the real world—the sum total of what a person believes about the situation or object at hand, how it functions, and how it's organized. This representation is based on a combination of hearsay and accumulated experience. People have mental models of how stoves work, how dogs behave, and what happens at a rock show. (Band plays, band says "Thank you and goodnight," band waits offstage while audience applauds, band returns to play popular favorites.)

Mental models can be real time-savers for deciding how to behave—to the extent they are accurate. Sometimes there's no encore. Sometimes you get burned. The first time I rented a Prius, I spent ten minutes sitting in the parking lot because my mental model of "passenger car" didn't include the hybrid's innovative ignition system.

In design, "intuitive" is a synonym for "matches the user's mental model." The closer an interface fits that image, the easier it will be to learn, use, and navigate. This is a concept with a lot of practical value.

You can use data from user research to diagram the (composite) mental model of each particular user type, and use that diagram to guide the design. This is, strictly speaking, a mental-model model. However, particularly following consultant and author Indi Young's work in *Mental Models: Aligning Design Strategy with Human Behavior* (http://bkaprt.com/jer2/08-02/), people in the business tend to use the one term as a catchall. So there are two types of mental models: the type each of us holds in our head to help us deal with the world, and the type

designers sketch out to better create that world. For maximum success, be aware of the former and get to work on the latter.

To design an application or a website, think about the mental models of the activities you want to support. If you're designing a mobile app to help commuters find the best way to get to work on public transit, it's useful to look at the mental model of "getting to work." If you're redesigning buses, you'd want to look at the mental model of "bus."

As a designer, you have your own mental model of what you're designing. You also have a mental model of the users themselves, your set of assumptions about what they know and how they will interact with your design. It's easy to overestimate how well your view matches their reality.

Documenting the user's mental model allows you not just to get inside their head, but also to get the inside of their head out of *your* head for everyone else to see. You can use a mental-model diagram to collaborate with your team, prioritize features, better organize information, and identify areas where users have needs that aren't being served.

A mental-model diagram can help resolve issues that arise if different user types have widely divergent mental models, or if the actual design of the system is significantly different from the one that was originally proposed.

How to create a mental model

Building a mental model doesn't have to be complicated. Just follow these steps.

1. Do user research.
2. Make an affinity diagram (see **FIG 8.1**).
3. Place affinity clusters in stacks representing the user's cognitive space to create the model. These groups will include actions, beliefs, and feelings.
4. Group the stacks around the tasks or goals they relate to (**FIG 8.3**).

Choose Destination **Plan a Visit**

Evaluate Alternatives	Choose Based on Priorities	Avoid Some Destinations	Select Time to Visit
Visit websites of potential destinations	Choose based on proximity	Avoid expensive destinations	
Read reviews on travel website	Choose based on educational potential	Avoid complicated logistics	Check own schedule
Suggest alternatives to children	Choose based on variety of activities	Avoid "tourist traps"	Check destination event calendar
Discuss potential destinations with partner	Choose based on value for money	Avoid boring destinations	

FIG 8.3: Mental model diagrams illustrate your users' thought processes in detail. This information helps you identify relevant and necessary content and functionality.

Conceptual modeling/site mapping

For a new website or service design, you can translate the mental model to a conceptual map that relates content and functionality according to the target user's view (**FIG 8.4**). The model will form the application framework or the basis of the information architecture as you proceed into more detailed design.

Gap analysis

If you have an existing product or service, you can use a mental model to identify *gaps*, or mismatches between what you offer and what the user needs or expects. This will help you design features that fill those gaps.

For example, when designing the app for urban commuters, you might find that their mental model of getting to and from work includes changing plans suddenly based on contingencies
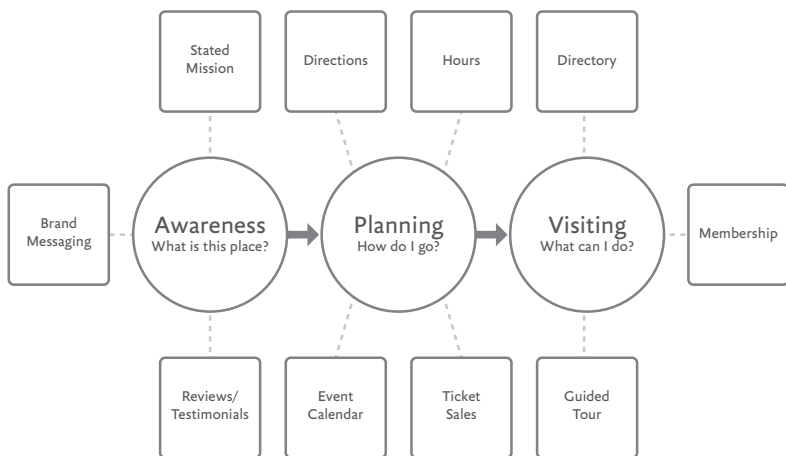
FIG 8.4: A conceptual model, such as this one for a museum, bridges the gap between mental model and system map.

like bad weather, local events, or transit-system delays. If your application only offers route suggestions based on optimal rather than actual conditions, you may end up recommending a route adversely impacted by unexpected difficulties.

Reviewing the mental model suggests an opportunity to offer additional information and support that will allow users to anticipate and evade problems, leading to a more successful commute.

On the other hand, you may find out that features you had considered offering don't fit in the users' mental model at all. Perhaps you were planning to display after-work entertainment suggestions along the way, but find that this is incompatible with the user's desire to quickly locate the most efficient route.

TASK ANALYSIS/WORKFLOW

Task analysis is simply breaking one particular task into the discrete steps required to accomplish it.

Contextual inquiry is the best prelude to task analysis, but you can also use data from user interviews as long as you've collected sufficiently detailed information about how the participants work toward their goals step by step. Any given task has both cognitive and physical components that may be more or less important given the domain and the goal of the analysis. For example, making a complex purchase decision such as buying a new car typically has a series of cognitive activities surrounding identifying the need or desire for a car and conducting research online, as well as the physical component of actually going to the dealership and test-driving the car itself.

From simple to complex and back again

Task analysis can be particularly helpful to map what people do in the real world to functionality you can offer on a site or in an application. For example, "purchasing tickets" sounds simple, but the online process is often a complex and stressful multistep flow with a lot of decision points.

Task analysis can also be helpful when designing any system intended to replace a real-world task with an online interface, or when changing the nature of a physical interaction, as with the shift to mobile devices from desktop-based applications.

Break it down

Using the information from user interviews or contextual inquiry, identify each step the participants reported (or you observed them taking) to complete a given task. Note the initial state, the event prompting the user to begin the task, the information or tools the user needs at each step, and any steps at which the task is likely to be interrupted or resumed. Put all of these steps back together as a workflow:

1. *Receive postcard advertising fall event calendar.*
2. *Go to website.*
3. *Locate event information on homepage.*
4. *Click on link to see all available upcoming events.*
5. *Identify event.*
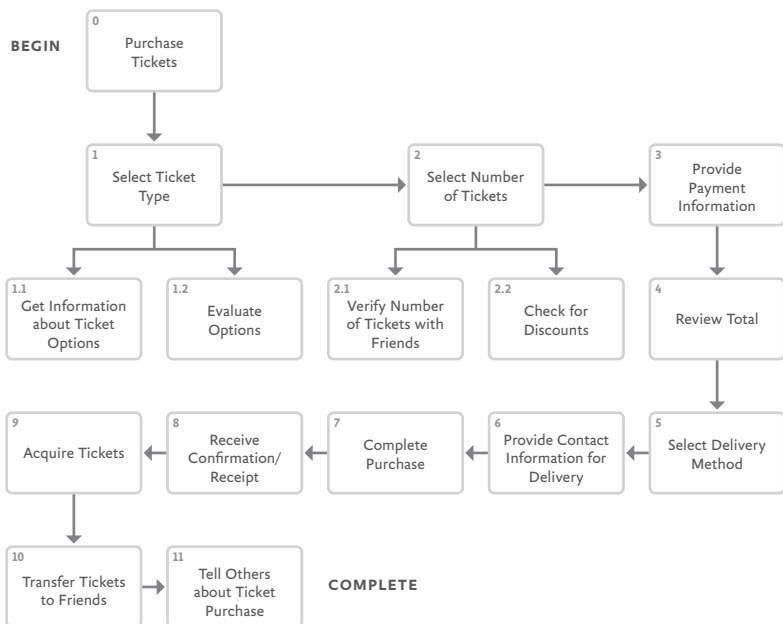
FIG 8.5: This task path for ticket purchase can help identify areas where users need specific content and functionality to meet their goals.

6. *Verify ticket availability and price.*
7. *Enter number of tickets desired.*
8. *Enter preferred delivery method.*
9. *Review information and total cost.*
10. *Select "Buy Now."*
11. *Enter credit card information.*
12. *View confirmation page and instructions for receiving tickets.*

Make it flow

In addition to informing the feature set and flow of an application, task analysis will help you identify where specific content might support a user along their task path. Users might take very different paths than you anticipated, or be influenced by

particular factors in the environment that you'll need to consider in your designs (ꜰɪɢ 8.5).

MODEL MANAGEMENT

This is just a sample of a few common ways to work with the research data and incorporate your findings into design decisions. A little exploration of the UX corners of the web will yield many more. Communicating the meaning and value of research is a design activity itself. And the act of working together to synthesize individual observations will ensure that your team has a better shared understanding than a report could ever deliver.

You may also benefit from the fact that a clear, economical diagram is viscerally appealing. If you're promoting the value of research among skeptics in your organization, don't underestimate the accessibility and appeal of your analysis, visualized. And the act of working together to synthesize individual observations will ensure that your team has a better shared understanding than a report could ever deliver.

9 SURVEYS

At its core, all business is about making bets on human behavior.
—"THE POWER OF 'THICK' DATA," THE *WALL STREET JOURNAL* (http://bkaprt.com/jer2/09-01/, SUBSCRIPTION REQUIRED)

A SURVEY IS A METHOD of collecting data from a predefined group of people using standardized questions. The questions can be asked in person or over the phone, or distributed on paper or collected online. The proliferation of online survey platforms has made it possible for anyone to create a survey in minutes. This is not a good thing.

Surveys are the most dangerous research tool—misunderstood and misused. They frequently blend qualitative and quantitative questions; at their worst, surveys combine the potential pitfalls of both.

A lot of important decisions are made based on surveys. When faced with a choice, or a group of disparate opinions, running a survey can feel like the most efficient way to find a direction or to settle arguments (and to shirk responsibility for the outcome). Which feature should we build next? We can't decide ourselves, so let's run a survey. What should we call our product? We can't decide ourselves, so let's run a survey.

If you ever think to yourself, "Well, a survey isn't *really* the right way to make this critical decision, but the CEO really wants to run one. What's the worst that can happen?"

Brexit.

EASY FEELS RIGHT

It is too easy to run a survey. Surveys are easy to create and easy to distribute, and the results are easy to tally. And our poor human brains are biased toward information that feels easy for us to process, regardless of reality. This ease makes survey results feel true and valid, no matter how false or misleading they are.

Surveys also shut out paths to genuine learning. Talking to real people and analyzing the results? That sounds hard. Blasting questions out to thousands of people to net a pile of quantifiable data with no gross human contact? Easy!

It's much harder to write a good survey than to conduct good qualitative user research—something like the difference between building an instrument for remote sensing and sticking your head out the window to see what the weather is like. Given a decently representative (and properly screened) research participant, you could sit down, shut up, turn on the recorder, and get useful data just by letting them talk. But if you write bad survey questions, you get bad data at scale with no chance of recovery. It doesn't matter how many answers you get if they don't provide a useful representation of reality.

A bad survey won't tell you it's bad. Bad code will have bugs. A bad interface design will fail a usability test. A bad user interview is as obvious as it is uncomfortable. But feedback from a bad survey can only come in the form of a secondary source of information contradicting your analysis of the survey results.

Most seductively, surveys yield responses that are easy to count, and counting things feels certain and objective and truthful. Even when you are counting lies. And once a statistic gets out—such as "75% of users surveyed said they love videos that autoplay on page load"—that simple "fact" will burrow into the brains of decision-makers and set up shop.

From time to time, designers write to me with their questions about research. Usually these questions are more about politics than methodologies. A while back this showed up in my inbox:

> *Direct interaction with users is prohibited by my organization, but I have been allowed to conduct a simple survey by email to identify usability issues.*

Tears of sympathy and frustration streamed down my face. This is so typical, so counterproductive. The question was, of course, "What do I do about that?"

Too many organizations treat direct interactions with users like a breach of protocol. I understand that there are sensitive situations, often involving personal data or early prototypes or existing customer relationships. But you can do perfectly valid user research or usability testing and never interact with current customers or current users, or reveal company secrets, or require people to breach privacy.

A survey is a survey. A survey should never be a fallback for when you can't do the right type of research—because designing a good survey is not easy. Surveys are the most difficult research method of all.

MATH FIRST

Managers should not trust a model they don't understand.
—TOM REDMAN, *DATA DRIVEN: PROFITING FROM YOUR MOST IMPORTANT BUSINESS ASSET*

Designers often find themselves up against the idea that survey data is better and more reliable than qualitative research just because the number of people it is possible to survey is so much larger than the number of people you can realistically observe or interview.

Taking small samples from large populations is a valid statistical technique for getting accurate information about the wider population. However, getting a truly representative sam-

ple requires great care. As the Pew Research center puts it: "A survey sample is a model of the population of interest" (http://bkaprt.com/jer2/09-02/). The more your sample differs from the population at large, the more sampling bias you are dealing with, and the less accurate the model.

So, unless you are very careful with how you sample, you can end up with a lot of bad, biased data that is totally meaningless and opaque.

If you survey enough representatives of a population, the results will probably be representative, all other things being equal. This doesn't mean the answers to your questions will be true—simply that they will represent how that population as a whole would have answered those questions. (Maybe everyone lies about their spending habits or motivations in similar ways!)

And it's possible to fiddle with the stats to justify your favorite definition of "enough" representatives. Bad researchers manipulate results to make it seem like the conclusions are more definitive (that is to say, statistically significant) than they are.

Into the woods

I will now use a fantasy analogy to explain survey-sample math at a very sketchy level. A course in basic statistics is a good idea before you start surveying—or using any quantitative method—but you need to understand why most quantitative research has a higher proportion of -ish than many people would like to believe.

Imagine you are studying the centaurs who live in the Foloi oak forest. You want to survey the centaurs in order to be more effective at selling them waist packs in the coming season. (How did you think centaurs carried their snacks?)

Your *target population* is all the centaurs in the forest. The set of centaurs you have the ability to contact is your *sampling frame*. (Ideally, the population of centaurs and your sampling frame are the same, but maybe your centaur mailing list is out of date.) The *sample* is the subset of individual centaurs whose specific data you actually collect. The goal is to be able to generalize to all the centaurs in the forest from the sample.

What constitutes a good or adequate sample is already a judgment call. The larger your sample size, the lower the margin of error. The greater a proportion of the total population you survey, the more representative the results will be.

Here is your magic formula:

$$\frac{\dfrac{z^2 \times p\,(1\text{-}p)}{e^2}}{1 + \left(\dfrac{z^2 \times p\,(1\text{-}p)}{e^2 N}\right)}$$

Don't worry. Every survey tool comes with a sample-size calculator and there are a bajillion of them on the web. That is just a peek under the hood. Let's break that formula down.

N = population size

This is the total number of centaurs. This is usually a guess or an estimate and depends on how you define your target population. Is it all centaurs? Only adult centaurs? Only single adult centaurs? Maybe some centaurs moved over from the next valley when housing prices increased, so you aren't really sure how many centaurs are in the forest these days.

e = margin of error

This is the difference between a sample statistic and the unknowable value for the whole population—for example, a variance of +/- 5%, which is pretty standard. The higher this number, the less likely it is that the results of the survey are true for the whole population.

For design and marketing research, it's unlikely you'll be doing random sampling anyway—you'll survey the centaurs who happen to be around that morning, or who pass by the tree with the survey nailed to it, or who are in your professional network—so your sample will be biased.

This statistic doesn't include other types of errors (like non-responses or faulty memories). You will never totally eliminate error.

z = confidence level

A 95% confidence level means if you theoretically repeated the survey a hundred times at the same time of day in the same part of the forest at the same time of year, the results would be within the margin of error ninety-five times—that is to say, the same-ish. (There's that -ish again.) In scientific research, 95% is pretty standard; in business, a 90% chance of something being true is okay. You will never be totally confident. The z-score represents the number of standard deviations a given proportion is away from the mean, or roughly how far off from the average.

p = percentage value

The p value is a complex and core idea in statistical analysis. Roughly, it's the probability that you would get the same results at random. A p value of less than .05 is the accepted criterion for significance.

Quantitative studies don't always yield statistically significant results. Sometimes you end up with a whole pile of annoying ambiguity and you don't know whether you can arrive at any meaningful conclusions at all. The pressure to show results has led to the practice of *p-hacking*, which just means manipulating the inputs and rerunning the analysis—drop a few of the outliers, say, or add in a few more respondents. While tacking on a few more interviews is often okay in qualitative studies, it is not cool in quantitative research.

The bottom line

So, if you know there are a thousand centaurs in the forest, and you want a 5% margin of error and a 95% confidence level, you are going to need to survey 278 centaurs.

For reasons of math, the larger the total population, the smaller the percentage of the population you need to include in your sample for the same confidence level. If there are ten thousand centaurs in the forest, you only need to include 370. And, given a hundred thousand, just 383. This is why the Pew Research center can report that 27% of US Facebook users do

not feel that the list of attributes on their ad preferences page represents them, based on surveying 963 people (http://bkaprt.com/jer2/09-03/).

Lowering your confidence level and increasing your margin of error also allows you to get away with a smaller sample size. If you are willing to go to a 90% confidence level and a 10% margin of error, you can survey sixty-eight out of ten thousand centaurs and the results you get will be within 10% of the overall population 90% of the time.

For example, if twenty out of the sixty-eight respondents (~30%) indicated that they purchased a waist pack in the last year, you can say you are 90% sure between 20–40% of the total population would have answered the same way, to the extent the sample is representative (**FIG 9.1**).

This is not to say that surveying four hundred people means that you can automatically generalize from the results.

Especially because we haven't even gotten to the…

Survey response rate

The percentage of those contacted who complete the survey is the *response rate*. Only the individuals who actually provide data when presented with the opportunity to participate in the survey count as part of your sample. You have to put your survey in front of far more people than you need responses from.

It would be great if there were one number that represented the ideal response rate to shoot for, but it can be all over the place. The response rate to a given survey depends on factors like population, context, and length of survey. If you're trying to reach a specific and reclusive group, like cave-dwelling hermits, or asking for feedback on a site that already generates seventeen pop-ups, your rate will be lower.

If you need a sample size of 370 centaurs and your survey is getting a 2% response rate, you need to get your call to action in front of 18,500 centaurs. That number represents a high potential for trampling.

This doesn't even touch statistical significance of the results. When respondents differ in meaningful ways from nonrespondents, that's *nonresponse bias*. For example, if the best centaurs

SURVEY QUESTION:	DID YOU PURCHASE A WAIST PACK IN THE LAST YEAR?	
	Example A: Smaller sample	Example B: Larger sample
TOTAL POPULATION:	10,000	10,000
MARGIN OF ERROR:	10%	5%
CONFIDENCE LEVEL:	90%	95%
SAMPLE SIZE:	68	370
RESPONSE:	Yes: 20 No: 48	Yes: 111 No: 259
RESULTS:	We are 90% sure that between 20–40% of the population would have answered yes, assuming a representative sample of the overall population.	We are 95% sure that between 25–35% of the population would have answered yes, assuming a representative sample of the overall population.

FIG 9.1: If you're planning to make big bets based on quantitative survey data, make sure you're real clear on what this math means.

in the forest don't respond to your survey because they're too busy sewing their own waist packs, that is significant nonresponse bias—and it will not show up in the survey results.

While multiple contact attempts may increase response rates, you have to consider this in the context of how many surveys from different researchers your target audience is exposed to. Survey fatigue is real. Anyone proposing a survey should keep a diary of all of the surveys they encounter in an average week on the web.

The stated purpose, placement, and design of your survey have a strong influence on your response rate. Often, factors that improve response rate also increase sampling bias. Generalizing from centaurs who already have strong feelings about waist packs might give you a skewed perception of the population overall, and nothing about your data will indicate that is the case.

How much does the math matter?

In the years since the first edition of this book came out, the question I have heard most frequently is this: "How do I convince managers to pay attention to qualitative research when all they care about are numbers?"

The tendency of managers to substitute metrics for meaning is a phenomenon known as *surrogation*. This can result in actions that undermine the very strategy those metrics are supposed to support. Many managers confuse the size of a sample with how representative it is, or prefer quantitative methods overall, simply because surrogation has slipped into their thinking. Fighting it requires perpetually returning the focus to your true objectives.

For uncovering the insights you need to meet those objectives, quantitative surveys might be a giant waste of time.

If you're deciding what to order for lunch at your company's staff offsite, by all means send out a survey. It's a fine way to find out you should arrange a tapas buffet for everyone except Frank who answered "burgers," and if he doesn't get a burger, he's going to get his knickers in a twist. The results will inform just one meal, so the risk is low.

On the other hand, if you're considering shifting $5 million in resources from your organization's live event budget to online courses and digital materials, you don't want to base that on your own subjective interpretations of thin data from a skewed sample. You'll probably get better information from qualitative research, or a combination of interviews and analytics designed to serve your goals.

PLANNING A SURVEY

A survey is a direct-to-user message about your company's priorities, attention to detail, and respect for their time. Create a survey experience that honors user time, and represents the best of your brand.
—ANNIE STEELE, HEAD OF RESEARCH AT STRIPE

So, I haven't talked you out of running a survey. The place to start is where you start with all research: with your design goal, and with what you need to know in order to achieve that goal, your research objective. You should also be clear on the decisions the results will inform and the actions you might take based on the results.

Your survey design goal is to create an interaction that encourages and allows the respondent to provide you with reliable, true information about themselves. In order to do this, you need to know a fair amount about your target population *before* designing the survey. Here are a few key questions you need to answer:

- Who should we be surveying?
- In what context should we be surveying them?
- Will the people we're surveying be willing and able to provide truthful, useful answers to our questions?
- What do we think will motivate them to respond?
- Is there another, better way to get the information we need without interrupting our users or customers with a survey?

The more clarity you have about your objectives, the more effective your surveys will be. You need to ensure that you ask the right number of questions, that they are possible to answer, and that you have already decided a clear path from survey results to action.

Writing surveys

As with all other studies, what you need to know determines the design. Every choice must be intentional and designed

to serve your objective; otherwise you'll end up on a Tilt-A-Whirl of bias.

Once you know your objective and audience, you need to decide:

- how many questions to ask
- question order
- whether the questions will be open or closed
- for closed questions, whether you offer options or a scale

Even given the same subject matter and respondents, the type and order of questions can vastly change your results. For example, asking a narrow question before a broad one will constrain the respondent's thinking. A closed question requires you to have considered all possible options from their perspective. The right choices depend on the objective, the context, and the respondents. Are you surveying people on their mobile devices where space and attention are limited? Did I mention this was hard? It's really hard.

In other words, to write a good survey, you need to be very clear on what you want to know and why a survey is the right way to get that information. Start with the answers you need, and then write clear questions:

Answer: X% of our active users have dogs at home.
Question: Do you have a dog at home?

Answer: This is the reason this page has a high bounce rate.
Question: What were you looking for on this page?

No matter what type of questions you write, there are a few things to keep in mind:

1. Ask more general questions first.
2. Write simple, succinct questions using specific language familiar to your audience.
3. Only ask one question at a time; don't combine two or more questions into one.

4. Avoid loaded or leading questions that contain embedded assumptions or preferred answers, such as "Which Jeff Goldblum character is the most charming?"
5. Don't ask people to recall the distant past, or to predict the future.
6. Offer the right number of response options—enough to cover all likely answers, but not so many that they overwhelm.

Question structure

Just as there are two types of data—quantitative and qualitative—there are two types of questions: closed-ended and open-ended.

An open-ended question, like "How did you find out about us?" allows the respondent to answer anything they like in the input field. These are the easiest to ask, but require the most work on the part of the respondent. If you ask too many, you might end up with a lot of blanks.

A closed-ended, or structured, question relies on answers in the form of a set of categories. The answers may be single response, multiple response, or scaled choices. Well-written structured questions may be easier for the respondent to answer and are definitely easier for the researcher to tally. This ease comes at the price of additional diligence to ensure that the options reflect reality.

When writing the selection of responses for a structured question, you should make certain that the list covers sufficient alternatives and that the answers are unique (i.e., they do not overlap).

Single answer

The most basic structured question allows the respondent to select one answer from a list of options.

Is a hot dog a sandwich?
( ) Yes
( ) No

This simple question contains an important lesson. Counting the responses to this question will not tell you whether or not a hot dog is a sandwich. It will merely tell you how many of the responses to the given question were "yes" and how many were "no." Depending on how you administer this survey, you might not even be able to tell whether or not each response was from a unique individual human.

You need to ensure that the answers are mutually exclusive and comprehensive enough to include all possible categories that might fit. For example:

What best describes your home?
( ) Single-family home
( ) Apartment
( ) Trailer home
( ) Townhouse

What if the respondent lives in a yurt or a houseboat? You can accommodate unexpected responses by adding a choice for "Other" with a freeform text box. But you still run the risk of making a subset of people feel bad or misunderstood when they don't see their situation reflected in the list.

Multiple answer

Keep these questions relevant and intelligible to your respondent. If you use technical terminology, make sure that it matches the vocabulary of your intended audience. Ask only one thing at a time; don't mix time frames or levels of specificity (**FIG 9.2**).

USING SCALES

When answer choices can be represented by points on a scale, and the order matters, these are called *scalar questions*. Scales are tricky—not only does the wording need to be familiar and meaningful, but the type of scale you choose has to reflect your respondents' mental models (14/10 heckin' floofy). Otherwise,

BAD	BETTER
Which of the following have you done in the past week, or ever?	Which of the following have you done in the past week? Choose all that apply.
□ Made or received a phone call to your mother	□ Made or received a phone call on a landline
□ Made or received a videocall on a smartphone to a friend	□ Made or received a videocall on a smartphone
□ Participated in a videoconference at work	□ Participated in a videoconference
□ Read a book to a child	□ Read a book

FIG 9.2: A poorly worded question and responses on the left; a better way of asking and answering on the right.

they're likely to pick an arbitrary response that doesn't map to their real-world attitudes and behaviors.

Interval scale

An *interval scale* is a range of values with a meaningful mathematical difference between them. The respondent rates the object or attribute directly, rather than through a statement. "On a scale of 1-10, rate the design." "Give the book 1 to 5 stars."

The chief benefit of asking for a rating on an interval scale is that you can find the mean (average), which you cannot do with the Likert scale (which I'll describe in a bit).

There is no way to tell exactly what the mean *means*, however. A hotel with a 4.8 rating on Trip Advisor may be excellent, or the proprietor may have a very large and supportive family. A movie with a 2.1 rating on Rotten Tomatoes may be terrible, or the victim of a troll attack.

Means also don't tell the whole tale. If you survey all the onsite employees at your company about their ideal office temperature, you'll be able to calculate an average from their

answers—and then everyone will be equally unhappy when it turns out you've missed distinct clusters of people who like it warm and people who like it cool.

Satisfaction-packed

A popular topic for surveys is "satisfaction." Customer satisfaction—to what extent a product or service meets expectations—has become the most widely used metric in companies' efforts to measure and manage customer loyalty. It's an abstract idea, and very dependent on context, like price and what other options are available at the time. For example, many people find ride-hailing apps like Uber and Lyft satisfactory because of cost and convenience; however, the prices are kept artificially low to attract riders. Would riders be just as satisfied with the same service at a sustainable price?

There's a whole industry based on providing customer-satisfaction metrics. And when there is an industry that makes money from the existence of a metric, that makes me skeptical of a metric.

Here is another cry for help I received not too long ago:

My boss is a convert to Foresee. She was skeptical of it at first, but she's a very analytical person and was converted by its promise of being able to quantify unquantifiable data—like "satisfaction."

The boss in question is "a very analytical person." This means she is a person with a bias toward quantitative data. The designer who wrote to me was concerned about the potential for pop-up surveys to sabotage the very customer experience they were trying to measure. (Classic surrogation.)

Looking at a typical customer satisfaction survey (**FIG 9.3**), it's unclear how the questions map to actual business-success metrics. What does "Rate the options available for navigating this site" even mean? What actual business success metric does that map to? "Rate the number of clicks"—on a ten-point scale? People will choose the number of clicks they remember making rather than giving that number a rating. And "accuracy of information"? Unless they're operating in "god mode," no user could

Customer Satisfaction Survey

Thank you for visiting our site. You have been randomly selected to take part in this survey to let us know what we are doing well and where we need to do better. Please take a minute or two to give us your opinions. The feedback you provide will help us enhance our site and serve you better in the future. All results are strictly confidential.

*Required questions are denoted by an ***

1: *Please rate **how well the site is organized.**
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

2: *Please rate the **options available for navigating** this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

3: *Please rate **how well the site layout helps you find what you are looking for.**
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

4: *Please rate the **number of clicks to get where you want** on this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

5: *Please rate the **visual appeal** of this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

6: *Please rate the **balance of graphics and text** on this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

7: *Please rate the **readability of the pages** on this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

8: *Please rate the **accuracy of information** on this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

9: *Please rate the **quality of information** on this site.
1=Poor   Excellent=10
1   2   3   4   5   6   7   8   9   10   Don't Know

FIG 9.3: Enjoy this example of a Foresee customer satisfaction survey I grabbed at random from among the dozen I come across every week. These are the questions that for some reason seemed like the right ones to ask.

know the answer to that. None of this speaks to what the website is actually for, or how actual humans think or make decisions. Just because a thing has numbers doesn't make it magically objective or meaningful.

The sleight of hand here is that these so-called customer-satisfaction questions are a random assortment of abstract site qualities presented for quantitative evaluation, completely devoid of context. This is some customer-research alchemy right here. So, you're counting on the uncountable while the folks selling these surveys are counting their money. Enjoy your phlogiston.

The Likert scale

After all, we are interested in measuring the attitudes of the members of the group, not those of the experimenter.
—RENSIS LIKERT, "A TECHNIQUE FOR THE MEASUREMENT OF ATTITUDES" (1932)

The psychologist and pioneering social scientist Rensis Likert (pronounced LICK-urt) deserves better. His name is most closely associated with the survey scale he developed as part of his PhD thesis. Respondents specify their level of agreement or disagreement with a series of statements on a scale (**FIG 9.4**). The scale is bipolar and symmetrical. It must contain an equal number of evenly distributed positive and negative choices. His goal in creating this scale was to improve on earlier methods and find a simpler, equally accurate, way to assess the distribution of attitudes in a population.

Likert went on to work for the USDA, surveying farmers about their feelings toward New Deal programs. He later joined a US military program to survey civilians in Japan and Germany about their morale after being bombed. Then he founded the University of Michigan Institute for Social Research (ISR), still one of the leading academic survey research organizations. He wrapped it all up as an organizational psychologist and author of several books on management science.

In other words, he put a lot of thought into his work. So don't just slap a scale on something and call it a Likert.

Our country should never declare war again under any circumstances.

| Strongly Approve (5) | Approve (4) | Undecided (3) | Disapprove (2) | Strongly Disapprove (1) |

FIG 9.4: An example question from the 1932 paper in which Likert introduced the scale (http://bkaprt.com/jer2/09-04/, PDF).

Frequency	Quality	Importance	Desirability
Always	Very Good	Very Important	Very Desirable
Often	Good	Important	Desirable
Occasionally	Acceptable	Moderately Important	Neutral
Rarely	Poor	Of Little Importance	Undesirable
Never	Very Poor	Unimportant	Very Undesirable

FIG 9.5: In addition to agreement, a Likert scale can measure other qualities.

A true Likert scale is a five- or seven-point rating of agreement and disagreement (**FIG 9.5**). The labels indicate the magnitude of difference. On a frequency scale, how far is it from sometimes to rarely? This will vary from one person to another and, as Likert pointed out in his original paper, from one "cultural group" to another. It's all relative.

Some researchers eliminate the neutral middle option to create a forced choice. But I think it's critical to understand the degree to which people don't know and don't care about things. This is often the biggest surprise to stakeholders. If you are asking about a scale in which neutrality is impossible, like "How familiar are you with Tide Pods?" then it makes sense not to offer that option. If you want to get technical, *ordered response scale* is a good way to describe other Likert-type scales that don't fit the criteria of symmetrical, labeled responses, such as the Foresee survey we saw earlier (**FIG 9.1**).

When it comes to evaluating your survey responses, consider whether the neutral choice is really neutral in the common understanding of the term. "Neutral" could mean anything from "I don't understand the question" to "I'm not comfortable taking a position" to "I reject the framing." Just something to keep in mind as you think about how much it's really possible to glean from surveys.

Designing a Likert scale survey

Want to make your own Likert? Here's how to do it:

1. **Select your topic.** Customer satisfaction? Attitudes toward gentrification? Aspirations about saving money? Your analysis will be clearer if you focus your survey on one topic at a time.
2. **Pick your poles.** Agree/Disagree? Always/Never?
3. **Decide on the number of anchors and their labels.** Five or seven? It may be tempting to get more granular, but how many shades of response make sense for your topic and your audience? Likert himself was a fan of five.
4. **Write your statements or questions.** These *must* be worded in the language of your target respondents, which you can find in qualitative research like interviews, input from customer support channels, or phrases gleaned from social media.

Using one consistent scale and set of labels per survey makes life easier for everyone, and reduces the chance of error. And being consistent means you can compare results over time.

Using statements instead of questions can introduce *acquiescence bias*—people have a harder time saying no due to the strong social norm of being agreeable. Strategies to counteract this include leading with the negative pole or reformulating the question in a way that avoids asking for agreement:

Electric scooters are a convenient way to commute.
  Strongly Disagree
  Disagree

Neutral
Agree
Strongly Agree

How inconvenient or convenient are electric scooters as a way to commute?
 Very Inconvenient
 Inconvenient
 Neither Inconvenient nor Convenient
 Convenient
 Very Convenient

Analyzing Likert data

Remember, Likert survey data is quantitative data, so analyze it using quantitative methods. You need to understand whether your results are statistically significant; what are the chances that you would have gotten that distribution of responses at random? If you don't follow this process, then you will just be treating your results as a bunch of anecdotes and slapping your own bias on it.

 Likert data are ordinal and discrete, and have a limited range. This means that you can rank the categories of response between your two poles, but the differences between any two ranks could differ wildly. The most popular and second-most-popular answer could be much closer together than the second and third.

 For example, imagine you surveyed ninety-seven people in your neighborhood about electric scooters using a single question, and the results came back:

I would feel safe riding an electric scooter in the neighborhood where I live.
 Strongly Disagree: 35
 Disagree: 7
 Neutral:19
 Agree: 20
 Strongly Agree: 16
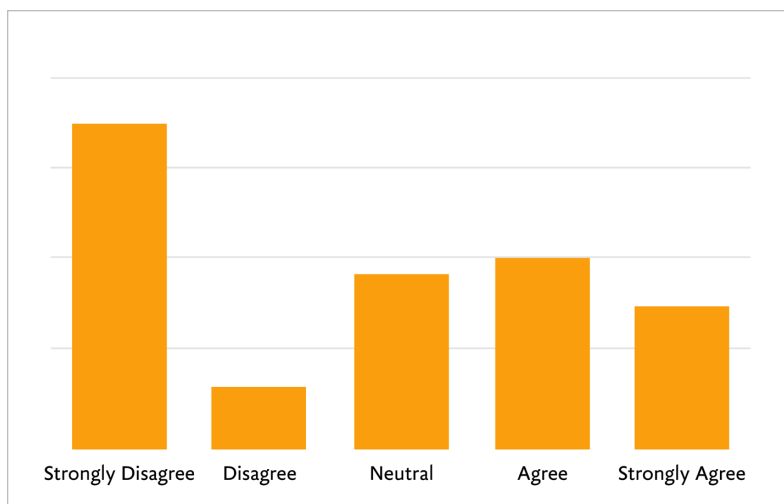
FIG 9.6: You can visualize Likert scale responses as happy little towers of insight.

Cool, but you can't count them up and average them—the mean is meaningless here. If you want to know the *mode*, the value that was chosen most often, you can line the responses up in descending order:

Strongly disagree: 35
Agree: 20
Neutral: 19
Strongly agree: 16
Disagree: 7

"Strongly disagree" was chosen most often, a whopping 36% of the time—there's your mode.

Visualizing the distribution in a bar chart from positive to negative can also be handy (**FIG 9.6**). What this shows you is that, of the people you surveyed, most report feeling neutral to positive about safety, but a substantial minority are very negative. How do you interpret that information? Well, it depends. How representative is your sample? Did you oversample parents of young children and retired people because you con-

ducted the survey by going door to door in the middle of a weekday? Do you have to account for a large nonresponse bias because you emailed the survey out to far more people than answered? Are there three thousand people in your neighborhood, or a hundred?

If you gathered additional information about the respondents such as age, gender, or level of education, there are further statistical tests you could run to determine whether responses are correlated with any of those.

A quick web search will show you just how much discussion is happening around what to do, exactly, with this sort of data. Quantitative data doesn't guarantee objective interpretation .

Net Promoter Score

Asking someone about what they'll do in the future isn't about loyalty. It's about optimism.
—JARED SPOOL, "NET PROMOTER SCORE CONSIDERED HARMFUL" (http://bkaprt.com/jer2/09-05/)

In a 2003 *Harvard Business Review* article, "The One Number You Need to Grow," Bain management consultant Fred Reichheld introduced the *Net Promoter Score,* or NPS (http://bkaprt.com/jer2/09-06/). Through his consulting work, he'd found customer-satisfaction surveys to be overly complicated, yielding low response rates and ambiguous results that didn't correlate with growth. After seeing a presentation from the Enterprise Rent-A-Car CEO about their success assessing customer loyalty, Reichheld spent two years formulating his one-question miracle survey:

> *How likely is it that you would recommend [company X] to a friend or colleague?*

He also sought to create a scale that would eliminate the need for statistical analysis, so that just about anyone in a company could assess the results and take action. He settled on an eleven-point scale, as in this Ticketmaster example (FIG 9.7).

FIG 9.7: Because the experience of buying a concert ticket includes such a complex interplay of inventory scarcity and monopoly power, this question is too reductive to be meaningful.

Not at all likely to recommend							*Extremely likely to recommend*			
0	1	2	3	4	5	6	7	8	9	10
Detractors							Passive		Promoters	
Net Promoter Score = *% of Promotor respondents minus % of Detractor respondents*										

FIG 9.8: This was totally made up by a consultant just to dumb down the math.

Here's where the real consultant magic happens. Based on correlating survey responses with actual reported referrals and purchase history from four thousand customers, Reichheld created and named three clusters, devised a scoring system, and then trademarked the whole darn thing (**FIG 9.8**).

A potential NPS ranges from -100 to 100. Reichheld defined scores of 0-6 as "Detractors," which each count as -1. Ratings of 7-8 are "Passive" and count for 0. And "Promoter" ratings of 9 or 10 count as 1 point each. So, if you survey a hundred customers and they all give you an 8, then your NPS is 0. For...

reasons. This is why any positive score is considered "good" and anything over 50 is excellent.

Managers love NPS because it was designed to be loveable by managers. It's simple and concrete and involves fancy consultant math, which makes it seems special. But is this metric as broadly applicable and powerful as it claims to be?

Nah.

- **NPS is not a research tool.** I shouldn't even be talking about NPS in a research book. As Reichheld states in his original article, NPS is "an operating management tool": "When a customer reported a neutral or negative experience, marking him a potential detractor, the interviewer requested permission to immediately forward this information to the branch manager, who was trained how to apologize, identify the root cause of the problem, and resolve it." So, it's not about learning, but about flagging and resolving less than awesome customer experiences. Well, then, that is something totally different, and expensive.
- **It's misused as a substitute for research.** NPS feels like useful data when it isn't, making organizations feels like they've learned something when they haven't. Even if you attach an open text box that allows the customer to provide more details, it's simply not designed to be a research tool. Some poor customer service person is just going to be going through those answers, cherry-picking responses.
- **The eleven-point scale isn't magic.** Follow-up studies by other researchers have shown that simply calculating the mean is just as good. Not to mention: a 0 is actually much different from a 6, so treating those scores the same way is suspect.
- **It may not be about loyalty at all.** Expressing an intention to recommend may not have anything to do with customer satisfaction, and depends on everything from the cultural context of the response to whether others in the customer's peer group have a shared need. And what about response bias? It only captures current customers, not potential customers or non-customers, or people who are too pissed off to take the survey.
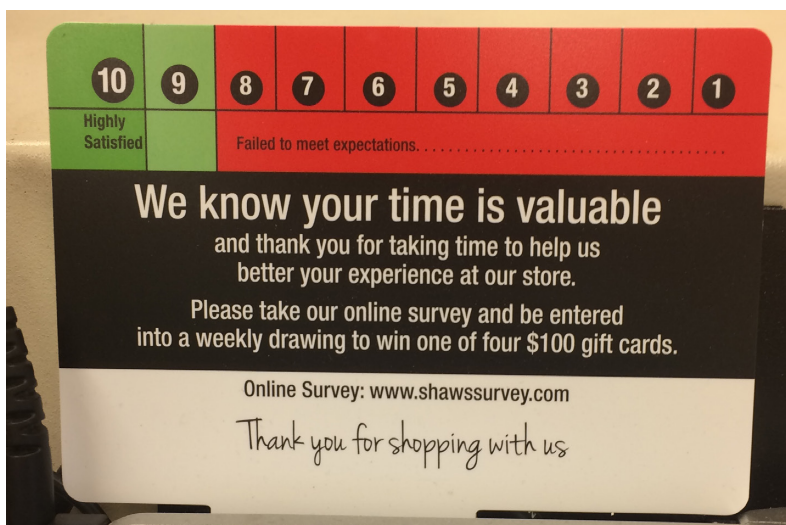
FIG 9.9: It's all become ridiculous.

- **Better scores don't necessarily map to business health.** NPS
  is about expectations. A fantastic way to exceed expectations
  is to charge less for a service than it costs to provide. And
  people game the shit out of it (**FIG 9.9**), especially when their
  bonuses are tied to it.

In short: nothing about NPS explains why your score is what
it is or what you should do about it (besides follow up with each
individual to try to resolve their issue, I guess).

QUANTITATIVE VERSUS QUALITATIVE SURVEYS

Unlike for quantitative surveys, qualitative survey metrics are rarely representative for the whole target audience; instead, they represent the opinions of the respondents....Unless you use sound statistics tools, you cannot say whether these results are the result of noise or sample selection, as opposed to truly reflecting the attitudes of your whole user population.

—SUSAN FARRELL, "28 TIPS FOR CREATING GREAT QUALITATIVE SURVEYS" (http://bkaprt.com/jer2/09-07/)

Read that. Read it again. That is a polite way of saying you can't generalize from metrics yielded by qualitative surveys. If a hundred people respond to an Instagram poll about Pillsbury canned dough and eighty indicate a "somewhat favorable" opinion, you still don't know what proportion of all Instagram users have a somewhat favorable opinion of Pillsbury canned dough (**FIG 9.10**). Even if the app only showed the poll to users who had previously been shown a Pillsbury ad, you couldn't even generalize to what proportion of users who had been shown the ad.

That said, you can use surveys to gather qualitative data if you treat them like sources of qualitative data. This means you are focusing on descriptions and not treating your results as measurements of anything. You need to decide in advance how you will analyze and use the data.

In the words of Susan Farrell: "If you won't act on the data, don't ask that question." Do the research that yields data you can act on, not the kind that leaves you acting like you forgot what you needed to know in the first place.

Surveys. Sixty percent of the time, they work every time. That's probably optimistic.

FIG 9.10: Don't pee in the public pool of customer goodwill by adding to the onslaught of pointless interruptions. This only makes it harder for those doing good research.

10 ANALYTICS

If they will not understand that we are bringing them a mathematically infallible happiness, we shall be obliged to force them to be happy.
—YEVGENY ZAMYATIN, *WE*

OPTIMIZE.

That's such a nice word. *Optimize.* Make something the best it can be. Who doesn't want to do that?

Now that you've done all of the hard work designing and developing your site, service, or application, you want to make sure it's the best. You want to *optimize* it. Optimizing a design is the chief aim of quantitative research and analysis. There are a lot of people out there who—in exchange for your money—want to help you do this.

When you set out to optimize, you will run up against one of the oldest and thorniest philosophical problems, that of the Good. What is good? How do you know it's good? What does it mean to be best? What are you optimizing for? How will you know when you have attained that optimal state and have reached the best of all possible worlds?

What if, in optimizing for one thing, you cause a lot of other bad things to happen?

Optimistic people talk as though there is some sort of obvious, objective standard—but once you start thinking about what is truly optimal, you will find that it's always subjective and you'll always have to make trade-offs. This is why designers will never be replaced by machines.

MATH, AGAIN

Qualitative research methods such as ethnography and usability testing can get you far. You'll begin to understand how people make decisions and may even get a peek at habits they might not fully admit to themselves. ("Huh, I guess TMZ *is* in my browser history a lot.") You can use these insights to design sensible, elegant systems primed for success.

And then you release your work into the world to see how right you were—and the fun begins. No matter how much research and smart design thinking you did up front, you won't get everything right out of the gate, and that's okay. Because here come the data...I mean, the visitors.

Once your website or application is live and users arrive in significant numbers, you'll start getting some quantitative data. (If no one shows up, please consult your marketing strategy.) Every interaction each of those individuals has with your website can be measured. All of the people with the particular needs and quirks you lovingly studied fade away in the face of the faceless masses.

You were in the realm of informed assertions. Now you're in the big time. Actual data. You can see how well your design is performing out there in the world. How many people? How long do they stay? What do they see? Where do they exit? Do they return? How frequently? And do they click the button?

Once you can measure your success in numerical terms, you can start tweaking. The elements of your design become so many knobs and levers you can manipulate to get to the level of success you'd envisioned, and beyond.

Preaching to the converted

The term for clicking the button—you know, *the* button—is *conversion*. A user is said to convert any time they take a measurable action you've defined as a goal of the site. For many websites there is an obvious primary *raison d'être*. On a marketing website, conversion is clicking "sign up"; for ecommerce sites, "buy now"; on a hotel site, "make a reservation." The success of the design can be measured by how many people click that button and do the thing that makes the money.

Some websites are completely optimized for simple conversion, and it's easy to tell. The design centers on one clear call to action, a vivid lozenge labeled with a verb. The usual picture is a little more complex, with several different types of conversion. Which converts do you want the most?

A site or app might offer several potential actions with desirable outcomes: newsletter sign-up, advance ticket sales, online shopping, becoming a member. Measuring the conversion rate for each of these will indicate the success of that particular path, but not how each type of conversion matters to the success of the organization itself. That is a business decision.

EASE INTO ANALYTICS

As soon as you have some data, you can start looking for trends and patterns. It might be a little overwhelming at first, but this sort of direct feedback gets addictive fast. Decision-makers love data, so being handy with the stats can be to your advantage in arguments. Sure, that involves math, but people who love math have built some tools to make it easy—and you're going to need to use them unless you're really keen on analyzing raw server logs yourself.

Analytics refers to the collection and analysis of data on the actual usage of a website or application—or any quantifiable system—to understand how people are using it. Based on data from analytics, you can identify areas where your website is not as effective as you'd like it to be. For example, analytics could tell you that a thousand people visit the homepage every

day, but only five people click on any other link on the page. Whether this is a problem depends on your goals for the site. You can make changes and then check these measurements, or metrics, again to see whether your changes have had an effect.

If you would like more people to sign up for the newsletter from the homepage, you could try making the link to the newsletter sign-up more visually prominent, then check the analytics again.

At the time of writing, over thirty-five million of the world's most popular websites have Google Analytics installed, according to technology trends website builtwith.com. Google Analytics is an excellent place to start your journey towards mathematical perfection and will give you a variety of pleasing charts and graphs. After you sign up, you or a friendly developer will need to insert a snippet of JavaScript into the source code of the site you want to measure.

Keep two things in mind when you consider analytics: goals and learning. The specific metrics to track will depend on your audience and business goals. Just because something is measurable doesn't make it meaningful; tracking the wrong metrics can be worse than not tracking any. If you don't already have quantitative goals, define some. You can start by looking up averages for your type of site or industry; those are the numbers to beat.

The whole point is to learn about the performance of your system so you can meet your goals. Otherwise, it's easy to see your success reflected in a funhouse mirror of *vanity metrics*— big numbers devoid of context that tell you nothing. As with Net Promoter Score from Chapter 9, you could end up trying to optimize specific numbers, chasing correlations without finding the why, and losing site of the larger picture.

Depending on the role any part of your online presence plays in your overall strategy for success, raw numbers might not mean *anything* useful. Your primary website might be strategically important, but never reach beyond the niche audience for which it's intended.

Some of the most interesting data points aren't about what's happening on your website at all, but where your traffic is coming from, and how your work is affecting things out in the world.

Having *enough* metrics is no longer the issue it once was. The question is what to do with them. If you aren't making your numbers, review the data and prioritize changes. For web sites, bounce rate—the proportion of visitors who leave after viewing one page—is a good place to start. Before you get around to fine-tuning your message, you need people to stick around long enough to hear it. A high bounce rate is often an indicator of unmet expectations or uncertainty about where to go next.

You can use analytics to see which pages are the most frequent entry points. Then review those pages for clarity. If you know what you want visitors to do, make sure that's coming through in the design and content of the page. How do you make sure? Well, you can do some usability testing to get more insight into the potential problems. Or venture into the statistical wonderland of split testing.

LICKETY-SPLIT

There are many solutions to every problem. If your problem is getting as many people as possible to sign up for the newsletter, there might be some debate over the most effective change to make to the site. To solve your dilemma, you could try *split testing.*

A split test is a clinical trial for a particular page or set of elements on your website. Some visitors are served the *control*—the current design—and others get a variation. The variation that performs significantly better for a specific metric is the winner. Then you can either decide to switch all traffic to the winner, or put it up against another challenger or set of challengers.

This method is called split testing because you split your traffic programmatically and randomly serve variations of a page or element on your site to your users. Maybe one half gets the current homepage design with a sign-up button to the right of the call to action, and the other half sees the exact same page with a sign-up button underneath the call to action. On the horizon, the clouds part and you can see all the way to Mount Optimal, that mythical realm of mathematical perfection.

Like an international criminal, split testing has a lot of aliases, including A/B testing, A/B/n testing, bucket testing, multivariate testing, and the Panglossian "whole site experience testing," which promises to deliver the best of all possible website experiences. Each of these denotes a variation on the same basic idea.

This approach is of special interest to marketers, and actually derives from a technique first used in ancient times when special offers were sent on paper by direct mail. Send a flyer with one offer ("Free dessert with every pizza") to a thousand houses, and a flyer with a different offer ("Free salad with every pizza") to a thousand other houses, and see which one generates the better response.

There is both an art and a science, and quite a lot of statistics, to using split testing effectively and appropriately. As a designer, you may be asked to participate in the process or create variations. Even if you aren't in charge of running them, it's helpful to know the basics so you can deal with the effects.

The split-testing process

At last, SCIENCE. Bust out that lab coat, because you will be running experiments.

The general outline of events for split testing is as follows:

1. Select your goal.
2. Create variations.
3. Choose an appropriate start date.
4. Run the experiment until you've reached a ninety-five-percent confidence level.
5. Review the data.
6. Decide what to do next: stick with the control, switch to the variation, or run more tests.

You will need a specific, quantifiable goal. This is a track race, not rhythmic gymnastics—no room for interpretation. You have to know the current conversion rate (or other metric) and how much you want to change it. For example, five percent of

all site visitors click on "Buy tickets," and we want to increase the conversion rate to seven percent.

Next, determine how much traffic you need. The average number of visitors your site gets is important for a couple of reasons. Small, incremental changes will have a more significant influence on a high-traffic site (one percent of one million versus one percent of one thousand) and tests will be faster and more reliable with a larger sample size. How large a sample do you need? It depends on the sensitivity of the test and how large an improvement you want to see. If you are looking at making a small change, you will need a larger sample to make sure you can be confident in the result. A small change in a small sample size is more likely to be merely the result of chance.

Approach this process with patience and confidence. The confidence in this case is statistical confidence—the probability that the winner is really the winner—rather than the outcome of chance events. The standard is ninety-five percent, meaning there is a ninety-five percent chance you can rely on the result. On a high-traffic site, you can get to this level within a couple of days; lower traffic, and the test will take longer.

To rule out the effect of other variables, such as the day of the week, you would ideally let the test run over a two-week holiday-free period, allowing you to make day-over-day comparisons. You also need to let the test run long enough to counter unexpected outliers; perhaps your organization received an unexpected mention in the *New York Times*, and the website variation you're testing is particularly popular with *Times* readers but not with the typical population of your site's visitors. The less patience you have, the more you open yourself up to errors, both false positives and false negatives.

It's also important to keep in mind that if you want to test variations of a particular page against the current state, someone has to design those variations. Even if they're small changes, it's still work.

If you're testing a landing page with one call to action—one button a user can click on—you can change any aspect of that page with regard to that one measurement, including:

- The wording, size, color, and placement of the button.
- Any piece of copy on the page and the total amount of copy.
- The price or specific offer.
- The image or type of image used (photo versus illustration).

The winner is often counterintuitive, in a "Who would have thought brown buttons would work the best with this audience?" sort of way. If there's agreement about which metric you're optimizing for and the math is sound, it's an opportunity to learn.

After a number of tests, you may see patterns begin to emerge that you can apply to your design work when solving for specific conversion goals. By the same token, remember that specific conversion goals are frequently just one aspect of the overall success of a website or business.

Cautions and considerations

More precautions apply to split testing than to most other information-gathering approaches, for a couple of reasons. Testing can be seductive because it seems to promise mathematical certitude and a set-it-and-forget-it level of automation, even though human decision-making is still necessary and the results remain open to interpretation within the larger context. The best response to a user-interface question is not necessarily a test. Additionally, these are activities that affect the live site itself, which presents some risk.

Much like Dr. Frankenstein, you have set up your laboratory in the same place you receive visitors, so it's important to design and run your experiments in a way that doesn't disrupt what's already working well. A consistent online experience can help build trust and habit, and split testing by its very nature introduces inconsistency. Keep this in mind as you decide what and how to test.

This is an incremental process—tweaking and knob-twiddling—and not a source of high-level strategic guidance. Since you're changing things up, it's best suited for aspects of your design where users might expect to see variation, and where there is a single clear user behavior you want to elicit in a given

The Limit of
Split Testing

Your Glorious
Potential
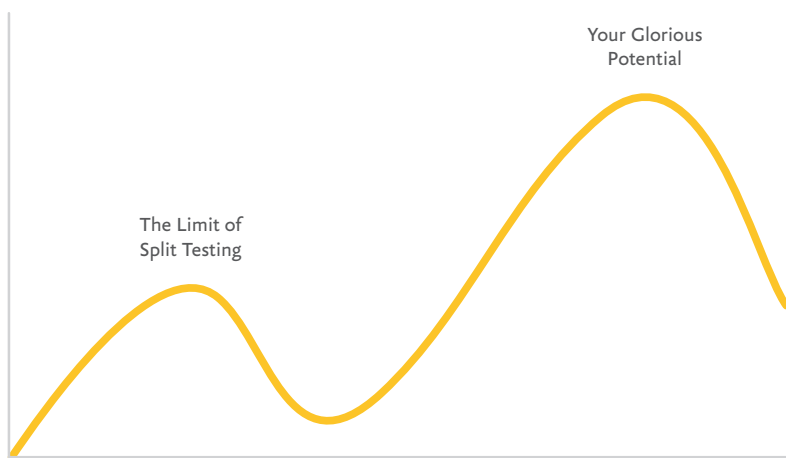
The Local Maximum

FIG 10: Split testing can help you optimize your current design until you reach a local maximum, but it can't tell you how much you can accomplish with a different approach.

context. Search engine marketing landing pages? Fantastic. Those are generally intended for new users. Global navigation? Maybe not.

Focusing on small positive changes can lead to a culture of incrementalism and risk aversion. How will you ever make a great leap that might have short-term negative effects? On his excellent blog, entrepreneur and adviser Andrew Chen invokes the concept of the *local maximum*, which you may be excited to remember from calculus (http://bkaprt.com/jer2/10-01/). The gist is that you can only do so much optimizing within an existing design system. If you focus on optimizing what you have rather than also considering larger innovations, who knows what vastly greater heights you might miss (**FIG 10**).

This is why understanding context and qualitative factors matters. All the split testing in the world never managed to turn Yahoo! into Google. And all of Google's mathematical acumen didn't save Google+ from the dustbin of also-ran social media experiments. You always need to answer "Why?" before asking "How?" And you need good answers for both.

DESIGNERS AND DATA JUNKIES
CAN BE FRIENDS

We admire Mr. Spock for his logical Vulcan acumen but find him relatable because of his human side.

There is a tension between strategic design thinking and data-driven decision-making. In the best case, this is a healthy tension that respects informed intuition and ambitious thinking and knows how to measure success. When data rules the roost, this can leave designers feeling frustrated and undervalued.

The best teams are Spock-like. They embrace data while encouraging and inspiring everyone working on a product to look beyond what can be measured to what might be valued.

You can optimize everything and still fail, because you have to optimize for the right things. That's where reflection and qualitative approaches come in. By asking why, we can see the opportunity for something better, beyond the bounds of the current best.

Even math has its limits.

CONCLUSION

IF THIS BOOK RAISED MORE QUESTIONS than it answered, fantastic. I want you to be excited about asking questions. Questions are more powerful than answers. And asking often takes more courage than sticking with comfortable assumptions.

Every time you find a product or service that's a joy to use, meets a need maybe you didn't even know you had, and fits seamlessly into your life, you know that someone on the other end asked hard questions. Why should this exist? Who benefits? How can we make this better?

You can do the same for your users and your (or your client's) business. They deserve no less. Your effort and craft also deserve to be put to use in a way that has real meaning. So, always make sure you inquire into the real-world context surrounding your work. When blue-sky thinking meets reality, reality always wins. Make friends with reality. Cultivate a desire to be proven wrong as quickly as possible and for the lowest cost. If you work in a culture that prizes failing fast, there is no faster way to fail than by testing an idea that's still on the drawing board. Except maybe checking your assumptions before you even get down to drawing.

The right questions keep you honest. They help improve communication within your team. They prevent you from wasting time and money. They are your competitive advantage, guiding you toward workable solutions to real problems.

Let curiosity be your guide. Form questions. Gather data. Analyze. One sequence, many approaches. I hope the techniques outlined in this book help you get started (right now!) and encourage you to develop a research habit wherever and however you work. Research isn't a burden or a luxury. It's simply a means to develop useful insights within your existing process.

How much research is just enough? You'll need to do just enough to find out.

NOT ENOUGH THANKS

HUGE GRATITUDE TO EVERYONE who read this book the first time around, everyone I've had the opportunity to meet because of it, and all of you who are joining us now.

I would consider writing yet another book just to have my work edited by Lisa Maria Marquis, who was steadfast by my side in the forest. Katel LeDû is the kindest person on the planet as well as a kickass executive director, and I hope she remembers that one time I beat a deadline. Caren Litherland, I appreciate your rigor. Every writer needs someone to tell them when they're being a hot mess. Big hugs to the legendary Jeffrey Zeldman and Jason Santa Maria.

Jared Braiterman, Mike Kuniavsky, and Liz Goodman still live weirdly close to me. Jeff Tidwell and Karen Wickre remain inspiring trailblazers. Nate Bolt! Cyd Harrell is really cool and smart. Kristina Halvorson gave me such a lovely tour of Minneapolis. Dan Brown is just the best. Lynne Polischuik and her intern offered invaluable advice and input on the new material. Thanks to Chris Noessel for good conversation and pointing out that name generator. Elle Waters is a gem for offering her expertise on accessibility. Indi Young remains willing to argue with me about empathy and Vivianne Castillo helped me think about the concept in a new way.

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Anything I've managed to accomplish in life, I owe to my family: Nancy, Esther, Bud, Al, and Gary. They taught me the Hall way—to climb mountains, prize laughter, and value what is good, or at least interesting, in people. A big hug to Judy and Nadine for their warmth and support over the years.

Mike Monteiro, I acknowledge you.

And, of course Rupert, my fuzzy little buddy and book model. Now we can go for that walk.

RESOURCES

THIS BOOK IS BRIEF. Curiosity should be infinite. So here are some people and places that can help you as you continue to go deeper and learn more about learning itself.

Websites and blogs

- **Helsinki Design Lab.** The lab is hibernating, but the website is still a trove of guides and templates, including an ethnography field guide (http://bkaprt.com/jer2/11-01/).
- **Design Kit.** This set of socially minded resources and practices from IDEO.org includes *The Field Guide to Human-Centered Design* (http://bkaprt.com/jer2/11-02/).
- **Guide to UXR.** Paulina Barlik has collected a whole bunch of tools and resources in one place (http://bkaprt.com/jer2/11-03/).
- **ResearchOps Community.** As of this writing, it's a Slack team with a waitlist, but it's very active (http://bkaprt.com/jer2/11-04/).
- **Service Design Toolkit.** This toolkit from Belgium focuses on human-centered service design: posters, guides, and workshop materials (http://bkaprt.com/jer2/11-05/).
- **Service Design Tools.** Roberta Tassi's thesis work in the design department of the Politecnico di Milano resulted in this orderly collection of communication tools and methodologies (http://bkaprt.com/jer2/11-06/).
- **Remote Research.** From the creators of Ethnio, a site to help you conduct remote research and testing (http://bkaprt.com/jer2/11-07/).
- **Userfocus.** This London-based usability consultancy publishes articles and ebooks. While many are free, some will cost a few pounds. Enjoy *Usability Test Moderation: The Comic* (http://bkaprt.com/jer2/11-08/).
- **Nielsen Norman Group.** Jakob Nielsen's evidence-based usability pronouncements are legendary. They have probably started as many arguments as they've settled (http://bkaprt.com/jer2/11-09/).

A few specifics

- **Getting People to Talk: An Ethnography & Interviewing Primer.** This video is handy because there are limits to how much you can glean about interviews from reading (http://bkaprt.com/jer2/11-10/).
- **ICC/ESOMAR Code on Market and Social Research.** Professional and ethical rules defined by the International Chamber of Commerce and an international organization for market researchers. Works just as well as a code for design research (http://bkaprt.com/jer2/02-02/).
- **"Human-Centered Design Considered Harmful."** This critique of human-centered design brings up several critical points about context (http://bkaprt.com/jer2/11-11/).
- **An Ethnography Primer.** AIGA and Cheskin put together a downloadable primer on design ethnography with concise text and pretty photos. Very handy for certain internal audiences (http://bkaprt.com/jer2/11-12/).

Further reading

- *Behave: The Biology of Humans at Our Best and Worst,* Robert Sapolsky. A bad model of human behavior leads to bad decisions about design and policy. This book is essential reading to understand why we do what we do. Also, it's chock full of jokes.
- *Designing for the Digital Age: How to Create Human-Centered Products*, Kim Goodwin. Another foundational, comprehensive text that should be on every designer's bookshelf.
- *Practical Design Discovery,* Dan Brown. Practical is in the name. Read everything this Dan Brown writes and your projects will go smoothly.
- *Practical Ethnography*, Sam Ladner. Hey, this one is practical too. Ladner is a sociologist who strives to balance rigor with the realities of tech company work.

- *Observing the User Experience* (2nd ed.), Liz Goodman, Mike Kuniavsky, Andrea Moed. If you're looking for a comprehensive design research resource, this is it.
- *Designing and Conducting Ethnographic Research*, Margaret D. LeCompte and Jean Schensul. The first volume of The Ethnographer's Toolkit series is a good introduction to methods and practices.
- *Mental Models: Aligning Design Strategy with Human Behavior*, Indi Young. This brief book goes deep on the technique of using mental models to capture and express the behavior you learn about during research.
- *Interviewing Users: How to Uncover Compelling Insights*, Steve Portigal. The now-classic primer on talking to people.

Research tools

The past few years have seen a proliferation of software tools and services. What's best for you and your team depends on what will be the most helpful, the least intrusive for research participants, and what fits into your existing workflow. New tools appear all the time, so I encourage you to do your own research to see what's out there.

Keep in mind that tools are not skills. The ease of using a tool may have little to do with the quality of the insights you gather, particularly with regard to surveys, recruiting, and remote usability testing. Be skeptical of all claims.

It's a good idea to standardize within your organization. Think of this as what goes into your virtual and physical research kit. The following are what I personally use.

Recruiting and screening

Do your own recruiting. Knowing how to find representative users and customers will help you appeal to and attract actual users and customers. A recruiting screener is just a particular type of survey; you can use Google Docs or any survey-creation tool that can output into a spreadsheet.

- **Ethnio.** An online tool that handles recruiting, scheduling, and incentive payments, from the guys who wrote the book on remote user research. It's designed for organizations that recruit research participants frequently, which should be every organization. I'm technically an advisor, but really I'm more of a fan. Founder Nate Bolt is one of the most knowledgeable and principled people in the business (http://bkaprt.com/jer2/11-13/).

Remote research and testing

Remote research allows you to reach more people, faster, in their own environments. However, it's best when moderated by the people who need to learn from it. Otherwise, as with surveys, so much work goes into getting the test just right so it can run on its own that this just creates a barrier or introduces biases. Beware of cheap, easy data.

- **Zoom**. My solid go-to. Records meetings locally or to the cloud.
- **Google Hangouts**. Hangouts are integrated with Google Calendar, so that's convenient. You'll have to record using a different app.
- **Skype**. This old standby is now owned by Microsoft. You can screenshare and record Skype-to-Skype calls directly in the app. Note: Skype for Business, as of this writing, is a whole other product that doesn't make it easy for external participants to join.

Transcription

Once you have audio or video, you need to turn that into text for analysis. Machine transcription isn't perfect yet, but it has come a long way.

- **Temi**. Really fast and cheap. Quality continues to improve (http://bkaprt.com/jer2/11-14/).

- **Rev**. Sometimes you need the human touch. Slower and more expensive than machine translation, but produces higher quality that won't require as much of your time to go through and edit after the fact (http://bkaprt.com/jer2/11-15/).

Diagramming

When you turn your research into models, you're going to need to make some diagrams. Use whatever you're most fluent in.

- **Google Docs**. As long as you communicate your ideas clearly, working collaboratively is far more important than visual polish. This is where I live now.
- **Keynote**. If you're going to end up sharing your work as a presentation, you may as well start that way. Great if you need to animate anything. You could also use Power-Point or Google Slides, but does either one of those have a flame effect?
- **Mockingbird**. A web-based tool to create and share wire-frames. Great for super-fast "paper" prototyping and usability tests. Not a general-purpose tool. Price goes up with the number of active projects, not collaborators (http://bkaprt.com/jer2/11-16/).
- **Creately**. A cloud-based diagramming tool that allows teams to collaborate on making charts and graphs. Price increases with the number of team members (http://bkaprt.com/jer2/11-17/).
- **OmniGraffle**: My first love. Terrific for mapping. Fast to use once you get the hang of it. Not cheap. Not built for collaboration (http://bkaprt.com/jer2/11-18/).

In the bag

If you're going to be doing field research, keep a bag or bags packed with what you need.

- **Dedicated laptop/s**. Ideally, there will be a shared team research laptop/tablet so no one gets confused about which files ended up in which places. If you are going to be doing usability testing, then you'll need a second laptop or other relevant device.
- **Data storage and transfer**. Assume you have to move some files and have no network. Depending on the equipment type, make sure you have cards, drives, adapters.
- **Field recorder**. Sure, you could use your smartphone, but having a dedicated recording device is handy and professional.
- **Webcam**. Maybe you need video, too. Having both an audio and video recorder gives you flexibility.
- **Small notebooks**. This is your excuse to buy adorable little multipacks of whatever notebooks you've been coveting. Also pens. Good pens.
- **Sign-making and paper prototyping materials**. Whether you want to invite people to your session or keep them out of a room, you'll need paper, colored markers, and tape. As a bonus, you can whip up a testing prototype on the fly.
- **Checklists**. Definitely maintain a list of everything that should be in the bag to make sure your coworkers haven't filched something for a quick sesh in the conference room. Also keep checklists for any processes or protocols you've agreed on.

In the room

If you have the luxury, maintain a dedicated space for research planning and collaborative analysis. Otherwise, keep another bag packed for research work-session supplies. This is just a starter list. Add your snacks of choice.

- **3 × 5 cards**. Thanks to open offices, no one has wall space anymore. Notecards are cheap, durable, and pleasing to use on horizontal surfaces. I find these more useful than sticky notes. Extra points for using different colors to code different types of data in your analysis sessions.

- **Sticky notes**. Can't do design thinking without them, right? Very few people are intimidated by sticky notes, so hand out sticky notes and pens to encourage the whole team to get involved. Also good for tabbed annotations in books and reports.
- **Pads of paper**. When people start taking notes on laptops, it's easy to get sucked into other personal work.
- **Whiteboards**. It's sometimes shocking how little whiteboard space is available in offices where design and development are going on. You need a place to stick and rearrange all of your notes. Ideally, you will have a conference room with whiteboard walls. In a pinch, you can use mobile boards, apply whiteboard wallpaper, or have the team over to brainstorm in your shower. Laptops are great for remote work, but terrible for in-person collaboration.
- **Cool pens for all the surfaces**. Just make sure to keep your permanent markers separate from your dry-erase markers.
- **Large monitor or screen**. That way everyone can view the same thing at the same time and stay off their laptops.

REFERENCES

Shortened URLs are numbered sequentially; the related long URLs are listed below for reference.

Chapter 1

01-01   https://new-ideo-com.s3.amazonaws.com/assets/files/pdfs/news/Informing_Our_Intuition.pdf

Chapter 2

02-01   https://www.jpattonassociates.com/emerging_best_agile_ux_practice/

02-02   https://www.nngroup.com/articles/no-validate-in-ux/

02-03   http://www.esomar.org/knowledge-and-standards/codes-and-guidelines.php

02-04   https://www.pnas.org/content/111/24/8788.full

02-05   https://uxdesign.cc/ethics-power-understanding-the-role-of-shame-in-ux-research-dafc08bd1d66

Chapter 3

03-01   https://articles.uie.com/usability_testing_three_steps/

03-02   http://pewinternet.org

Chapter 4

04-01   https://library.gv.com/tagged/design

04-02   https://library.gv.com/field-guide-to-ux-research-for-startups-8569114c27fb

04-03   https://books.google.com/books/about/Strategic_Management.html?id=NpmA_qEiOpkC%20

04-04   http://www.uxmatters.com/mt/archives/2007/09/conducting-successful-interviews-with-project-stakeholders.php

04-05   http://www.ftrain.com/wwic.html

Chapter 5

05-01 https://www.itu.int/en/ITU-D/Statistics/Pages/publications/misr2018.aspx
05-02 http://www.helsinkidesignlab.org/pages/ethnography-fieldguide.html
05-03 http://www.inc.com/magazine/20040401/25cook.html
05-04 http://archives.newyorker.com/?i=2000-10-16#folio=CV1

Chapter 6

06-01 http://www.sri.com/sites/default/files/brochures/dec-05.pdf

Chapter 7

07-01 http://www.fastcompany.com/1784823/bill-nguyen-boy-bubble
07-02 http://www.nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/
07-03 http://www.nngroup.com/articles/ten-usability-heuristics/
07-04 https://www.nngroup.com/articles/usability-101-introduction-to-usability/
07-05 https://www.nngroup.com/articles/usability-test-checklist/
07-06 https://speakerdeck.com/beparticular/usability-testing-on-mobile-devic-
       es?slide=18

Chapter 8

08-01 http://random-name-generator.info/
08-02 http://rosenfeldmedia.com/books/mental-models/

Chapter 9

09-01 https://www.wsj.com/articles/the-power-of-thick-data-1395443491
09-02 https://www.pewresearch.org/methods/2019/02/27/growing-and-improv-
       ing-pew-research-centers-american-trends-panel
09-03 https://www.pewinternet.org/2019/01/16/facebook-algorithms-and-per-
       sonal-data/
09-04 https://legacy.voteview.com/pdf/Likert_1932.pdf
09-05 https://blog.usejournal.com/net-promoter-score-considered-harmful-and-
       what-ux-professionals-can-do-about-it-fe7a132f4430
09-06 https://hbr.org/2003/12/the-one-number-you-need-to-grow
09-07 https://www.nngroup.com/articles/qualitative-surveys/

Chapter 10

10-01 http://andrewchen.co/2008/06/04/5-steps-towards-building-a-metrics-driven-business/

Resources

11-01 http://www.helsinkidesignlab.org

11-02 http://www.designkit.org/resources/1

11-03 http://guidetouxr.com/

11-04 https://researchops.github.io/www//

11-05 https://servicedesigntoolkit.org

11-06 http://www.servicedesigntools.org/

11-07 http://remoteresear.ch/

11-08 http://www.userfocus.co.uk/articles/index.html

11-09 http://www.nngroup.com/articles/

11-10 https://vimeo.com/1269848

11-11 https://jnd.org/human-centered_design_considered_harmful/

11-12 http://www.aiga.org/ethnography-primer/

11-13 https://ethn.io

11-14 https://www.temi.com

11-15 https://www.rev.com

11-16 https://www.gomockingbird.com

11-17 https://creately.com

11-18 https://www.omnigroup.com/omnigraffle/

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ABOUT A BOOK APART

We cover the emerging and essential topics in web design and development with style, clarity, and above all, brevity—because working designer-developers can't afford to waste time.

COLOPHON

The text is set in FF Yoga and its companion, FF Yoga Sans, both by Xavier Dupré. Headlines and cover are set in Titling Gothic by David Berlow.

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