

Creating a product roadmap allows for organizations to smartly allocate resources to projects and to establish a long-term vision for a product. It can also help organizations to not try to do too much in a single product launch, which can cause the project never to launch.⁵ They are also a good place to link back to the overall business strategy, to attach metrics and revenue targets to specific releases.

Summary

As Buckminster Fuller noted, “You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.” This is what the best strategies do: they create new demand and open up new spaces for products to live.

We now turn our attention to understanding the people who will use the products interaction designers create, and the contexts they will use them in.

For Further Reading

Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant, W. Chan Kim and Renée Mauborgne

Subject To Change: Creating Great Products & Services for an Uncertain World, Peter Merholz, Todd Wilkens, Brandon Schauer, and David Verba

Building Design Strategy: Using Design to Achieve Key Business Objectives, Thomas Lockwood and Thomas Walton (eds.)

Creating Breakthrough Products: Innovation from Product Planning to Program Approval, Jonathan Cagan and Craig M. Vogel

Seeing Differently: Insights on Innovation, John Seely Brown (ed.)

Competitive Strategy: Techniques for Analyzing Industries and Competitors, Michael E. Porter

Managing the Design Factory, Donald G. Reinertsen

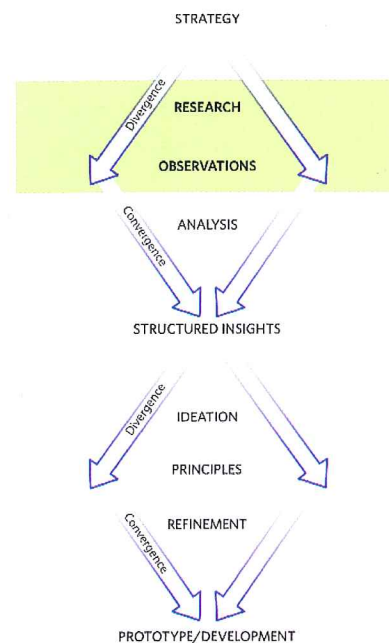
The Reflective Practitioner: How Professionals Think in Action, Donald A. Schön

Zag: The Number One Strategy of High-Performance Brands, Marty Neumeier

⁵ See, for instance, the infamous Chandler product, detailed in the book *Dreaming in Code* by Scott Rosenberg

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Design Research



Imagine a zoo where the zookeepers don't know anything about animals, and they don't bother to find out about the animals' natural habitat, dietary needs, or natural predators. The zookeepers keep the animals in metal cages, group the animals randomly together, and feed them whatever they have around. Now imagine the chaos that ensues and the unhappy (or worse: sick or dead) animals that would be the result. Not the type of place you'd want to take your kids to.

Our fictional zoo is the state of a lot of the products and services today, albeit not so extreme. While most businesses do have strong interest in their customers and put considerable amount of money into their products and services, a lot of that money is poorly spent. If only a small bit of the typical time, money, and resources used to make and market a product or service were put towards design research—observing, talking to, and maybe even making artifacts with customers and users—the products and services we use would be greatly improved.

What Is Design Research?

Design research is the act of investigating, through various means, a product's or service's potential or existing users and the context of use. Design research uses a hodgepodge of methods drawn from anthropology, scientific and sociological research, theater, and design itself, among other disciplines. The methods (some of which are detailed later in this chapter) range from silent observation to lively engagement with subjects in active play, such as role playing and model making.

Designers use these research methods to obtain information about the subjects and their environment that the designers might otherwise not have known and are thus better able to design for those subjects and environments. It behooves designers to understand the emotional, cultural, and aesthetic context that the product or service will exist in. Only through research can designers find out.

NOTE When users are invited in throughout the design process for research purposes (to help generate ideas, discuss concepts, and test prototypes), it is often called *participatory design (PD)*.

Most design research is qualitative, not quantitative. **Qualitative research** is (arguably) more subjective, based on smaller, targeted sample sizes, and is concerned more with *how* and *why* questions. **Quantitative research**, on the other hand, is often about large, random, statistically-significant sample sizes and is designed to answer *what* questions. The outcome of quantitative research is often numerical data that can be made into statistics and mathematical models, while the outcome of qualitative research is usually interview videos, pictures, and other, “softer” data that is (again, arguably) more open to interpretation. Designers can, of course, do both, but this chapter will focus on qualitative methods of research, as those can focus more easily on motivations, expectations, and behaviors, and are thus most valuable to interaction designers.

Why Bother with Design Research?

Interaction designers aren't usually required to do design research. As noted in Chapter 2, many designers don't; instead, they trust their instincts, knowledge, and experience to create products. And in some cases, especially on small projects or in a subject area the designer knows well, this may be the correct approach. But on larger projects in unfamiliar domains, cultures, or subject areas, this approach can be risky. Without any up-front (sometimes called **generative**) research, designers risk finding out later in the process—during testing (see Chapter 8) or, worse, after the product launches—that the product they've designed doesn't meet users' needs or doesn't work in its environment. Research can help prevent these costly mistakes.

Designers usually work on projects outside of their area of expertise (design). The best way, aside from being an intuitive genius, of understanding people different from yourself and the environments they live and work in is to do research. Meeting even a single user will likely change one's perspective on a project. Spending a day observing someone do his or her job will give insights into that job that you would never get otherwise.

Design research can be especially helpful if the product contains features and functionality that are for specific types of users (often power users), who are doing specific types of work, work that the designer doesn't do. Sometimes conducting research is the only way to understand the nuances of a specific feature, as well as its importance to a specific group of users.

Design research helps give designers **empathy** with users. An understanding of the users and their environment helps designers avoid inappropriate choices that would frustrate, embarrass, confuse, or otherwise make a situation difficult for users.

Design research can also lead to moments of inspiration, such as when a research subject says something enlightening, or the environment suggests how a product might fit into it.

Brenda Laurel on Design Research



Brenda Laurel, Ph.D., is the chair of the Graduate Program in Design at California College of the Arts. She has written and edited several seminal interaction design books, including *Computers as Theater*, *The Art and Science of Human-Computer Interaction*, and *Design Research*.

Why is design research important?

Perhaps the single most pernicious sort of folly I have seen over nearly 30 years in the computer field is the belief on the part of engineers, designers, and marketing people that they "just know" what will work for their audience. For an extremely observant, experienced designer, this may indeed be true, but such people are exceedingly rare, and those who are most successful have "trained" their intuition by carefully observing and reaching deep understanding of certain kinds of people, cultures, and contexts. For the rest of us, that first "great idea" is usually a shot in the dark. Examining the idea to discover the hypotheses that are implicit in it gives the designer a platform for inquiry that will inform the project. It may also surprise and delight the designer.

Brenda Laurel on Design Research (continued)

Full-blown ideas for great, innovative products do not come from research subjects. The designer need not fear that engaging in research means that one is the slave of their findings. Design research includes the careful analysis of findings, turning them this way and that, looking for patterns. At the end of the day, well-designed research findings can spark the imagination of the designer with outcomes that could not have been dreamt of by either the research subjects or even the designer herself. Good design research functions as a springboard for the designer's creativity and values.

You've said that good design needs to understand "deep, roiling currents of our dynamic culture." Is research the best method for divining those currents?

Well, "research" is a pretty broad term. Exploration, investigation, looking around, finding out are all synonyms for research. In the business of cultural production, exposure to popular media is essential research. Television, movies, news, games, nonfiction, science fiction—all facets of the Spectacle—can provide a great deal of information about the trajectories of change, what people long for and what they fear; what sorts of stories are told and why; how people are likely to greet particular changes in their world.

What should designers look for when doing research?

The dictionary definition frames research as "scholarly or scientific investigation or inquiry." The first step is to deliberately identify one's own biases and beliefs about the subject of study and to "hang them at the door" so as to avoid self-fulfilling prophecies. One must then frame the research question and carefully identify the audiences, contexts, and research methods that are most likely to yield actionable results. Those last two words are the most important: actionable results. Often, the success of a research program hangs upon how the question is framed.

You've said that design needs to be a more "muscular" profession. How can research help in that?

Research helps design to become a more muscular profession because knowledge is power. Identifying the deepest needs of our times and carefully examining the complexes of beliefs, practices, attitudes, hopes, and fears that surround them can empower designers to do more than embroider the Spectacle. Muscular design can lift the veil and open new pathways through the challenges that confront us, from the everyday challenge of opening a bottle of medicine with arthritic hands to the global challenge of designing everything for sustainability, increasing delight while decreasing the weight of the human footprint on Earth.

Research Planning

Doing research, especially a larger research project with multiple locations, requires some planning up front for it to be successful. That planning involves finding subjects to research and locations for research, and figuring out the activities and interview questions that will get you the information you need. In short, you need to figure out who you are going to research and what you are trying to find out.

Designers can help themselves focus by creating a **hunt statement** before going out into the field. A hunt statement is a tool for narrowing down what the designer is researching and why. Hunt statements typically take this form: I am going to research X so that I can do Y. X is often an activity, and Y is usually a project goal or subject area. Here's an example: I am going to research how doctors use laptops on the job so that I can design a laptop for them. Hunt statements should be developed before doing research so that there is a purpose to each piece of research. The more specific the hunt statement, the better.

Costs and Time

One myth of design research is that it is expensive and time consuming. And while it can be—some rare design research projects cost millions of dollars and take place over years—most design research takes place over days or weeks and costs in the tens of thousands of dollars. It is time and money well spent.

The materials necessary for design research can be as simple as a notebook and a pen, or as complicated as specialized software and video-recording equipment. Ideally, a research team will have two of everything: two notebooks, two cameras (in case one breaks), and four pens. The research team itself should consist of (at least) two people who can trade off interviewing and moderating duties during research sessions.

The amount of time spent doing research can vary widely. Even a single day spent doing research will improve the outcome of the project. Ideally, however, designers will want enough time to interview and observe a representative group of users. In most cases, this will be more than 10 people, but fewer than 40. Time needs to be set aside not only for doing the research itself, but also for recruiting subjects, which can be quite time consuming

itself. Generally speaking, most design research takes from a week to two months to execute from beginning to end.

Recruiting

The validity of your research data is entirely dependent on finding the right subjects to research. Before going into the field, determine who you should be speaking to and then try to find them. This requires figuring out a set of characteristics of the people you want to speak to. These can include basics such as age, gender, geographic location, and other “marketing segmentation” type characteristics. It should also include behavioral criteria such as level of expertise, attitude toward the product, and frequency or likelihood of product use or activity engagement.

Unless your users (or prospective users) are an extremely narrow group, some diversity is essential in order to make sure you are getting valuable research data and enough variety of viewpoints and, especially, behavior. Be careful to avoid **unconscious bias** in choosing subjects. As humans, we often unconsciously choose to engage with people who appear similar to us. In design research, unconscious bias might keep you from valuable subjects with markedly different viewpoints.

Once you have the criteria, you should figure out the number of users you will need for each criterion. A good, basic rule of thumb is around four to six subjects per major characteristic. Of course, you can combine criteria into clusters, such as “women 18–30 who are current users,” which can help with recruiting. It helps to have a spreadsheet to track which criteria remain to be recruited.

You should create a **screeners** to help make sure you are getting the right people. A screener is a set of initial questions to make sure a subject is a good fit and matches all the criteria you need. You want to make the screener as specific as possible so that you get the right combination of subjects. The screener should not only ask characteristic questions (“Are you female?” “What is your age?” and so on) but also specific questions in the subject area to make sure that the potential subject isn't lying about what they know. There are people who participate in research studies strictly for the money, regardless of whether they are qualified, so it behooves you to try to root out those people before you waste your time researching them. If, for example,

you are doing a project for active stock traders, you may want to ask potential subjects about common ticker symbols such as Microsoft (MSFT) just to make sure they really are who they say they are. It'll probably become obvious during research that a subject is an impostor, but it is far better to find this out during a screener than in the midst of an interview. In order to get a large number of potential subjects to choose from, you should disclose the incentive before asking potential subjects the criteria questions.

There are firms that will recruit research subjects when given a screener. Often companies will have a list of customers to recruit from that they can check the screener against. There are also ways to recruit subjects over the Web, using sites like Craigslist, or using a tool like Bolt|Peters' Ethnio (Figure 4.1) to intercept potential subjects at particular Web sites with an online screener.

Figure 4.1

Research subjects can be recruited online using tools such as Ethnio, which essentially let you present your screener as a Web site popup.

SONY USA

Register Shop Electronics PlayStation Online Games Music & Movies Service & Support Search Sony

ONLINE SURVEY CLOSE

sony style Help us improve sonystyle.com

Are you considering any other brands? Yes: ☐ No: ☐

How long have you been shopping?

What specifically are you visiting the site for today?

May we call you for a phone interview? Yes: ☐ No: ☐

What is your age? Please select:

Name

Email

Phone number where we can reach you immediately

Submit

ethnio powered by Bolt|Peters

QUANTUM SPACE

Relive the Excitement of Bond. Own it on Blu-ray Disc™ media and DVD.

Learn More

Play Shop

Customize your PSP system The ultimate reading list

COURTESY BOLT|PETERS

However it is done, recruiting takes time. You can expect, in some cases, for recruiting to take as much time as the actual research itself, especially if the subjects are difficult to find.

Moderator Script

In order to make sure you are getting good data, you need to ask the right questions, so it is best to create a moderator script before doing a research session. A moderator script guides the person or people running a research session (the moderators) on what to say and in what order to say it.

Moderator scripts (sometimes called discussion guides or protocols) should contain not only questions designed to entice the right data from a subject, but also instructions to the person conducting the research. Research sessions can be stressful, and it is easy to forget basic tasks like turning the video camera on, or resetting an activity. Writing down those instructions will help make the sessions run more smoothly.

When possible, moderators should avoid questions that can be answered with a yes or no; instead focus on drawing out stories and answers to how, what, and why questions: How is this activity done? Why is it done this way? What tools do you use to do it? If I took those tools away, how would you do it? And so on.

You should avoid leading questions ("So how good is this product?") and instead present as neutral and objective a tone as possible. Remember that the research subjects are people in the unfamiliar situation of being interviewed and observed. They want to give researchers what they want and will look to the researcher for cues as to what they should say and do. Thus, you can easily influence their responses through the phrasing of your questions ("Wasn't that a confusing widget?"). Revise questions that might suggest a given (your) answer.

The moderator script should be treated as a living, working document. After a few sessions have been run, it will likely become clear where the script has to be tweaked and refined, so moderators should do so. There is also usually no harm, unless it eats up all your session time, in deviating from the script to follow an interesting or revealing line of questioning. In fact, this is to be encouraged (within reason). However, make sure your goals remain consistent so you don't deviate from the point of the research—refer to the hunt statement if you need to.

Conducting Design Research

Anthropologist Rick E. Robinson¹ has outlined three main rules drawn from anthropology for conducting design research:

- ▶ **You go to them.** Designers shouldn't read other people's research on their research subjects from the comfort of their offices. Designers shouldn't make subjects come to them, to an artificial testing environment in an unfamiliar location. Observing the environment—where activities are performed—is an essential component of any research.
- ▶ **You talk to them.** Designers shouldn't just read about their subjects. Nor should they ask other people about them. Designers should have subjects tell their own stories in their own manner. The nuances of *how* a story is told can often tell a designer as much as the story itself.
- ▶ **You write stuff down.** The human memory is faulty. If designers can't write down what they see and hear directly as they do their research, then they should do so immediately afterward.

What Not to Do

Years of marketing methodology has left its mark. The first thing that most people think of when they think about talking to users is assembling a focus group. *Don't do this.* Focus groups are artificial constructs that, like juries, can be swayed and manipulated by strong participants in it, throwing off natural results. And that's to be expected—focus group facilitators assemble people into a synthetic group in an artificial setting (usually a conference room with a two-way mirror) and pepper them with scripted questions. This is not a good way to do design research. Rule #1: You go to them.

Nor is it a good idea to rely solely on the research of others, unless they are on the design team. Without knowing the circumstances and methods of the research, designers typically can't verify that the results are good and that they record the data that is most important to the designer: what the subjects did, said, or made, and the environment they were in. This dictum is especially true for data derived from marketing research. Marketing research typically focuses on demographics and attitudes—some of the least interesting data from a designer's point of view. Rule #2: You talk to them—emphasis on *you*.

¹ See a collection of Robinson's papers and presentations online at www.rickerobinson.com

Designers shouldn't rely on a videotape or transcript to capture what they need to remember. Reviewing audio or videotape is a tedious process and will seldom be done, except to find specific moments. Transcripts of tapes, while useful, take time to create even when using a transcription service, and the designer may need the information before the transcript is complete. And there is always that dreadful possible moment when the video camera malfunctions. Designers need to take their own research notes, both for safety and to focus their observations. Rule #3: You write stuff down.

Ethical Research

When conducting research, designers should strive to treat their subjects ethically. Not only is this the right thing to do, but it will yield better results as well, since the subjects will likely open up more if they know and feel that they (and their data) are being treated well. Ethical research requires following these guidelines:

- ▶ **Get informed consent from subjects.** The designer should tell the subject that he or she is conducting a research study and explain the purpose. The subject must understand what is going on and agree to participate, preferably in writing. With studies involving minors, parental or guardian approval in writing is a necessity. An exception to this guideline is observations in public spaces where it would be impossible or impractical to get consent from everyone in view.
- ▶ **Explain the risks and benefits of the study.** Some studies carry with them risks. The designer may hear or see something that the subject doesn't want him to. The presence of a designer could be dangerous or make certain tasks cumbersome. But the designer should also explain what he or she hopes will improve as a result of the study ("We're going to build a better system for tracking shipments of ball bearings"), both to reassure the subject and to ensure good research results.
- ▶ **Respect the subjects' privacy.** Never use subjects' real names or other data that might identify them. Blur or hide faces in photographs. This will ensure that anything that subjects do or say won't have personal repercussions for them.
- ▶ **Pay subjects for their time.** People's time is valuable, and people who give some of it to provide insights to designers should be paid for it,

at least a token amount. This payment doesn't necessarily have to be cash, although it should have value to the subjects.

- ▶ **If asked, provide data and research results to subjects.** Some subjects will want to see what you have recorded and the outcomes of the research. Designers should respect these requests.

What to Look For and How to Record It

When in the field, designers can get overwhelmed with the amount of data they are suddenly receiving. Often the designers are in a strange environment interacting with strangers. The newness of everything makes everything seem important. But the designer needs to focus on observing the things that are truly essential—namely, specific activities, the environment where activities take place, and the interactions among people that take place during activities.

Patterns and Phenomena

In the field, the main things a designer looks for are patterns and unique phenomena.

Patterns can be patterns of behavior, patterns in stories, patterns of responses to a question—any action or idea that keeps recurring. The rules of thumb are these:

- ▶ See or hear it once, it's a phenomenon. Write it down.
- ▶ See or hear it twice, it's either a coincidence or a pattern emerging. Write it down.
- ▶ See it or hear it three times, it's a pattern. Write it down.

Sometimes patterns won't emerge until after the research data has been analyzed (see Chapter 5). Sometimes a pattern is obvious in the midst of doing the research. Indeed, one good rule of thumb is that when you start noticing many patterns, you've likely done enough research to draw some meaningful conclusions.

Phenomena are interesting to a designer as well. Unusual behaviors—especially unusual methods of working—can suggest directions that will benefit larger numbers of people in their work. Say an accountant has created a different use for a spreadsheet; perhaps this approach can be built into the spreadsheet so that others can use it as well.

NOTE *It's never a good idea to do research alone. Having a second pair of eyes, ears, and hands is immensely valuable for observing, listening, and recording, and for discussing and analyzing the research data afterwards. Two people observing the same phenomenon can draw (at least) two distinct conclusions from it, provided both saw it. Sometimes another person can be valuable simply to help capture the rich data being observed. Patterns can be subtle and easily missed.*

Field Notes

Writing down observations and key phrases is essential. Paper notebooks are best and less distracting than laptops or mobile devices, unless the environment is one where a notebook might seem more conspicuous, such as in an office environment.

All field notes should start the same way: recording the name of the person doing the research and the day, time, and place where the research is taking place. These details are crucial, especially for reference later in the project when these items can provide cues for recalling details. ("Remember that woman in the diner? The one we talked to last Tuesday. What did she say again?") Although the designer may record subjects' names and other data to provide compensation, for instance, this data should be kept separately from field notes, which should use pseudonyms instead of real names to preserve the anonymity of the subjects. Another thing to leave out, no matter how tempting, are personal opinions about the subjects, the observed activities, or overheard conversations. Doing otherwise is simply asking for trouble. Subjects, clients, and teammates may want to see the field notes, and showing bias in them is not only unprofessional, but bad research. Bias in research can't be helped, but it can (and should) be minimized.

It's a good idea, however, for the designer to have a separate area on the page to jot down thoughts and feelings that arise during the research sessions, including possible patterns. This should be a place to capture quick reflections or flashes of insight that can be explored more fully later.

Other findings that should be written down in the field notes are:

- ▶ Exact quotes with indications of emphasis and tone—Bob: "I sure do love these controls" (said ironically).

- ▶ Sketches of the location, annotated with comments and detail.
- ▶ The history, steps, and context of any activities.

Still pictures should be taken when and where feasible. Ideally, these will be printed, attached to the accompanying field notes, and annotated with captions or other notes. When taking pictures, make sure you are capturing not just the subject, but also the environment, any objects that are mentioned, and especially any activities being performed or demonstrated.

Research Methods

Design research has many methods, drawn from other disciplines or created by designers over the years. These methods can be roughly divided into three categories: observations, interviews, and activities, including having subjects make things and self-report on their activities.

Whole books have been written on the methods of design research (see For Further Reading at the end of the chapter), so what follows is a representative sample of the most common methods.

Observations

The easiest and possibly the most fruitful of all design research methods is simply observing what people are doing in a conscientious manner. Designers can covertly watch or interact with people or tag along with subjects to ask them questions about how and why they are doing what they are doing.

- ▶ **Fly on the wall.** Go to a location and unobtrusively observe what goes on there. For instance, a designer could go to a mall and watch how people shop.
- ▶ **Shadowing.** Follow subjects as they go about their routines. This technique usually requires permission, as the designer is following the subject throughout the day, recording what is done and said.
- ▶ **Contextual inquiry.** A variation on shadowing, contextual inquiry involves going to the subjects' location and asking questions about their behaviors, such as "Why are you doing that? Could you describe that to me?"

- ▶ **Undercover agent.** Observe people by interacting with them covertly, posing as someone "normal" in the environment. A designer who wants to know about a service can pretend to be a customer and use the service.

When conducting observations, dress not to impress. The point is to blend in with the environment so that the observer isn't the one being observed. Observers should wear neutral, nondescript clothing that is appropriate to the environment. The more observers look like they belong, the more they'll become part of the background. Bring props if necessary. Some environments require certain items for the observer to seem normal, such as a backpack in school settings, a hard hat on construction sites, or a suit in a conservative office.

Observers should choose their locations wisely and be willing to change to another one if the original doesn't seem to be yielding good results. Observers should sit or stand in places where they can observe without being noticeable. It's best to be at an angle when observing subjects instead of directly in front or back of them, because an angle gives a clearer line of sight.

Camera phones are excellent for inconspicuously snapping photos in public spaces. Remember, however, that any such photos should be used in an ethical manner.

Interviews

It's amazing what you can find out if you just ask. Talking to people and hearing their stories is a great way to uncover attitudes and experiences—but designers do need to be careful: what people say they do and what they actually do are typically two very different things. Here are some methods for talking to users:

- ▶ **Directed storytelling.** Ask subjects to tell stories about specific times they performed an action or interacted with a product or service. Moments to ask about are the first time they performed an action or used a product ("Tell me about the first time you used the system to place an order"), a time when the product or service hasn't worked ("Can you describe a time when you couldn't do something you wanted to with your mobile phone?"), and a time when they did something new ("Why did you try to use the screwdriver to pry open the phone?").

Figure 4.2

A desk tour can reveal how people structure their personal space to work and uncover objects and methods users neglected to mention.



► **Unfocus group.** A method from design firm IDEO,² this approach turns the traditional focus group on its head. Instead of assembling a group of users in a room to talk about a subject or product, this method suggests assembling a group of experts in the field, hobbyists, artists, and others to explore the subject or product from different viewpoints. The purpose is not to get a typical user's perspective, but instead an atypical view of the subject.

► **Role playing.** With a willing group or individual, role playing different scenarios can draw out emotions and attitudes about a subject, product, or service in ways that can be very fresh ("I'm going to pretend I'm a customer and interact with you. Is that okay?").

► **Extreme-user interviews.** Another method from IDEO, in this approach the designer interviews people on the outer edge of the subject matter. For example, a designer working on an interactive TV project might interview a subject who doesn't own a TV.

► **Desk/purse/briefcase tour.** Ask subjects to give a tour of their desks or the contents of their purses or briefcases (Figure 4.2). How people use their desks and what they carry with them can reveal a lot about their personalities and work habits. Are they messy or neat? Organized or disorganized? Do they have special systems for working? Are there family pictures?

When talking to subjects, it's best to have what Buddhists call the "beginner's mind." Designers should be open and nonjudgmental and should not assume that they know the answer beforehand. Simple questions can reveal powerful answers.

² See IDEO's method cards for more. www.ideo.com/work/item/method-cards/

Activities

A recent trend in design research calls for designers to not only observe and talk to users, but also to have them engage in an activity that involves making an artifact. This process allows designers to draw out emotions and understand how people think about a subject. Doing activities frees subjects' creativity and allows them to express themselves differently than they would in an interview. Here are some methods for making artifacts with subjects:

► **Collaging.** Using images and words, have subjects make a collage related to the product or service being researched (Figure 4.3). For a mobile phone project, for example, designers might have subjects make a collage on mobility. The collage images can come from magazines, the Web, or stock photographs, and should contain a wide range of subjects and emotions. The same is true for the words. About 200 words, both positive and negative, should be printed out on strips of paper for use. Subjects should have a way to write their own words as well.

► **Modeling.** Using modeling clay, pipe cleaners, Styrofoam blocks, cardboard, glue, and other modeling tools, designers can have subjects design their version of a physical or even digital product. For example, a designer could have gamers design their ultimate game console or have air traffic controllers design an ideal set of controls.

► **Draw your experience.** Give subjects drawing materials and paper and tell them to draw their experience with a product or service (Figure 4.4). A project about e-mail, for example, might have subjects draw the lifecycle of e-mail on their computers.



Figure 4.3

Creating collages can give visual and verbal clues as to how subjects think and feel about a topic.

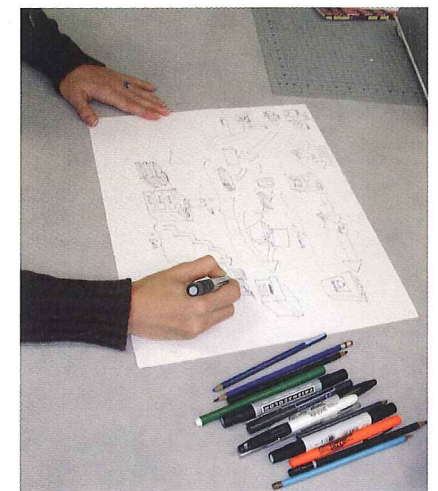


Figure 4.4

Drawing experiences can bring out subjects' hidden experiences and emotions.

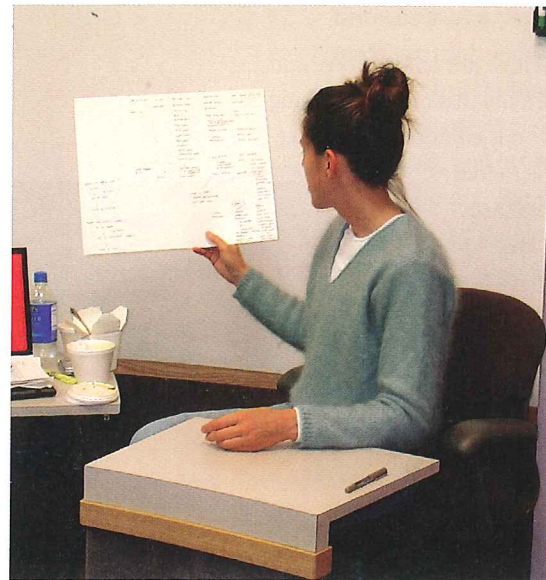


Figure 4.5

An essential part of having subjects make artifacts is having the subjects explain their choices afterwards.

Self-Reporting

Another type of activity is self-reporting. In this approach, subjects, not the researcher, record their activities and thoughts, and the researcher then collects and analyzes these records after the subjects are done. Self-reporting is an excellent tool for longer studies in multiple locations, when it would be impractical to send designers to do all of the research in person. Self-reporting can also be good for documenting moments that subjects might be reluctant or embarrassed to present to a designer in person. Self-reporting methods include the following:

- ▶ **Journals.** Subjects keep a journal of particular activities. A classic example is the journals kept by the Nielsen families, who write down what they watch on TV for two week's time so that the Nielsen ratings can be compiled.
- ▶ **Beeper studies.** Subjects wear a beeper, which the designer sets off during the day. When the beeper goes off, the subjects record in a journal what they are doing at that time.

An important part of having subjects make things is having them explain their choices after they are done (Figure 4.5). Otherwise, the designer may be left with a perplexing object and no way of understanding it. Ask, for instance, why a subject chose negative words in the collage or why a subject built the robot that way. However, for the best results, designers shouldn't tell subjects beforehand that they will be explaining their choices; this could inhibit them as they complete the activity.

Making artifacts requires more advance preparation than other forms of research. Designers need to gather and choose the materials for making the artifacts as well as the tools to do so.

- ▶ **Photo/video journals.** Subjects are given cameras and told to document activities and their daily lives. Research on dining experiences, for instance, might ask subjects to document every time they cook or eat something.

Self-reporting requires a lot of time and effort from the subjects, so the subjects should be selected (and compensated) accordingly.

Summary

Design research is a powerful tool in the interaction designer's toolkit. It allows designers to get away from their desks and out into the field where the product will be actually used. It can bring insights and inspiration that can change not only the end product, but even the strategy as well. New markets and new opportunities can be found, and the designer becomes immersed in the subject matter.

But, as Jesse James Garrett noted in his essay *ia/recon*,³ "Research can help us improve our hunches, but research should inform our professional judgment, not substitute for it."

But research alone is almost useless. At the end of the research period, you have a pile of observations and data that are mostly unformed and not particularly helpful. The research data needs to be analyzed and turned into structured findings. Without the critical next step, what you've seen and heard will likely not make its way into the product. Research analysis and the making of structured findings are the subject of the next chapter.

For Further Reading

Design Research: Methods and Perspectives, Brenda Laurel and Peter Lunenfeld (eds.)

A Designer's Research Manual: Succeed in Design by Knowing Your Clients and What They Really Need, Jennifer Visocky O'Grady and Kenneth Visocky O'Grady

³ Found online at www.jjg.net/ia/recon/

Observing the User Experience: A Practitioner's Guide to User Research,
Mike Kuniavsky

Understanding Your Users: A Practical Guide to User Requirements, Catherine
Courage and Kathy Baxter

*Through Navajo Eyes: An Exploration in Film Communication and Anthro-
pology*, Sol Worth and John Adair

*Learning From Strangers: The Art and Method of Qualitative Interview Stud-
ies*, Robert S. Weiss

The Ethnographer's Toolkit, Volumes 1-7, by Margaret Diane LeCompte and
Jean J. Schensul

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Structured Findings

