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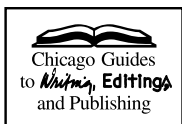
THE Craft OF Research

WAYNE C. BOOTH

GREGORY G. COLOMB

JOSEPH M. WILLIAMS

The Craft of Research



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JACQUES BARZUN

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HOWARD S. BECKER

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HOWARD S. BECKER

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WAYNE C. BOOTH, GREGORY G. COLOMB,
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The Craft of Research

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WAYNE C. BOOTH

GREGORY G. COLOMB

JOSEPH M. WILLIAMS

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WAYNE C. BOOTH was the George M. Pullman Distinguished Service Professor Emeritus at the University of Chicago. His many books include *The Rhetoric of Fiction*, *For the Love of It: Amateuring and Its Rivals*, and *The Essential Wayne Booth*, each published by the University of Chicago Press. Professor Booth died in 2005.

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PART I

*Research,
Researchers,
and
Readers*

Prologue

BECOMING A RESEARCHER

WHO NEEDS RESEARCH?

When you think of a researcher, what do you imagine? Someone in a lab coat peering into a microscope? A white-bearded professor taking notes in a silent library? That's what most people think. But you might also have pictured Oprah, Yahoo creator Jerry Yang, or the manager of every major league baseball, football, and basketball team in the world. Like just about every successful person, they are not only experts in doing research, but in using the research of others. In fact, that's part of what makes them successful. In an aptly named "age of information" (or, too often, *misinformation*), every one of them has learned not only how to find information, but how to evaluate it, then to report it clearly and accurately. More than ever, those skills are essential to anyone who wants to succeed in just about any profession you can think of.

You may not yet be one of those practicing professionals, but learning to do research now will help you today and prepare you for what's to come. First, it will help you understand what you read as nothing else will. You can accurately judge the research of others only after you've done your own and can understand the messy reality behind what is so smoothly and confidently presented in your textbooks or by experts on TV. The Internet and cable TV flood us with "facts" about government, the economy, the environment, the products we buy. Some are sound; most are not. That's why, as you

learn to do research, you'll also learn to value reliable research reported clearly and accurately.

You'll also discover how new knowledge depends on what questions you ask—and don't; how the way you present your research shapes the questions you can ask and how you answer them. Most important, you will understand how the knowledge we all rely on depends on the quality of the research that supports it and the accuracy of its reporting. Although some might think it idealistic, another reason for doing research is the sheer pleasure of solving a puzzle, of discovering something that no one else knows.

But learning to do research is not like learning to ride a bike, the sort of thing you learn once and never forget. Each of the three of us has started projects that forced us to rethink how we do our work. Whenever we've addressed a new research community, we've had to learn its ways to help us understand what its members think is important. But even then, we could still rely on principles that all researchers follow, principles that we describe in this book. We think you will find them useful as your projects and readers become more demanding, both in school and after.

We must be candid, though: doing research carefully and reporting it clearly are hard work, consisting of many tasks, often competing for your attention at the same time. And no matter how carefully you plan, research follows a crooked path, taking unex-

FLOODS OF MISINFORMATION

Since 9/11, our government has had to counter bizarre claims that have circulated around the world: No Muslims were among the hijackers; Jews had advance notice and stayed home; the attacks were the work of the CIA. These claims have been widely believed, even though no evidence backs them up. But we should also recall some bizarre stories believed by many Americans: The CIA started the AIDS epidemic to kill homosexuals and African Americans; the government still hides the bodies of aliens in Area 51; bar codes are a UN conspiracy. Every society falls for outlandish claims, but we can learn to see through them once we understand how to make a good case for what we should believe, based not on fear or paranoia, but on reliable evidence and a sound argument.

pected turns, sometimes up blind alleys, even looping back on itself. As complex as that process is, we will work through it step-by-step so that you can see how its parts work together. When you can manage its parts, you can manage the often intimidating whole and look forward to doing more research with greater confidence.

STARTING A RESEARCH PROJECT

If you are beginning your first project, the task may seem overwhelming. *How do I find a topic? Where do I find information on it? What do I do when I find it?* Even if you've done a research paper in a writing class, the idea of another may be even more intimidating if this time it's *the real thing*. If so, you're not alone. Even experienced researchers feel anxious when they tackle a new kind of project for a new audience. So whatever anxiety you feel, most researchers have felt it too. (It's a feeling that the three of us know well.*) The difference is that experienced researchers know what lies ahead—hard work, but also the pleasure of the hunt; some frustration, but more satisfaction; periods of confusion, but confidence that, in the end, it will all come together and that the result is worth the effort. Most of all, experienced researchers know how to get from start to finish not easily, perhaps, but as efficiently as the complexity of their task allows. That's the aim of this book.

WORKING WITH A PLAN

You will struggle with your project if you don't know what readers look for in a final report or how to help them find it. Experienced researchers know that they most often produce a sound report when they have a plan, no matter how rough, even if only in their heads. In fact, they create two kinds of plans: One helps them prepare and conduct their research; the second helps them draft their report of it.

They usually begin with a question and a plan to guide their search for an answer. They may not know exactly what they'll find,

*Careful readers may notice that in this third edition we still speak in the voice of three authors, even though Wayne Booth was no longer with us to participate in the revisions. We two (Colomb and Williams) chose to keep Wayne's voice because we could not imagine the book without it.

but they know generally what it will look like, even if it surprises them. They also know that once they have an answer, they don't just start writing, any more than an experienced carpenter just starts sawing. They draw up a second plan, a rough blueprint for a >rst draft—maybe no more than a sketch of an outline. Shrewd researchers, though, don't let that plan box them in: they change it if they run into a problem or discover something that leads them in a new direction. But before they start a >rst draft, they begin with *some* plan, even when they know they'll almost certainly change it.

That plan for a draft helps researchers write, but created with their readers in mind, it also helps readers read. In fact, researchers of all kinds use standard forms to anticipate what readers look for:

- A newspaper reporter writes her story in the traditional “pyramid” form, with the salient information >rst, not just to make her job of drafting easier, but also so that her readers can >nd the gist of the news quickly, then decide whether to read on.
- An accountant follows a standard form for her audit report not just to organize her own writing, but so that investors can >nd the information they need to decide whether the company is another Enron or the next Apple.
- A Food and Drug Administration scientist follows the predictable form for a scienti>c report—Introduction, Methods and Materials, Results, Discussion, Conclusion—not just to order his own thoughts coherently, but to help readers >nd the speci>c issues they have to consider before they accept his >ndings.

Within these forms or *genres*, writers are free to emphasize different ideas, to put a personal stamp on their work. But they know that a plan helps them write efficiently and, no less important, helps their readers read productively.

This book will help you create and execute a plan for doing your research and another for reporting it in ways that not only encourage your best thinking, but help your readers see its value.

HOW TO USE THIS BOOK

The best way to deal with the complexity of research (and its anxieties) is to read this book twice. First skim it to understand what lies ahead (skip past what seems tedious or confusing). But then as you begin your work, read carefully the chapters relevant to your immediate task. If you are new to research, reread from the beginning. If you are in an intermediate course but not yet at home in your field, skim part I, then concentrate on the rest. If you are an experienced researcher, you will find chapter 4 and parts III and IV most useful.

In part I, we address what those undertaking their first project must think about deliberately: why readers expect us to write up our research in particular ways (chapter 1), and why you should think of your project not as solitary work but as a conversation with sources whose work you read and with those who will in turn read your work (chapter 2).

In part II, we discuss how to frame and develop your project. We explain

- how to find a topic in an interest, then how to focus and question it (chapter 3)
- how to transform those questions into a research problem (chapter 4)
- how to find sources to guide your search for answers (chapter 5)
- how to engage sources in ways that encourage your own best thinking (chapter 6)

In part III, we discuss how to assemble a sound case in support of your claim. That includes

- an overview of a research argument (chapter 7)
- how to evaluate your claim for its significance (chapter 8)
- how to judge what count as good reasons and sound evidence (chapter 9)

- how to acknowledge and respond to questions, objections, and alternative views (chapter 10)
- how to make clear the logic of your argument (chapter 11)

In part IV, we lay out the steps in producing your report:

- how to plan a first draft (chapter 12)
- how to draft it quickly and efficiently (chapter 13)
- how to test and revise it (chapter 14)
- how to present complex quantitative evidence clearly and pointedly (chapter 15)
- how to write an introduction and conclusion that convince readers your report is worth their time (chapter 16)
- how to edit your style to make it clear, direct, and readable (chapter 17)

Between some of the chapters you will find “Quick Tips,” brief sections that complement the chapters with practical advice.

In an afterword, “The Ethics of Research,” we reflect on a matter that goes beyond professional competence. Doing and reporting research is a social activity with ethical implications. We often read about the dishonest research of historians, scientists, stock analysts, and others. And we see plagiarism among writers at all levels of achievement, from secondary-school students to leaders of their professions. Such events highlight the importance of *ethical* research and its reporting.

In a concluding essay, we address those who teach research. At the end of the book is a bibliography of sources for beginning researchers and for advanced researchers in particular fields.

Research is hard work, but like any challenging job done well, both its process and its results can bring great satisfaction. No small part of that satisfaction comes from knowing that your work sustains the fabric of a community of people who share your interests, especially when you discover something that you believe can improve your readers’ lives by changing what and how they think.

CHAPTER ONE

Thinking in Print

THE USES OF RESEARCH, PUBLIC AND PRIVATE

In this chapter we define research, then discuss how you benefit from learning to do it well, why we value it, and why we hope you will too.

Whenever we read about a scientific breakthrough or a crisis in the world affairs, we benefit from the research of those who report it, who in turn benefited from the research of countless others. When we walk into a library, we are surrounded by more than twenty-five centuries of research. When we log on to the Internet, we can read millions of reports written by researchers who have posed questions beyond number, gathered untold amounts of information from the research of others to answer them, then shared their answers with the rest of us so that we can carry on their work by asking new questions and, we hope, answering them.

Teachers at all levels devote their lives to research. Governments spend billions on it, businesses even more. Research goes on in laboratories and libraries, in jungles and ocean depths, in caves and in outer space, in oceans and, in the information age, even in our own homes. Research is in fact the world's biggest industry. Those who cannot do it well or evaluate that of others will find themselves sidelined in a world increasingly dependent on sound ideas based on good information produced by trustworthy inquiry and then presented clearly and accurately.

In fact, research reported by others, in writing, is the source of most of what we believe. Of your three authors, only Williams has ever set foot in Australia, but Booth and Colomb believe it exists, because for a lifetime they have read about it in reports they trust

and have seen it on reliable maps (and heard reports about it from Williams). None of us has been to Venus, but we believe that it is hot, dry, and mountainous, because that's what we've read. But we trust that research only because we think it was done carefully and reported accurately.

Without trustworthy *published* research, we all would be locked in the opinions of the moment, prisoners of what we alone experience or dupes to whatever we're told. Of course, we want to believe that our opinions are sound, yet mistaken ideas, even dangerous ones, flourish because too many people accept too many opinions based on too little evidence. And as recent events have shown, those who act on unreliable evidence can lead us—indeed have led us—into disaster.

That's why in this book we will urge you to be amiably skeptical of the research you read, to question it even as you realize how much you depend on it. Are we three authors 100 percent drop-dead certain of reports that Venus is hot, dry, and mountainous? No, but we trust the researchers who have published reports about it, as well as the editors, reviewers, and skeptical readers who have tested those reports and published their own results. So we'll go on thinking that Venus is hot and dry, at least until we see better evidence that it's not.

1.1 WHAT IS RESEARCH?

In the broadest terms, we do research whenever we gather information to answer a question that solves a problem:

PROBLEM: Where do I find a new head gasket for my '65 Mustang?

RESEARCH: Look in the yellow pages for an auto-parts store, then call to see if it has one in stock.

PROBLEM: To settle a bet, I need to know when Michael Jordan was born.

RESEARCH: You Google "Michael Jordan birthday."

PROBLEM: I'm just curious about a new species of >sh.

RESEARCH: You search the Internet for articles in newspapers and academic journals.

We all do that kind of research every day, and though we rarely write it up, we rely on those who wrote up theirs: Jordan's biographers, the >sh discoverers, the publishers of the yellow pages and the catalogs of the auto-parts suppliers—they all wrote up their research because they knew that one day someone would have a question that they could answer.

If you're preparing to do a research project not because you want to but because it's been assigned, you might think that it is just make-work and treat it as an empty exercise. We hope you won't. Done well, your project prepares you to join the oldest and most esteemed of human conversations, one conducted for millennia among philosophers, engineers, biologists, social scientists, historians, literary critics, linguists, theologians, not to mention CEOs, lawyers, marketers, investment managers—the list is endless.

Right now, you may feel that the conversation is one-sided, that you have to listen more than you can speak, and that in any event you have little to contribute and only one reader. That may be true, for the moment. But at some point, you will join a conversation that, at its best, can help you and your community free us from ignorance, prejudice, and the half-baked ideas that so many charlatans try to impose on us. It is no exaggeration to say that, maybe not today or tomorrow but one day, your research and your reports of it can improve if not the whole world, at least your corner of it.

1.2 WHY WRITE IT UP?

For some of you, though, the invitation to join this conversation may still seem easy to decline. If you accept it, you'll have to >nd a good question, search for sound data, formulate and support a good answer, and then write it all up. Even if you turn out a >rst-rate report, it may be read not by an eager world but only by your teacher.

And, besides, you may think, my teacher knows all about my topic. What do I gain from writing up my research, other than proving I can do it?

One answer is that we write not just to share our work, but to improve it before we do.

1.2.1 Write to Remember

Experienced researchers >rst write just to remember what they've read. A few talented people can hold in mind masses of information, but most of us get lost when we think about what Smith found in light of Wong's position, and compare both to the odd data in Brunelli, especially as they are supported by Boskowitz—*but what was it that Smith said?* When you don't take notes on what you read, you're likely to forget or, worse, misremember it.

1.2.2 Write to Understand

A second reason for writing is to see larger patterns in what you read. When you arrange and rearrange the results of your research in new ways, you discover new implications, connections, and complications. Even if you could hold it all in mind, you would need help to line up arguments that pull in different directions, plot out complicated relationships, sort out disagreements among experts. *I want to use these claims from Wong, but her argument is undercut by Smith's data. When I put them side by side, I see that Smith ignores this last part of Wong's argument. Aha! If I introduce it with this part from Brunelli, I can focus on Wong more clearly.* That's why careful researchers never put o= writing until they've gathered all the data they need: they write from the beginning of their project to help them assemble their information in new ways.

1.2.3 Write to Test Your Thinking

A third reason to write is to get your thoughts out of your head and onto paper, where you'll see what you really *can* think. Just about all of us, students and professionals alike, believe our ideas are more compelling in the dark of our minds than they turn out to be in the cold light of print. You can't know how good your ideas

are until you separate them from the swift and muddy flow of thought and fix them in an organized form that you—and your readers—can study.

In short, we write to remember more accurately, understand better, and evaluate what we think more objectively. (And as you will discover, the more you write, the better you read.)

1.3 WHY A FORMAL REPORT?

But even when they agree that writing is an important part of learning, thinking, and understanding, some still wonder why they can't write up their research in their own way, why they have to satisfy demands imposed by a community that they have not joined (or even want to) and conform to conventions they did nothing to create. *Why should I adopt language and forms that are not mine? Aren't you just trying to turn me into an academic like yourself? If I write as you expect me to, I risk losing my identity.*

Such concerns are legitimate (most teachers wish students would raise them more often). But it would be a feeble education that did not change you at all, and the deeper your education, the more it will change the “you” that you are or want to be. That's why it's so important to choose carefully what you study and with whom. But it would be a mistake to think that learning to write sound research reports must threaten your true identity. It will change the way you think, but only by giving you more ways of thinking. You will be different by being freer to choose who you want to be and what you want to do with the rest of your life.

But the most important reason for learning to report research in ways readers expect is that when you write for others, you demand more of yourself than when you write for yourself alone. By the time you fix your ideas in writing, they are so familiar to you that you need help to see them not for what you want them to be but for what they really are. You will understand your own work better when you try to anticipate your readers' inevitable and critical questions: *How have you evaluated your evidence? Why do you think it's relevant? What ideas have you considered but rejected?*

All researchers, including the three of us, can recall moments

when in writing to meet their readers' expectations, they found a flaw or blunder in their thinking or even discovered a new insight that escaped them in a first draft written for themselves. You can do that only when you imagine and then meet the needs and expectations of informed and careful readers. When you do that, you create what we call a *rhetorical community* of shared values.

You might think, *OK, I'll write for readers, but why not in my own way?* The traditional forms that readers expect are more than empty vessels into which you must squeeze your ideas. They have evolved to help writers question their thinking in ways they might not otherwise; they also embody the shared values of a research community. Whatever community you join, you'll be expected to show that you understand its practices by reporting your research as its members do. Once you know its standard forms, you'll be better able to answer your particular community's predictable questions and understand what its members care about and why.

But regardless of these differences among communities, what counts as good work is the same, whether it's in the academic world or the world of government, commerce, or technology. If you learn to do research well now, you gain an immense advantage in the kind of research you will do later, no matter where you do it.

1.4 WRITING IS THINKING

Writing a research report is, really, thinking with and for your readers. When you write for others, you disentangle your ideas from your memories and wishes, so that you—and others—can explore, expand, combine, and understand them more fully. Thinking for others is more careful, more sustained, more insightful—in short, more thoughtful—than just about any other kind of thinking.

You can, of course, take the easy way: do just enough to satisfy your teacher. This book will help you do that, but you'll shortchange yourself if you do. If instead you find a topic that *you* care about, ask a question that *you* want to answer, then pursue that answer as best you can, your project can have the fascination of a mystery whose solution richly rewards your efforts. Nothing contributes more to successful research than your commitment to it, and noth-

ing teaches you more about how to think than a successful (or even unsuccessful) report of its product.

We wish we could tell you how to balance your belief in the worth of your project with the need to accommodate the demands of teachers and colleagues, but we cannot. If you believe in what you're doing and cannot find anyone else who shares your beliefs, all you can do is put your head down and press on. With our admiration.

Some of the world's most important research has been done by those who persevered in the face of indifference or even hostility, because they never lost faith in their vision. The geneticist Barbara McClintock struggled for years unappreciated because her research community considered her work uninteresting. But she believed in it and pressed on. When her colleagues finally realized that she had already answered questions that they were just starting to ask, she won science's highest honor, the Nobel Prize.

CHAPTER TWO

Connecting with Your Reader

(RE-)CREATING YOURSELF AND YOUR READERS

Research counts for little if few read it. Yet even experienced researchers sometimes forget to keep their readers in mind as they plan and draft their report. In this chapter we show you how to think about readers even before you begin your project.

Most of the important things we do, we do with others. Some students think research is different. They imagine that solitary scholar reading in a hushed library. But no place is more filled with imagined voices than a library or lab. Whether you read a book or a lab report, you silently converse with its writer—and through her with everyone else she has read. In fact, every time you go to a written source for information, you join a conversation between writers and readers that began more than seven thousand years ago. And when you report your own research, you add your voice and can hope that other voices will respond to you, so that you can in turn respond to them. So it goes and, we hope, will continue for a long time to come.

2.1 CREATING ROLES FOR YOURSELF AND YOUR READERS

All conversations are social activities in which we are expected to play our parts. In face-to-face conversations, we can judge how well we and others do that by sensing how the conversation is going. Do we treat each other as equals, speaking and listening civilly, answering each other's questions directly? Or does one of us seem to be playing the role of expert, dismissing others as a mere audience? We can judge how well a conversation is going as we have it, and we can adjust our roles and behavior to repair mistakes and misunderstandings as they occur. But in an imagined conversa-

tion in writing, once we decide what role to play and what role to assign to readers, those roles are fixed. If as we read we think, *Well, Abrams acknowledges Stanik's evidence, but he's dogmatic in criticizing it and ignores obvious counterexamples*, Abrams can't change what we read next to recover from our judgment. (Right now, we three expect that you're judging us.)

Of course, judgments go both ways: just as we judge a writer as we read, so a writer must judge his readers, but before he writes. For example, the writers of these next two passages imagined different readers, with different questions based on different levels of knowledge about the chemistry of heart muscles. So they wrote in different ways:

1a. The control of cardiac irregularity by calcium blockers depends on calcium's activation of muscle groups through its interaction with the regulatory proteins actin, myosin, tropomyosin, and troponin in the sarcomere, the basic unit of muscle contraction.

1b. Doctors can control irregular heartbeats with the drugs called calcium blockers. When the heart contracts, its muscles are activated by calcium. The calcium in a heart muscle cell interacts with four proteins that regulate contraction. The proteins are actin, myosin, tropomyosin, and troponin. That interaction happens in the basic unit of muscle contraction, the sarcomere.

The writer of (1a) casts herself and her readers as colleagues who know how muscles work. The writer of (1b) casts himself in the role of an expert, patiently explaining a complicated matter to readers who know little. If they judged their readers correctly, their readers will judge them favorably.

But suppose they switched passages. Someone ignorant of the way muscles work would read (1a) thinking the writer was indifferent to his needs; those who knew how muscles work would read (1b) thinking the writer was talking down to them. In either case, the writers would lose their readers because they misjudged them and their relationship.

In writing this book, we tried to imagine you—what you're like,

what you know about research, whether you even care about it. We imagined a *persona* for you, a role we hoped you would adopt: someone interested in learning how to do and report research and who shares our belief in its importance (or at least is open to being persuaded). Then we imagined a persona of our own: writers committed to the value of research, interested in sharing how it works, not talking *at* you like a lecturer or *down* to you like a pedant, but working *with* the “you” that we hoped you would be willing to be. At times we struggled trying to speak as easily to those of you starting your first project as to those doing advanced work. We hoped that new researchers would not be frustrated when we discussed issues they haven’t yet faced and that more experienced readers would be patient as we covered familiar ground. Only you can judge how well we’ve succeeded.

In fact, we can’t avoid creating *some* role for ourselves and our readers: they will infer them from our writing whether we plan them or not. So roles are worth thinking about before you write a word. If from the outset, you ignore or miscast your readers, you’ll leave so many traces of that mistake in your early drafts that you won’t easily fix them in the final one.

2.2 UNDERSTANDING YOUR ROLE

Since few people read research reports for entertainment, you have to create a relationship that encourages them to see why it’s in their interest to read yours. That’s not easy. Too many beginning researchers offer readers a relationship that caricatures a bad classroom: *Teacher, I know less than you. So my role is to show you how many facts I can dig up. Yours is to say whether I’ve found enough to give me a good grade.* Big mistake. Do that and you turn your project into a pointless drill that demeans both you and your teacher. Worse, you cast yourself in a role exactly opposite to that of a true researcher.

In a research report, you must switch the roles of student and teacher. When you do research, you learn something that others don’t know. So when you report it, you must think of your reader as someone who doesn’t know it *but needs to* and yourself as some-

one who will *give her reason to want to know it*. You must imagine a relationship that goes beyond *Here are some facts I've dug up about medieval Tibetan weaving. Are they enough of the right ones?*

There are three better reasons for offering those facts: the third is most common in academic research.

2.2.1 I've Found Some New and Interesting Information

You take the *first* step beyond data-grubbing when you say to your reader, *Here are some facts about medieval Tibetan weaving that you do not know and may find interesting*. This *offer* assumes, of course, that your reader wants to know, but even if not, you must still cast yourself in the role of someone who has found something your reader will *find* interesting and your reader as someone who wants to know, *whether she really will or not*. Down the road, you'll be expected to *find* (or create) a community of readers who not only share an interest in your topic (or can be convinced to), but also have questions about it that you can answer. But even if you don't have that audience right now, you must write as if you do. You must present yourself as interested in, even enthusiastic about wanting to share something new, because the interest you show in your work roughly predicts the interest your reader will take in it. And in you.

2.2.2 I've Found a Solution to an Important Practical Problem

You take *big a* step toward more *significant* research when you can say to readers not just *Here are some facts that should interest you*, but *These facts will help you do something to solve a problem you care about*. That is the kind of research that people do every day in business, government, and the professions. They confront practical problems whose solutions require research into the facts of the matter, *first* to understand the problem, then to *figure out* how to solve it—problems ranging from spam to falling pro*tests* to terrorism.

To help new researchers learn that role, teachers sometimes invent “real world” scenarios: an environmental science professor might assign you to write a report for the director of the state Environmental Protection Agency on how to clean up a local lake.

In this scenario you are not playing the role of a student dumping data on a teacher, but of a professional giving practical advice to someone who needs it. To make your report credible, however, you must use the right terminology, cite the right sources, and present the right evidence, all in the right format. But most important, you have to design your report around a specific *intention* that defines your role: to advise a decision maker on what to *do* to solve a problem. That kind of research is typical in the world at large but is less common in academic research than the next one.

2.2.3 I've Found an Answer to an Important Question

Although academic researchers sometimes advise EPA directors on what to do, their more common role is that of scholars who help their research community simply understand something better. Others might use their findings to solve a practical problem—a discovery about the distribution of prime numbers, for example, helped cryptologists design an unbreakable code. But that research itself was aimed at solving not the practical problem of keeping secrets, but the *conceptual* problem of not entirely understanding prime numbers. Some researchers call this kind of research “pure” as opposed to “applied.”

Teachers occasionally invent “real world” scenarios involving conceptual problems: a political science professor asks you to play the role of a senator’s intern researching how violent TV affects children’s behavior. But more typically they expect you to imagine yourself as what you are learning to be—a researcher addressing a community of other researchers interested in issues that they want to understand better. Your report on medieval Tibetan weaving, for example, might help rug designers sell more rugs, but its basic aim is to help scholars better understand something about Tibetan art, such as *How did medieval Tibetan rugs influence the art of modern China?*

2.3 IMAGINING YOUR READER’S ROLE

You establish your side of the relationship with your readers when you adopt one of those three roles—I *have information for you*; I

can help you fix a problem; I can help you understand something better. You must, however, cast your readers in a complementary role by offering them a social contract: *I'll play my part if you play yours.* But that means you have to understand their role. If you cast them in a role they won't accept, you're likely to lose them entirely. In this case, the old advice to "consider your audience" means that you must report your research in a way that motivates your readers to play the role you have imagined for them.

For example, suppose you're an expert on blimps and zeppelins. You've been asked to share your research with three different groups with three different reasons for wanting to hear about it. How they receive you will depend on how accurately you imagine the role they intend to play and how well you match your role to theirs. For that, you must understand what they want and what they are in return willing *and able* to do for you.

2.3.1 Entertain Me

Imagine the first group that invited you to speak is the local Zeppelin Club. Its members are not experts, but they know a lot about zeppelins. They read about them, visit historic sites, and collect zeppelin memorabilia. You decide to share some new facts you've found in a letter from your great-uncle Otto describing his transatlantic zeppelin flight in 1936, along with some photographs and a menu he saved. His letter comments on the grilled oysters he had for dinner and tells a funny story about why he happened to take the trip in the first place.

In planning your talk, you judge that what's at stake is just a diverting hour of zeppelin trivia. You meet your side of the bargain when you share whatever you think might interest them—hunches, speculation, even unsubstantiated rumors. You won't show Power-Point slides, present data, or cite scholarly sources to substantiate your claims. Your audience will play its role by listening with interest, asking questions, maybe sharing their own anecdotes. You don't expect them to challenge the authenticity of the letter from Great-Uncle Otto or question how the photos are relevant to the social history of zeppelins, much less of lighter-than-air travel in

general. Your job is to give an engaging talk; theirs is to be amiably engaged.

Some beginning researchers imagine their readers belong to a Zeppelin Club, already fascinated by their topic and eager to hear anything new about it. While that sometimes works for experts with the right audience (see the box below), it rarely works for students learning to do and report serious research. Your teachers expect you to report not just *what* you found, but what you can *do* with it.

2.3.2 Help Me Solve My Practical Problem

Imagine that your next meeting is with True-to-Life Films. It plans to make a movie about a zeppelin flight in 1936 and wants you to help them get the historical details right, including a scene in the dining cabin. They want to know how the cabin was furnished, what people ate, what the menus looked like, and so on. They don't care whether your facts are new, only whether they are right, so that they can make the scene authentic. You show them your photos and the menu and describe the oysters Great-Uncle Otto ate, but you don't bother with why he took the trip. To succeed in this role, you must help them solve a practical problem whose solution you base not on *all* the data you can find, no matter how new, but on just those *particular* facts that are relevant to the problem of authenticity and whose sources you can show are reliable. Your audience will listen intently and critically, because they want to get the details right.

That's the kind of task you're likely to face if your teacher invents a "real world" assignment—write to an EPA official who needs to do something about a polluted lake. Academic researchers sometimes address practical problems like these, but for them another kind of problem is far more common. So pose a practical problem *only if* your teacher creates one; otherwise, check with her first. (We'll discuss practical problems in more detail in chapter 4.)

2.3.3 Help Me Understand Something Better

Now imagine that your audience is the faculty of Zeppo University's Department of Lighter-than-Air Studies (with the same stand-

ing as, say, your English department). They study all aspects of blimps and zeppelins, do research on their economics and aerodynamics, and participate in a worldwide conversation about their history and social significance. They compete with other lighter-than-air scholars to produce new lighter-than-air knowledge and theories that they publish in lighter-than-air journals and books read by everyone in their lighter-than-air world.

These scholars have invited you to talk about your specialty: the social history of zeppelin travel in the 1930s. They don't want you just to amuse them with new facts (though they'll be happy if you do) or to help them *do* something (though they'd be pleased if you got them consulting work with True-to-Life Films). They want you to use whatever new facts you have to help them better *understand* the social history of zeppelin travel or, better still, of lighter-than-air culture in general.

Because these lighter-than-air scholars are intensely committed to finding the Truth about zeppelins, you know they expect you to be objective, rigorously logical, able to examine every issue from all sides. You also know that if you don't nail down your facts, they'll hammer you during the question period, and if you don't have good answers, slice you up afterward over the wine and cheese, not just to be contentious or even nasty (though some will be), but to get as close as they can to the Truth about zeppelins in the 1930s. If you offer new data, like Great-Uncle Otto's photos, letter, and menu, they'll be glad to see them, but they'll want to know why they matter and might even question their authenticity.

Above all, they will care about your documents *only* if you can show how they serve as *evidence* that helps you answer a question important to understanding something about zeppelins that is *more important* than your uncle's trip. They will receive you especially well if you can convince them that they do not understand the social history of zeppelins as well as they thought and that your new data will improve their flawed understanding. If you can't do that, they'll respond not with *I don't agree*—we all learn to live with that; some of us even thrive on it—but with a response far more devastating: *I don't care*.

So you begin your talk:

As we all have been led to believe by a number of studies on the food service on transatlantic zeppelin flights in the 1930s (especially Schmidt 1986 and Kloepper 1998), items were never cooked over an open flame because of the danger of explosions. However, I have recently discovered a menu from the July 12, 1936, crossing of the *Hindenburg* indicating that oysters grilled over charcoal were served. . . . [You then go on to show why that new knowledge matters.]

That is the kind of conversation you join when you report research to a community of scholars, lighter-than-air or not. You must imagine them imagining this conversation with you: *Never mind whether your style is graceful (though I will admire your work more if it is); don't bother me with amusing anecdotes about your great-uncle Otto (though I like hearing them if they help me understand your ideas better); ignore whether what you know will make me rich (though I would be happy if it did). Just tell me something I don't know so that I can better understand our common interest.*

Your academic readers will almost always adopt this third role. They will think you've fulfilled your side of the social contract only when you treat them as who they think they are: scholars interested in greater knowledge and better understanding. To be sure, the faculty over in chemistry or philosophy care little about zeppelins, much less their meal service. (*Can you believe the trivia they study over in Helium Hall?*) But then you don't much care about their issues, either. You are concerned with your *particular* community of readers, with *their* interests and expectations, with improving *their* understanding, based on the best evidence you can find. That's the social contract that all researchers must establish with their readers.

WHO CARES ABOUT *THAT*?

Academic researchers are often scorned at for studying esoteric topics that matter to no one but themselves. The charge is usually unfair, but some researchers do become fascinated with matters that seem to have little significance. Williams once attended the dissertation defense of a PhD candidate who had discovered reels and reels of silent film shot by European anthropologists in Africa and Asia in the early twentieth century. This previously unknown footage fascinated the silent film scholars on the committee. But when Williams asked the candidate, "How do these new silent films improve our understanding of movies then or now?" she could answer only that "no one has ever seen this footage before." Williams put his question in different ways but never got a better answer. The silent film scholars, on the other hand, were untroubled (and found Williams's questions naive), because they were already imagining how the footage might change their thinking about early silent film. And in any event, they all loved old silent film for its own sake. So sometimes new data alone are enough to interest the right readers. But if that candidate hopes to write anything that interests anyone but a tiny coterie of specialists, she will have to make an offer better than *Here's some new stuff*.



QUICK TIP: *A Checklist for Understanding Your Readers*

Think about your readers from the start, knowing that you'll understand them better as you work through your project. Answer these questions early on, then revisit them when you start planning and again when you revise.

1. Who will read my report?

- Professionals who expect me to follow every academic convention and use a standard format?
- Well-informed general readers?
- General readers who know little about the topic?

2. What do they expect me to do? Should I

- entertain them?
- provide new factual knowledge?
- help them understand something better?
- help them do something to solve a practical problem in the world?

3. How much can I expect them to know already?

- What do they know about my topic?
- Is the problem one that they already recognize?
- Is it one that they have but haven't yet recognized?
- Is the problem not theirs, but only mine?
- Will they take the problem seriously, or must I convince them that it matters?

4. How will readers respond to the solution/answer in my main claim?
 - Will it contradict what they already believe? How?
 - Will they make standard arguments against my solution?
 - Will they want to see the steps that led me to the solution?

PART II

Asking Questions, Finding Answers

Prologue

PLANNING YOUR PROJECT—AN OVERVIEW

If you've skimmed this book once, you're ready to begin your project. If you have a research question and know how to look for its answer, review the next two chapters quickly; then read the remaining ones carefully as they become relevant to your task. You may, however, feel bewildered if you're starting from scratch, without even a topic to guide you. But you can manage if you have a plan and take one step at a time.

If you are starting from scratch, your first task is to find a research problem that might be worth solving. Here are four steps to that end:

1. Find a topic specific enough to let you master a reasonable amount of information on it in the time you have: not, for example, *the history of scientific writing*, but *essays in the Proceedings of the Royal Society (1675–1750) as precursors to the modern scientific article*; not *doctors in seventeenth-century drama*, but *Molière's mockery of doctors in three early plays*.
2. Question that topic until you find questions that catch your interest. For example, *How did early Royal Society authors demonstrate that their evidence was reliable?* Or, *Why did Molière mock doctors?*
3. Determine the kind of evidence your readers will expect you to offer in support of your answer. Will they accept reports of

facts from secondary sources, or will they expect you to consult primary sources (see 5.1.1)? Will they expect quantitative data, quotations from authorities, or firsthand observations?

4. Determine whether you can find those data. There's no point starting research on a topic until you know you have a good chance of finding data on it.

WHAT ARE YOUR DATA?

No matter their field, researchers collect information to use as evidence to support their claims. But researchers in different fields call that information by different names. We call it *data*. By *data* we mean not just the numbers that natural and social scientists collect, but anything you find "out there" relevant to answering your research question. The term is used less often by researchers in the humanities, but they, too, gather data in the form of quotations, historical facts, and so on. Data are inert, however, until you use them to support a claim that answers your research question. At that point, your data become *evidence*. If you don't have more data than you can use as evidence, you haven't collected enough. (Incidentally, *data* is plural; a single bit of data is a *datum*.)

Once you think you have enough data to support at least a plausible answer to your question, you'll be ready to assemble an argument that makes your case (see part III), then to plan, draft, and revise it (part IV).

You'll discover, however, that you can't march through those steps in the neat order we present them. You'll think of a tentative answer to your research question before you have all the evidence you need to support it. And when you think you have an argument worth making, you may discover that you need more and maybe different evidence from new sources. You may even modify your topic. Doing research is not like strolling along an easy, well-marked path to a familiar destination; it's more like zigzagging up and down a rocky hill through overgrown woods, sometimes in a fog, searching for something you won't recognize until you see it. But no matter how indirect your path, you can make progress if at

each step of the way you plan for predictable detours (and maybe even avoid some of them).

Resolve to do lots of writing along the way. Much of it will be routine note-taking, but you should also write re?ectively, to understand: make outlines; explain why you disagree with a source; draw diagrams to connect disparate facts; summarize sources, positions, and schools; record even random thoughts. Many researchers >nd it useful to keep a journal for hunches, new ideas, random thoughts, problems, and so on. You might not include much of this writing-to-discover-and-understand in your >nal draft. But when you *write as you go, every day*, you encourage your own best critical thinking, understand your sources better, and, when the time comes, draft more productively.



QUICK TIP: *Creating a Writing Group*

A downside of academic research is its isolation. Except for group projects, you'll read and write mostly alone. But it doesn't have to be that way. Look for someone other than your instructor or adviser who will talk with you about your progress, review your drafts, even pester you about how much you've written. That might be a generous friend, but better is another writer so that you can comment on each other's ideas and drafts.

Best of all is a group of four or >ve people working on their own projects who meet regularly to read and discuss one another's work. Early on, each meeting should start with a summary of each person's project in this three-part sentence: *I'm working on X because I want to find out Y, so that I (and you) can better understand Z* (more about this in 3.4). As your projects advance, develop an opening "elevator story," a short summary of your project that you could give someone on the way to a meeting. It should include your research question, your best guess at an answer, and the kind of evidence you expect to use to support it. The group can then follow up with questions, responses, and suggestions.

Don't limit your talk to just your story, however. Talk about your readers: Why should they be interested in your question? How might they respond to your argument? Will they trust your evidence? Will they have other evidence in mind? Such questions help you plan an argument that anticipates what your readers expect. Your group can even help you brainstorm when you bog down. Later the group can read one another's outlines and drafts to imagine how their >nal readers will respond. If your group has a problem with your draft, so will those readers. But for most writers, a writing group is most valuable for the discipline it imposes. It is easier to meet a schedule when you know you must report to others.

Writing groups are common for those writing theses or dissertations. But the rules di=er for a class paper. Some teachers think that a group or writing partner provides more help than is appropriate, so be clear what your instructor allows.

From Topics to Questions

In this chapter we discuss how to find a topic among your interests, narrow it to a manageable scope, then question it to find the makings of a problem that can guide your research. If you are an experienced researcher or know the topic you want to pursue, skip to chapter 4. But if you are starting your first project, you will find this chapter useful.

If you are free to research any topic that interests you, that freedom might seem frustrating—so many choices, so little time. At some point, you have to settle on a topic. But you can't jump from picking a topic to collecting data: your readers want more than a mound of random facts. You have to find a reason better than a class assignment not only for you to devote weeks or months to your research, but for your readers to spend any time reading about it. You'll find that better reason when you can ask a *question* whose answer solves a *problem* that you can convince readers to care about. That question and problem are what will make readers think your report is worth their time. They also focus your research and save you from collecting irrelevant data.

In all research communities, some questions are “in the air,” widely debated and researched, such as whether traits like shyness or an attraction to risk are learned or genetically inherited. But other questions may intrigue only the researcher: *Why do cats rub their faces against us? Why does a coffee spill dry up in the shape of a ring?* That's how a lot of research begins—not with a big question that attracts everyone in a field, but with a mental itch about a small one that only a single researcher wants to scratch. If you feel that itch, start scratching. But at some point, you must decide whether the answer to your question solves a problem significant

to a teacher, to other researchers, or even to a public whose lives your research could change.

Now that word *problem* is itself a problem. Commonly, a problem means trouble, but among researchers it has a meaning so special that we devote the next chapter to it. But before you can frame your research problem, you have to find a topic that might lead to one. So we'll start there, with finding a topic.

QUESTION OR PROBLEM?

You may have noticed that we've been using the words *question* and *problem* almost interchangeably. But they are not quite the same. Some questions raise problems; others do not. A question raises a problem if not answering it keeps us from knowing something more important than its answer. For example, if we cannot answer the question *Are there ultimate particles?* we cannot know something even more important: the nature of physical existence. On the other hand, a question does not raise a problem if not answering it has no apparent consequences. For example, *Was Abraham Lincoln's right thumb longer than his nose?* We cannot think of what would we gain by knowing. At least at the moment.

3.1 FROM AN INTEREST TO A TOPIC

Most of us have more than enough interests, but beginners often find it hard to locate among theirs a topic focused enough to support a substantial research project. A research topic is an interest stated specifically enough for you to imagine becoming a local expert on it. That doesn't mean you already know a lot about it or that you'll have to know more about it than your teacher does. You just want to know a lot more about it than you do now.

If you can work on any topic, we offer only a cliché: start with what most interests you. Nothing contributes to the quality of your work more than your commitment to it.

3.1.1 Finding a Topic in a General Writing Course

Start by listing as many interests as you can that you'd like to explore. Don't limit yourself to what you think might interest a teacher or make him think you're a serious student. Let your ideas

Now. Prime the pump by asking friends, classmates, even your teacher about topics that interest them. If no good topics come to mind, consult the Quick Tip at the end of this chapter.

Once you have a list of topics, choose the one or two that interest you most. Then do this:

- In the library, look up your topic in a general bibliography such as the *Readers' Guide to Periodical Literature* and skim the subheadings. If you have a more narrow focus, look into specialized guides such as the *American Humanities Index*. Most libraries have copies on the shelf; many subscribe to their online equivalents, but not all of them let you skim subject headings. (We discuss these resources in chapter 5 and list several in the appendix.)
- On the Internet, Google your topic, but don't surf indiscriminately. Look first for Web sites that are roughly like sources you would find in a library, such as online encyclopedias. Read the entry on your general topic, and then copy the list of references at the end for a closer look. Use Wikipedia to find ideas and sources, but always confirm what you find in a reliable source. Few experienced researchers trust Wikipedia, so *under no circumstances cite it as a source of evidence* (unless your topic is the Wikipedia itself).
- You can also find ideas in blogs, which discuss almost every contentious issue, usually ones too big for a research paper. But look for posts that take a position on narrow aspects of the larger issues: if you disagree with a view, investigate it.

3.1.2 Finding a Topic for a First Research Project in a Particular Field

Start by listing topics relevant to your particular class *and* that interest you, then narrow them to one or two promising ones. If the topic is general, such as *religious masks*, you'll have to do some random reading to narrow it. But read with a plan:

- Skim encyclopedia entries in your library or online. Start with standard ones such as the *Encyclopaedia Britannica*. Then con-

sult specialized ones such as the *Encyclopedia of Religion* or the *Stanford Encyclopedia of Philosophy*.

- Skim headings in specialized indexes, such as the *Philosopher's Index*, *Psychological Abstracts*, or *Women's Studies Abstracts*. Use subheadings for ideas of how others have narrowed your topic.
- Google your topic, but not indiscriminately. Use Google Scholar, a search engine that focuses on scholarly journals and books. Skim the articles it turns up, especially their lists of sources.

When you know the general outline of your topic and how others have narrowed it, try to narrow yours. If you can't, browse through journals and Web sites until it becomes more clearly defined. That takes time, so start early.

3.1.3 Finding a Topic for an Advanced Project

Most advanced students already have interests in topics relevant to their field. If you don't, focus on what interests you, but remember that you must eventually show why it should also interest others.

- Find what interests other researchers. Look online for recurring issues and debates in the archives of professional discussion lists relevant to your interests. Search online and in journals like the *Chronicle of Higher Education* for conference announcements, conference programs, calls for papers, anything that reflects what others find interesting.
- Skim the latest issues of journals on your library's new arrivals shelf, not just for articles, but also for conference announcements, calls for papers, and reviews. Skim the most recent articles in your library's online database.
- Investigate the resources that your library is particularly rich in. If, for example, it (or one nearby) holds a collection of rare papers on an interesting topic, you have not only found a topic but a way into it. Before you settle on a topic, on the other

hand, be sure your library has at least some relevant sources. If not, you may have to start over.

3.2 FROM A BROAD TOPIC TO A FOCUSED ONE

At this point, your biggest risk is settling on a topic so broad that it could be a subheading in a library catalog: *spaceflight*; *Shakespeare's problem plays*; *natural law*. A topic is probably too broad if you can state it in four or >ve words:

Free will in Tolstoy

The history of commercial aviation

A topic so broad can intimidate you with the task of >nding, much less reading, even a fraction of the sources available. So narrow it:

Free will in Tolstoy	→	The conflict of free will and inevitability in Tolstoy's description of three battles in <i>War and Peace</i>
The history of commercial aviation	→	The contribution of the military in developing the DC-3 in the early years of commercial aviation

We narrowed those topics by adding words and phrases, but of a special kind: *conflict*, *description*, *contribution*, and *developing*. Those nouns are derived from verbs expressing actions or relationships: *to conflict*, *to describe*, *to contribute*, and *to develop*. Lacking such “action” words, your topic is a static thing.

Note what happens when we restate static topics as full sentences. Topics (1) and (2) change almost not at all:

(1) Free will in Tolstoy_{topic} → There is free will in Tolstoy's novels_{claim}

(2) The history of commercial aviation_{topic} → Commercial aviation has a history_{claim}

But when (3) and (4) are revised into full sentences, they are closer to claims that a reader might >nd interesting.

(3) The *conflict* of free will and inevitability in Tolstoy's *description* of three battles in *War and Peace*_{topic} → In *War and Peace*, Tolstoy *describes* three battles in which free will and inevitability *conflict*_{claim}

(4) The *contribution* of the military in *developing* the DC-3 in the early years of commercial aviation_{topic} → In the early years of commercial aviation, the military *contributed* to the way the DC-3 *developed*_{claim}

Such claims may at first seem thin, but you'll make them richer as you work through your project.

Caution: Don't narrow your topic so much that you can't find data on it. Too many data are available on *the history of commercial aviation* but too few (at least for beginning researchers) on *the decision to lengthen the wingtips on the DC-3 prototype for military use as a cargo carrier*.

3.3 FROM A FOCUSED TOPIC TO QUESTIONS

Once they have a focused topic, many new researchers make a beginner's mistake: they immediately start plowing through all the sources they can find on a topic, taking notes on everything they read. With a promising topic such as *the political origins of legends about the Battle of the Alamo*, they mound up endless facts connected with the battle: what led up to it, histories of the Texas Revolution, the poor plan of the mission, even biographies of generals Santa Anna and Sam Houston. They accumulate notes, summaries, descriptions of differences and similarities, ways in which the stories conflict with one another and with what historians think really happened, and so on. Then they dump it all into a report that concludes, *Thus we see many differences and similarities between . . .*

Many high school teachers would reward such a report with a good grade, because it shows that the writer can focus on a topic, find data on it, and assemble those data into a report, no small achievement—for a first project. But in *any* college course, such a report falls short if it is seen as just a pastiche of vaguely related

facts. If a writer asks no specific question worth asking, he can offer no specific answer worth supporting. And without an answer to support, he cannot select from all the data he *could* find on a topic just those relevant to his answer. To be sure, those fascinated by Elvis Presley movie posters or early Danish anthropological films will read *anything* new about them, no matter how trivial. Serious researchers, however, do not report data for their own sake, but to support the answer to a question that they (and they hope their readers) think is worth asking.

So the best way to begin working on your specific topic is not to find all the data you can on your general topic, but to formulate questions that point you to just those data that you need to answer them.

You can start with the standard journalistic questions: *who*, *what*, *when*, and *where*, but focus on *how* and *why*. To engage your best critical thinking, systematically ask questions about your topic's history, composition, and categories. Then ask any other question you can think of or find in your sources. Record all the questions, but don't stop to answer them even when one or two grab your attention. (And don't worry about keeping these categories straight; their only purpose is to stimulate questions and organize your answers.) Let's take up the example of masks mentioned earlier.

3.3.1 Ask about the History of Your Topic

- How does it fit into a **larger developmental context**? Why did your topic come into being? *What came before masks? How were masks invented? Why? What might come after masks?*
- What is its own **internal history**? How and why has the topic itself changed through time? *How have Native American masks changed? Why? How have Halloween masks changed? How has the role of masks in society changed? How has the booming market for kachina masks influenced traditional design? Why have masks helped make Halloween the biggest American holiday after Christmas?*

3.3.2 Ask about Its Structure and Composition

- How does your topic **fit into the context of a larger structure or function as part of a larger system**? *How do masks reflect the values of different societies and cultures? What roles do masks play in Hopi dances? In scary movies? In masquerade parties? How are masks used other than for disguise?*
- How do its parts **fit together as a system**? *What parts of a mask are most significant in Hopi ceremonies? Why? Why do some masks cover only the eyes? Why do few masks cover just the bottom half of the face? How do their colors play a role in their function?*

3.3.3 Ask How Your Topic Is Categorized

- How can your topic be **grouped into kinds**? *What are the different kinds of masks? Of Halloween masks? Of African masks? How are they categorized by appearance? By use? By geography or society? What are the different qualities of masks?*
- How does your topic **compare to and contrast with** others like it? *How do Native American ceremonial masks differ from those in Japan? How do Halloween masks compare with Mardi Gras masks?*

3.3.4 Turn Positive Questions into Negative Ones

- *Why have masks not become a part of other holidays, like President's Day or Memorial Day? How do Native American masks not differ from those in Africa? What parts of masks are typically not significant in religious ceremonies?*

3.3.5 Ask *What If?* and Other Speculative Questions

- How would things be different if your topic never existed, disappeared, or were put into a new context? *What if no one ever wore masks except for safety? What if everyone wore masks in public? What if it were customary to wear masks on blind dates? In marriage ceremonies? At funerals? Why are masks common*

in African religions but not in Western ones? Why don't hunters in camouflage wear masks? How are masks and cosmetic surgery alike?

3.3.6 Ask Questions Suggested by Your Sources

You won't be able to do this until you've done some reading on your topic. Ask questions that **build on agreement**:

- If a source makes a claim you think is persuasive, ask questions that might extend its reach. *Elias shows that masked balls became popular in eighteenth-century London in response to anxieties about social mobility. Did the same anxieties cause similar developments in Venice?*
- Ask questions that might support the same claim with new evidence. *Elias supports his claim about masked balls with published sources. Is it also supported by letters and diaries?*
- Ask questions analogous to those that sources have asked about similar topics. *Smith analyzes costumes from an economic point of view. What would an economic analysis of masks turn up?*

Now ask questions that reflect **disagreement**:

- *Martinez claims that carnival masks uniquely allow wearers to escape social norms. But could there be a larger pattern of all masks creating a sense of alternative forms of social or spiritual life?*

(We discuss in more detail how to use disagreements with sources in 6.4.)

If you are an experienced researcher, look for questions that other researchers ask but don't answer. Many journal articles end with a paragraph or two about open questions, ideas for more research, and so on (see p. 63 for an example). You might not be able to do all the research they suggest, but you might carve out a piece of it. You can also look for Internet discussions on your topic, then "lurk," just reading the exchanges to understand the kinds of questions those on the list debate. Record questions that spark your interest. You can post questions on the list if they are

specific and narrowly focused. But first see whether the list welcomes questions from students. (If you can't find a list using a search engine, ask a teacher or visit the Web site of professional organizations in your field.)

3.3.7 Evaluate Your Questions

When you run out of questions, evaluate them, because not all questions are equally good. Look for questions whose answers might make you (and, ideally, your readers) think about your topic in a new way. Avoid questions like these:

- Their answers are settled fact that you could just look up. *Do the Inuit use masks in their wedding ceremonies?* Questions that ask *how* and *why* invite deeper thinking than *who*, *what*, *when*, or *where*, and deeper thinking leads to more interesting answers.
- Their answers would be merely speculative. *Would church services be as well attended if the congregation all wore masks?* If you can't imagine finding hard data that might settle the question, it's a question you can't settle.
- Their answers are dead ends. *How many black cats slept in the Alamo the night before the battle?* It is hard to see how an answer would help us think about any larger issue worth understanding better, so it's a question that's probably not worth asking.

You might, however, be wrong about that. Some questions that seemed trivial, even silly, have answers more significant than expected. One researcher wondered why a coffee spill dries up in the form of a ring and discovered things about the properties of fluids that others in his field thought important—and that paint manufacturers found valuable. So who knows where a question about cats in the Alamo might take you? You can't know until you get there.

Once you have a few promising questions, try to combine them into larger ones. For example, many questions about the Alamo

story ask about the interests of the storytellers and their effects on their stories: *How have politicians used the story? How have the storytellers' motives changed? Whose purposes does each story serve?* These can be combined into a single more significant question:

How and why have users of the Alamo story given the event a mythic quality?

With only a topic to guide your research, you can find endless data and will never know when you have enough (much less what to do with it). To go beyond fact-grubbing, find a question that will narrow your search to just those data you need to answer it.

3.4 FROM A QUESTION TO ITS SIGNIFICANCE

Even if you are an experienced researcher, you might not be able to take the next step until you are well into your project, and if you are a beginner, you may find it deeply frustrating. Even so, once you have a question that holds your interest, you must pose a tougher one *about* it: *So what? Beyond your own interest in its answer, why would others think it a question worth asking?* You might not be able to answer that *So what?* question early on, but it's one you have to start thinking about, because it forces you to look beyond your own interests to consider how your work might strike others.

Think of it like this: What will be lost if you *don't* answer your question? How will *not* answering it keep us from understanding something else better than we do? Start by asking *So what?* at first of yourself:

So what if I don't know or understand how butterflies know where to go in the winter, or how fifteenth-century musicians tuned their instruments, or why the Alamo story has become a myth? So what if I can't answer my question? What do we lose?

Your answer might be *Nothing. I just want to know.* Good enough to start, but not to finish, because eventually your readers will ask as well, and they will want an answer beyond *Just curious.* Answering *So what?* vexes all researchers, beginners and experienced alike, because when you have only a question, it's hard to predict

whether others will think its answer is significant. But you must work toward that answer throughout your project. You can do that in three steps.

3.4.1 Step 1: Name Your Topic

If you are beginning a project with only a topic and maybe the glimmerings of a good question or two, start by naming your project:

I am trying to learn about (working on, studying) _____.

Fill in the blank with your topic, using some of those nouns derived from verbs:

I am studying the *causes* of the *disappearance* of large North American mammals . . .

I am working on Lincoln's *beliefs* about *predestination* and their *influence* on his *reasoning* . . .

3.4.2 Step 2: Add an Indirect Question

Add an indirect question that indicates what you do not know or understand about your topic:

1. I am studying/working on _____
2. **because I want to find out who/what/when/where/whether/why/how _____.**
1. I am studying the causes of the disappearance of large North American mammals
2. **because I want to find out whether they were hunted to extinction . . .**
1. I am working on Lincoln's beliefs about predestination and its influence on his reasoning
2. **because I want to find out how his belief in destiny influenced his understanding of the causes of the Civil War . . .**

When you add that *because I want to find out how/why/whether* clause, you state why *you* are pursuing your topic: to answer a question important to you.

If you are a new researcher and get this far, congratulate yourself, because you have moved beyond the aimless collection of data. But now, if you can, take one step more. It's one that advanced researchers know they must take, because they know their work will be judged not by its significance to them but by its significance to others in their field. They must have an answer to *So what?*

3.4.3 Step 3: Answer *So What?* by Motivating Your Question

This step tells you whether your question might interest not just you but others. To do that, add a second indirect question that explains why you asked your first question. Introduce this second implied question with *in order to help my reader understand how, why, or whether*:

1. I am studying the causes of the disappearance of large North American mammals
 2. because I want to find out whether the earliest peoples hunted them to extinction
 3. **in order to help my reader understand whether native peoples lived in harmony with nature or helped destroy it.**
1. I am working on Lincoln's beliefs about predestination and their influence on his reasoning
 2. because I want to find out how his belief in destiny and God's will influenced his understanding of the causes of the Civil War,
 3. **in order to help my reader understand how his religious beliefs may have influenced his military decisions.**

It is the indirect question in step 3 that you hope will seize your readers' interest. If it touches on issues important to your field, even indirectly, then your readers should care about its answer.

Some advanced researchers begin with questions that others in their field already care about: *Why did the giant sloth and woolly mammoth disappear from North America?* Or: *Is risk taking genetically based?* But many researchers, including at times the three of us, find that they can't finish out the last step in that three-part sentence until they finish a first draft. So you make no mistake *begin-*

ning your research without a good answer to that third question—*Why does this matter?*—but you face a problem when you *finish* it without having thought through those three steps at all. And if you are doing advanced research, you *must* take that step, because answering that last question is your ticket into the conversation of your community of researchers.

Regularly test your progress by asking a roommate, relative, or friend to force you to *resh* out those three steps. Even if you can't take them all confidently, you'll know where you are and where you still have to go. To summarize: Your aim is to explain

1. what you are writing about—*I am working on the topic of . . .*
2. what you don't know about it—*because I want to find out . . .*
3. why you want your reader to know and care about it—*in order to help my reader understand better . . .*

In the following chapters, we return to those three steps and their implied questions, because they are crucial not just for *answering* questions, but for framing the research problem that you want your readers to value.



QUICK TIP: *Finding Topics*

If you are a beginner, start with our suggestions about skimming bibliographical guides (3.1). If you still draw a blank, try these steps.

FOR GENERAL TOPICS

1. What special interest do you have—sailing, chess, >nches, old comic books? The less common, the better. Investigate something about it you don't know: its origins, its technology, how it is practiced in another culture, and so on.
2. Where would you like to travel? Surf the Internet, >nding out all you can about your destination. What particular aspect surprises you or makes you want to know more?
3. Wander through a museum with exhibitions that appeal to you—artworks, dinosaurs, old cars. If you can't browse in person, browse a "virtual museum" on the Internet. Stop when something catches your interest. What more do you want to know about it?
4. Wander through a shopping mall or store, asking yourself, *How do they make that?* Or, *I wonder who thought up that product?*
5. Leaf through a Sunday newspaper, especially its features sections. Skim reviews of books or movies, in newspapers or on the Internet.
6. Browse a large magazine rack. Look for trade magazines or those that cater to specialized interests. Investigate whatever catches your interest.
7. If you can use an Internet news reader, look through the list of "alt" newsgroups for one that interests you. Read the posts, looking for something that surprises you or that you disagree with.

8. Tune into talk radio or interview programs on TV until you hear a claim you disagree with. Or find something to disagree with on the Web sites connected with well-known talk shows. See whether you can make a case to refute it.
9. Use an Internet search engine to find Web sites about something people collect. (Narrow the search to exclude dot-com sites.) You'll get hundreds of hits, but look only at the ones that surprise you.
10. Is there a common belief that you suspect is simplistic or just wrong? A common practice that you find pointless or irritating? Do research to make a case against it.
11. What courses will you take in the future? What research would help you prepare for them?

FOR TOPICS FOCUSED ON A PARTICULAR FIELD

If you have experience in your field, review 3.1.2–3.

1. Browse through a textbook of a course that is one level beyond yours or a course that you know you will have to take. Look especially hard at the study questions.
2. Attend a lecture for an advanced class in your field, and listen for something you disagree with, don't understand, or want to know more about.
3. Ask your instructor about the most contested issues in your field.
4. Find an Internet discussion list in your field. Browse its archives, looking for matters of controversy or uncertainty.
5. Surf the Web sites of departments at major universities, including class sites. Also check sites of museums, national associations, and government agencies, if they seem relevant.

From Questions to a Problem

In this chapter we explain how to turn a question into a problem that readers think is worth solving. If you are an advanced researcher, you know how essential this step is. But if you are new to research, understanding its importance may prove challenging. If you feel lost, skip to chapter 5, but we hope you'll stay with us, because what you learn here will be essential to all your future projects.

In the last chapter, we suggested that you can identify the significance of your research question by fleshing out this three-step formula:

1. **Topic:** I am studying _____
2. **Question:** because I want to find out what/why/how _____,
3. **Significance:** in order to help my reader understand _____.

These steps describe not only the development of your project, but your own as a researcher.

- When you move from step 1 to 2, you are no longer a mere data collector but a researcher interested in understanding something better.
- When you then move from step 2 to 3, you focus on why that understanding is *significant*.

That significance might at first be just for yourself, but you join a community of researchers when you can state that significance *from your readers' point of view*. In so doing, you create a stronger relationship with readers because you promise something in return for their interest in your report—a deeper understanding of

something that matters to *them*. At that point, you have posed a *problem* that they recognize needs a solution.

4.1 DISTINGUISHING PRACTICAL AND RESEARCH PROBLEMS

Finding the significance of a problem is hard, even for experienced researchers. Too many researchers at all levels write as if their only task is to answer a question that interests them alone. They fail to understand that their answer must solve a problem that others in their community think needs a solution. To understand how to find that question and its significance, though, you first have to know what research problems look like.

4.1.1 Practical Problems: What Should We Do?

Everyday research usually begins not with dreaming up a topic to think about but with a practical problem that, if you ignore it, means trouble. When its solution is not obvious, you have to find out how to solve it. To do that, you must pose and solve a problem of another kind, a *research* problem defined by what you do not *know* or *understand* about your practical problem.

It's a familiar task that typically looks like this:

PRACTICAL PROBLEM: My brakes are screeching.

RESEARCH PROBLEM: Can I find a brake shop in the yellow pages to fix them?

RESEARCH SOLUTION: Here it is. The Car Shoppe, 1401 East 55th Street.

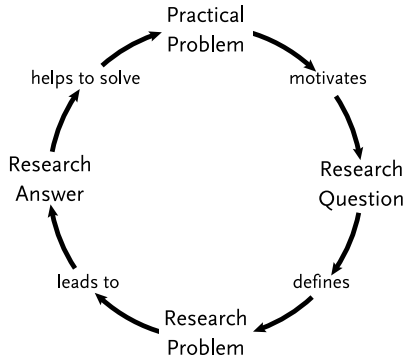
PRACTICAL SOLUTION: Drive over to get them fixed.

Problems like that are in essence no different from more complicated ones.

- The National Rifle Association is lobbying me to oppose gun control. *How many votes do I lose if I refuse?* Do a survey. *Most of my constituents support gun control.* I can reject the request.
- Costs are up at the Omaha plant. *What changed?* Send Sally to find out. *Increase in turnover.* If we improve training and morale, our workers will stick with us.

To solve either of those *practical* problems, someone >rst had to solve a research problem that improved their *understanding*. Then on the basis of that better understanding, someone had to decide what to *do* to solve the practical problem, then report their research so that their solution could be shared and studied.

Graphically, the relationship between practical and research problems looks like this:



4.1.2 Academic Research Problems: What Should We Think?

Solving a practical problem usually requires that we >rst solve a research problem, but it's crucial to distinguish *practical* research problems from *conceptual* ones:

- A *practical* problem is caused by some condition in the world (from spam to losing money in Omaha to terrorism) that makes us unhappy because it costs us time, respect, security, pain, even our lives. We solve a practical problem by *doing* something (or by encouraging others to do something) that eliminates the cause of the problem or at least ameliorates its costs.
- In academic research, a *conceptual* problem arises when we simply do not *understand* something about the world as well as we would like. We solve a conceptual problem not by doing something to change the world but by answering a question that helps us understand it better.

The term *problem* thus has a special meaning in the world of research, one that sometimes confuses beginners. In our everyday world, a problem is something we try to avoid. But in academic research, a problem is something we seek out, even invent if we have to. Indeed, a researcher without a good conceptual problem to work on faces a bad practical problem, because without a research problem, a researcher is out of work.

There is a second reason inexperienced researchers sometimes struggle with this notion of a research problem. Experienced researchers often talk about their work in shorthand. When asked what they are working on, they often answer with what sounds like one of those general topics we warned you about: *adult measles*, *mating calls of Wyoming elk*, *zeppelins in the 1930s*. As a result, some beginners think that having a topic to read about is the same as having a problem to solve.

When they do, they create a big practical problem for themselves, because without a research question to answer, with only a topic to guide their work, they gather data aimlessly and endlessly, with no way of knowing when they have enough. Then they struggle to decide what to include in their report and what not, usually throwing in everything, just to be on the safe side. So it's not surprising they feel frustrated when a reader says of their report, *I don't see the point here; this is just a data dump*.

To avoid that judgment, you need a research problem that focuses you on finding just those data that will help you solve it. It might take awhile to figure out what that problem is, but from the outset, you have to think about it. That begins with understanding how conceptual problems work.

4.2 UNDERSTANDING THE COMMON STRUCTURE OF PROBLEMS

Practical problems and conceptual problems have the same two-part structure:

- a situation or *condition*, and
- undesirable *consequences* caused by that condition, *costs* that you (or, better, your readers) don't want to pay

What distinguishes them is the nature of those conditions and costs.

4.2.1 The Nature of Practical Problems

A *fat tire* is a typical practical problem, because it is (1) a condition in the world (the *fat*) that imposes (2) a tangible cost that you don't want to pay, like missing a dinner date. But suppose you were bullied into the date and would rather be anywhere else. In that case, the benefit of the *fat* is more than its cost, so the *fat* is not a problem but a solution to the bigger problem of an evening spent with someone you don't like. Low cost, big benefit, no problem.

To be part of a practical, tangible problem, a condition can be anything, so long as it imposes intolerable costs. Suppose you win a million dollars in the lottery but owe a loan shark two million and your name gets in the paper. He finds you, takes your million, and breaks your leg. Winning the lottery turns out to be a Big Problem.

To state a practical problem so that others understand it clearly, you must describe both its parts.

1. Its condition:

I missed the bus.

The hole in the ozone layer is growing.

2. The **costs** of that condition that make you (or your reader) unhappy:

I'll be late for work and lose my job.

Many will die from skin cancer.

But a caution: It's not you who judges the significance of your problem by the cost *you* pay, but your readers who judge it by the cost *they* pay if you don't solve it. So what *you* think is a problem, they might not. To make your problem their problem, you must frame it from *their* point of view, so that they see its costs to *them*. To do that, imagine that when you pose the condition part of your problem, your reader responds, *So what?*

The hole in the ozone layer is growing.

So what?

You answer with the cost of the problem:

A bigger hole exposes us to more ultraviolet light.

Suppose he again asks, *So what?*, and you respond with the cost of more ultraviolet light:

Too much ultraviolet light can cause skin cancer.

If, however improbably, he again asks, *So what?*, you have failed to convince him that *he* has a problem. We acknowledge a problem only when we stop asking *So what?* and say instead, *What do we do about it?*

Practical problems like cancer are easy to grasp because when people have it, we don't ask *So what?* In academic research, however, your problems will usually be conceptual ones, which are harder to grasp because both their conditions and costs are not palpable but abstract.

4.2.2 The Nature of Conceptual Problems

Practical and conceptual problems have the same two-part structure, but they have different kinds of conditions and costs.

- The condition of a practical problem can be *any* state of affairs whose cost makes you (or better, your reader) unhappy.
- The condition of a conceptual problem, however, is *always* some version of *not knowing* or *not understanding* something.

You can identify the condition of a conceptual problem by completing that three-step sentence (3.4): The first step is *I am studying/working on the topic of* _____. In the second step, the indirect question states the condition of a conceptual problem, what you do not know or understand:

I am studying stories of the Alamo, because I want to understand **why voters responded to them in ways that served the interests of Texas politicians.**

That's why we emphasize the value of questions: they force you to state what you don't know or understand but want to.

The two kinds of problems also have two different kinds of costs.

- The **cost** of a practical problem is always some degree of unhappiness.

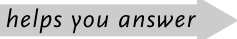
A conceptual problem does not have such a tangible cost. In fact, we'll call it not a cost but a *consequence*.

- The **consequence** of a conceptual problem is a *second* thing that we don't know or understand because we don't understand the *first* one, *and that is more significant, more consequential than the first*.

You express that bigger lack of understanding in the indirect question in step 3 of that formula:

I am studying stories of the Alamo, because I want to understand why voters responded to them in ways that served the interests of local Texas politicians, in order to help readers understand the bigger and more important question **of how regional self-images influence national politics**.

All this may sound confusing, but it's simpler than it seems. The condition and the consequence of a conceptual problem are both questions: Q1 and Q2. But there are two differences: (1) the answer to the *first* question helps you answer the second, and (2) the answer to the second question is more important than the answer to the *first*.

Q1  Q2

Here it is again: The *first* part of a research problem is something you don't know but want to. You can phrase that gap in knowledge or understanding as a direct question: *How have romantic movies changed in the last fifty years?* Or as an indirect question, as in: *I want to find out how romantic movies have changed in the last fifty years.*

Now imagine someone asking, *So what if you can't answer that question?* You answer by stating *something else more important* that you can't know until you answer the >rst question. For example:

If we can't answer the question of how romantic movies have changed in the last >fty years,^{condition/first question} **then we can't answer a more important question: How have our cultural depictions of romantic love changed?**^{consequence/larger, more important second question}

If you think that it's important to answer that second question, you've stated a consequence that makes your problem worth pursuing, and if your readers agree, you're in business.

But what if you imagine a reader again asking, *So what if I don't know whether we depict romantic love differently than we did?* You have to pose a yet larger question that you hope your readers will think is signi>cant:

If we can't answer the question of how our depictions of romantic love have changed,^{second question} **then we can't answer an even more important one: How does our culture shape the expectations of young men and women about marriage and families?**^{consequence/larger, more important question}

If you imagine that reader again asking, *So what?*, you might think, *Wrong audience*. But if that's the audience you're stuck with, you just have to try again: *Well, if we don't answer that question, we can't . . .*

Those outside an academic >eld often think that its specialists ask ridiculously trivial questions: *How did hopscotch originate?* But they fail to realize that researchers want to answer a question like that so that they can answer a *second*, more important one. For those who care about the way folk games influence the social development of children, the conceptual consequences of not knowing justifies the research. *If we can discover how children's folk games originate, we can better understand how games socialize children, and before you ask, once we know that, we can better understand . . .*

4.2.3 Distinguishing “Pure” and “Applied” Research

We call research *pure* when the solution to a problem does not bear on any practical situation in the world, but only improves the understanding of a community of researchers. When the solution to a research problem does have practical consequences, we call the research *applied*. You can tell whether research is pure or applied by looking at the last of the three steps defining your project. Does it refer to knowing or doing?

1. **Topic:** I am studying the electromagnetic radiation in a section of the universe
2. **Question:** because I want to find out how many stars are in the sky,
3. **Significance:** in order to help readers *understand* whether the universe will expand forever or collapse into a new big bang.

That is pure research, because step 3 refers only to understanding.

In an applied research problem, the second step refers to knowing, but that third step refers to *doing*:

1. **Topic:** I am studying how readings from the Hubble telescope differ from readings for the same stars measured by earthbound telescopes
2. **Question:** because I want to find out how much the atmosphere distorts measurements of electromagnetic radiation,
3. **Practical Significance:** so that astronomers can use data from earthbound telescopes *to measure* more accurately the density of electromagnetic radiation.

That is an applied problem because only when astronomers *know* how to account for atmospheric distortion can they *do* what they want to—measure light more accurately.

4.2.4 Connecting a Research Problem to Practical Consequences

Some inexperienced researchers are uneasy with pure research because the consequence of a conceptual problem—merely not knowing something—is so abstract. Since they are not yet part of a community that cares deeply about understanding its part of the

world, they feel that their findings aren't good for much. So they try to cobble a practical cost onto a conceptual question to make it seem more significant:

1. **Topic:** I am studying differences among nineteenth-century versions of the Alamo story
2. **Research Question:** because I want to find out how politicians used stories of such events to shape public opinion,
3. **Potential Practical Significance:** in order to protect ourselves from unscrupulous politicians.

Most readers would think that the link between steps 2 and 3 is a bit of a stretch.

To formulate a useful applied research problem, you have to show that the answer to the indirect question in step 2 *plausibly* helps answer the indirect question in step 3. Ask this question:

- (a) If my readers want to achieve the goal of _____ [state your objective from step 3],
- (b) would they think that they could do it if they found out _____? [state your question from step 2]

Try that test on this applied astronomy problem:

- (a) If my readers want to use data from earthbound telescopes to measure more accurately the density of electromagnetic radiation,
- (b) would they think that they could if they knew how much the atmosphere distorts measurements?

The answer would seem to be *Yes*.

Now try the test on the Alamo problem:

- (a) If my readers want to protect themselves from unscrupulous politicians,
- (b) would they think they could if they knew how nineteenth-century politicians used stories about the Alamo to shape public opinion?

We may see a connection, but it's a stretch.

If you think that the solution to your conceptual problem *might* apply to a practical one, formulate your problem as the pure research problem it is, then *add* your application as a *fourth* step:

1. **Topic:** I am studying how nineteenth-century versions of the Alamo story differ
2. **Conceptual Question:** because I want to find out how politicians used stories of great events to shape public opinion,
3. **Conceptual Significance:** in order to help readers understand how politicians use popular culture to advance their political goals,
4. **Potential Practical Application:** so that readers *might* better protect themselves from unscrupulous politicians.

When you state your problem in your introduction, however, formulate it as a purely conceptual research problem whose significance is in its conceptual consequences. Then wait until your conclusion to suggest its practical application. (For more on this, see chapter 16.)

Most research projects in the humanities and many in the natural and social sciences have no direct application to daily life. But as the term *pure* suggests, many researchers value such research more than they do applied. They believe that the pursuit of knowledge “for its own sake” reflects humanity’s highest calling—to know more, not for the sake of money or power, but for the transcendental good of greater understanding and a richer life of the mind. As you may have guessed, the three of us are deeply committed to pure research, but also to applied—so long as the research is done well and is not corrupted by malign motives. For example, there is a threat to both pure and applied research in the biological sciences, where profits not only determine the choice of some research problems, but color how some researchers reach their solutions: *Tell us what to look for, and we’ll provide it!* That raises an ethical question that we touch on in our afterword on ethics.

ANTICIPATING A TYPICAL BEGINNER'S MISTAKE

No one can solve the world's great problems in a >ve- or even a >fty-page paper. But you might help us better understand a *small part* of one, and that can move us closer to a practical solution. So if you care deeply about a practical problem, such as destructive forest >res, carve out of it a conceptual question that is small enough to answer but whose answer might ultimately contribute to a practical solution: *How important are fires to the ecological health of a forest? How do local fire codes affect the spread of forest fires?* The right answer to a small question moves us closer to solving a big problem than a big answer that doesn't work.

4.3 FINDING A GOOD RESEARCH PROBLEM

What distinguishes great researchers from the rest of us is the brilliance, knack, or just dumb luck of stumbling over a problem whose solution makes all of us see the world in a new way. It's easy to recognize a good problem when we bump into it, or it bumps into us. But researchers often begin a project without being clear about what their real problem is. Sometimes they hope just to de>ne a puzzle more clearly. Indeed, those who >nd a new problem or clarify an old one often make a bigger contribution to their >eld than those who solve a problem already de>ned. Some researchers have even won fame for *disproving* a plausible hypothesis that they had set out to prove.

So don't be discouraged if you can't formulate your problem fully at the outset of your project. Few of us can. But thinking about it early will save you hours of work along the way (and perhaps panic toward the end). It also gets you into a frame of mind crucial to advanced work. Here are some ways you can aim for a problem from the start and along the way.

4.3.1 Ask for Help

Do what experienced researchers do: talk to teachers, classmates, relatives, friends, neighbors—anyone who might be interested. Why would anyone want an answer to your question? What would they do with it? What new questions might an answer raise?

If you are free to work on any problem, look for a small one that

is part of a bigger one. Though you won't solve the big one, your small piece of it will inherit some of its larger significance. (You will also educate yourself about the problems of your field, no small benefit.) Ask your teacher what she is working on and whether you can work on part of it. But a warning: Don't let her suggestions define the limits of your research. Nothing discourages a teacher more than a student who does *exactly* what is suggested *and no more*. Teachers want you to use their suggestions to *start* your thinking, not *end* it. Nothing makes a teacher happier than when you use her suggestions to find something she never expected.

4.3.2 Look for Problems as You Read

You can also find a research problem in your sources. Where in them do you see contradictions, inconsistencies, incomplete explanations? Tentatively assume that other readers would or should feel the same. Many research projects begin with an imaginary conversation while reading another's report: *Wait a minute, he's ignoring . . .* But before you set out to correct a gap or misunderstanding, be sure it's real, not your own misreading. Countless research papers have refuted a point that no one ever made. Before you correct a source, reread it carefully. (In 6.4 we list several common "moves" that writers make to find a problem in a source, variations on *Source thinks X, but I think Y*.)

Once you think you've found a real puzzle or error, do more than just point to it. If a source says X and you think Y, you may have a research problem, but only if you can show that those who misunderstand X misunderstand some larger issue, as well.

Finally, read the last few pages of your sources closely. That's where many researchers suggest more questions that need answers. The author of the following paragraph had just finished explaining how the life of nineteenth-century Russian peasants influenced their performance as soldiers:

And just as the soldier's peacetime experience influenced his battle-field performance, so must the experience of the officer corps have influenced theirs. Indeed, a few commentators after

the Russo-Japanese War blamed the Russian defeat on habits acquired by officers in the course of their economic chores. In any event, to appreciate the service habits of Tsarist officers in peace and war, *we need a structural—if you will, an anthropological—analysis of the officer corps like that offered here for enlisted personnel.* [our emphasis]

That last sentence offers a new problem waiting for you to tackle.

4.3.3 Look at Your Own Conclusion

Critical reading can also help you discover a good research problem in your own drafts. We usually do our best thinking in the last few pages we write. It is often only then that we begin to formulate a final claim that we did not anticipate when we started. If in an early draft you arrive at an unanticipated claim, ask yourself what question it might answer. Paradoxical as it might seem, you may have answered a question that you have not yet asked, and thereby solved a problem that you have not yet posed. Your task is to figure out what it might be.

4.4 LEARNING TO WORK WITH PROBLEMS

Experienced researchers dream of finding new problems to solve. A still bigger dream is to solve a problem that no one even knew they had. But that new problem isn't worth much until others think (or can be persuaded) that they want to see it solved. So the first question an experienced researcher should ask about a problem is not *Can I solve it?* but *Will readers think it should be?*

No one expects that you can do that the first time out. But your teachers do want you to practice the mental habits that prepare you for that moment. That means doing more than just accumulating and reporting facts. They want you to formulate a question that *you* think is worth answering, so that down the road, you'll know how to find a problem that *others* think is worth solving. Until you can do that, you risk the worst response a researcher can get: not *I don't agree*, but *I don't care*.

By now, all this talk about airy academic research may seem

disconnected from a world in which so many people labor so hard at getting ahead or keeping others down. But in business and government, in law and medicine, in politics and international diplomacy, no skill is valued more highly than the ability to recognize a problem, then to articulate it in a way that convinces others both to care about it and to believe it can be solved, especially by you. If you can do that in a class on medieval Tibetan rugs, you can do it in an office on Main Street, Wall Street, or on Queen's Road in Hong Kong.



QUICK TIP: *Manage the Unavoidable Problem of Inexperience*

We all feel anxious when we start work in a field whose basic rules we don't entirely understand, much less those tacit rules that experienced researchers follow but don't explain to others because they're taken for granted. And to our surprise, we feel a newcomer's anxiety again when we begin a new kind of project on a new topic. We three authors have felt those anxieties, not just starting out, but long after our hair had grayed. You can't avoid feeling overwhelmed and anxious at times, but there are ways to manage it:

- Know that uncertainty and anxiety are natural and inevitable. Those feelings don't signal incompetence, only inexperience.
- Get control over your topic by writing about it along the way. Don't just retype or photocopy sources: write summaries, critiques, questions, responses to your sources. Keep a journal in which you reflect on your progress. The more you write, no matter how sketchily, the more confidently you will face that intimidating first draft.
- Break the task into manageable steps and know that they are mutually supportive. Once you formulate a good question, you'll draft and revise more effectively. The more you anticipate how you will write and revise a first draft, the more effectively you will produce it.
- Count on your teachers to understand your struggles. They want you to succeed, and you can expect their help. (If they don't help, look for others who will.)
- Set realistic goals. You do something significant when you wind up your project feeling it has changed just what you think and that your readers think you did it well, even if they don't agree with your claims.

- Most important, recognize the struggle for what it is—a learning experience. To overcome the problems that all beginners face, do what successful researchers do, especially when discouraged: review your plan and what you’ve written, then press on, confident that it will turn out OK. Perhaps only “OK—considering,” but probably a lot better than that.

From Problems to Sources

If you are a new researcher and expect to find most of your sources in your library or on the Internet, this chapter will help you develop a plan for your research. If you are more experienced, you might skip to the next chapter; if you are very experienced, skip to part III.

If you have not yet formulated a research question, you may have to spend time reading generally on your topic to find one. But if you have a question and at least one promising answer (the philosopher C. S. Peirce called it a *hypothesis on probation*), you can start looking for data to test it.

To do that efficiently, you need a plan. If you plunge into any and all sources on your topic, you risk losing yourself in an endless trail of books and articles. To be sure, aimless browsing can be fun, even productive. Many important discoveries have begun in a chance encounter with an unexpected idea. The three of us indulge in it a lot. But if you have a deadline, you need more than luck to find good sources in time: you have to search systematically for those sources whose data will let you test your hypothesis, by supporting it or, more usefully, by challenging you to improve or abandon it.

In this chapter we discuss how to find sources and then to winnow them to a manageable number. In the next we'll discuss how to engage sources that look promising.

5.1 KNOWING HOW TO USE THREE KINDS OF SOURCES

Sources are conventionally categorized into three kinds. Their boundaries are fuzzy, but they're useful in helping you plan your search.

5.1.1 Primary Sources

These provide the “raw data” that you use first to test your working hypothesis and then as evidence to support your claim. In history, for example, primary sources include documents from the period or person you are studying, objects, maps, even clothing; in literature or philosophy, your main primary source is usually the text you are studying, and your data are the words on the page. In such fields you can rarely write a research paper without using primary sources.

5.1.2 Secondary Sources

Secondary sources are research reports that use primary data to solve research problems, written for scholarly and professional audiences. Researchers read them to keep up with their field and use what they read to frame problems of their own by disputing other researchers’ conclusions or questioning their methods. You can use their data to support your argument, but only if you cannot find those data in a primary source. A secondary source becomes a primary source when you study its argument as part of a debate in a field, such as whether patriotic historians deliberately distorted Alamo stories.

5.1.3 Tertiary Sources

These are books and articles that synthesize and report on secondary sources for general readers, such as textbooks, articles in encyclopedias and mass-circulation publications like *Psychology Today*, and what standard search engines turn up first on the Web. In the early stages of research, you can use tertiary sources to get a feel for a topic. But if you use what you find in a tertiary source to support a scholarly argument, most of your readers won’t trust your report—or you.

It’s not that books written for general readers about brains or black holes are necessarily wrong. Many distinguished researchers write such books. But they sometimes oversimplify the research, and their work usually dates quickly. So if you start your research with a popular book, look at the journals listed in its bibliography, then go

to them for more current research. (As with secondary sources, a source like an encyclopedia could be a primary source if you were studying, say, how encyclopedias deal with gender issues.)

5.2 LOCATING SOURCES THROUGH A LIBRARY

Unless you collect your own data from experiments or observation, you'll probably find data in books or articles, occasionally in photos, films, videos, or audio recordings. In that case, your first stop is not Google but your library's Web site.

If you've explored the farthest reaches of the Net, starting with a library may seem old-fashioned, but today's libraries connect you to the best online resources. So when we caution you not to rely on the Internet for your research, we don't mean that you ought not go online. The three of us work online whenever we can. But you must distinguish online resources that are extensions of libraries (and are as reliable) from random Internet sources whose reliability is always in doubt.

If your library's online resources are limited, ask your librarian whether you can access the online resources of one of your state universities. If you can't, consult the online catalog of the Library of Congress (www.loc.gov), where you'll find almost any source you could want. Most state universities allow guest access to their online catalogs (but not their databases).

If your library has few books and articles on your topic, look for a larger library nearby, but don't forget specialized ones, such as the National Rifle Association Library in Fairfax, Virginia, or the Martin Luther King Jr. Library in Atlanta. But even if a small library is all you have, it probably offers more than you think, including research guides and reference works, both general and specialized. If you use online catalogs, bibliographies, and databases thoughtfully, you can do a great deal with a small library and interlibrary loan (loans take time, so start early).

5.2.1 Planning Your Search

The first step is to *plan* your search. Start with an overview of the research on your topic. Look it up in general or specialized encyclopedias, then in reference works that summarize research in

specific areas, as well as bibliographies that list research by area (see pp. 283–311). Most fields have such resources, and your library will have many of them, some online.

TALK TO LIBRARIANS. If this is your first shot at serious research, you might begin by talking to a reference librarian. They are usually ready to help when you don't know where to start. Large libraries even have specialists in particular topics. They can show you how to use the catalog and other specialized online resources. If you feel too shy or proud to ask questions in person, e-mail them.

You will save both your time and theirs if you prepare your questions, even rehearse them. You might describe your project using the three-step rubric from chapter 3:

I am working on educational policy in the 1950s
to find out how school boards in the Midwest dealt with desegregation,
because I want to understand regional differences in race relations.

Can you help me find periodical guides that list articles on that topic?

Early on, your questions may be general, but as you narrow your topic, state your problem so that your librarian understands exactly what you need: *I want to find how school boards used court decisions on the “separate but equal” doctrine to resolve questions about how far students could be bussed.*

IF YOU DON'T KNOW, ASK

You can't learn the ropes of research if you don't know where they are, and you won't find where they are if you don't ask. On her first visit to its research library, a new graduate student at the University of Chicago couldn't find the stacks, where all the books that circulate are kept. Too embarrassed to ask, she wandered for two more days through seven floors of reading rooms, finding only reference works. Only on the third day did she get up the nerve to ask a librarian where all the books were. The librarian pointed to a door that led to acres of books. Moral of the story: The only embarrassing question is the one you *failed to* ask but should have.

TALK TO EXPERTS. You can also ask experts in a field to help you focus your topic and suggest sources. Start with your teacher, but don't expect her to have all the answers. (You might hope she doesn't; if she thinks your report will teach her something, she'll read it with greater interest.) You can also look for help from advanced students. Here, too, the quality of the help you get depends on the quality of the questions you ask. So before you ask, rehearse them.

How much help should you get? At one extreme, we know a graduate student who met his adviser every day for breakfast, reporting what he found the day before and asking for guidance for the day ahead. (It's a good thing few students want that much help.) At the other extreme are those who disappear into the bowels of the library and don't emerge until they've completed their project, sometimes years later. (We don't actually *know* anyone who has done that, but we know some who have come close.) Most researchers take the middle way, relying on regular conversations to guide their reading, which stimulate more questions and hunches to try out on others.

CONSULT GENERAL REFERENCE WORKS. If you already know a lot about your topic, you probably also know how to find sources on it. If not, start by looking at the end of an article on your topic in a general reference work such as the *Encyclopaedia Britannica*, where it may list basic sources. If you find nothing under one heading, try another. The 1993 *Books in Print* listed nothing under *gender*, a term that is now standard for researchers in women's studies, but it had many entries under *sex*.

CONSULT SPECIALIZED REFERENCE WORKS. If you are working in a particular field, look up your topic in a specialized encyclopedia or dictionary, such as the *Encyclopedia of Philosophy*, and consult the references cited there. Many libraries offer access to online bibliographical databases, many of which include abstracts that summarize journal articles. In some new or highly specialized fields, you may find bibliographical lists on Web sites maintained by individual scholars, departments, or scholarly associations. These may be less reliable than large databases, but they'll get you started.

You may also find print bibliographies covering your field. If you're lucky, you'll find an annotated bibliography that sums up current books and articles. It's an efficient way to survey what other researchers think is important. Most fields also publish a journal that annually reviews new research, which is even more useful. If you need the newest sources, the *Chronicle of Higher Education* lists new books, and many journals list "books received" (new books that publishers hope the journal will review).

Every major field has at least one guide to all these resources: lists of bibliographies, locations of important primary materials, research methods, and so on. We list many in our "Appendix: Bibliographical Resources," several of which are online.

5.2.2 Searching for Specific Sources

SEARCH YOUR LIBRARY CATALOG. Once you locate a few sources on your topic, you can expand your search in two ways: keyword searches and browsing.

Start a keyword search with the specific terms that you used to narrow your topic—for example, *Alamo*, *legend*, *Texas independence*, and so on. Once you find books under those terms, look at the Library of Congress subject headings, either on the back of their title page or on their "details" page in the online catalog. On the back of this book's title page are the terms

1. Research—Methodology. 2. Technical writing.

If you search an online catalog for those terms, you will find all the books on those subjects in that library.

You can also search most catalogs by browsing for books with similar call numbers. Once you identify one book that seems on target, find the browse link on that book's catalog entry. This list will be less focused than a keyword list, but it may also contain unexpected gems. So don't restrict yourself to books nearest your target. Invest the time to browse widely.

The problem with any online search is that it may produce an overwhelming number of titles. The University of Chicago library has more than three hundred books on Napoleon and thousands with the word *environment* in their titles. If your search turns up

too many titles, cut it to those published in the last >fteen years; if that's still too many, cut to the last ten.

After you search the Library of Congress or a large university catalog, you may discover that your own library holds only a fraction of what you found, but it can borrow most of what you need. For books too new to be in a library catalog but crucial to your research, >nd an online bookseller. Those books might turn up on your library's new acquisitions shelf, but you'll probably have to buy them.

On the other hand, if you >nd nothing, your topic may be too narrow or too far o= the beaten track to yield quick results. But you could also be on to an important question that nobody has thought about, at least not for a while. For example, "friendship" was once an important topic for philosophers, but it was then ignored by major encyclopedias for centuries. Recently, though, it has been revived as a topic of serious research. Chances are you'll make something of a neglected topic only through your own hard thinking. In the long run, that research might make you famous, but it won't work for a paper due in a few weeks.

CONSULT ONLINE DATABASES. If you are sure that most of your sources will be in journals (typically in the social sciences), skip the catalog and go right to your library's online journal databases. Most let you search for titles and key words in the ways we've described. (Browsing capabilities, however, are less common.) Many include abstracts, which can help you decide whether an article is worth reading carefully. Some databases even provide the full text of articles, though often for a fee. For information too current for the journals, check periodical indexes or search the online archives of a major newspaper.

PROWL THE STACKS. In many respects, doing research online is faster than on foot, but if you never go into the stacks of your library (assuming you're allowed to), you may miss crucial sources that you'll >nd only there. More important, you'll miss the benefits of serendipity—a chance encounter with a valuable source that occurs only when a title happens to catch your eye. (All three of us have found important sources in this way.)

If you can get into the stacks, find the shelf with books on your topic, then scan the titles on that shelf, then on the ones above, below, and on either side, especially for books with new bindings published by university presses. Then turn around and skim titles behind you; you never know. When you spot a promising title, skim its table of contents and index for key words related to your question and answer. Then skim its bibliography for titles that look relevant. You can do all that faster with a book in your hand than you can online. Be suspicious of a book with no index or bibliography. (See 5.4 for more on systematic skimming.)

You can check tables of contents for many journals online, but browsing among the shelved journals can be more productive. Once you identify promising journals online or in bibliographies, find them on the shelf. Skim the bound volumes for the last ten years (most have an annual table of contents in front). Then take a quick look at journals shelved nearby. You'll be surprised how often you find a relevant article that you would have missed online.

5.3 LOCATING SOURCES ON THE INTERNET

Not long ago, experienced researchers distrusted all data found on the Internet. That is no longer true. Researchers now log on to the Internet to access library sources, government reports and databases, primary texts from reputable online publishers, newspapers, even scholarly journals available only online. You can use—and trust—those sources as you would their print counterparts.

Beyond those traditional sources, you'll find more on the Internet than any library can—or would—provide. But the Net's strength in numbers is also its limitation, because it has no gatekeepers. It is like a publisher without editors or a library without librarians. Most people post what they are passionate about or what will make them money, with no one to check their honesty or accuracy. When a search engine points you to a site, it knows only that many others have looked at it, not whether it offers careful reporting or the ranting of an obsessed mind. Your problem is that you can't easily know that either. You would have to in-

vest more time than you may have to determine what is reliable enough to use.

So use the Internet freely only when it's a primary source. For example, if you study how soap opera story lines respond to their fans' reactions, the fan blogs would be primary sources. But avoid the Internet for secondary or, worse, tertiary sources, unless you can show your readers that a specific Internet source is reliable. (We discuss evaluating sources in the next section.)

RESPECTING AUTHORS' RIGHTS

There are sites that provide reliable online copies of older texts no longer in copyright, but some postings of recently printed texts violate the author's copyright. Careful readers dislike seeing unauthorized copies cited because it breaks the law and the texts are often inaccurately reproduced. So unless a recent text is posted with the author's clear permission (as in a database), use its print rather than its e-version.

5.4 EVALUATING SOURCES FOR RELEVANCE AND RELIABILITY

When you start looking for sources, you'll find more than you can use, so you must quickly evaluate their usefulness; use two criteria: relevance and reliability.

5.4.1 Evaluating Sources for Relevance

If your source is a book, do this:

- Skim its index for your key words, then skim the pages on which those words occur.
- Skim the first and last paragraphs in chapters that use a lot of your key words.
- Skim prologues, introductions, summary chapters, and so on.
- Skim the last chapter, especially the first and last two or three pages.
- If the source is a collection of articles, skim the editor's introduction.
- Check the bibliography for titles relevant to your topic.

If your source is an article, do this:

- Read the abstract, if it has one.
- Skim the introduction and conclusion, or if they are not marked off by headings, skim the first six or seven paragraphs and the last four or five.
- Skim for section headings, and read the first and last paragraphs of those sections.
- Check the bibliography for titles relevant to your topic.

If your source is online, do this:

- If it looks like a printed article, follow the steps for a journal article.
- Skim sections labeled “introduction,” “overview,” “summary,” or the like. If there are none, look for a link labeled “About the Site” or something similar.
- If the site has a link labeled “Site Map” or “Index,” check it for your key words and skim the referenced pages.
- If the site has a “search” resource, type in your key words.

This kind of speedy reading can guide your own writing and revision. If you do not structure your report so your readers can skim it quickly and see the outlines of your argument, your report has a problem, an issue we discuss in chapters 12 and 14.

5.4.2 Evaluating Sources for Reliability

You can’t judge a source until you read it, but there are signs of its reliability:

1. Is the source published or posted online by a reputable press?

Most university presses are reliable, especially if you recognize the name of the university. Some commercial presses are reliable in some fields, such as Norton in literature, Ablex in sciences, or West in law. Be skeptical of a commercial book that makes sensational claims, even if its author has a PhD after his name. Be espe-

cially careful about sources on hotly contested social issues such as stem-cell research, gun control, and global warming. Many books and articles are published by individuals or organizations driven by ideology. Libraries often include them for the sake of coverage, but don't assume they are reliable.

2. Was the book or article peer-reviewed? Most reputable presses and journals ask experts to review a book or article before it is published; it is called "peer review." Many essay collections, however, are reviewed only by the named editor(s). Few commercial magazines use peer review. If a publication hasn't been peer-reviewed, be suspicious.

3. Is the author a reputable scholar? This is hard to answer if you are new to a >eld. Most publications cite an author's academic credentials; you can >nd more with a search engine. Most established scholars are reliable, but be cautious if the topic is a contested social issue such as gun control or abortion. Even reputable scholars can have axes to grind, especially if their research is >nancially supported by a special interest group. Go online to check out anyone an author thanks for support, including foundations that supported her work.

4. If the source is available only online, is it sponsored by a reputable organization? A Web site is only as reliable as its sponsor. You can usually trust one sponsored and maintained by a reputable organization. But if the site has not been updated recently, it may have been abandoned and is no longer endorsed by its sponsor. Some sites supported by individuals are reliable; most are not. Do a Web search for the name of the sponsor to >nd out more about it.

5. Is the source current? You must use up-to-date sources, but what counts as current depends on the >eld. In computer science, a journal article can be out-of-date in months; in the social sciences, ten years pushes the limit. Publications have a longer life in the humanities: in philosophy, primary sources are current for centuries, secondary ones for decades. In general, a source that

sets out a major position or theory that other researchers accept will stay current longer than those that respond to or develop it. Assume that most textbooks are *not* current (except, of course, this one).

If you don't know how to gauge currency in your field, look at the dates of articles in the works cited of a new book or article: you can cite works as old as the older ones in that list (but perhaps not as old as the oldest). Try to find a standard edition of primary works such as novels, plays, letters, and so on (it is usually not the most recent). Be sure that you consult the most recent edition of a secondary or tertiary source (researchers often change their views, even rejecting ones they espoused in earlier editions).

6. If the source is a book, does it have a notes and a bibliography? If not, be suspicious, because you have no way to follow up on anything the source claims.

7. If the source is a Web site, does it include bibliographical data? You cannot know how to judge the reliability of a site that does not indicate who sponsors and maintains it, who wrote what's posted there, and when it was posted or last updated.

8. If the source is a Web site, does it approach its topic judiciously? Your readers are unlikely to trust a site that engages in heated advocacy, attacks those who disagree, makes wild claims, uses abusive language, or makes errors of spelling, punctuation, and grammar.

The following criteria are particularly important for advanced students:

9. If the source is a book, has it been well reviewed? Many fields have indexes to published reviews that tell you how others evaluate a source (see the "Appendix: Bibliographic Resources").

10. Has the source been frequently cited by others? You can roughly estimate how influential a source is by how often others cite it. To determine that, consult a citation index (see "Appendix: Bibliographic Resources").

These indicators do not guarantee reliability. Reviewers sometimes recommend that a reputable press publish something weakly argued or with thin data because other aspects of its argument are too important to miss—we three have each done so. So don't assume that you can read uncritically just because a report is written by a reputable researcher and published by a reputable press.

WHOM CAN YOU TRUST?

The highly respected *Journal of the American Medical Association* appointed a committee to review articles published by reputable journals for reliability. Even though those papers had been approved by experts in the field, the reviewers reported that “statistical and methodological errors were common” (“When Peer Review Produces Unsound Science,” *New York Times*, June 11, 2002, p. D6). In the face of such revelations, some just dismiss what scientists publish: if the reviewers of scientific articles can't guarantee reliable data, what is a mere layperson to do? You do what we all do—the best you can: read critically, and when you report data, do so as accurately as you can. We'll return to this question in chapter 8.

Error is bad, but dishonesty is worse. One of Booth's students got a summer job with a drug company and was assigned to go through stacks of doctors' answers to questionnaires and shred certain ones until nine out of ten of those left endorsed the company's product. These bogus data were then used to “prove” that the product worked. The student quit in disgust and was, no doubt, replaced by someone less ethically careful.

5.5 FOLLOWING BIBLIOGRAPHICAL TRAILS

Most sources will give you trailheads for bibliographical searches. When you find a book that seems useful, skim its bibliography or works cited. Its index will list the authors cited most often (generally, the more citations, the more important an author is). Journal articles usually begin with a review of previous research, all cited. By following this bibliographic trail, you can navigate the most difficult research territory, because one source always leads to others, which lead to others, which lead to . . .

5.6 LOOKING BEYOND PREDICTABLE SOURCES

For a class paper, you'll probably use the sources typical in your field. But if you are doing an advanced project, an MA thesis, or a PhD dissertation, search beyond them. If, for example, your project were on the economic effects of agricultural changes in late sixteenth-century England, you might read Elizabethan plays involving country characters, look at wood prints of agricultural life, and commentary by religious figures on rural social behavior. Conversely, if you were working on visual representations of daily life in London, you might work up the economic history of the time and place. When you look beyond the standard *kinds* of references relevant to your question, you enrich not only your analysis but your range of intellectual reference and your ability to synthesize diverse kinds of data, a crucial competence of an inquiring mind. Don't ignore a work on your topic that is not mentioned in the bibliographies of your most relevant sources—you will get credit for originality if you turn up a good source that others have ignored.

WHEN THEY BEAT YOU TO THE PUNCH

Don't panic if you find a source that seems to pose and solve precisely your problem: "Transforming the Alamo Legend: History in the Service of Politics." At that moment you might think, *I'm dead. Nothing new to say.* (It happened to Williams when he was writing his doctoral dissertation and to Colomb just before his first book came out.) You may be right, but probably not. If the source does in fact settle your exact question, you have to formulate a new one. But the question your source asked is probably not as close to yours as you first feared. And you may find that you can do the source one better: if the author failed to get things entirely right, you have an unwitting ally in formulating your problem.

5.7 USING PEOPLE AS PRIMARY SOURCES

In some areas, you have to collect primary data from people, even if your research is not directly about them. They may provide useful information, if you can help them understand your interest

in what they know. Don't ignore people in local business, government, or civic organizations. For example, if you were researching school desegregation in your town, you might go beyond the documents to ask the local school district whether anyone there has memories to share.

We can't explain the complexities of interviewing (there are many guides to that process), but remember that the more you plan by determining *exactly* what you want to know, the more efficiently you will get what you need. You don't need to script an interview around a set list of questions—in fact, that can be a bad idea if it freezes the interviewee. But prepare so that you don't question your source aimlessly. You can always reread a book for what you missed, but you can't keep going back to people because you didn't prepare well enough to get what you needed the first time.



QUICK TIP:

The Ethics of Using People as Sources of Data

In recent years we have become increasingly aware that research using people may inadvertently harm them—not just physically but by embarrassing them, violating their privacy, and so on. So every college or university now has a Human Subjects Committee that reviews all research directly or indirectly involving people, whether done by students or professional researchers. Its aim is to ensure that researchers follow the maxim that should govern research as it does medicine: *Do no harm*. Consult with that committee if you use people as sources of data—whether by interviewing, surveying, perhaps even just observing them. Jumping through these hoops may feel like bureaucratic make-work, but if you don't, you could harm those who help you and may even damage your institution.

Engaging Sources

To make your research as reliable as you expect your sources to be, you must use them fairly and accurately. In this chapter we explain how to engage your sources productively and how to take notes so that readers can trust you when you rely on or critique a source.

How you use sources depends on where you stand in your search for a problem and solution. If you still have only a topic, you may have to read a lot of sources to find a question to pursue. If you have a question, you can search sources for data to test and support your answer. You must record them so that you can accurately recover not just their data but their arguments and your responses to them. Those are skills highly valued not just in the classroom, but in every workplace.

The problem is, human nature works against us in two ways. First, most of us embrace our first answer so strongly that we read less critically than we should. We easily spot data and arguments that confirm our claim, but we just as easily overlook or distort data that qualify or even contradict it. We don't do that deliberately; it's just human nature. You have to guard against this bias, not only in your own work but in your sources, especially when they agree with you.

Second, when we read just to understand, taking notes can feel like a chore. Many new researchers take notes in a shorthand that seems understandable at the time but that betrays them later—ask Doris Kearns Goodwin, historian and TV pundit, whose reputation was scarred by accusations of plagiarism, which she attributed to careless note-taking. You have to take notes more carefully than you think you need to.

In this chapter we show you how to use secondary sources as accurately, critically, and fairly as time—and human nature—allow.

6.1 KNOWING WHAT KIND OF EVIDENCE TO LOOK FOR

Different fields use different kinds of evidence, so before you start collecting data, you must know the particular *kinds* of evidence your readers expect:

- personal beliefs and anecdotes from writers' lives, as in a first-year writing course
- direct quotations from letters, diaries, books, poems, and so on, as in most humanities courses
- verbal accounts of objects, images, and events in the form of descriptions, anecdotes, and narratives, as in history
- fine-grained records of objects and events recorded in photographs, videotapes, films, drawings, and recordings, as in anthropology
- quantitative data gathered in laboratory experiments and surveys, represented in tables, graphs, charts, as in many of the social and all of the natural sciences

Each field accepts other kinds of data, if presented properly, but each is also likely to disfavor certain kinds. Literary critics do not expect bar charts to represent an author's development; most psychologists are suspicious of self-reported anecdotes about mental processes.

6.2 RECORD COMPLETE BIBLIOGRAPHICAL DATA

Before you read one page of a source, record *all* its bibliographical data, not only to record what you read, but to credit your sources and help readers find them, should they want to check for themselves. We promise that no habit will serve you better for the rest of your career. (Different fields follow different styles for citing their sources. See 13.8. Determine the style your readers expect so that you can record your sources appropriately.)

For printed books, record

- author
- title (including subtitle)
- editor(s) and translator(s) (if any)
- edition
- volume
- place published (the first if more than one is listed)
- publisher
- date published
- page numbers of articles or chapters consulted

For journals, record

- author
- title (including subtitle) of article
- title of journal
- volume and issue number
- date
- page numbers of article

For online sources, record as much of the above as applies.
Also record

- URL
- date of access
- Webmaster (if identified)
- name of database (if any)

If you access a printed text online, cite bibliographical data from the original printing as well as your source of online access.

If you photocopy a passage from a book, copy its title page and from its reverse side copy the date of publication, then record its library call number. You don't include call numbers in your list of sources, but we can tell you how frustrating it is to find in your notes the perfect quote or the essential bit of data whose source you incompletely documented, cannot find again, and so cannot use.

DOCUMENT A POTENTIAL SOURCE WHEN YOU FIRST TOUCH IT
Williams once had to withhold publication of research on Elizabethan social history for more than a year because he failed to document a source fully. Years earlier he had come across data (a list of renters in London in 1638) that no one else had thought to apply to a problem he thought he might one day address. But he had failed to record complete information on his source, so he could not use its data. He searched the library at the University of Chicago for hours, until one night he sat up in bed, realizing that the source was in a different library!

6.3 ENGAGING SOURCES ACTIVELY

If you can, read important sources twice. Make your first reading generous and sensitive to what sparks your interest. Reread passages that puzzle or confuse you. Don't look for disagreements right away; read in ways that help the source make sense. Otherwise, you'll be tempted to emphasize its weaknesses if it presents an argument that rivals yours. Resist that temptation, at least at first. If your source seems important or disagrees with your position, read it a second time slowly and more critically. If you can't sum up a passage in your mind, you don't understand it well enough to disagree.

Don't accept a claim just because an authority asserts it. For decades researchers cited the "fact" that the Inuit peoples of the Arctic had many terms for types of snow. But another researcher found that they have just three (or so she claims). And be wary of dueling experts. If Expert A says one thing, B will assert the opposite, and C will claim to be an expert but is not. When some students hear experts disagree, they become cynical and dismiss expert knowledge as just opinion. Don't confuse mere opinion

with informed and thoughtful debate over legitimately contested issues.

If you are an advanced researcher, check the accuracy of everything important to your argument. If you ask almost anyone whose work has been used by others, he will tell you that, as often as not, it was reported inaccurately, summarized carelessly, or criticized ignorantly. Writers regularly write to the *New York Review of Books* and the “Book Review” of the *New York Times*, pointing out how reviewers distorted their ideas or made factual errors criticizing them.

CHECK—AND CHECK AGAIN

Researchers rarely misrepresent data deliberately, but carelessness and intellectual laziness do happen. Colomb heard a prominent researcher confess after her talk that she had never read the work she had just discussed. One of Booth’s books was “refuted” by a critic who apparently read only the title of a section, “Novels Must Be Realistic.” Failing to read beyond it, he didn’t know that Booth himself was attacking the claim in the title, along with other misconceptions about fiction. One reviewer of a book by Williams misquoted him and then, thinking he was disagreeing with him, argued for the point Williams made in the first place!

6.4 USING SECONDARY SOURCES TO FIND A PROBLEM

Once you have a research problem, use it to guide your search for evidence, models, and arguments to respond to. But if you don’t yet have one, you won’t know which data, models, or arguments might be relevant. So read sources not randomly but deliberately to find a problem. Look for claims that seem puzzling, inaccurate, or simplistic—anything you can disagree with. You’re more likely to find a research problem when you disagree with a source, but you can also find one in sources you agree with.

6.4.1 Look for Creative Agreement

If you believe what a source claims, try to extend that claim: What new cases might it cover? What new insights can it provide? Is there confirming evidence the source hasn’t considered? Here are some ways to find a problem through creative agreement.

1. **Offer additional support.** You can offer new evidence to support a source's claim.

Smith uses anecdotes to show that the Alamo story had mythic status beyond Texas, but editorials in big-city newspapers offer better evidence.

- Source supports a claim with old evidence, but you offer new evidence.
- Source supports a claim with weak evidence, but you offer stronger evidence.

2. **Confirm unsupported claims.** You can prove something that a source only assumes or speculates about.

Smith recommends visualization to improve sports performance, but MRI studies of the mental activities of athletes offer evidence that shows why that is good advice.

- Source speculates _____ might be true, but you offer evidence to show that it is.
- Source assumes _____ is true, but you can prove it.

3. **Apply a claim more widely.** You can extend a position.

Smith argues that medical students learn physiological processes better when they are explained with many metaphors rather than with just one. The same seems true for engineering and law students.

- Source correctly applies _____ to one situation, but you apply it to new ones.
- Source claims that _____ is true in a specific situation, but you show it's true in general.

6.4.2 Look for Creative Disagreement

We can't tell you what to disagree with, but we can list some ways of disagreeing that point to new research problems. (The list is not exhaustive, and some kinds overlap.)

1. **Contradictions of kind.** A source says something is one kind of thing, but it's another.

Smith says that certain religious groups are "cults" because of their strange beliefs, but those beliefs are no different in kind from standard religions.

- Source claims that _____ is a kind of _____, but it's not.
- Source claims that _____ always has _____ as one of its features or qualities, but it doesn't.
- Source claims that _____ is normal/good/significant/useful/moral/interesting, but it's not.

You can reverse those claims and the ones that follow to state the opposite:

- Though a source says _____ is *not* a kind of _____, you can show it is.

2. **Part-whole contradictions.** You can show that a source mistakes how the parts of something are related.

Smith has argued that sports are crucial to an educated person, but in fact athletics have no place in college.

- Source claims that _____ is a part of _____, but it's not.
- Source claims that one part of _____ relates to another in a certain way, but it doesn't.
- Source claims that every _____ has _____ as one of its parts, but it doesn't.

3. **Developmental or historical contradictions.** You can show that a source mistakes the origin or development of a topic.

Smith argues that the world population will rise, but it won't.

- Source claims that _____ is changing, but it's not.
- Source claims that _____ originated in _____, but it didn't.
- Source claims that _____ develops in a certain way, but it doesn't.

4. **External cause-effect contradictions.** You can show that a source mistakes a causal relationship.

Smith claims that juveniles can be stopped from becoming criminals by "boot camps." But evidence shows that they don't.

- Source claims that _____ causes _____, but it doesn't/they are both caused by _____.
- Source claims that _____ is sufficient to cause _____, but it's not.
- Source claims that _____ causes only _____, but it also causes _____.

5. **Contradictions of perspective.** Most contradictions don't change a conceptual framework, but when you contradict a "standard" view of things, you urge others to think in a new way.

Smith assumes that advertising has only an economic function, but it also serves as a laboratory for new art forms.

- Source discusses _____ from the point of view of _____, but a new context or point of view reveals a new truth [the new or old context can be social, political, philosophical, historical, economic, ethical, gender specific, etc.].
- Source analyzes _____ using theory/value system _____, but you can analyze it from a new point of view and see it in a new way.

6.5 USING SECONDARY SOURCES TO PLAN YOUR ARGUMENT

Experienced researchers read secondary sources mainly to keep up with work in their field, but they use them in other ways as well, and so can you.

6.5.1 Reading Secondary Sources for Data to Use as Evidence

New researchers regularly read secondary sources for data to support a claim, but if you can, check the primary source. If an important quotation is available in its original form and context, it is risky and intellectually lazy not to look it up.

You don't have to agree with a source to use its data; in fact, its argument does not even have to be relevant to your question, so long as its data are. However, use statistical data only if you can judge for yourself whether they were collected and analyzed appropriately. (You serve yourself well if you take a course or two in statistics and probability, an area where most Americans are shamefully ignorant.)

Don't try to find every last jot of data relevant to your question; that's impossible. But you do need data that are sufficient and representative. Unfortunately, different fields judge that differently. For example, to have sufficient evidence for a claim about a causal correlation between baldness and IQ, a psychologist might need results from hundreds of subjects. But before accepting a claim about a new cancer drug, the FDA might demand data from thousands of subjects through scores of trials. The more at stake, the higher the threshold of reliability, and that means more data.

What counts as representative, of course, depends on the nature of the data. Anthropologists might interpret a whole culture in New Guinea on the basis of a deep acquaintance with a few individuals, but no sociologist would make a claim about American religious practices based on a single Baptist church in Oregon. If you don't know what researchers in your field judge to be sufficient and representative, ask your teacher or another expert. In particular, ask for examples of arguments that *failed* because of insufficient or unrepresentative evidence. To learn what works, you must know what doesn't.

6.5.2 Reading Secondary Sources for Claims to Use as Support

Researchers often use the results they find in secondary sources to bolster their own arguments. If you find a useful claim, you can cite it to support your own. You can use a claim as factual data, but only if it has been supported and widely accepted. But many claims show nothing more than that another researcher agrees with you—useful support, but not evidence. To use such claims as evidence, you have to report not only the conclusion of the source but its reasoning and supporting evidence as well.

6.5.3 Reading Secondary Sources for Models of Argument and Analysis

If you have never made an argument like the one you plan to, you can model it on ones you find in secondary sources. You can't use specific ideas (that would be plagiarism), but you do not plagiarize a source when you borrow its logic. Don't worry that your argument will be unoriginal. The logic of a research argument is rarely original. Readers will look for originality in your problem, claim, and evidence.

Suppose you want to argue that the Alamo legend thrived because it served the political interests of those who created it and satisfied the emotional needs of those who repeated it. You will need reasons and evidence unique to your claim, but you can raise the *kinds* of issues that readers see in similar arguments about other legends, real or fictional. If, for example, a source shows that creators of the King Arthur legend benefited from responses to it, ask how the Alamo legend benefited its creators and audience. You are not obliged to cite your model, but to gain credibility, you might note that it makes an argument similar to yours:

As Weiman (1998) shows about the Arthurian legends, those responsible for the Alamo legend also gained the most from its depiction of Texas as an outpost civilization. . . .

6.5.4 Reading Secondary Sources to Define Your Problem

Experienced researchers usually present their problem in relation to the research that led them to it. Before they state their problem

in their introduction, they describe the line of research that their work will replace, correct, refine, or extend. So as you read secondary sources, look for research questions similar to yours. You can use those earlier studies in your introduction to define a gap that your work will fill. For example, you might frame your study of Alamo legends in light of previous studies of other legends:

Historians have been interested in ways that communities use legends to create and maintain political and social identity. For early Christian communities, it was the Grail legend (Gromke 1988); for England, it was the Arthurian legend (Weiman 1998); for . . . For the new Republic of Texas, it was the legend of the Alamo.

You can cite those sources again in the body of your report, but you don't have to. Just mentioning them in your introduction is enough to show your readers how your report is related to a wider conversation.

6.5.5 Reading Secondary Sources for Arguments to Respond To

No research report is complete until it acknowledges and responds to its readers' predictable questions and disagreements. You can find some of those competing views in secondary sources. What alternatives to your claims do they offer? What evidence do they cite that you must acknowledge? Some new researchers think they weaken their case if they mention any views opposing their own. The opposite is true. When you acknowledge the views of others, you show that you not only know those views, but have carefully considered and can confidently respond to them (for more on this, see chapter 10).

Experienced researchers also use those competing views to improve their own. You can't really understand what you think until you understand why a rational person might think differently. So as you look for sources, don't look just for those that support your claims. Be alert for sources that contradict them, because they are sources that your readers are likely to know.

6.6 RECORDING WHAT YOU FIND

Once you find a source that you think you can use, you must read it purposefully and carefully. But it does no good to understand your source when you read it if you cannot recall what you understood when you read your notes later.

6.6.1 Take Full Notes

As you hunt down data, it can feel tedious to record them accurately, but you lose what you gain from careful reading if you depend on careless notes. Some still believe that the best notes are written longhand on cards like this:

Sharman, Swearing, p. 133. HISTORY/ECONOMICS (GENDER?)

Says swearing became economic issue in 18th c. Cites Gentleman's Magazine, July 1751 (no page reference): woman sentenced to ten days' hard labor because couldn't pay one-shilling fine for profanity.

"... one rigid economist practically entertained the notion of adding to the national resources by preaching a crusade against the opulent class of swearers."

[Way to think about swearing today as economic issue? Comedians more popular if they use bad language? Movies more realistic? A gender issue here? Were 18th-c. men fined as often as women?]

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- At the top left is the author, short title, and page number.
- At the top right are key words that let the researcher sort and re-sort notes into different categories and orders.
- The body of the card summarizes the source, records a direct quotation, and includes a thought about further research.
- At bottom left is the call number of the source.

This format encourages systematic note-taking, but to be honest, we three haven't used such cards in a long time. We take notes on

a computer or lined pad, because a note card is usually too small a space to record our responses fully.

But we still follow these principles:

- On each sheet of notes, record the author, short title of the source, page numbers, and key words.
- Put notes on different topics on different pages.
- Perhaps most important: clearly distinguish three kinds of notes: (1) what you quote, (2) what you paraphrase and summarize, and (3) your own thoughts. On a computer, use different fonts or styles; on paper use headings or different-colored ink or paper.

We stress that you must *unambiguously* distinguish your own words from those of your sources, because it is so easy to confuse the two. (Photocopy passages longer than a few lines.) You must also distinguish your own ideas from those you paraphrase or summarize from a source.

6.6.2 Know When to Quote, Paraphrase, and Summarize

It takes too long to transcribe the exact words of every source you read, but it's a nuisance when you need to quote a passage you only summarized. So when taking notes, you must know when to quote, paraphrase, and summarize. In general, researchers in the humanities quote most often; social and natural scientists usually paraphrase and summarize. But every choice depends on how you plan to use a passage:

- Summarize when you need only the point of a passage, section, or even whole article or book. Summary is useful for context or views that are related but not specifically relevant. A summary of a source never serves as good evidence.
- Paraphrase when you can represent what a source says more clearly or pointedly than it does. Paraphrase doesn't mean changing just a word or two. You must replace most of the words and phrasing of the original with your own. A paraphrase is never as good evidence as a direct quotation.

- Record exact quotations for these purposes:
 - The quoted words are evidence that backs up your reasons. If, for example, you claimed that different regions responded to the Battle of the Alamo differently, you would quote exact words from different newspapers. You would paraphrase them if you needed only their general sentiments.
 - The words are from an authority who backs up your view.
 - The words are strikingly original or express your ideas so compellingly that the quotation can frame the rest of your discussion.
 - They state a view that you disagree with, and to be fair you want to state that view exactly.

If you don't record important words now, you can't quote them later. So copy or, better, photocopy passages more often than you think you must. *Never* abbreviate a quotation thinking you can accurately reconstruct it later. You can't. And if you misquote, you'll undermine your credibility.

6.6.3 Get the Context Right

As you use material from your sources, record not just what they say but how they use the information.

I. When you quote, paraphrase, or summarize, be careful about context. You cannot entirely avoid quoting out of context, because you cannot quote all of an original. So when you draft a paraphrase or summary or copy a quotation, do so within the context that matters most—that of your own grasp of the original. When you record a part of an argument, note the line of reasoning that the author was pursuing:

NOT: Bartolli (p. 123): The war was caused by Z.

NOT: Bartolli (p. 123): The war was caused by X, Y, and Z.

BUT: Bartolli: The war was caused by X, Y, and Z (p. 123). But the most important cause was Z (p. 123), for three reasons: reason 1 (pp. 124–26); reason 2 (p. 126); reason 3 (pp. 127–28).

Sometimes you will care only about the conclusion, but readers usually want to see how a conclusion emerges from the argument supporting it. So when you take notes, record not only conclusions but also the arguments that support them.

2. When you record a claim, note its rhetorical importance in the original. Is it a main point? A minor point? A qualification or concession? By noting these distinctions you avoid this kind of mistake:

ORIGINAL BY JONES: "We cannot conclude that one event causes another just because the second follows the first. Nor can statistical correlation prove causation. But no one who has studied the data doubts that smoking is a causal factor in lung cancer."

MISLEADING REPORT ABOUT JONES: Jones claims that "we cannot conclude that one event causes another just because the second follows the first. Nor can statistical correlation prove causation." No wonder responsible researchers distrust statistical evidence of health risks.

Jones did not make that point at all. He *conceded* a point that was relatively trivial compared to the point he wanted to make. Anyone who deliberately misreports in this way violates basic standards of truth. But a researcher can make such a mistake inadvertently if he notes only words and not their role in an argument.

Distinguish statements that are central to an argument from qualifications or concessions the author acknowledges but downplays. Unless you are reading "against the grain" of the writer's intention—to expose hidden tendencies, for example—do not report minor aspects of a research report as though they were major or, worse, as if they were the whole of the report.

3. Record the scope and confidence of a claim. These are not the same:

Chemicals in french fries cause cancer.

Chemicals in french fries may be a factor in cancer.

Some chemicals in french fries correlate with a higher incidence of some cancers.

4. Don't mistake a summary of another writer's views for those of an author summarizing them. Some writers do not clearly indicate when they summarize another's argument, so it is easy to quote them as saying what they set out to disprove rather than what they in fact believe.

5. Note why sources agree and disagree. Two social scientists might claim that a social problem is caused by personal factors, not by environmental forces, but one might cite evidence from genetic inheritance while the other points to religious beliefs. How and why sources agree is as important as the fact that they do. In the same way, sources might disagree, because they interpret the same evidence differently or take different approaches to the problem.

It is risky to attach yourself to what any one researcher says about an issue. It is not "research" when you uncritically summarize another's work. Even if your source is universally trusted, be careful. If you rely on at least two sources, you'll almost always find that they do not agree entirely, and that's where your own research can begin. *Which has the better argument? Which better respects the evidence?* In fact, you have a research problem right there—whom should we believe?

Remember that your report will be accurate only if you double-check your notes against your sources, and after your first draft, check your quotations against your notes. If you use one source extensively, skim its relevant parts to be sure you in fact understand it. At this point, you may *believe* in your claim so strongly that you read everything in its favor. Despite our best intentions, that temptation affects us all. There is no cure, save for checking and rechecking. And rechecking again.

THE VALUE OF IRRELEVANT DATA

We have emphasized how important it is to have a good question to focus your search for data most relevant to its answer. Don't think, however, that you waste time reading sources that turn out to be irrelevant. In fact, when you read and record more than you use, you build up a base of knowledge crucial to the exercise of good thinking. Good thinking is a skill that you can learn, but you can exercise it only when you have a deep and wide base of facts, data, and knowledge to work on. So read sources not just to answer the question you ask today, but to help you think better about every question you'll ask for the rest of your research career. To that end, everything you read is relevant.



QUICK TIP: *Manage Moments of Normal Anxiety*

As you get deeper into your project, you may experience a moment when everything seems to run together into a hopeless muddle. That usually happens when you accumulate notes faster than you can sort them. The bad news is that you can't avoid all such moments; the good news is that eventually they pass. You can minimize the panic by taking every opportunity to organize and summarize what you have gathered by *writing as you go* and by returning to the central questions: *What question am I asking? What problem am I posing?* Keep rehearsing that formula, *I am working on X to learn more about Y, so that my readers can better understand Z*. You can also turn to friends, classmates, teachers—anyone who will serve as a sympathetic but critical audience. Explain how what you have learned bears on your question and helps you resolve your problem. Ask them, *Does this make sense? Am I missing anything important? What else would you like to know?* You will profit from their reactions, but even more from the mere act of explaining your ideas to nonspecialists.

Appendix

BIBLIOGRAPHICAL RESOURCES

There is a large literature on finding and presenting information, only some of which can be listed here. For a larger and more current selection, consult the Library of Congress catalog and commercial Web sites that provide customer reviews of books. If there is no date listed for an item, the publication appears annually. Sources available online or as a CD-ROM (in addition to or in place of traditional print formats) are so indicated. Online sources for which no URL is given are readily available from multiple online databases.

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For most of those areas, six kinds of resources are listed:

1. specialized dictionaries that offer short essays defining concepts in a field
2. general and specialized encyclopedias that offer more extensive overviews of a topic
3. guides to finding resources in different fields and using their methodologies

4. bibliographies, abstracts, and indexes that list past and current publications in different fields
5. writing manuals for different fields
6. style manuals that describe required features of citations in different fields

INTERNET DATABASES (BIBLIOGRAPHIES AND INDEXES)

General

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