

Prologue pulling together your argument If you have accumulated a bushel of notes, photocopies, and summaries, all spilling off your desk or filling up your hard drive, it's time to think about imposing some shape on all that stuff, especially if you can see even the dim outline of an answer to your research question. The risk, however, is that you may be tempted like too many researchers to sort your data under the most obvious topics, arrange them into some arbitrary sequence, and start writing. Unfortunately, the obvious topics are usually the least useful, because they will likely reflect only what your sources suggest. Even if those suggested topics do go beyond the obvious, they are likely to fit only a linear sequence (A → B → C . . .), a structure usually too weak to support a complex argument. And almost surely they will not be organized in a way that clearly supports the claim that answers your question. To impose a useful order on all that information, you need a principle of organization that comes not from the categories of your data but from the logic of your answer and its support. You have to organize your report to support a claim that answers your research question and justifies both the time you spent answering it and the time you ask readers to spend reading about it. The support for that answer and claim takes the form of a research argument. Though you should at first organize your materials around the elements of your argument, your final draft must reflect not only 111112 making a claim and supporting it the structure of your argument but also the structure of your readers' understanding. We will discuss these two steps as though you could take them separately: first assemble the elements of your argument and then arrange them to meet you readers' knowledge and needs. But the process of creating an effective report is cyclical, so as you focus on assembling your argument in part III, keep in the back of your mind our advice about planning a draft in part IV. As you become a more experienced writer, assembling your argument and planning your first draft will become a single action.

RESEARCH ARGUMENTS In chapter 4 we distinguished everyday, troublesome problems from the kind that motivate research projects. In the same way, we now have to distinguish between everyday arguments and the kind that organize research reports. People usually think of arguments as disputes: children argue over a toy; roommates over the stereo; drivers about who had the right-of-way. Such arguments can be polite or heated, but they all involve conflict, with winners and losers. To be sure, researchers sometimes wrangle over evidence and occasionally erupt into charges of carelessness, incompetence, and even fraud. But that is not the kind of argument that made them researchers in the first place. In the next five chapters, we examine a kind of argument that is less like a prickly dispute with winners and losers and more like a thoughtful conversation with amiable colleagues, a conversation in which you cooperatively explore a contestable issue that you all think is important to resolve, a conversation that aims not at coercing each other into agreement, but at cooperatively finding and agreeing on the best answer to a hard question. In that conversation, though, you do more than just politely exchange opinions. We are all entitled to our opinions, and no law requires us to explain or defend them. But in a research community, we are expected both to make claims new and important enough to interest our readers and to explain them, as if our readers were asking us, quite reasonably, Why should I believe that?

Prologue 113 In a research report, your goal is not to stuff your claim down your readers' throats, but to start where they do, with what they know and don't know, what they accept and what they question. Then you answer those questions in a way that lets readers see how your claim solves their problem, and so furthers their best interests. To do that, you must anticipate their questioning each element of your argument, not to knock it down, but to help you both find and understand a truth you can share. Of course, when you write an argument, they are usually not there to question you, so you must learn to imagine their questions so that your arguments truly are a conversation with readers. Getting to Know You Nothing is harder than imagining questions from

someone you don't know. Experienced researchers have the advantage of knowing many of their readers personally. They talk with them, trying out ideas before writing them up. And when they don't know their readers, they try to find out about them. A group of physicists who wanted biologists to notice their research were unhappy when the first manuscript they sent to a biology journal was rejected. So they started attending biology conferences, reading biology journals, even hanging around the lounge in the biology department. After they got to know how biologists think, they did some rewriting and were able to publish papers that influenced the field. Students seldom have the time or opportunity to hang around their readers, especially before they start to specialize in a field. But you can do some homework on questions your readers might ask:

- Read journals that publish research like yours. Notice the kinds of questions the articles acknowledge and respond to.
- Rehearse your argument with your teacher. After you have a plan but before you draft, talk over your ideas, asking whether any seem confusing or doubtful to her.
- Ask someone to read your drafts and indicate where they have questions or see alternatives. Find someone as much like your intended readers as possible.

You've been told a thousand times to think about your readers. To do that, you have to get to know them.

### chapter seven Making Good Arguments an overview

In this chapter we discuss the five elements of research arguments, showing how they respond to readers' predictable questions and how you can organize them into a genuinely coherent argument. When you know enough to start planning your research report, you should have a tentative but clear understanding of your question and why it might matter to your readers, and a tentative but reasonably specific answer. You should have a list of reasons that support your claim and evidence to support those reasons, and some idea about the kinds of questions and objections your readers would be likely to raise, were they there in front of you. You won't be able to imagine all of their questions, nor will they expect you to. But you must anticipate at least the questions that generate the five elements of an argument and answer them before they're asked.

#### 7.1 ARGUMENT AND CONVERSATION

In a research report, you make a claim, back it with reasons based on evidence, acknowledge and respond to other views, and sometimes explain your principles of reasoning. There's nothing arcane in any of this, because you use those elements in every conversation that inquires thoughtfully into an unsettled issue:

A: I hear you had a rocky time last semester. How do you think this term will go? [A poses a problem that interests her, put in the form of a question.] B: Better, I hope. [B makes a claim that answers the question.]

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A: Why is that? [A asks for a reason to believe B's claim.] B: I'll finally be taking courses in my major. [B offers a reason.] A: Why do you think that'll make a difference? [A doesn't see how B's reason is relevant to his claim that he will do better.] B: When I take courses I'm interested in, I work harder. [B offers a general principle that relates his reason to his claim.] A: What courses? [A asks for evidence to back up B's reason.] B: History of architecture, introduction to design. A: But what about that calculus course you have to take again? [A offers a point that contradicts B's reason.] B: I know I had to drop it last time, but I found a really good tutor. [B acknowledges A's objection and responds to it.] A: But won't you be taking five courses? [A raises another reservation.] B: I know. It won't be easy. [B concedes a point he cannot refute.] A: Will you pull up your GPA? [A asks about the limits of B's claim.] B: I should. I'm shooting for at least a 3.0, as long as I don't have to get a part-time job. [B limits the scope of his claim and adds a condition.]

If you can imagine playing the roles of both A and B, you will find nothing strange about assembling a research report, because every written argument, research or not, is built out of the answers to those same five questions that you must ask on your readers' behalf:

1. What do you claim?
2. What reasons support that claim?
3. What evidence supports those reasons?
4. Do you acknowledge this alternative/complication/objection, and how do you respond?
5. What principle (warrant) justifies

connecting your reasons to your claim?116 making a claim and supporting it

## 7.2 BASING CLAIMS ON REASONS

At the core of every research report is your claim, the answer to your research question, along with two kinds of support for it. The first support is at least one reason, a sentence or two explaining why your readers should accept your claim. We can usually join a claim and a reason with because: The emancipation of Russian peasants was an empty gestureclaim because it did not improve the material quality of their daily lives.reason TV violence can have harmful psychological effects on childrenclaim because those exposed to lots of it tend to adopt the values of what they see.reason At this point, we have to pause to clarify some terms. We must distinguish claims in general from main claims, and both from reasons:

- As we will use the term, a claim is any sentence that asserts something that may be true or false and so needs support: The world's temperature is rising.
- A main claim is the sentence (or more) that your whole report supports (some call this its thesis). If you wrote a report to prove that the world's temperature is rising, the sentence stating that would be its main claim.
- A reason is a sentence supporting a claim, main or not. These terms can get confusing, because a reason is often supported by more reasons, which makes that first reason a claim in its own right. In fact, a sentence can be both a reason and a claim at the same time, if what it states (1) supports a claim and (2) is in turn supported by another reason: For example, TV violence can have harmful psychological effects on childrenclaim 1 because those exposed to large amounts of it tend to adopt the values of what they seereason 1 supporting claim 1/claim 2 supported by reason 2 Their constant exposure to violent images makesMaking Good Arguments 117 them unable to distinguish fantasy from reality.reason 2 supporting reason 1/claim 2 Reasons can be based on reasons, but ultimately a reason has to be grounded on evidence.

## 7.3 BASING REASONS ON EVIDENCE

In casual conversation, we usually support a claim with just a reason: We should leaveclaim because it looks like rain.reason We don't ask, What evidence do you have that it looks like rain? (unless someone thinks he's a meteorologist: Those aren't rain clouds; they're just . . .). When you address serious issues in writing, though, you can't expect readers to accept all your reasons at face value. Careful readers behave more like that would-be weatherman, asking for the evidence, the data, the facts on which you base those reasons: TV violence can have harmful psychological effects on childrenclaim 1 because those exposed to large amounts of it tend to adopt the values of what they see.reason 1 supporting claim 1/claim 2 supported by reason 2 Their constant exposure to violent images makes them unable to distinguish fantasy from reality.reason 2 supporting reason 1/claim 2 Smith (1997) found that children ages 5–9 who watched more than three hours of violent television a day were 25 percent more likely to say that most of what they saw on television was "really happening."evidence supporting reason 2 At least in principle, evidence is something you and your readers can see, touch, taste, smell, or hear (or is accepted by everyone as just plain fact—the sun came up yesterday morning). It makes no sense to ask, Where could I go to see your reasons? It does make sense to ask, Where could I go to see your evidence? For example, we can't see children adopting values, but we could see a child answer the question Do you think that what you see on TV is real? That somewhat oversimplifies the idea of "evi-118 making a claim and supporting it dence from out there," but it illustrates the principle. (We'll discuss this distinction between reasons and evidence in more detail in chapter 9.) We now have the core of a research argument: Claim because of Reason based on Evidence

## 7.4 ACKNOWLEDGING AND RESPONDING TO ALTERNATIVES

A responsible researcher supports a claim with reasons based on evidence. But thoughtful readers don't accept a claim just because you back it up with your reasons and your evidence. Unless they think exactly as you do (unlikely, given the fact that you are making an argument), they will probably think of evidence you haven't, interpret your evidence differently, or, from the same evidence, draw a different conclusion. They may reject the truth

of your reasons, or accept them as true but deny that they are relevant to your claim and so cannot support it. They may think of alternative claims you did not consider. In other words, your readers are likely to question any part of your argument. So you have to anticipate as many of their questions as you can, and then acknowledge and respond to the most important ones. For example, as readers consider the claim that children exposed to violent TV adopt its values, some might wonder whether children are drawn to TV violence because they already are inclined to violence of all kinds. If you think readers might ask that question, you would be wise to acknowledge and respond to it: TV violence can have harmful psychological effects on children claim 1 because those exposed to large amounts of it tend to adopt the values of what they see. reason 1 supporting claim 1/claim 2 supported by reason 2 Their constant exposure to violent images makes them unable to distinguish fantasy from reality. reason 2 supporting reason 1/claim 2 Smith (1997) found that children ages 5–9 who watched more than three hours of violent television a day were Making Good Arguments 119 25 percent more likely to say that most of what they saw on television was “really happening.” evidence supporting reason 2 It is conceivable, of course, that children who tend to watch greater amounts of violent entertainment already have violent values, acknowledgment but Jones (1989) found that children with no predisposition to violence were just as attracted to violent entertainment as those with a history of violence. response The problem all researchers face is not just responding to readers’ questions, alternatives, and objections, but imagining them. (In chapter 10 we’ll review questions and objections you should expect.) Since no research argument is complete without them, we add acknowledgment/responses to our diagram to show that they relate to all the other parts of an argument:

### 7.5 WARRANTING THE RELEVANCE OF REASONS

Even if readers agree that a reason is well supported by evidence, they may not see why it should lead them to accept your claim. They will ask why that reason, though factually true, is relevant to the claim. For example, suppose you offer this claim and its supporting reason (assume the evidence is there): Children who are exposed to large amounts of violent entertainment tend to become adults who think violence is a legitimate component of daily life claim because as children they tend to adopt the violent values in what they see. reason Readers might question not the truth of that reason, but its relevance to the claim: 120 making a claim and supporting it Why should children who adopt violent values necessarily become adults who tend to accept violence as a legitimate component of everyday life? I don’t see how your claim follows from your reason. To answer, you must offer a general principle that shows why you believe your particular reason is relevant to your particular claim so that you are justified in connecting them: Whenever children adopt particular values, as adults they tend to accept as “normal” any behavior that reflects those values. That statement—sometimes called a warrant—expresses a general principle of reasoning that covers more than violent TV. It covers all values acquired as a child and all adult behaviors. Think of a warrant as a principle claiming that a general set of circumstances predictably allows us to draw a general consequence. You can then use that warrant to justify concluding that a specific instance of that general consequence (your claim) follows from a specific instance of that general circumstance (your reason). But for that warrant to apply, readers must first agree that the specific circumstance (or reason) qualifies as a sound instance of the general circumstance in the warrant and that the specific consequence (or claim) qualifies as a sound instance of the general consequence. As you’ll see, it is not easy to decide where to put warrants in the sequence of an argument, or even whether you need them at all. In fact, writers state warrants rarely, only when they think readers might question the relevance of a reason to their claim. For example, suppose you said: Watch out going down the stairs, because the light is out. You wouldn’t need to add the warrant When it’s dark, you have to be careful not to

misstep.warrant So watch out going down the stairs,claim because the light is out.reason That would seem condescending.Making Good Arguments 121 But if you think readers won't immediately see how a reason is relevant to your claim, then you have to justify the connection with a warrant, usually before you make it: Violence on television and in video games can have harmful psychological effects.main claim Few of us question that when children are repeatedly exposed to particular values in graphic and attractive form, they use those values to structure their understanding of their world.warrant In the same way, children constantly exposed to violent entertainment tend to adopt the values of what they see. . . . (As you can see, no aspect of argument is as abstract and difficult to grasp as warrants.) We add warrants to our diagram to show that they connect a claim and its supporting reason: Those five elements constitute a "basic" argument. But many also include explanations of issues that readers might not understand. If, for example, you were making an argument about the relationship between inflation and various forms of money supply to readers not familiar with economic theory, you would have to explain the different ways that economists define "money."

### 7.6 BUILDING COMPLEX ARGUMENTS OUT OF SIMPLE ONES

The arguments in research reports are, of course, more complex than these simple ones. First, researchers almost always support<sup>122</sup> making a claim and supporting it a claim with more than one reason, each of which is supported by its own evidence and may be justified by its own warrant. Second, since readers can be expected to see many alternatives to any complex argument, careful researchers typically respond to a number of them. But most important, each element of a substantial argument is itself likely to be treated as a claim, supported by its own argument. Each reason will typically be treated as a claim supported by other reasons, often reasons that are themselves claims. A warrant may be supported by its own argument, with reasons and evidence, perhaps even with its own warrant and acknowledgments and responses. Each response might itself be a miniargument, sometimes a full one. Only the evidence "stands alone," but you may have to explain where you got it and why you think it's sound.

### 7.7 ARGUMENTS AND YOUR ETHOS

This process of "thickening" an argument with other arguments is one way that writers gain the confidence of readers. Readers will judge you by how well you manage the elements of an argument so that you anticipate their concerns. In so doing, they are in effect judging the quality of your mind, even of your implied character—an image of yourself that you project through your argument, traditionally called your ethos. When you seem to be the sort of person who supports your claims thoroughly and who thoughtfully considers other points of view, you give readers reason to trust what you say and not to question what you don't. By acknowledging their views and differences, you foster their desire to work with you in developing and testing new ideas. In the long run, the ethos you project in individual arguments settles into your reputation, something every researcher must care deeply about, because your reputation will be an invisible sixth element in every argument you write. It answers the unspoken question Can I trust this person? If your readers don't know you, you have to earn that trust in each argument. But if<sup>Making Good Arguments 123</sup> they do know you, you want the answer to their question to be Yes. In the next four chapters, we look at each element of an argument, to show you both how to assemble them into a complete argument and how to think about them critically. In part IV we take up the matter of arranging those elements into a coherent report.

### Designing Arguments Not for Yourself but for Your Readers: Two Common Pitfalls

Arguments fail for many reasons, but inexperienced researchers stumble most often when they rely too much on what feels familiar and comfortable and too little on what their readers need. Here are two common problems to avoid.

#### INAPPROPRIATE EVIDENCE

If you are working in a new field and unfamiliar with its characteristic modes of argument, you'll be tempted to fall back on forms of argument you already know. Every time you enter a new research community, though, you must find

out what's new about the kinds of argument those in that community expect you to make. If you learned in a first-year writing class to search for evidence in your own experience or take a personal stand on issues of social concern, do not assume that you can do the same in fields that emphasize "objective data," such as experimental psychology. On the other hand, if as a psychology or biology major you learned to gather data, subject it to statistical analysis, and avoid attributing to it your own feelings, do not assume that you can do the same in art history. This does not mean that what you learn in one class is useless in another. All fields share the elements of argument we describe here. But you do have to watch for what's distinctive in how a field handles those elements and be flexible enough to adapt—trusting, at the same time, the skills you already command. You can anticipate this problem as you read by noting the kinds of evidence used by the sources you consult. Here are just a few of the different kinds of evidence to watch for in different fields:

- personal beliefs and anecdotes from writers' own lives, as in a first-year writing course;
- direct quotations, as in most of the humanities;
- citations and borrowings from previous writers, as in the law;
- fine-grained descriptions of behavior, as in anthropology;
- statistical summaries of behavior, as in sociology;
- quantitative data gathered in laboratory experiments, as in natural sciences;
- photographs, sound recordings, videotapes, and films, as in art, music, history, and anthropology;
- detailed documentary data assembled into a coherent story, as in some kinds of history or anthropology;
- networks of principles, implications, inferences, and conclusions independent of factual data, as in philosophy.

Just as important, note the kinds of evidence that are never used in your field. Anecdotes enliven literary history but rarely count as good evidence in sociological explanations; fine-grained narratives are crucial in many anthropological reports but are irrelevant in an argument about subatomic physics.

**COMFORTABLE SIMPLICITY** When you are new to a field, everything you read may seem confusing. Like everyone else in those circumstances, you will look for a familiar method or an unambiguous answer, any simplification that helps you manage the complexity. Once you find it, you are in danger of oversimplifying your argument. But no complex effect has a single unambiguous cause; no serious question has a single unqualified answer; no interesting problem has a single methodology to solve it. So when you are new to a field, seek out qualifications; formulate at least one alternative solution to your problem; ask whether someone else in the field approaches your problem differently. As you learn the typical problems of a field, its methods, schools of thought, and so on, you will begin to be comfortable with its standard forms of argument. It is at this point that newly experienced researchers succumb to another kind of overgeneralization: once you learn how to construct one kind of argument, you try to make that same argument over and over. Be aware that every field exhibits a second kind of complexity, the complexity of competing solutions, competing methodologies, competing goals and objectives—all marks of a lively field of inquiry. The more you learn, the more you recognize that while things are not as blindingly complex as you first thought, neither are they as simple as you then hoped they would be.

**Cognitive Overload: Some Reassuring Words** At this point, you may be feeling a bit overwhelmed. Take comfort in the fact that your anxieties have less to do with age or intelligence than with sheer lack of experience in a particular field. One of us was explaining to teachers of legal writing how being a novice makes new law students feel insecure. At the end of the talk, one woman reported that she had been a professor of anthropology whose published work had been praised for the clarity and force of her writing. Then she switched careers and went to law school. She said that during her first six months, she wrote so incoherently that she feared she was suffering from a degenerative brain disease. Of course, she was not: she was experiencing a kind of temporary aphasia that afflicts most of us when we try to write

about matters we do not entirely understand for an audience we understand even less. She was relieved to find that the more she understood law, the better she wrote about it.

## chapter eight Claims

In this chapter we discuss the point of your argument, the claim that answers your research question and serves as the main point of your report. As we have emphasized, you need a tentative answer to your research question well before you can know exactly what the final one will be. Even if you expect to replace your working answer, you need one from the start to help you know what to look for and to sift out from what you find just those data that are relevant. You also need that tentative claim to help you assemble the kind of argument you will need to support it. So from the first, try to articulate the best, most complete claim your current understanding allows. You can test your claim with three questions:

- What kind of claim will you make?
- Can you state it specifically?
- Will your readers think it is significant?

When you can answer those three questions, you're ready to assemble other elements of your argument to see whether you in fact can make a good case for your claim.

### 8.1 WHAT KIND OF CLAIM?

The kind of problem you pose determines the kind of claim you make and the kind of argument you need to support it. As we saw in chapter 4, researchers in academic settings usually pose not a practical problem but a conceptual one, the kind whose solution asks readers not to do something but to believe something: The recession of 2001–2002 was caused partly by excessive investment in information systems that failed to improve productivity as much as had been promised. Some conceptual claims might imply an action: Businesses that invest in information systems benefit only when they understand how to use them to improve productivity. But if you want readers to act, it is wise to be explicit about what they should do: writers too often assume that readers can infer your intentions better than they actually do. Some researchers think that by posing and answering a conceptual question, they can contribute to the solution of a practical problem: If we could simply understand what turns cancer cells on, we might figure out how to turn them off. But if readers think your argument is intended to support both a belief and an action, you risk confusing them if you in fact support only one, because conceptual and practical claims need different arguments with different kinds of support. Before readers believe that your answer is relevant to solving a practical problem, they are likely to expect you to support two conceptual claims: one claim explains what causes the problem; the other explains how doing something will fix it. But in addition, they may also expect you to show the following about your solution:

- It is feasible; it can be implemented in a reasonable time.
- It will cost less to implement than the cost of the problem it solves.
- It will not create a bigger problem than the one it solves.
- It is cheaper or faster than alternative ones—a claim that can be extremely difficult to support.

Claims 129 If readers mistakenly think that you are tacitly proposing a practical claim, they may expect to see those four arguments at least acknowledged. So as you assemble the elements of your argument, be clear about the kind of claim you intend to support: conceptual or practical. If you answer a conceptual question but want to point out its practical applications, build your argument around the answer to the conceptual question and hold off discussing its application until your conclusion, where you can offer it as something worth further consideration (we'll return to this point in chapter 14).

### 8.2 EVALUATING YOUR CLAIM

We can't tell you how to find your claim or test its truth (other than by testing the argument that supports it). But we can help you roughly evaluate it from the point of view of your readers. They will expect your claim to be both specific and at least potentially significant.

#### 8.2.1 Is Your Claim Specific?

Vague claims lead to vague arguments. The more detailed your claim, the more likely readers will judge it to be substantive, and the more it can help you plan a substantive argument in its support. There are two ways to make it more specific.

#### SPECIFIC LANGUAGE.

Compare these claims: TV inflates estimates of crime rates. The graphic reports of violence on local TV

lead regular viewers to overestimate by as much as 150 percent both the rate of crime in their neighborhood and the personal danger to themselves and their families. The first claim uses only general terms. The second consists of richer, more specific concepts that not only give readers a more specific idea of the claim, but also give the writer a fuller set of concepts to develop in his argument. Now, we are not recommending long, wordy claims for their130 making a claim and supporting it own sake. You will benefit if early drafts of your claim have more terms than you ultimately use, but your final claim should be only as specific as your readers need and should include only those concepts that you develop as themes in your argument. But as you assemble the elements of your argument, your first task is to articulate your claim, so at this point, make it as richly explicit as you can. You can fix it later.

**SPECIFIC LOGIC.** A second kind of specificity depends on how many logical elements your claim includes. Even with its specific language, this claim offers only a single unelaborated proposition: Regular TV viewers overestimate by as much as 150 percent both the rate of crime in their neighborhood and the personal danger to themselves and their families. In the natural and social sciences, claims like this are common, even preferred. But in the humanities, such a claim might seem to be not particularly rich in ideas. For purposes of assembling your argument, try elaborating its logic in two ways:

- Introduce it with a clause beginning with *although* or *even though*.
- Conclude it with a reason-clause beginning with *because*.

For example, *Although violent crime is actually decreasing, regular TV viewers overestimate by as much as 150 percent both the rate of crime in their neighborhood and the personal danger to themselves and their families, because local TV evening news regularly opens with graphic reports of mayhem and murder in familiar locations, making many believe that crime happens nightly outside their front door.* While that claim may seem overwritten, it is substantively more explicit. More importantly, it foreshadows three of the five ele-Claims 131 ments that you need for a full argument: *Although I acknowledge X, I claim Y, because of reason Z.* An introductory *although*-clause can acknowledge alternative views in one of three ways:

- It acknowledges a point of view that conflicts with yours: *Although most people think they are good judges of the security of their neighborhoods, regular TV viewers overestimate . . .*
- It acknowledges a fact that your readers might believe but that your claim qualifies: *Although violent crime is actually decreasing overall, regular TV viewers overestimate . . .*
- It acknowledges a condition that limits the scope or confi- dence of your claim: *Although it is difficult to gauge the real feelings about their personal security, regular TV viewers overestimate . . .*

If those qualifications are ones that might occur to your readers when they read your claim, then by acknowledging them first, you not only imply that you understand their views, but commit yourself to responding to them in the course of your argument. On the other hand, a final *because*-clause forecasts reasons for believing the claim—either the most important ones or a general one that encompasses several: *Although many believe that school uniforms help lower the incidence of violence in public schools, the evidence is at best weak, because no researchers have controlled for other measures that have been instituted at the same time as uniformsreason 1 and because the data reported are statistically suspect.reason 2* Again, we do not suggest that in your final draft you offer claims as bloated as our examples. But as you assemble the elements of your argument, the more richly you can articulate a claim, the more comprehensive your argument is likely to be.132 making a claim and supporting it

### 8.2.2 Is Your Claim Significant?

After its accuracy, readers will value most highly the significance of your claim, a quality they measure by the degree to which it asks them to change what they think. While you can't precisely quantify it, you can gauge significance by this rough measure: If readers accept a claim, how many other beliefs must they change? The most significant claims require an entire research community to change its deepest belief (and that community will resist it accordingly). Although it is the



weakest kind of claim, some research communities will consider a claim significant that asks readers only to accept new information about a subject already studied: In what follows, I describe six thirteenth-century grammars of the Welsh language. These grammars have only recently been found and are the only examples of their kind. They help us better appreciate the range of grammars written in the medieval period. (Recall those reels of newly discovered film, p. 26.) Readers value research more highly when it offers new knowledge but also uses that knowledge to settle what has seemed puzzling, uncertain, inconsistent, or otherwise problematical: The relationship between consumer confidence and the stock market has long been debated, but new statistical tools developed in the last few years have shown that there is virtually no relationship whatsoever. . . . But they value most highly new knowledge that upsets what seemed long settled: It has long been assumed that the speed of light is constant everywhere at all times, under all conditions, but there is now experimental data suggesting it might not be. A claim like that will be hotly contested by legions of physicists, because if it is true, they will have to change their minds about lots of things other than the speed of light.

**Claims 133** Early in your career, you won't be expected to know what researchers in a field think should be corrected, or at least modified. But you can still estimate the significance of your claim by determining whether readers think it might be worth contesting. You can gauge that by judging the apparent significance of its opposite claim. For example, consider these two claims: Shakespeare is a great playwright. This report summarizes recent research on the disappearance of frogs. To assess whether either claim is worth contesting, revise it into its opposite: change an affirmative claim into a negative or vice versa: Shakespeare is not a great playwright. This report does not summarize recent research on the disappearance of frogs. If the reverse of a claim seems self-evidently false (like the first one) or trivial (like the second), then most readers are unlikely to consider the original worth an argument. (It is true, however, that some great thinkers like Copernicus have successfully contradicted apparently self-evident claims such as Obviously the sun goes around the earth.) Especially if you are an advanced researcher, you will measure the significance of your claim by how much it will roil the thinking of your research community. For example, big mammals like the camel and woolly mammoth died out in North America about twelve thousand years ago, either because of disease or because indigenous peoples hunted them to extinction. If you claim they were hunted to death, the many researchers who believe that the earliest Native Americans lived in harmony with nature will have to change their minds about something important to them (and so to that degree, they will resist your claim). But that can be known only by someone in the field aware of those beliefs. If you are too new to a field to make that assessment, imagine<sup>134</sup> making a claim and supporting it readers like yourself. What did you think before you began your own research? How much has your claim changed the way you now think? What do you understand now that you did not understand before? That's the best way to prepare for reporting research to readers who will ask the same questions. They will put that question most pointedly when they ask the most devastating question any researcher can face: not Why should I believe that? but Why should I care?

**Qualifying Claims to Enhance Your Credibility** Some inexperienced researchers think they are most credible when they are most certain. But flatfooted certainty more often undermines your ethos, and thus your argument. As paradoxical as it may seem, you make a research argument more credible when you acknowledge its limitations. You have already seen that readers expect writers to acknowledge and respond to objections and alternatives (also see chapter 10). When you do, you show that you have dealt with readers openly and honestly; by responding, you show readers why you think their objections do not undermine your argument. But readers look for another kind of limitation as well: you should qualify any claim that is less than entirely certain for all time and in all circumstances. **ACKNOWLEDGE LIMITING**

CONDITIONS No claim is free of limiting conditions: We can conclude that the epicenter of the earthquake was fifty miles south-southwest of Tokyo, assuming the instrumentation was accurately calibrated. We believe that aviation manufacturing will not soon match its late-twentieth-century levels, unless new global conflicts lead to a significant increase in military spending. Every claim is subject to countless conditions, so ordinarily you should mention only the ones you expect readers to bring up. Scientists rarely acknowledge that their claims depend on the accuracy of their instruments, because everyone expects them to ensure that they are. But economists often acknowledge limitations on their predictions, both because they depend on circumstances that do change and because readers want to know what conditions to watch for.

135136 quick tip: qualifying claims Consider mentioning important limiting conditions on your claim even if you think readers would never think of them. (Don't mention more than one or two, and avoid obvious or unlikely conditions.) For example, in this case, not only does the writer show that she was careful, but she also gives a fuller and more accurate picture of the claim: Today Franklin D. Roosevelt is revered as one of our most admired historical figures, but toward the end of his second term, he was not popular. Newspapers, for example, attacked him for promoting socialism, a sign that a modern administration is in trouble. In 1938, 70 percent of Midwest newspapers accused him of wanting the government to manage the banking system. . . . Some have argued otherwise, including Nicholson (1983, 1992) and Wiggins (1973), both of whom offer anecdotal reports that Roosevelt was always in high regard, acknowledgment but these reports are supported only by the memories of those who had an interest in deifying FDR. response Unless it can be shown that the newspapers critical of Roosevelt were controlled by special interests, limitation on claim their attacks demonstrate significant dissatisfaction with Roosevelt's presidency. restatement of claim

USE HEDGES TO LIMIT CERTAINTY Only rarely can you assert in good conscience that you are 100 percent certain that your evidence is 100 percent reliable and your claims are unqualifiedly true. Careful writers acknowledge these limitations by using modifying words and phrases known as hedges. For example, if anyone was ever entitled to be assertive, it was Crick and Watson, the discoverers of the helical structure of DNA. But in the opening of their announcement (condensed), they chose diffidence (the hedges are boldfaced): We wish to suggest a [note: not the] structure for the salt of deoxyribose nucleic acid (D.N.A.). . . . A structure for nucleic acid has already been proposed by Pauling and Corey. . . . In our opinion, this structure is unsatisfactory for two reasons: Quick Tip: Qualifying Claims 137 (1) We believe that the material which gives the X-ray diagrams is the salt, not the free acid. . . . (2) Some of the van der Waals distances appear to be too small. —J. D. Watson and F. H. C. Crick, "Molecular Structure of Nucleic Acids" Without the hedges, their claim would be more concise, but also more aggressive. Compare that cautious passage with this more unqualified version of it (most of the more aggressive tone comes from the absence of hedges, from the flatfooted lack of any qualification): We announce here the structure for the salt of deoxyribose nucleic acid (D.N.A.). . . . A structure for nucleic acid has already been proposed by Pauling and Corey. . . . Their structure is unsatisfactory for two reasons: (1) The material which gives their X-ray diagrams is the salt, not the free acid. . . . (2) Their van der Waals distances are too small. When you hedge your language, you give your argument nuance. Of course, if you hedge too much, you will seem timid or uncertain. But in most fields, readers are not impressed by flatfooted certainty expressed in words like all, no one, every, always, never, and so on. Some teachers say they object to all hedging, but what most of them condemn are hedges that qualify every trivial claim. And some fields do tend to use fewer hedges than others. But most careful researchers in most fields know that to seem thoughtfully confident, they must express the limits of that confidence. Few aspects of your argument affect your ethos more than how you handle its uncertainties and limitations.

It takes a deft touch. Hedge too much and you seem mealy-mouthed; too little, smug. Unfortunately, the line between hedging and fudging is thin. As usual, watch how those in your field manage uncertainty, then do likewise.

**chapter nine Reasons and Evidence** In this chapter we discuss the two forms of support for a claim: reasons and evidence. We show you how to distinguish between the two, how to use reasons to organize your argument, and how to evaluate the quality of your evidence. Readers look first for the core of an argument, for its claim and two kinds of support: reasons and evidence. In the sequence of reasons, they see the outline of the logical structure of its support. If they do not see that structure, they are likely to judge your argument shapeless, even incoherent. Evidence, on the other hand, is the bedrock of your argument, the established body of facts that readers need to see before they accept your reasons. If they don't accept your evidence, they are likely to reject your reasons, and with them your claim. So once you know your claim, your next task is to assemble the reasons that support it, and the evidence on which those reasons rest.

**9.1 USING REASONS TO PLAN YOUR ARGUMENT** Readers use reasons to decide whether to believe your claim, but they also use them to understand the structure of your report. Reasons outline the logic of your argument, and if each major reason is the point of a section, they outline the report as well. For a complex argument, each reason will be supported with subreasons that serve as the points of subsections of the report. So as you collect evidence, you can use your reasons (and subreasons) to organize that evidence in a form that anticipates the structure of your report. You can do this as a traditional outline, 138 **Reasons and Evidence** 139 but at this stage you'll probably find it more helpful to create a chartlike outline known as a "storyboard." Put your main claim and each reason or subreason on its own card (or page). Then put all the evidence that supports an individual reason or subreason on its own card (or page). Finally arrange the cards on a table or wall to make their logical relationships visible, as in the figure below.

Subreason	Reason	Subreason	Main Claim	Reason	Reason	Reason	Subreason	Evidence	Evidence
Evidence	Try out different orders and groupings until you find one that best reflects your current understanding.	As your research progresses, try new arrangements.	Don't worry about organizing the details; at this point, you want to work with middle-sized chunks that you can arrange in various ways.	If this chart makes your argument look too predictable, don't worry about it.	It outlines not your paper but your argument.	When you begin to work on a first draft (see chapter 12), you'll have to plan in light of your readers' point of view: how to introduce your problem to make it seem significant to them; how much background to present; and how to order your subclaims; and so on.	These are important matters for later, but not now,	140 making a claim and supporting it when you are still discovering what you can make of that mound of notes, summaries, and photocopies.	

**9.2 THE SLIPPERY DISTINCTION BETWEEN REASONS AND EVIDENCE** On pp. 117–18, we distinguished reasons from evidence. In some contexts the words seem interchangeable: You have to base your claim on good reasons. You have to base your claim on good evidence. But they are not synonyms. Compare these two sentences: I want to see the evidence that you base your reason on. I want to see the reason that you base your evidence on. That second sentence seems a bit odd because we don't base evidence on reasons; we base reasons on evidence. • Reasons state why readers should accept a claim. Researchers can think up reasons; they don't think up evidence (or at least they do so at their own risk). • Evidence is what readers accept as fact, at least for the moment. They think of evidence as "hard" reality, evident to anyone able to observe it. So when you assemble the elements of your argument, you must start with one or more reasons, but you must base each reason on its own foundation of fact. The problem is, you don't get to decide whether a statement counts as describing evidence or as just offering another reason—your readers do. If they ask for support for what you offer as evidence, then you have to treat what you thought was evidence as just a

reason instead, a reason that you must support with still “harder” evidence. For example, consider this little argument: Reasons and Evidence 141 American higher education should review its “hands-off” policy toward student drinking off-campus, claim because high-risk binge drinking has become a common and dangerous form of behavior. reason Injuries and death from it have increased in frequency and intensity, not only at the big “party” schools but among first-year students at small colleges. evidence In that last sentence, the writer offers what she believes is a “fact” hard enough to treat as evidence. But a skeptical reader might ask, Are you sure about that? What do you base that on? In that case, the reader treats that statement not as evidence but as a reason still in need of its own basis in evidence. The writer could add: Episodes of binge drinking resulting in death or injury by first-year students at colleges with fewer than two thousand students have increased by 19 percent in the last five years. Of course a really skeptical reader could again ask, Well, how do you know that’s true? If so, the writer would have to provide more. If she did her own research, she could produce her raw data and the questionnaires she used to gather them (which themselves are subject to still more skeptical questioning). If she found her data in a source, she could cite it, but then she might be asked to give good reason for accepting it as reliable. If you can imagine readers asking, How do you know that? Why should I accept it as a fact?, then you have not yet hit the bedrock of evidence readers are seeking. And at a time when so-called experts are quick to tell us what to do based on studies we never get to see, experienced readers have learned to view most evidence skeptically. So when you report evidence, be clear about how it was collected and by whom. If it was collected by others, find and cite a source as close to the evidence as you can get. 142 making a claim and supporting it Our Foundational Conception of Evidence When people talk about evidence, they typically use foundational metaphors (as have we): evidence is hard reality, solid proof, something we can see for ourselves. It’s the bedrock, the solid foundation on which we build arguments. Language like that encourages readers to think of evidence as something independent of their own interpretations and judgments. But data are always constructed and so to some degree shaped by those who collect them—when they decide what to look for, how to record what they see, and how to present what they find. So as you build your argument, try to build it on an unshakable foundation of evidence, but keep in mind that what makes your evidence count as evidence is your readers’ willingness to accept it without question, at least for the moment. That way, you may also remember to report it in ways that encourage readers to agree that what you offer is “just the facts.”

### 9.3 EVIDENCE VS. REPORTS OF EVIDENCE

Now a complication: researchers rarely include in any report the actual evidence itself. Even if you collect evidence yourself, counting the number of rabbits in a field, in your report you can only represent those rabbits in words, numbers, tables, graphs, pictures, recordings, and so on. For example, when a prosecutor says in court, Jones was dealing drugs, and here is the evidence to prove it, he can hold up the bag of cocaine, even hand it to jurors so that they can hold in their own hands the “evidence itself.” (Of course, both he and the jurors must believe a chemist who says that the white stuff is really cocaine.) But when he writes about the case in a law journal, he cannot attach that bag to his article; he can only refer to or describe it. Unlike prosecutors speaking in a courtroom, researchers almost never share the evidence itself with their readers in their report. The same holds for a researcher who argues this: Emotions play a larger role in rational decision-making than most of us think, claim because without the help of the emotional centers of the brain, we cannot make rational decisions. reason Reasons and Evidence 143 Persons whose brains have suffered physical damage to their emotional centers cannot make even simple, everyday decisions. evidence That argument doesn’t offer as evidence real people with damaged brains unable to make decisions; it can only report observations of their behavior, offer pictures of their brain scans or tables of their reaction

times, and so on. (In fact, we much prefer to have researchers report their evidence fairly than for us to have to test brains, read scans, and observe people for ourselves.) We know the distinction between evidence and reports of evidence may seem like hairsplitting, but it emphasizes two important problems. First, every time you report your own evidence, you change it, usually by cleaning it up and making it more coherent than what you actually saw or counted. Even when you offer seemingly objective quantitative data, you cannot avoid “spinning” them: you must decide what to count, how to categorize the numbers, how to order them. Even photographs and recordings can only represent evidence in a particular way, giving it a slant or shape. The second problem is that you have to depend on the reports of others, who have already shaped their evidence. It is rare for any researcher to rely only on evidence he collected himself, even rarer if he faces a deadline next week. For example, suppose you wanted to back up a claim that the cult of celebrity has distorted rational economic decision-making with evidence of how much more athletes and entertainers earn than do top government officials. You could obtain official reports of government salaries, but those athletes and entertainers would be unlikely to share their check stubs or tax returns (which are themselves reports of reports). So you would have to rely on reports of those reports of salaries. And unless you can talk to the people who did the counting, you’ll be four or five reports away from the evidence itself. So as you collect and report evidence, most of it<sup>144</sup> making a claim and supporting it already at least thirdhand, you have to remember that all the reporters in the chain did their own selecting, arranging, and tidying up. The often dubious quality of reports of reports is why people who read lots of research are so demanding about “proof.” If you collected evidence yourself, they want to know what methods you used. If you used sources, they expect you to find primary sources, or if not, sources as close to the evidence itself as you can get. And they want complete citations and a bibliography so that they can go look for themselves. In short, they want to know the complete chain of reports between themselves and the evidence itself. In an age when we are all subjected to research reports and opinion surveys that are at best dubious and at worst faked, you have to give your readers good reason to suspend their justified skepticism, because the last link in that chain of accountability is you. Why Trust Reports of Evidence? In the early days of experimental science, researchers conducted experiments before witnesses, reputable scientists who could observe the experiments firsthand and attest to the accuracy of the reported evidence. Contemporary researchers can’t rely on witnesses anymore. Instead, each area of study has standardized methodologies for collecting and reporting evidence. Today it is those methodologies that will guarantee that your evidence is reliable. If you follow the procedures for collecting and reporting evidence that have become standard in your field, you encourage readers to accept your evidence at your word, without wanting to see it for themselves or to hear about it from witnesses.

#### 9.4 SELECTING THE RIGHT FORM FOR REPORTING EVIDENCE

You can report evidence in many ways:

- with direct quotations from letters, diaries, books, poems, and so on;
- with words representing objects, images, and events in the form of anecdotes, narratives, and descriptions;
- with photographs, videotapes, films, drawings, and recordings that represent objects and events visually and aurally;
- with tables, graphs, charts, and words representing quantitative data (see chapter 15);
- with summaries and paraphrases of any of the above.

The problem is that different communities of research expect different forms of evidence. Sociologists and economists, for example, prefer data in the form of tables, graphs, and charts. Literary critics rely on quotations from literary texts. Anthropologists and art historians tend to rely not only on verbal descriptions of particular images and events, but also on photographs, videotapes, and sound recordings. Each group accepts other kinds of data, if presented properly, but each is likely to disfavor certain kinds. Literary critics do not expect bar charts to represent

the development of an author; most psychologists will be suspicious of mere anecdotes about mental processes.

**9.5 RELIABLE EVIDENCE** Once you know the kind of evidence your readers expect, you must test the evidence you have collected by the same criteria that you used to judge your sources (review pp. 76–78): is it sufficient and representative, reported accurately and precisely from an authoritative source? These are not exotic criteria. We all apply them in our most ordinary conversations, even with children. In the following, “P” faults “C” on all those criteria:

C: I need new sneakers.  
 claim Look. These seem small.  
 evidence P: Your feet haven’t grown that much in a month, and they don’t seem to hurt you much [i.e., I accept that what you offer as evidence could be relevant, but I reject it first because it is not accurate and second because even if it were accurate, “seem small” is not sufficiently precise].  
 C: But they’re grungy.  
 reason Look at this dirt and those raggedy laces.  
 evidence146 making a claim and supporting it P: Raggedy laces and dirt aren’t reason enough to buy new sneakers [i.e., Your assertion may be factually correct and might be worth considering, but dirt and shoelaces alone are not enough evidence].  
 C: Everybody thinks I should get new sneakers.  
 reason Harry said so.  
 evidence P: Harry’s opinion doesn’t matter [i.e., Even if it’s true, other people’s opinions are to me not authoritative].  
 C: They’re hurting me.  
 reason Look at how I limp.  
 evidence P: You were walking fine a minute ago [i.e., Your evidence is not representative].

If you can imagine yourself as P (or C), you can test the quality of evidence in any research argument, including your own. Readers judge reports of evidence by P’s criteria. They want your evidence to be accurate, sufficient and representative, and precise. And if you didn’t gather it, they want it to be from an authoritative source. (Readers may also reject evidence because it is irrelevant or inappropriate, but to apply those criteria, you have to know about warrants, which we discuss again in chapter 11.) So as you assemble the evidence in support of your reasons, screen it before you enter it into your plan.

**9.5.1 Report Evidence Accurately** Readers predisposed to be skeptical seize on the smallest flaw in your data, on the most trivial mistake in a quotation or citation, as a sign of your irredeemable unreliability in everything else. If your paper depends on data collected in a lab or in the field, record them completely and clearly, then double-check before, as, and after you write them up. Getting the easy things right shows respect for your readers and is the best training for dealing with the hard things. You can sometimes use even questionable evidence, if you acknowledge its shaky quality. In fact, if you point to evidence that seems to support your claim but then reject it as unreliable, you show yourself to be cautious and self-critical— and thus trustworthy.

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**9.5.2 Provide Sufficient, Representative Evidence** Beginners typically present insufficient evidence. They think they prove a claim when they find support in one quotation, one bit of data, one personal experience (though sometimes only one bit of evidence is sufficient to reject a claim). Shakespeare must have hated women because those in *Macbeth* are either evil or weak. Readers usually need more than one bit of data to accept a claim. If your claim is even mildly contestable, find your best evidence, but know that more is always available, and that some of it might be fatal to your claim. Even if you offer lots of evidence, your readers still expect it to be representative of the full range of variation in the available evidence. One Shakespearean play is not representative of all his works, much less of all Elizabethan drama.

**9.5.3 Be Appropriately Precise** Your readers also want you to state your evidence precisely. They hear warning bells in certain words that so hedge your claim that they cannot assess its substance: The Forest Service has spent a great deal of money to prevent forest fires, but there is still a high probability of large, costly ones. How much money is a great deal? How high is a high probability— 30 percent? 50 percent? 80 percent? How many acres are destroyed in a large fire? Watch for words like some, most, many, almost, often, usually, frequently, generally, and so on. Such words can set appropriate limits of certainty on a claim (see pp. 135– 37), but they can also fudge it. What counts as

precise, however, differs from field to field. A physicist measures the life of quarks in infinitesimal fractions of a second, so the tolerable margin of error is vanishingly small. A historian gauging when the Soviet Union was ready to collapse would estimate it in weeks or months. A paleontologist dating a new species might give or take hundreds of thousands of years.<sup>148</sup> making a claim and supporting it

According to the standards of their fields, all three are appropriately precise. (Evidence can also be too precise. A historian would seem foolhardy if she asserted that the Soviet Union reached its point of collapse at 2 p.m. on August 18, 1987.) Different fields define the criteria for evaluating evidence differently, but each demands that your evidence meet them. If you are a beginner, you will need experience to learn the kinds of evidence readers in your field accept and reject. The painful way to gain that experience is to be the object of their criticism. Less painful is to seek examples of arguments that have failed because their evidence was judged to be unreliable. Listen to lectures and class discussions for the kinds of arguments that your instructors criticize because they think the evidence is weak. Ask for examples of bad arguments. You will better understand what counts as reliable after you see examples of what does not.

**Showing the Relevance of Evidence** Your evidence may be accurate, precise, sufficient, representative, and authoritative, but if readers cannot interpret it quickly, you might as well offer none at all. They will interpret evidence more easily if they understand its relevance to your claim because you added a reason that both supports the claim and explains the evidence. Graphically, it looks like this:

For example, what exactly in this table should we see as relevant to the claim in the sentence introducing it? American consumption of gasoline has contradicted some pessimistic predictions:

	1970	1980	1990	1996
Miles (thousands)	10.3	9.1	10.5	11.3
Consumption (gallons)	830	712	677	698

We need help to interpret the data, to see what we should see, and to know which data are most relevant to the claim. Adding a sentence such as this would help:

<sup>149</sup>150 quick tip: evidence American consumption of gasoline has contradicted some pessimistic predictions.

**claim** In 2000 we drove about 23 percent more than we did in 1970, but used 30 percent less fuel.