SECOND EDITION

THE Craft OF Research

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PART III

Making a Claim and Supporting It

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

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?*

In a research report, your goal is not to stuff your claim d 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.*]

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: W.. 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?

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 gesture$_{claim}$ **because** it did not improve the material quality of their daily lives.$_{reason}$

> TV violence can have harmful psychological effects on children$_{claim}$ **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 children$_{claim\ 1}$ because **those exposed to large amounts of it tend to adopt the values of what they see**$_{reason\ 1\ supporting\ claim\ 1/claim\ supported\ by\ reason\ 2}$ Their constant exposure to violent images makes

> **them unable to distinguish fantasy from reality.**$_{reason\ 2\ supporting\ reason\ 1/claim\ 2}$

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 leave$_{claim}$ 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 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 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 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-

lence 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.

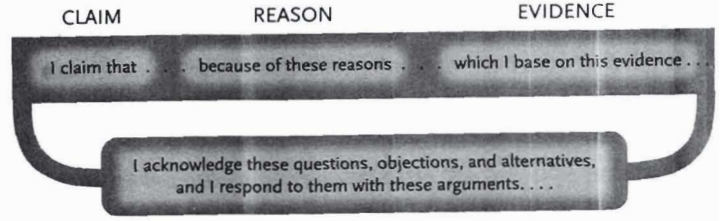
In other words, your readers are likely to question *any* part of your argument. So you have to anticipate as many of their questions as you can, and then acknowledge and respond to the most important ones. For example, as readers consider the claim that children exposed to violent TV adopt its values, 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

> 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:

> 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*

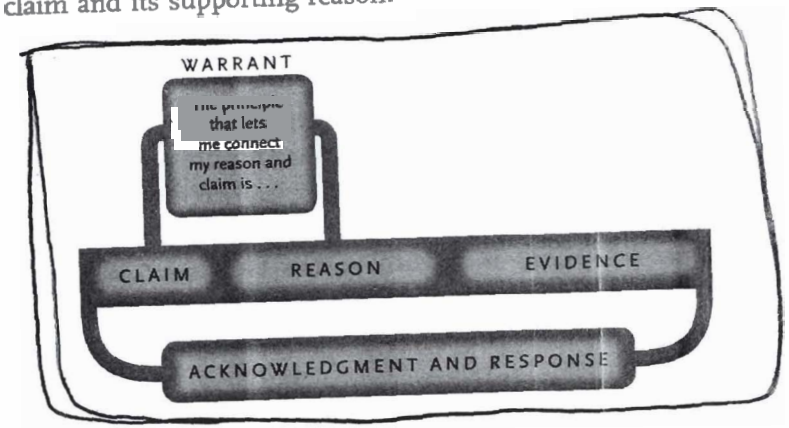
That would seem condescending.

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

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 mini-argument, 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 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 ment, 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.

QUICK TIP: *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

chapter 4, researchers in academic settings usually pose practical problem but a conceptual one, the kind whose ...n 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.

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 their

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 elements 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 confidence 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 uniforms**$_{reason\ 1}$ **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.

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.

Early in your career, you won't be expected to know w. searchers 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

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?*

QUICK TIP:

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.

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.*claim* 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.

> (1) **We believe** that the material which gives the X-ray diagra . . 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 mealymouthed; 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.

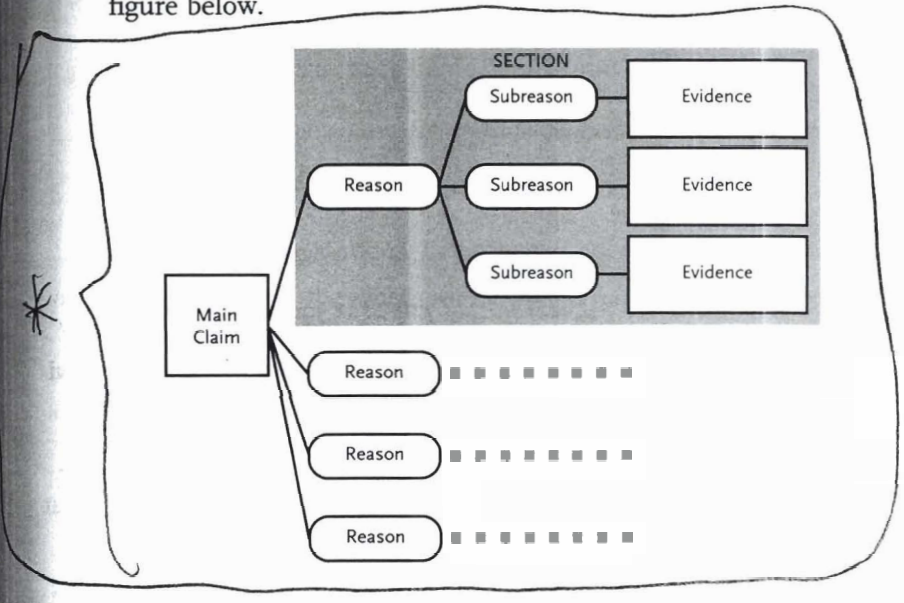
Readers look first for the core of an argument, for its claim and two kinds of support: reasons and evidence. In the sequence of reasons, they see the outline of the logical structure of its support. If they do not see that structure, they are likely to judge your argument shapeless, even incoherent. 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,

but at this stage you'll probably find it more helpful to 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.



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,

when you are still discovering what you can make of that mou of notes, summaries, and photocopies.

9.2 THE SLIPPERY DISTINCTION BETWEEN REASONS AND EVIDENCE

On pp. 117–18, we distinguished reasons from evidence. In so 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 evi dence on reasons; we base reasons on evidence.

- Reasons state why readers should accept a claim. Research- ers 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:

> 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.

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*

> 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

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.*evidence*

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.

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.

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.

QUICK TIP: *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:

So reasons are very important to link good claims to good evidence

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:

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.***reason*

	1970	1980	1990	19
Miles (thousands)	10.3	9.1	10.5	11
Consumption (gallons)	830	712	677	6

The added sentence tells us what to look for in the table and how to interpret it. In fact, that sentence does double duty: it not only explains the data, but also offers a reason that supports the claim.

Readers look for the same help when they read a long quotation. Here is a passage that bases a claim about Hamlet directly on the evidence of a quoted passage:

When Hamlet comes upon his stepfather, Claudius, at prayer, he demonstrates his cool rationality.*claim*

> Now might I do it [kill him] pat, now he is praying:
> And now I'll do't; and so he goes to heaven;
> And so am I reveng'd. . . . [Hamlet pauses to think]
> [But this] villain kills my father; and for that,
> I, his sole son, do this same villain send to heaven[?]
> Why, this is hire and salary, not revenge.*evidence*

That argument is not clear. Nothing in the quotation refers to Hamlet's cool reason. In contrast, compare this version:

When Hamlet comes upon his stepfather, Claudius, at prayer, he demonstrates his cool rationality.*claim* **He impulsively wants to kill Claudius but pauses to reflect. If he kills Claudius while praying, he will send his soul to heaven, but Hamlet wants Claudius damned to hell, so he coldly decides to kill him later:***reason*

> Now might I do it [kill him] pat, now he is praying:
> And now I'll do't; and so . . .*report of evidence*

You can't depend on detailed data or quotations to speak for themselves. Lacking a reason that explains the evidence to them, readers may have to struggle to understand what it means. So always introduce complex evidence with a reason explaining it.

CHAPTER TEN

Acknowledgments and Responses

This chapter discusses matters that can help all researchers, whether beginning or advanced, to convince readers that they are thoughtful and judicious.

As you know by now, the core of your argument is a claim backed by a reason based on evidence. You thicken that core by assembling more reasons, perhaps supporting each with yet more reasons, then laying down a base of evidence on which all those reasons rest. But if you plan your argument only around claims, reasons, and evidence, your readers may think that your argument is flatfooted, even naive. You will seem less like an inquirer amiably engaging intelligent but feisty colleagues in conversation than like a lecturer droning at an empty room.

Since your readers won't be there as you draft your report, you have to *imagine* them asking questions, not just the predictable ones that readers ask about any argument, but ones about yours in particular. It's when you can acknowledge and respond to that imagined questioning, to suggested alternatives and to outright objections, that your report not only speaks in your voice but brings in the voice of others. That's how you most effectively establish a working relationship with readers.

In this chapter we show you how to anticipate two kinds of questions that readers may ask about your argument:

- They may question its intrinsic soundness: the clarity of your claim, the relevance of your reasons, the quality of your evidence.

You have to decide just how forceful your blunt rejection should be; if the alternative seems to you obviously flawed, say so, but focus on the work, not the person.

ADDRESSING LOGICAL ERROR

When you think a writer might not have thought through an issue carefully, you usually should say so civilly. Here are a few possibilities:

That evidence is important, but we must look at all the available evidence.

explains some of the problem, but it is too complex for a single explanation.

That principle holds in many cases, but we must also consider the cases it overlooks.

CHAPTER ELEVEN

Warrants

This chapter raises an issue more complex than you may want if you are just beginning: the logical relevance of your reasons to your claims. In the long run, however, every researcher should work to understand it.

Researchers owe their readers their best reasons, backed with more than enough of the best available evidence. But even if readers accept your reasons as true, they may still not accept your claim if they think your reasons are *irrelevant* to it. We explain and demonstrate the relevance of a reason to a claim with the fifth element of argument—a warrant.

A warrant is sometimes called a *commonplace*, a commonsense generalization about the world that everyone considers self-evident: *Where there's smoke, there's fire.* But some warrants are so specific to a particular community that they virtually define its special habits of mind: *When different species share little DNA, we can conclude that they diverged earlier than species that share more DNA.* Like all commonplaces and habits of mind, we sometimes make them explicit, but more often we take them for granted.

In this chapter we show how warrants explain your reasoning, how to know when you must state them, and how to formulate and test them. But first a caution: Warrants are the most abstract, difficult element in an argument to understand and manage. Everyone struggles to grasp them, and rhetorical theorists debate them. So if at the end of this chapter you still have questions,

you are in good company (including, from time to time, the three of us).

11.1 HOW WARRANTS WORK

Suppose your friend makes this argument:

> Despite Congress's doubling the budget to reduce drug smuggling, the amount of drugs smuggled into this country has risen.*reason* Clearly, we are wasting our money.*claim*

You respond:

> Why should the fact that smuggling has increased despite a bigger budget to prevent it mean that we are wasting money? I don't see how that follows.

To persuade you to accept that reason as supporting that claim, your friend would have to respond with a general principle that explains why it does. His principle would consist of two parts, a general circumstance and a general consequence that reliably follows from it:

> When more resources are invested to prevent something but its incidence goes up,*general circumstance* those resources have been wasted.*general consequence*

If you accept the general principle (you might not), then you should accept the same relationship between any *specific instance* of that circumstance and any *specific instance* of that consequence. If you accept that the general consequence follows from the general circumstance, then you should also accept that the specific consequence follows from the specific circumstance.

We can represent how a warrant "covers" a reason and claim graphically like this:

General circumstance	*predictably leads to*	**General consequence**
When more resources are invested to prevent something but its incidence goes up,		those resources have been wasted.
✓ Despite Congress's doubling the budget to reduce drug smuggling, the amount of drugs smuggled into this country has risen.*reason*	***therefore***	✓ We are wasting our money.*claim*
Specific circumstance	*lets us infer*	**Specific consequence**

The check marks indicate that we think

- the specific circumstance (*Despite Congress's doubling the budget to reduce drug smuggling, the amount of drugs smuggled into this country has risen*) is a good instance of the general circumstance (*more resources are invested to prevent something but its incidence goes up*);
- the specific consequence (*We are wasting our money*) is a good instance of the general consequence (*resources have been wasted*).

If the warrant and reason are true and the reason and claim are good instances of the warrant, then the claim must be true. Of course, the warrant will not "work" if you don't accept it as a true general principle. In that case, your friend either has to make a case to convince you to accept it or find another applicable one that you do accept.

Writers usually offer warrants to connect a reason and a claim, so that's what we will concentrate on here. But you should know that you can also offer warrants to explain how evidence is relevant to a reason. Since reasons are (sub)claims, warrants connect

a reason to its supporting evidence just as they connect a claim to its supporting reason.

11.2 WHAT WARRANTS LOOK LIKE

In practice, writers state warrants in many ways, from direct to oblique:

> If a problem continues, resources invested in prevention are wasted.
>
> Spending money for nothing is a waste.
>
> An ounce of prevention is wasted if you still need the cure.

But however it is stated, a warrant always has those two parts: a **general circumstance and the general consequence** that readers should infer. The parts can relate by cause-and-effect (*Rain causes streets*), one-thing-is-the-sign-of-another (*Cold hands, warm heart*), a rule of behavior (*Look both ways before you cross the street*), a definition (*A three-sided figure is a triangle*), a principle of reasoning (*Sufficient representative data are necessary for any reliable generalization*), or by any other principle that links a condition and a consequence.

But for our purpose here, this next way of stating warrants is most useful because it clearly distinguishes the two parts that every warrant must have:

> When(ever) X, then Y.

This formulation helps you test the connection between a specific condition and a specific consequence. You can then restate the warrant however you like.

11.3 KNOWING WHEN TO STATE A WARRANT

Research reports involve countless principles of reasoning, most of them so deeply embedded in our assumptions and tacit knowledge that we would never question them. That's why researchers state warrants only when they think their readers will question

the relevance of a reason to a claim. Look especially for the following three cases:

- You can assume that some readers will have questions if you use a principle of reasoning that you know is new or controversial in your field.

In that case, explicitly state it as a warrant; then justify it, preferably by referring to authoritative figures who also use and defend the principle. You are not likely to convince those already set against it, but you will at least acknowledge that you know your position is controversial and show that you are not alone in holding it.

- Readers will also look for warrants if they are unfamiliar with the kind of argument you are making.

If you are writing as a specialist in a field to readers who are not, find places where you use reasons that only specialists would use. If the principle behind that reason is one only specialists would recognize, explain it with a warrant. If readers are generally familiar with your kind of argument, look for places where you reason in surprising or unconventional ways. Even if readers recognize an unconventional principle of reasoning, you can diffuse some of their resistance by explicitly stating *and defending* the warrant that explains it.

- Readers are more likely to question your reasoning when they resist your claim because they just don't want it to be true.

In that case, start with a warrant that you think they will accept before you lay out the reason and claim you expect them to resist. They may not like the claim any better, but you will at least force them to see that their resistance is illogical. For example, consider this argument:

> Homosexuality must have a strong genetic component$_{claim}$ because so many of its characteristics appear in the feelings and

behavior of children who have no contact with homosexuals but become homosexual adults.*reason*

Some readers resist that claim because they believe that sexual orientation is a matter of free will and that any genetic basis for homosexuality would compromise their moral objections to it. A writer might not be able to overcome their strongly held beliefs, but if he had good evidence to support that reason, he might get them to consider the claim if he first convinced them to accept a warrant connecting that reason and claim:

When children manifest behavior arising not from teaching or modeling, but spontaneously, that behavior is genetically based.*warrant* Homosexuality must therefore have a strong genetic component*claim* because . . .*reason*

If readers think that both warrant and reason are true, and that the specific reason and claim are good examples of the warrant, they are logically obliged to accept the claim. If they do not, you know that no rational argument is likely to change their minds.

What You Don't Say Says Who You A

You show consideration for readers when you offer warrants to explain principles in your field that they may not recognize. But it is an equally strong gesture when you keep silent about warrants you could have stated. Warrants articulate the principles of reasoning that form the intellectual fabric of a research community. So when you are silent about warrants exclusive to your field, you exclude readers not in the know and implicitly claim that you are a knowledgeable insider. One way or the other, warrants significantly affect how readers perceive your ethos.

11.4 TESTING YOUR WARRANTS

Assume that your readers are most likely to challenge your warrants when they strongly resist your claims. Consider this little argument:

We believe that, contrary to popular belief, gun ownership was not widespread in the first half of the nineteenth century in America or before,*claim* because guns were so rarely mentioned in wills,*reason* A review of 4,465 wills filed in seven states from 1750–1850 shows that only 11 percent of them mention a long gun or handgun. . . .*report of evidence*

You can expect that claim to be resisted by those whose image of America includes widespread gun ownership stretching back before the Revolution. Even if they accept that guns were rarely mentioned in wills, they may still object: *Why should the fact that guns were rarely mentioned in wills count as a reason for believing that few people owned one?*

If a writer anticipated that objection, she could begin with a warrant:

In the eighteenth and nineteenth centuries, most household objects were regularly listed in wills, especially if they were valuable objects like guns. So when someone failed to mention such an object, he probably did not own one.

But the moment she states that warrant, she should ask herself three questions:

- Is that warrant true and appropriately limited?
- Does it apply to the reason and claim?
- Is it appropriate and persuasive for the readers of this argument?

11.4.1 Is Your Warrant True and Appropriately Limited?

If your readers think your warrants are just false, no amount of reasons and evidence can save your claim.

Nonhuman creatures are mere biological objects without any inner life and so should not be objects of pity or concern.*warrant* Since apes used in medical experiments experience nothing like

human emotions or feelings,*reason* we should not waste money trying to make their conditions more comfortable.*claim*

Half a century ago, most psychologists believed that warrant to be true. Almost none do today.

A warrant can be basically true but stated too generally. For example, here is that warrant about gun ownership with no qualifications or hedges:

> In the eighteenth and nineteenth centuries, household objects were listed in wills.

That's too strong. Scaled back, it might be more acceptable:

> In the eighteenth and nineteenth centuries, household objects **considered valuable by their owners** were **usually** listed in wills.

These tests also apply to *creating* a warrant when you need one. A good principle is to create a warrant that is only a bit more general than the reason and claim, and that does not depend on words like *everyone, any, never,* and *always.* It is particularly challenging to formulate a warrant when the reason and claim are already general statements. When that's the case, the warrant has to be more general yet. For example:

> Belief in astrology resists logical argument*claim* because people tend to remember vivid coincidences between a prediction and a random daily event better than they remember the many more times a prediction failed.*reason*

We can find a warrant for that by restating the specific reason and claim in the *When X, then Y* form:

> When people remember vivid coincidences between an astrological prediction and a random daily event better than they remember the many more times when a prediction failed,*reason side* their belief in astrology resists logical argument.*claim side*

Then we revise both sides to make them more general:

> When people generalize on one vivid coincidence,*reason side* they do not think logically.*claim*

That warrant is, in fact, an important principle of decision science, but is it always true, in all circumstances, at all times? If not, we open it to exceptions that may lead readers to reject not only the warrant but the whole argument.

11.4.2 Does Your Warrant Actually Apply to Your Reason and Claim?

This test for warrants addresses a matter that has vexed logicians and rhetoricians for more than two thousand years: How does a warrant connect a reason to a claim *validly*? When your reasons and evidence are untrue, you can correct them; when they are unclear, you can clarify them. But when someone says your claim is *unwarranted,* or refers to it by the Latin term *non sequitur* ("it doesn't follow"), you have to analyze the logic of your argument. Here is a simple example:

Alex: You should buy a gun, because you live alone.

Anya: Why should my living alone mean I should buy a gun?

Alex: Whenever you live in insecure circumstances, you should protect yourself.

Anya: But living alone does not mean that my life is insecure.

Anya complains that Alex's reason is not a good instance of the reason side of his warrant, at least for her, because living alone is not an instance of being insecure.

But testing other arguments can be harder. Here, for example, is a subtly flawed argument about the effect of TV violence on children (we should alert you that what follows requires close attention):

> Few doubt that when we expose children to examples of courage and generosity, we influence them for the better. How can we then deny that when they are constantly exposed to images of sadistic violence, they are influenced for the worse?*warrant* Data show that violence among children 12–16 is rising faster than

among any other age group.*reason* Brown (1997) has shown that . . .*evidence* We can no longer ignore the conclusion that TV violence, even in cartoons, is a destructive influence on our children **today.***claim*

To diagnose what is wrong here, we break the warrant into its two parts, and then align the reason and claim under them.

[redacted]umstan[redacted]	*edictably leads to*	General consequence
When children are constantly exposed to images of sadistic violence,		they are influenced for the worse.
?		?
Data show that violence among children 12–16 is rising faster than among any other age group.*reason*	*therefore*	TV violence is a destructive influence on our children today.*claim*
Specific circumstance	*lets us infer*	**Specific consequence**

Now we see that the specific circumstance is not a good instance of the general one: *rising violence* is not an instance of *children being exposed to images of violence.* Similarly, the specific consequence is not a good instance of the general one: *TV violence is destructive* is not an instance of *children being influenced for the worse,* because it is too specific. So even if all of those statements are true (arguably they are), they do not add up to a valid argument, because the warrant covers neither the reason nor the claim.

To fix that argument, we would have to revise both the reason and claim to fit the warrant (or the warrant to fit the reason and claim):

> Few doubt that when we expose children to examples of courage and generosity, we influence them for the better. How can we then deny that when they are constantly exposed to images of sadistic violence, they are influenced for the worse? All our data show that violence among children 12–16 is rising faster than among any other age group. This violence results from many factors, but we can no longer ignore the conclusion that because **television is the major source of children's images of violence,***reason* **they are becoming violent because of it.***claim*

The evidence and claim seem closer to the kind that the warrant admits:

General circumstance	*predictably leads to*	General consequence
When children are constantly exposed to images of sadistic violence,		they are influenced by those images for the worse.
✓		✓
Television is the major source of children's images of violence.*reason*	*therefore*	Children are becoming **violent because** of it.*claim*
Specific circumstance	*lets us infer*	**Specific consequence**

But a reader keen to derail the argument might still object:

> Hang on. Your reason does not, in fact, fit your warrant. It is true—images of violence do appear on television. But I don't believe that those images are "sadistic." A lot of it is cartoon violence. Therefore, your warrant cannot cover your reason because your reason is not a good instance of your warrant. Furthermore, your claim—"becoming violent"—is more extreme than "influence for the worse." It is too specific and so goes beyond the claim your warrant allows.

As we said, this is not easy stuff.

11.4.3 Is Your Warrant Appropriate to Your Readers' Research Community?

Law students get a painful lesson in learning to make legal arguments when they find out that many commonsense warrants that

most of us believe have no place in their world of legal reasoning. For example, like most of us, they start law school holding this commonsense belief that we can express as a warrant:

> When someone does another an injustice, our legal institutions should correct it.

But law students have to unlearn such commonsense warrants, because other warrants may trump them. For example,

> When you fail to meet legal obligations, even inadvertently, you must suffer the consequences.

More specifically,

> When old people forget to pay real estate taxes, others can buy their house for back taxes and evict them.

Against their most decent instincts, law students have to learn that justice is not what most of us want it to be, but what courts say it is.

Warrants help you understand why important issues are so endlessly contestable: why, when you feel you have a watertight case, your readers still say, *Wait a minute. What about . . . ? I don't agree that your evidence counts as . . .*

Even more troublesome, readers may offer competing warrants:

> When unions want to express their political views, they have a constitutionally protected right to do so. The local teachers union believes real estate taxes should be raised, so they have a right to picket the school board meeting.

> When there is no unanimous agreement in a group, the group should not express a controversial opinion. Not every member of the local teachers union thinks real estate taxes should be raised, so it should not picket the school board meeting.

What reasons and evidence could we offer to prove either warrant? And what higher-order warrants would cover those reasons?

Of all our disagreements with one another, those involving warrants cut the deepest.

11.5 CHALLENGING THE WARRANTS OF OTHERS

If it is hard to convince readers to accept a new warrant, it is more difficult to get them to give one up they believe. If you want to build your argument on warrants that challenge your readers' basic principles, start by imagining how readers would *defend* the warrant you want to challenge. For example, an economist might argue:

> The population of Zackland must be controlled.*claim* because it is outstripping its resources and heading for disaster.*reason* **When a population grows beyond its resources, only a reduction in population will save the country from collapse.***warrant*

If someone challenged that warrant, he might back it with economic analysis:

> When countries A, B, and C exceeded their means, each collapsed. They tried to prevent collapse by every means other than population control, but it did no good.*reason* **When societies reach a point where their population exceeds their resources, the only way they can prevent collapse is to reduce their population.***claim/warrant*

But a religious person might challenge that argument with another claim based on a warrant grounded not in economic principles but moral ones:

> It doesn't make any difference what the economic consequences might be; it is immoral to discourage married couples from having children.*claim* **When people are advised to defy God's will as revealed in our holy books, that advice is sinful.***warrant*

A third person might also reject population control but offer yet a different warrant:

> Whenever we put our minds to a problem of limited resources, we can solve it.

Asked what backs up such a warrant, that third person might say, *Well, I believe in a can-do attitude. It's the American way.* This last warrant is based not on data or religious belief but on cultural conditioning. Those three different warrants are each supported in different ways: by economic data, by a system of revealed truth, by cultural inheritance. To challenge them, you have to challenge their support, each in its own way.

QUICK TIP: *Some Strategies for Challenging Warrants*

Since warrants can be based on fundamentally different principles of reasoning, you have to challenge them in different ways.

WARRANTS BASED ON EXPERIENCE

Asked to defend a warrant based on experience, we refer to everyday experience or to reliable reports by others.

> Where there's smoke, there's fire.

> When certain insecticides leach into the ecosystem, eggshells of wild birds become so weak that fewer chicks hatch and the bird population falls.

CHALLENGES: To challenge those warrants, you have three choices, all difficult: (1) find counterexamples that cannot be dismissed as special cases; (2) challenge the reliability of their experience; or (3) argue that the evidence is not relevant to the warrant. Choose the first strategy if you have good counterexamples. You can argue without directly discounting the experience or the reasoning of your readers. For the other two, you have to tackle readers head-on.

WARRANTS BASED ON AUTHORITY

We believe some people because of their expertise, position, or charisma.

> When authority X says Y, Y must be so.

CHALLENGES: Challenging authority is difficult. The easiest—and friendliest—way is to argue that, on this matter, the authority does not have all the information or has reached beyond her core area of expertise. The most direct way is to give good reason not to take her at her word, because she is no authority at all.

WARRANTS BASED ON SYSTEMS OF KNOWLEDGE AND BELIEF

These warrants are backed by systems of definitions, principles, or theories:

From mathematics: When we add two odd numbers, we get an even one.

From religion: When we commit adultery, we commit a sin.

From law: When we drive without a license, we commit a misdemeanor.

CHALLENGES: When you challenge these warrants, "facts" are largely irrelevant. You must either challenge the system, always difficult, or show that the case does not fall under the warrant: what about driving in my own driveway?

GENERAL CULTURAL WARRANTS

These are the warrants that seem just "common sense" to members of a particular culture. Some are backed by empirical experience, but many are not:

Early to bed, early to rise, makes you healthy, wealthy, and wise.

Whenever a king wants to abuse his subjects, he may.

It is always wrong to mock someone from another culture.

CHALLENGES: Warrants like these change over time, but slowly. You can challenge them, but readers will resist your attempts to change them because you will seem to be challenging their culture.

METHODOLOGICAL WARRANTS

Think of these as "meta-warrants," general patterns of thought that have no content until applied to specific cases. We use them to explain our reasoning:

Generalization: When many cases of X have the quality Y, then X is characterized by Y.

Analogy: When X is like Y in certain respects, then X will be like Y in other respects.

Cause-effect: When Y occurs if and only if X occurs first, then X may cause Y.

Sign: When Y regularly occurs before, during, or after X, Y is a sign of X.

CHALLENGES: Philosophers have questioned even these warrants, but in matters of practical argumentation, we challenge only their application or point out limiting conditions: *Yes, we can analogize X to Y, but not if . . .*

WARRANTS BASED ON ARTICLES OF FAITH

Some warrants are beyond challenge: Jefferson invoked that kind of warrant when he wrote, "We hold these truths to be self-evident. . . ."

When a claim is directly experienced as revealed truth, that claim is true.

When a claim is in accordance with divine teachings, it must be true.

Such warrants are backed not by any confirmable evidence but simply by the believers' inner certainty. They are statements of faith, requiring no argument, no evidence.

CHALLENGES: It makes no sense to challenge these warrants, because no argument could support or undermine them. The best you can do is offer an equally unargued alternative. If you encounter them as you gather your data, either ignore them or decide to study them from an entirely different perspective: not as a subject for research but as an inquiry about the meaning of life.