PART THREE
Making a Claim and Supporting It

Prologue: Arguments,
Drafting, and Conversations

First Thoughts about a First Draft
If you have accumulated a bushel of notes, photocopies, and summaries, and they are spilling off your desk or filling up your hard disk, it’s time to think about a first draft. You may have only dim outlines of answers to your most important questions—in fact, you may not yet know exactly what they are. But once you accumulate a substantial body of data, you have to start thinking about what they add up to. One way to get closer to an answer is to sort through your materials in a way that will help you discover in them some pattern or implication and formulate a claim you think you could support.

When beginning researchers start to organize their material, too many sort it under the most obvious topics, arrange those topics into a plausible sequence, and start writing. Unfortunately, the most obvious topics may be the least useful, because they probably reflect not what you discovered through your own hard thinking, but only what your sources gave you. And even if those topics do go beyond the obvious, they are likely to constitute only a linear sequence (A + B + C + . . .), a rhetorical structure rarely strong enough to support a long and complex argument. The worst result is that you just summarize someone else’s ideas.

To be sure, sorting is a good way to prepare for a first draft—sort your data by any topics that seem appropriate. Finally, though, as you close in on the moment when you have to start planning a first draft, you need a principle of organization that comes not from the categories of your data but from your questions and their answers. You have to organize those answers to support some central claim that you want to make, a claim that will stand as the answer to your hardest question, as justification for writing your
paper. The support for that answer and claim will take the form of a research argument.

**Argument as Conversation**

In Chapter 4, we distinguished everyday, troublesome problems from the kind that motivate research projects. In the same way, here we 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, but they always imply conflict, with winners and losers. To be sure, researchers sometimes wrangle over evidence, jockey for position, and occasionally erupt into charges of carelessness, incompetence, even fraud. But that is not the kind of argument that made them researchers in the first place.

In the next four chapters, we examine a kind of argument that is less like a contentious debate and more like a thoughtful conversation in which, together with others, you explore ideas on issues that you all believe are important.

In that conversation, however, you do more than just exchange views. We are all entitled to our opinions, and in everyday conversation no law requires that we explain why we hold them. But in the world of research you are expected to make claims that you think are new and important enough to interest your readers, and then you are expected to explain those claims as if your readers were asking you, quite reasonably, why you believe them. Because you anticipate those questions, you support your claims with good reasons and grounds, with evidence.

You should also know, however, that readers you respect will question your evidence, perhaps even your logic, and so you must explain your argument as well, breaking it into subordinate claims, themselves supported with further evidence. You may even feel that you must explain why you think your particular evidence logically supports your particular claim. Finally, you have to anticipate that readers will think of objections and alternatives, and so you have to answer them as they are likely to arise.

Your objective in all this is not to force your opinions down the throats of your readers or to overwhelm them with unqualified Truth, but, by anticipating their views, their positions, their interests, to put forward your claims in a way that helps them recognize their own best interests. By helping you explore the limits of your evidence and test the soundness of your reasoning, the elements of a good argument help you work not against your readers but with them to find and understand a truth you can share.
CHAPTER SEVEN

Making Good Arguments:

An Overview

In this chapter we survey the four elements of a research argument. Chapter 8 discusses the two elements essential to every argument, Chapters 9 and 10 two additional elements that advanced researchers must master and beginners should at least understand.

7.1 Conversations and Arguments

There is nothing especially difficult about the kind of argument that you find or have to make in a research report. It has the same give-and-take of a lively discussion with those whose intelligence you respect, especially when their questions can help you think through to the solution of a complicated problem. The only difference is that in conversation you usually feel more confident about what you know, and another person is right there in front of you, asking questions that encourage you to think hard about what you believe and why you believe it:

A: So how do you think you'll do this semester? [A asks a question, implicitly raising a problem.] B: I think I'll do better than last. [In answering the question, B makes a claim and implicitly solves the problem.] A: Why do you think so? [A asks for evidence to support the claim.] B: I'm finally taking courses in my major. [B offers evidence.] A: Why will that make a difference? [A doesn't see why taking courses in a major counts as relevant evidence.] B: I do better when I take courses that interest me. [B offers a principle about courses and motivation that connects the claim to the evidence.] A: But what about that statistics course you have to take? [A points to evidence that might counterbalance B's evidence.] B: I know I bombed calculus, but statistics is easier and now I have a tutor who can explain things better than my teachers do. [B acknowledges the contrary evidence, but rebuts it by offering more evidence.]

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 rebut.] A: Think you'll make the Dean's list? [A asks about the limits of B's claim.] B: I can't promise, but I think I'll do well. At least a 3.00, as long as I don't have to get a part-time job. [B limits the scope of the claim and then stipulates a condition that qualifies his confidence.]

If you can imagine being a part of that conversation, you will find nothing strange in research arguments, because the elements are the same. The only difference is that in a research report, not only must you answer your readers' questions, you must also ask questions on their behalf. Their questions will include these:

Reader's Questions  Your Answers
What is your point?  I claim that . . .
What evidence do you have?  I offer as evidence . . .
Why do you think your evidence supports your claim?  I offer this general principle . . .
But how about these reservations?  I can answer them. First, . . .
Are you entirely sure?  Only if . . . and as long as . . .
No reservations here at all?  I must concede that . . .
Then just how strong is your claim?  I limit it . . .

Your answers constitute your argument. It should offer
- a claim,
- evidence or grounds that support it,
- something we call a warrant, a general principle that explains why you think your evidence is relevant to your claim,
- qualifications that make your claim and evidence more precise.

As you put arguments together, no habit of mind will serve you better than imagining yourself in a conversation with your readers, you making claims, your readers asking good questions, you answering them as best you can.

7.2 Claims and Evidence

The two elements that you must always state explicitly are your claim and supporting evidence.
Making a Claim and Supporting It

- your claim states what you want readers to believe;
- your evidence or grounds are the reasons they should believe it.

Claim: It must have rained last night,
Evidence: because the streets are wet.
Claim: You should be checked for diabetes,
Evidence: because your glucometer reading is 200.
Claim: The emancipation of Russian peasants was largely symbolic,
Evidence: because it didn't improve the quality of their daily lives.

When you offer either of these elements without the other, you seem to offer either pointless data or ungrounded opinion.

Claims and evidence are enough for ordinary conversations, such as whether it rained last night. But when you make a significant claim, you ask your readers to change their minds about something important. Since most readers correctly resist changing their minds easily, especially about important matters, you will usually need to expand your argument with two more elements: warrants and qualifications.

### 7.3 Warrants

The warrant of an argument is its general principle, an assumption or premise that bridges the claim and its supporting evidence, connecting them into a logically related pair. Your warrant answers questions not about whether your evidence is accurate but about whether it is relevant to your claim; or, to put it the other way around, whether your claim can be inferred from your evidence. Think of your warrant as a superstructure that bridges evidence and claim:

In casual conversation, we rarely ask for a warrant. If we asserted, It must have rained last night because the streets are wet, few would ask in response, Why should the fact that these streets are wet make me believe your claim that it rained last night? Almost everyone just takes for granted the warrant, the general principle, that links the evidence of wet streets to a claim about rain.

Whenever we see the evidence of wet streets in the morning, we can conclude that it probably rained the night before.

(Of course, if you live in a village that uses sprinklers to keep the dust down, the warrant alone would not be enough; you would also want to know whether the sprinklers were operating last night. More about this in Chapter 9.)

For other kinds of claims, though, questions about warrants are inevitable. Suppose you get your blood tested at one of those booths set up in shopping malls. The volunteer reads the device that tests for blood sugar and says, You should be checked by your doctor because your reading is 200. Almost all of us would ask why 200 means that we should see a doctor. When we do, we are asking for a warrant, a principle that justifies connecting particular evidence—200 on this device—to a particular claim—that we should see a doctor. Well, responds the tester, whenever someone has a reading of more than 120, that's a good sign that she may have diabetes.

You often need to include the additional supporting structure supplied by an explicit warrant, because research arguments normally ask readers to change their minds about things that are not obvious. That often means you have to convince your readers that your evidence is in fact relevant to your claim.

For example,

The emancipation of Russian peasants was merely symbolic because it didn't improve the quality of their daily lives.

This argument might lead a reader to ask for a warrant:

Even if I grant your evidence that the quality of life for Russian peasants did not improve, why should that lead me to believe your claim that their emancipation was merely symbolic?

The researcher would have to respond with a general principle that states how a kind of evidence is relevant to a particular claim:
Whenever a political action fails to improve the lives of those it is alleged to help, we judge that reform to have been only symbolic.

Of course, the reader might reject that warrant as false. If so, he would then have to question the argument as a whole, even though both the evidence and the claim might be factually true. (We'll discuss all of this in more detail in the next two chapters.)

7.4 Qualifications

The fourth part of an argument consists of qualifications. Qualifications limit the certainty of your conclusions, stipulate the conditions in which your claim holds, address your readers' potential objections, and—when not overdone—make you appear a judicious, cautious, thoughtful writer.

Whenever you make a claim that is true only under certain conditions or you assert a connection between evidence and claim that is not 100% certain but only probably true, you owe it to yourself and your readers to qualify your argument appropriately. When you qualify your argument, you acknowledge the obstacles that interrupt the movement between your evidence and claims.

For example, a reading of 200 is not always a sign of diabetes. First thing in the morning, 200 is high, unless you just ate a big sweet roll. So before we can evaluate a claim and its evidence, we have to know how their scope is qualified: Your reading is \(200_{\text{evidence}}\) so you should be checked, \(200_{\text{claim}}\) because that much glucose in the blood is a good \(200_{\text{qualification}}\) sign that you may \(200_{\text{qualification}}\) have diabetes, \(200_{\text{warrant}}\) unless, of course, you just ate something sugary \(200_{\text{qualification}}\).

The more complex and interesting your argument, the more qualifications you are likely to need, because complex and interesting claims are never cut-and-dried, 100% true under all circum-
stances. To be sure, some great thinkers (and more than a few teachers) deliver Olympian judgments as if they were beyond qualification. The rest of us do better to qualify. Without "waffling" or "dodging the question," we should show legitimate caution about our results. (See pp. 141–42)

How you manage claims, evidence, warrants, and qualifications is important in how readers judge not just your arguments but the quality of your mind, even your character. Most readers will want to know why you make a claim, not to challenge you, but because they want to understand your argument better, to be part of the conversation. When you acknowledge their interest, you present yourself as a considerate writer. If you simply claimed, You should be checked for diabetes or The emancipation of the Russian peasants was merely symbolic, and said nothing more, you would seem to expect your audience to believe whatever you said simply because you said it, always an uncivil assumption. Good reasons and thoughtful qualifications help convince your readers that you are trustworthy.

When you make a claim, give good reasons, and add qualifications, you acknowledge your readers' desire to work with you in developing and testing new ideas. In this light, the best kind of argument is not verbal coercion but an act of cooperation and respect. But this structure of argument is more even than that. It can also guide your research. If you understand how your sources put together their arguments, you can read them more critically and take notes more accurately. If you understand how you will have to put together your argument, you can plan your first draft more efficiently and test your findings more reliably.
CHAPTER EIGHT

Claims and Evidence

In this chapter, we discuss the two elements that you must make explicit in every argument. These matters are important for everyone who wants to make a credible argument, beginning and advanced researchers alike.

The central element in every report is its major claim, its main point or general thesis. It is the culmination of your analysis, the statement of what your research means. But if you want your readers to change their minds about something important to them, you cannot simply assert that claim; you have to give them good reasons, reliable evidence for believing it. This pair, claim and evidence, constitutes the conceptual core of every research report.

8.1 Making Strong Claims

Your main claim is the heart of your report, the part that most fully reflects your personal contribution to your research. To hold up your end of the dialogue, that claim must meet the expectations of your readers. They expect it (as well as the subordinate claims that support it) to be substantive, contestable, and explicit.

8.1.1 Your Claim Must Be Substantive

Readers want you to help them understand something important, so they will take little interest in a claim only about what you have done:

Though the 1981–82 recession occurred chiefly because OPEC raised oil prices, I have examined the role of the Federal Reserve Board.

or about what your paper will do:

This paper will discuss the role of OPEC and the Federal Reserve Board in the recession of 1981–82.

8.1.2 Your Claim Must Be Contestable

Readers think a claim significant to the degree that it is contestable. It should lead them to think, You'll have to explain that, either because they have long thought otherwise, or because they never thought about it at all. No one contests a claim that refers only to the report itself or to you, nor a claim that repeats what readers already believe:

Thus World War II changed the course of history by allowing the Soviet Union to dominate Eastern Europe for almost half a century.

Since most readers already believe this, saying so adds nothing new. If nothing you tell them changes their minds in ways they care about, you waste their time. Only to the degree that your claim changes what they already believe will it be contestable. To the degree it is contestable, your readers will think it significant. (See the Quick Tip at the end of this chapter for some common ways researchers make contestable claims.) But again, if this is one of your first research projects, focus on your own interests, on what would be significant to you, or to someone with your interests and knowledge.

8.1.3 Your Claim Must Be Specific

Readers also expect your claims to be couched in language sufficiently detailed and specific for them to recognize the central concepts that you will develop throughout your paper. Compare:

Thus the emancipation of Russian peasants was not a significant event.
Thus the emancipation of Russian peasants was not significant, because while their lives changed somewhat, their situation declined.

Thus the emancipation of the Russian peasants was only symbolic, because while they gained control over their daily affairs, their economic condition deteriorated so sharply that their new social status did not affect the material quality of their existence.

The first claim has little substance. The second is less vague, but it announces few specific concepts that readers should watch for (except decline). The third is explicit, announcing several concepts that the author must develop in its support: symbolic, gain control, economic condition, deteriorate, new social status, material quality of existence.

When you state your main claim early, at the end of your introduction (as most readers prefer; see pp. 202–6), it is important that you state it in language that is specific. When readers see that language reappear, they are more likely to feel that your text is coherent. When readers do not know what concepts to expect, they may miss important ones and judge what they read to be unfocused, even an incoherent mess.

8.2 Using Plausible Claims to Guide Your Research

Your readers will dismiss your claims if they are not substantive, contestable, and explicit. Those qualities can also be important to you while researching and drafting. You will understand your sources better when you can identify their major claims and the evidence they offer in support. You give yourself directions for research when you create substantive claims with explicit topics and concepts: what would you need to flesh out gain control, economic condition, deteriorate, new social status, material quality of their lives?

You can also use these concepts to sort your evidence:

Before the peasants were emancipated, their material lives were sufficient for survival.
—What evidence relates to “material lives”?
Their social level was low.
—What evidence relates to “low”?
They did not control their lives.
—What evidence relates to “control”?

Claims and Evidence

Their social status rose somewhat.
—What evidence relates to “rising”?
The material quality of their everyday life deteriorated.
—What evidence relates to “deteriorated”?

Each term is simultaneously part of the main claim and of subarguments that will need their own supporting evidence. The more explicit your language, the more evidence you need to support your claims and the better you will see the research you must still do.

If you are writing your first research paper, the task of formulating a significant, contestable claim in richly specific language can seem impossible, especially when your reader is an expert in the subject of your research. How, you might ask, am I supposed to find something that my teacher does not already know or believe? Teachers understand this problem and will expect you to make a claim that would be new and contestable for someone with your level of experience and knowledge, perhaps just new for yourself. In that case, do your research with your own interests in mind, or those of your classmates. What might they find surprising, contestable, significant?

If, however, you are an advanced student, your teachers will expect you to make a claim that would be considered contestable—or at least worth testing—by experts. In that case, your research must include what experts now believe about your problem and how they have responded to similar ones. Ask your teacher what she expects.

8.3 Offering Reliable Evidence

Your claim is the heart of your paper, but most of the paper will be devoted to supporting evidence. If readers reject your supporting evidence because they think it is weak, it will fail one or more of six tests: they will judge it not to be accurate, precise, sufficient, representative, authoritative, or perspicacious. (Readers may also reject evidence because it is irrelevant or inappropriate, but to test evidence by those two criteria you have to know more about warrants, which we discuss in the next chapter.)

These criteria are not unique to research arguments. We use them in our most mundane conversations. The following argument by C fails on all six criteria of quality, and on appropriateness as well:
Making a Claim and Supporting It

C: I need new sneakers. These seem small.

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 to your claim, but I reject it first
  because it is not accurate and second because even if it were accu-
  rate, “seem small” is not sufficiently precise.]

C: But they look awful. They’re dirty. Look at these raggedy
  laces.

P: Raggedy laces and dirt aren’t reason enough to buy new
  sneakers. [i.e., Your assertion may be factually correct and with
  more evidence might be worth considering, but shoe laces and dirt
  alone are not sufficient evidence of the terminal condition of your
  shoes.]

C: Everybody thinks I should get new sneakers.

P: Everybody’s opinion doesn’t matter. [i.e., Even if it’s true,
  other people’s opinions are to me not authoritative.]

C: Haven’t you seen the way I have to walk?

P: No. [i.e., How you walk might qualify as evidence, but I have seen
  you and I don’t see anything wrong. Your evidence is not per-
  spicious.]

C: Look at how I limp.

P: You were walking fine a minute ago. [i.e., Your evidence is not
  representative.]

C: You can afford to buy me new shoes.

P: Forget it. [i.e., I will not respond because your evidence is not ap-
  propriate.]

If you can imagine yourself as P, you can test the quality of evidence
in any research argument.

8.3.1 Accuracy

Above all, your evidence must be accurate; expert readers are
contemptuous of error. Read again our cautions in Chapter 6 about
taking notes that accurately reflect both the text and context of
passages you cite. (See pp. 77–80.) If your paper depends on
data collected in a lab or in the field, record your data completely
and clearly, then double-check both before and as you write them
up. Readers predisposed to be skeptical of your arguments, as all
thoughtful readers should be, can seize on the smallest flaw in your
data, on the most trivial mistake in a quotation or citation (even
your spelling and punctuation), as a sign of your irredeemable un-
reliability. Getting the easy things right shows respect for your readers
and is the best training for the hard things.

Since accuracy is crucial, one way to sort your evidence is by
its reliability. What evidence are you certain of? What evidence do
you wish were more reliable? You can use questionable evidence,
if you acknowledge its quality. In fact, when you point to evidence that
seems to support your claim and then reject it as unreliable, you
show yourself to be cautious and self-critical.

8.3.2 Precision

Researchers want evidence that is not only accurate, but pre-
cise. What counts as precise, though, 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 would give or take tens 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 he asserted that the Soviet Union reached its point of collapse
at 2 P.M. August 18, 1987.)

Though you should not make your evidence seem more precise
than it is, careful readers will hear warning bells if you use 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” probabil-
ity—30%? 50%? 80%? How many acres are destroyed in a “large”
fire? Watch for words like some, most, many, almost, often, usually,
frequently, generally, and so on. These qualifiers can set appropriate
limits on a claim, but they can also fudge it. (We’ll return to
qualifications in Chapter 10.)
8.3.3 Sufficiency

Just as different fields judge the precision of evidence differently, so they differ in gauging its sufficiency. In some fields, researchers base a claim on evidence from a single episode of research: a critic calls a new novel a potboiler after one reading and cites as evidence a single flaw. For a claim about handedness and baldness a psychologist might want results from 150 subjects in a dozen experiments. But before accepting a new cancer drug, the FDA would demand data from thousands of subjects through years of trials. The more at stake, the higher the threshold of sufficiency. It might be interesting to know whether a new novel is a potboiler or more left-handers are bald, but few suffer from wrong results. Not so with a new cancer drug.

Beginners typically present insufficient evidence. They think they have proved a general claim when they find support in one quotation, one bit of data, one personal experience:

Shakespeare must have hated women because in Macbeth they are all either evil or weak.

Researchers almost always need more than one bit of data to support a claim that is substantive and contestable (though sometimes only one bit of evidence will disprove a claim). If you are making a claim even mildly contestable, offer your best evidence, but know that there is always more available, and that it could contain counterexamples fatal to your claim.

Paradoxically, some beginning researchers cite the very lack of evidence as proving their claim:

No evidence shows life elsewhere in the universe, so there must be none.

You can see how useless negative evidence is when you recognize that, on the same question, it can cut both ways:

No evidence shows that life cannot exist elsewhere in the universe, so it probably does.

8.3.4 Representativeness

Data are representative when their variety reflects the variety of the population from which they are drawn and about which you make your claim. What counts as representative also varies by field. Anthropologists might interpret a small culture in New Guinea on the basis of a deep acquaintance with a few individuals, but no sociologist would make a claim about American religious practices based on data from a single Baptist church in Oregon. Beginners always risk offering evidence that fails to reflect the range of available evidence, not because they are careless, but because they cannot imagine what more representative evidence would look like.

Once you collect your evidence, ask your teacher or someone experienced in the field about the kind of additional evidence they would expect to support a claim such as yours. If you want to learn how to judge this for yourself, ask your teacher for examples of arguments that failed because they were based on unrepresentative evidence. We learn what counts as representative by accumulating representative examples of what does not.

8.3.5 Authority

Competent researchers cite the most authoritative sources, but what counts as authoritative again varies by field. Note the authorities whom researchers in your field cite most often, what procedures they trust, what records they regularly cite. If you are dealing with primary sources (original texts of books, plays, diaries, and so on), be sure that your edition is recent and published by a reputable press. There are on-line electronic editions of Shakespeare so sloppily edited that using them would label you as incompetent.

When students are unfamiliar with or can't find authoritative secondary sources—scholarly journals and books—they often resort to tertiary sources: textbooks, articles in encyclopedias, mass-circulation publications like Psychology Today (see our warnings on p. 69). If these are the only sources available, so be it, but never assume that they are authoritative. Be especially cautious about books on complex issues intended for mass audiences. Authors who write for the ordinary reader about brains or black holes are usually competent, sometimes distinguished researchers. But they must always simplify, sometimes oversimplify, and are always out of date. So if you start your research with a popular book, look at the dates of the journals cited in its bibliography.

Authority also depends on being current, but again, different fields judge currency in different ways. In the sciences, out-of-date
might be a month ago. In the humanities, a scholar might judge as reliable a book more than a century old. The best way to gauge currency is to skim dates in bibliographies of recent journal articles. What seems to be the cutoff date? Assume that most textbooks and reference books are out-of-date.

Remember, though, that some of the best research proves that a long-established “current and authoritative” notion is in fact not true. For decades people in many fields casually cited the “fact” that the Inuit peoples of the Arctic have dozens of terms for types of snow. Only when a researcher checked did she find that they in fact may have just three. (Or at least so she claims.)

Finally, distinguish authoritative evidence from “authorities.” In every field, if Expert A says one thing, Expert B will assert the opposite. And someone else will claim to be Expert C, who in fact is no expert at all. When beginning researchers hear experts disagree, they (and the public as well) can become cynical about expertise and dismiss the experts’ knowledge as mere opinion. Don’t confuse uninformed cynicism with informed and thoughtful skepticism.

If you are an intermediate researcher, do not trust any source as authoritative until you know the research in the area. Nothing reveals incompetence more quickly than quoting someone whom everyone in the field scorns—or worse, has never heard of.

Different fields define all these criteria differently, but each demands that evidence meet them. Listen to lectures and class discussions for the kinds of arguments that your instructors criticize because they think the evidence is unreliable. Ask for examples of bad arguments, even if they have to invent them. You will understand what counts as reliable only after you see examples of what does not. Acquiring that knowledge through the mistakes of others is less painful than gaining it through your own.

### 8.3.6 Perspicuity

Your evidence may be accurate, precise, sufficient, representative, and authoritative, but if readers cannot see your evidence as evidence, you might as well offer no evidence at all. Especially when it consists of quantitative data or direct quotations, be sure that your readers can see in it what you want them to see. For example:

In the treadmill test, metabolic values for subjects 1, 3, 7, and 10 were invalid. Pulse rate data at 4, 8, and 10 minutes:

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What should we see here? We would know only if we already knew that metabolic effects occur when pulse rates per minute rise above 170% of the resting rate, and we can do the percentages in our head. Otherwise, these data feel not like evidence but like raw, undigested numbers. (In Chapter 12, we will offer some principles for analyzing and revising tables like this.)

Equally puzzling is the “bare bones” quotation. Here is a student’s claim about Lincoln, citing as evidence the “Gettysburg Address”:

Linear believed that the Founders would have supported the North, because as he said, this country was “dedicated to the proposition that all men are created equal.”

It may be that the Founders would have supported the North, but what in that quotation should make us think that Lincoln believed they would? When pressed, the writer explained:

Since the Founders dedicated the country to the proposition that all men are created equal and Lincoln freed the slaves because he thought they were created equal, then he must have thought that he and the Founders agreed, so they would have supported the North. It's obvious.

Well, it’s not. Quotations rarely speak for themselves; most have to be “unpacked.” If you offer only evidence without interpretation,
your report will seem to be a pastiche of quotations and numbers, suggesting that your data never passed through the critical analysis of a working mind.

Whenever you support a claim with numbers, charts, pictures, quotations—whatever looks like primary data—do not assume that what you see is what your readers will get. Spell out what you want them to see as the point of your evidence, its significance. For a quotation, a good principle is to use a few of its key words just before or after it. Introduce a chart, table, or graph by pointing out both what you want readers to notice and why it is notable.

To understand why evidence fails, you need experience and the ability to anticipate what readers are likely to accept or reject. You gain that ability in two ways. The more painful way is to be the object of criticism. Less painful is to hear from your teachers example of arguments that fail. By understanding failed examples, you can evaluate your own more objectively. So ask.

8.4 Using Evidence to Develop and Organize Your Paper

This scheme for evaluating arguments should encourage you not to approach your readers in a spirit of conflict or coercion. Rather than staking out a position and fiercely defending it against those whom you expect to attack it, imagine yourself and your readers in a civil conversation, working together to create new knowledge, the kind of conversation that you should have been having with your sources.

The emphasis on dialogue in this scheme can also help you find and build your arguments, especially when your notes seem nothing more than a pile of undigested information. As you prepare to draft, use the elements of argument as a principle of organization that helps you anticipate your readers’ concerns. The scheme is useful even in the earliest stages of gathering information. If you understand how researchers put together their arguments, you can do a better job of reading your sources and taking notes on them.

As you review your data, remember that your argument must always be in the form of a claim plus supporting evidence. But you can’t convince readers just by piling up data, because convincing reasons are not a matter of quantity alone, or even of their quality. Considerate researchers also explain their evidence. They present their evidence and then treat it as if it were a claim in a more detailed argument that requires still more evidence. As researchers construct supporting explanatory arguments to support their evidence, they offer readers good reasons why their evidence is sound.

In this next paragraph, the writer claims that the Forest Service has wasted millions, then offers evidence: despite all that money, there’s been no decrease in the incidence of fires. But he doesn’t stop there. He goes on to explain the evidence, pointing out that the total number of fires has remained constant but large fires have decreased. Then he explains why they have decreased.

There is good reason to believe that since 1950, the U.S. Forest Service has wasted millions on trying to prevent fires when it could have better spent those resources on managing small ones that go out of control to cause catastrophic damage. Despite the millions spent on prevention, the number of fires in western forests has remained unchanged since 1930. But starting in 1950, the number of devastating fires began to drop, because it was then that the Service systematically used firefighting aircraft to reach small fires quickly and bring them under control before they could spread. Had the millions spent preventing fires since then been spent on efforts to keep the small ones from spreading, there would be fewer of those massive conflagrations whose costs dwarf the money spent on their prevention.

Every researcher must support contestable claims with evidence, but she must then explain that evidence, treating each major bit of evidence as a claim in a subordinate argument that needs its own evidence. In fact, every research report consists of multiple arguments of different kinds, but all in the service of the central claim that the researcher wants to make. So the structure of your paper will always be more elaborate (and less linear) than a single claim supported by a single body of evidence. The evidence that supports a main claim will itself be divided into groups of smaller arguments, each of them structured as a (sub-)claim with its own supporting evidence:
If you like doing things visually, put this on a wall-sized chart. Pin up index cards as in the figure above, then try different combinations of sub-arguments. Don't worry about organizing information within each card; just focus on getting it into middle-sized groups that you can arrange and then rearrange in a variety of configurations.

If this chart looks like an outline, it is. But it outlines not your paper but your argument. When you begin to outline your first draft, you'll have to think more about your readers: 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, but they are not pressing when you are only at the point of discovering your argument.

**QUICK TIP:**
**A TAXONOMY OF CONTRADICTIONS**

This "Quick Tip" will probably be most useful to more advanced students, but beginners should become familiar with these kinds of contradictions because they will see them in everything they read.

You cannot determine how "significant" a claim is until you know how much others in your field must change their thinking in order to accept it. In all fields, though, a common way of implying significance is to contradict settled ideas. (And by claiming that something your readers believe is incomplete or incorrect, you create the condition of a problem. Review pp. 51–55.) We can't tell you what ideas you should contradict, but we can show you some standard kinds of contradictions that turn up again and again in research literature.

**SUBSTANTIVE CONTRADICTIONS**

If you can show that a previous researcher has gotten something wrong, you can easily signal the significance of your argument. The more authoritative the mistake, the greater the significance. Three cases are most common:

- You find an error in a fact or computation.
- You have new facts that either qualify old facts or replace them.
- You find a mistake in reasoning and from the same facts come to a different conclusion.

**FEATURE CONTRADICTIONS**

Other kinds of contradictions follow patterns that are so standard that they are like those categories of questions we encouraged you to ask about your topic (pp. 39–42). We do not, however, encourage you to memorize or to limit yourself to the items on this list. We offer them only as a way to encourage your thinking and imagination.

**Category Contradictions**

*It has often been claimed that certain religious groups are "cults" because of how they differ from mainstream churches, but if we look at those organizations from a historical perspective, it is not clear when a so-called "cult" becomes a "sect" or even a "religion."*
In this pattern, you claim that your argument contradicts the categories that others in your field accept. Generally, you promise to show either that while others place something in a category, they should not; or that while others do not place something in a category, they should. (In the examples, substitute for X and Y terms of your own.)

1. Though X seems to be an example of Y, it is not.

Though cigarettes seem to be addictive, they are not.

Or the case can be reversed:

Though cigarettes seem not to be addictive, they are.

Other common patterns of category contradictions:

2. Though X seems to include Y as an example, it does not.

3. Though X and Y seem to be similar, they are different.

4. Though X seems to be characteristic of Y, it is not.

Part-Whole Contradictions

In recent years, some have argued that athletics is only entertainment and therefore should have no place in higher education, but in fact it can be shown that without athletics education would suffer.

This pattern is like the category contradiction, except that you show that others have mistaken the relationship among the parts of something.

1. Though X seems to be an integral part of Y, it is not.

2. Though X seems to have Y as an integral part, it does not.

3. Though the parts of X seem to be systematic, they are not.

4. Though X seems to be general, it is only local.

Internal Developmental Contradictions

Recently, the media have been headlining rising crime, but in fact the overall crime rate has been falling for the last few years.

In this pattern, you claim that others have mistaken the origin, development, or history of your object of study.

1. Though X seems to be stable/rising/falling, it is not.

2. Though X may seem to have originated in Y, it didn’t.

3. Though both X and Y may seem to have come from Z, X didn’t.

4. Though the sequence of development of X seem to be 1, 2, and 3, it is not.

External Cause-Effect Contradictions

A new way to stop juveniles from becoming criminals is the “boot camp” concept. But evidence suggests that it does little good.

In this pattern, you claim that others have either failed to see causal relationships or seen them where they do not exist.

1. Though X seems not to be causally related to Y, it is.

2. Though X seems to cause Y, both X and Y are caused by Z.

3. Though X and Y seem to correlate, they do not.

4. Though X seems to be sufficient to cause Y, it is not.

5. Though X seems to cause only Y, it also causes A, B, and C.

Value Contradictions

In this pattern, you simply contradict received valued judgments.

1. Though X seems to be good, it is not.

2. Though X seems to be useful for Y, it is not.

Perspectival Contradictions

Some contradictions run deeper. In the standard pattern of contradicting features, you reverse a widely held supposition, but you do not change the terms of the discussion. In perspectival contradictions, you step outside of the standard discussion to suggest that we must look at things in an entirely new way.

It has generally been assumed that advertising is best understood as a purely economic function, but in fact it has served as a laboratory for new art forms and styles.

1. We have generally discussed X in Y context, but there is a new context of understanding that we should consider—social, political, economic, intellectual, academic, gender specific, etc.
2. We have generally seen X as explained by theory Y, but there is a new foundational theory or a theory from another field that can be applied to X that makes us see it differently.

3. There is a new value system by which to evaluate X.

4. We long ago used to analyze X using theory/value system Y, then we rejected X as inapplicable to Y, but Y is relevant to X in a new way.

If you find a plausible contradiction of any of these kinds, keep track of it, because you will be using it when you write your introduction. More of that in Chapter 15.

CHAPTER NINE

Warrants

This chapter raises issues more complex than some beginning researchers might want to wrestle with. Advanced students, however, should ponder them.

Good research should change our thinking. It asks us to accept a new idea, or in the strongest case, to rearrange our system of beliefs in fundamental ways. Such changes we rightly resist without good reasons. So when you ask your readers to change their minds, you owe them your best reasons for doing so. But you can't just pile up more and more data, no matter how reliable, because good reasons go beyond their sheer quantity, even beyond their quality. Unlike those who never apologize and never explain, considerate researchers always ask themselves whether they need to explain why their data are not just reliable but relevant.

9.1 Warrants: The Basis of Our Belief and Reasoning

To explain why your data are relevant, you may have to articulate an element of your argument that is often left tacit. It shows readers why any particular body of data should count as evidence in support of your claim. This connection between claim and evidence is your warrant. Here again is the argument about wet streets and rain:

Claim: It must have rained last night.

Why do you think that? (That is, what’s your evidence?)

Evidence: The streets are wet this morning.

What makes you think that wet streets should count as evidence of rain? (That is, what’s your warrant?)

If we accept the evidence as reliable—that the streets were indeed wet this morning—what principle or premise, what underlying assumption must we accept before we believe the claim that