



# The Craft of Research

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*Prologue*  
**ASSEMBLING A RESEARCH ARGUMENT**

Once you've accumulated a stack of notes, photocopies, and summaries, don't keep piling them up until they spill off your desk (or you lose track of them on your hard drive). It's time to impose some order on what you've found. The risk, however, is that you just group your data under obvious headings, arrange them into some arbitrary sequence, and start writing. Do that and you're likely to end up with a data dump that says little more than *Here are some facts about my topic*. You need a more powerful principle of organization, one based not on your data but on the solution to your problem and the logic of its support. That support takes the form of a research *argument*.

Now a research argument is not like the heated exchanges we hear every day. Those arguments usually involve a dispute: children argue over a toy; roommates over the stereo; drivers about who had the right-of-way. Such arguments can be polite or nasty, but most involve conflict, with winners and losers. To be sure, researchers sometimes wrangle over each other's reasoning and evidence and occasionally erupt into charges of carelessness, incompetence, and even fraud. But that's 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 lively conversation with amiable colleagues. It is a conversation in which you and your imagined readers *cooperatively* explore an issue that you both think is important to resolve, a conversation that aims not at coercing each other into agreement, but at cooperatively finding the best answer to an important but challenging question.

In that conversation, though, you do more than politely trade opinions. We are all entitled to our opinions, and no law requires us to explain or defend them. But in a research argument, we are expected to make claims not just because we believe they're true but because we think they are new and important enough to change what readers think. Then we support those claims with sound reasons and good evidence, as if our readers were asking us, quite reasonably, *Why should I believe that?*

In fact, although we more easily notice the heated disputes, we have many more of these collaborative arguments every day, each time we trade good reasons for deciding what to do—when discussing with a friend what car to buy, what movie to rent, even whether to get pizza or Chinese. As with those friendly discussions, a research argument doesn't force a claim on readers. Instead, you start where your readers do, with their predictable questions about why they should accept your claim, questions they ask not to sabotage your argument but to test it, to help both of you find and understand a truth worth sharing. Of course, when you write an argument, no one is there to ask you those questions in person. So you must imagine them on your readers' behalf. It's those imagined questions and your answers that make your argument seem to be, if not an actual conversation, then at least in the spirit of one.

As you become an experienced writer, you will plan your argument and your paper as a single process. But if you are writing one of your first research reports, it's useful to do that in two steps: first, assemble your argument to see if it persuades you; then revise it into a report that you think will persuade your reader. In chapter 7 we survey the elements that constitute a research argu-

ment. In chapters 8–11 we discuss each element in detail. In part 4 we discuss how to turn the plan for your argument into a plan for your paper.

#### 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 about research projects, trying out ideas before writing them up. And when they don't know their readers, they try to find out. For example, some physicists wanted biologists to notice their research, but were unhappy when the first manuscript they sent to a biology journal was rejected. So they attended biology conferences, read biology journals, even hung around the biology department's faculty lounge. After they figured out how biologists think, they rewrote their reports and published papers that influenced the field.

Students seldom have the time or opportunity to hang around their readers, but you can do some homework:

- 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 she thinks any seem doubtful or confusing.
- 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 endlessly to think about your audience. To do that well, you must get to know actual readers.

## CHAPTER SEVEN

## Making Good Arguments: An Overview

*In this chapter we discuss the nature of a research argument and the five questions whose answers constitute one.*

You can't wait to plan an argument supporting the answer to your question until you have every last bit of data. In the first place, you'll never get them all. But more important, you can't know what data you need until you sketch the argument they fit into. Only after you sort your data into the elements of an argument that answers your readers' predictable questions can you see what research you still have to do. But more than that, when you plan your argument early, you grasp your material better and avoid wasted effort, especially return trips to the library.

## 7.1 ARGUMENT AS A CONVERSATION WITH READERS

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

A: I hear last semester was a little rocky. 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: Why will that 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. [B offers specific instances on which he based his reason.]

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 CPA? [A asks about the limits of B's claim.]

B: I should. I'm hoping for 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 yourself in that conversation, as either A or B, you'll find nothing strange about assembling the argument of a research report, because every argument, research or not, is built out of the answers to five questions in that conversation, questions that you must ask yourself on your readers' behalf:

1. What is my claim?
2. What reasons support my claim?
3. What evidence supports my reasons?
4. Do I acknowledge alternatives/complications/objections, and how do I respond?
5. What principle makes my reasons relevant to my claim? (We call this principle a warrant.)

## CLAIMING SOME TERMS

So far, we've used two terms to name the sentence that sums up the results of your research: in the context of questions, we called it your *answer*; in the context of problems, we called it your *solution*. Now in the context of an argument, we'll call it your *claim*.

A *claim* is a sentence that asserts something that may be true or false and so needs support. *The world is warming up*.

The *main claim* of a report is the sentence (or more) that the whole report supports (some call this sentence your *thesis*). If you were report to prove that the world is warming up, the sentence stating that would be your main claim.

A *reason* is a sentence supporting a claim, true or not.

These terms can be confusing, because a reason is also a subclaim that can be supported by more reasons. What we call it depends on its context. For example,

TV can have harmful psychological effects on children, <sup>and claim</sup> because when they are constantly exposed to violent images, they come to think violence is natural. <sup>claim/reason</sup> Those exposed to lots of such visual entertainment tend to adopt the values of what they see. <sup>claim/reason supporting the reason</sup>

Reasons support main claims, but "lower" reasons can support "higher" reasons.

## 7.2 SUPPORTING YOUR CLAIM

At the core of every research report is the answer to your research question, the solution to your problem—your main claim. You have to back up that claim with two kinds of support: reasons and evidence.

## 7.2.1 Base Claims on Reasons

The first kind of support, a reason, is a statement that gives your readers cause to accept your claim. We often join a reason to a claim with *because*:

The emancipation of Russian peasants was an empty gesture, <sup>claim</sup> because it did not improve the material quality of their daily lives. <sup>reason</sup>

TV violence can have harmful psychological effects on children <sup>claim</sup> because their constant exposure to violent images makes them think that violence is natural. <sup>reason</sup>

You usually need more than one reason to support a contestable claim, and in a detailed argument, each reason will usually be a separate sentence.

## 7.2.2 Base Reasons on Evidence

The second kind of support is the evidence on which you base your reasons. Now the distinction between reasons and evidence can seem just a matter of semantics, and in some contexts the words do 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, and distinguishing them is crucial in making sound arguments. Compare these two sentences:

What evidence do you base your reason on?

What reason do you base your evidence on?

That second sentence seems odd: we don't base evidence on reasons; we base reasons on evidence.

There are other differences:

- We think up reasons by the action of our mind.
- We have to search for evidence "out there" in the "hard" reality of the world, then make it available for everyone to see.

It makes no sense to ask, *Where do I go to see your reasons?* It does make sense to ask, *Where do I go to see your evidence?* For example, we can't see TV naturalizing violence for children, but we could see a child answer the question: *Do you think that fighting on TV is real?* In principle, *evidence* is what you and your readers can see, touch, taste, smell, or hear (or is accepted by everyone as a remembered fact—the sun came up yesterday morning). That

oversimplifies the idea of "evidence from out there," but it illustrates the difference between evidence and reasons.

In casual conversation, we usually support a claim with just a reason:

We should leave <sup>claim</sup>It looks like rain <sup>reason</sup>.

Few ask, *What's your evidence that it looks like rain?* But when you address serious issues, readers expect you to base each reason on its own foundation of evidence, because careful readers don't accept reasons at face value. They ask for the evidence, the data, the facts on which you base those reasons:

TV violence can have harmful psychological effects on children <sup>claim 1</sup> because those exposed to lots of TV tend to adopt the values of what they see <sup>reason 1 supporting claim 1 / claim 2</sup>. Constant exposure to violent images makes them unable to distinguish fantasy from reality <sup>reason 2 supporting reason 1 and claim 2</sup>. Smith (1997) found that children ages 5–7 who watched more than three hours of violent television a day were 25 percent more likely to say that what they saw on television was "really happening." <sup>evidence supporting reason 2</sup>

With reasons and evidence, we have the core of a research argument:

CLAIM *because of* REASON *based on* EVIDENCE

To offer a complete argument, however, you must add at least one more element and often a second: you must acknowledge other points of view and offer what we call *warrants*, which show how a reason is *relevant* to a claim.

### 7.3 ACKNOWLEDGING AND RESPONDING TO ANTICIPATED

#### QUESTIONS AND OBJECTIONS

A responsible researcher supports a claim with reasons based on evidence. But unless your readers think exactly as you do (unlikely, given the fact that you have to make an argument in the first place), they may draw a different conclusion or even think of evidence you haven't. No thoughtful reader will accept your claim based solely on *your* views: you must also address theirs.

Careful readers will question *every* part of your argument, so you must anticipate as many of their questions as you can, and then acknowledge and respond to the most important ones. For example, when readers consider the claim that children exposed to violent TV adopt its values, they might wonder whether children are drawn to TV violence because they are *already* inclined to violence. 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 <sup>claim 1</sup> because those exposed to lots of it tend to adopt the values of what they see <sup>reason 1 supporting claim 1 / claim 2</sup>. Their constant exposure to violent images makes them unable to distinguish fantasy from reality <sup>reason 2 supporting reason 1 and claim 2</sup>. Smith (1997) found that children ages 5–7 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." <sup>evidence supporting reason 2</sup> **Of course, some children who watch more violent entertainment might already be attracted to violence.** <sup>acknowledgment</sup> But Jones (1999) found that children with no predisposition to violence were as attracted to violent images as those with a violent history. <sup>response</sup>

The challenge all researchers face, however, is not just responding to readers' questions, alternatives, and objections, but imagining them in the first place. (In chapter 10 we'll discuss the 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:

CLAIM REASON EVIDENCE

I claim that because of these reasons which I base on this evidence

I acknowledge these questions, objections, and alternatives, and I respond to them with these arguments.

ACKNOWLEDGMENT AND RESPONSE

### 7.4 WARRANTING THE RELEVANCE OF YOUR REASONS

Even when your readers agree that a reason is true, they may still object that it's not *relevant* to your claim. It's what most of us would say to this little argument:

We should leave <sup>claim</sup> because  $2 + 2 = 4$ .<sup>reason</sup>

Most of us think, *I don't get it. What's the connection?*

This is where the logic of an argument can get difficult to understand. For example, suppose you offer this less bizarre argument:

We are facing significantly higher health care costs in Europe and North America<sup>claim</sup> because global warming is moving the line of extended hard freezes steadily northward.<sup>reason</sup>

Readers might accept the *truth* of that reason, but question its *relevance* to the claim, asking:

What do higher health costs have to do with hard freezes? I don't see the connection.

To answer, you must offer a *general* principle that justifies relating your *particular* reason to your *particular* claim:

When an area has fewer hard freezes, it must pay more to combat new diseases carried by subtropical insects no longer killed by those freezes.

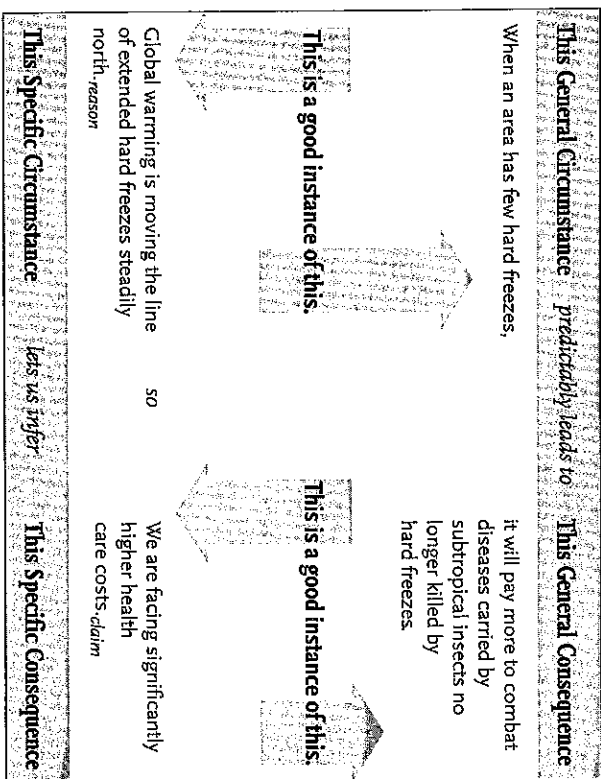
Like all warrants, that one says that if a general circumstance exists (an area has fewer hard freezes), then we can infer a general consequence (that area will have higher costs to combat new diseases). The logic behind all warrants is that if a generalization is true, then so must be specific instances of it.

But for that logic to work, readers must agree with four things. Two are easy to understand:

1. The warrant is true: fewer hard freezes in fact mean higher medical costs.
2. The reason is true: hard freezes in fact are moving north.

The next two are more difficult:

3. The specific circumstance in the reason qualifies as a *plausible instance* of the general circumstance in the warrant.
  4. The specific consequence in the claim qualifies as a *plausible instance* of the general consequence in the warrant.
- We can illustrate that logic like this:

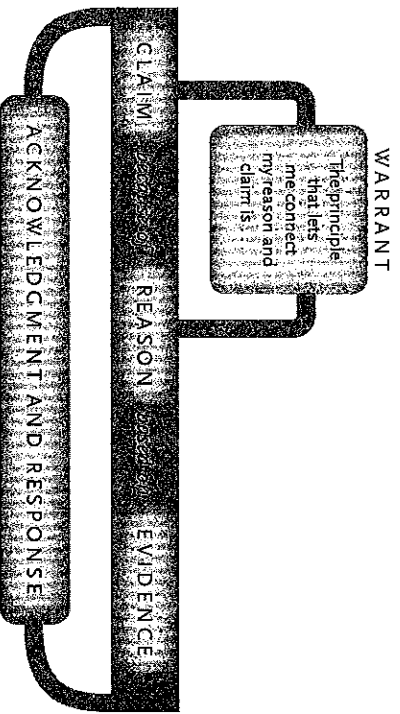


As we'll see, it's not easy to decide when you even need a warrant. Experienced researchers state them only when they think readers might question whether a reason is relevant to their claim. If you think they will see its relevance, you don't need a warrant. But if they might not, you must add a warrant to justify the connection, usually before you make it:

**When an area has fewer hard freezes, it can expect higher medical costs to cope with diseases carried by subtropical insects that do not survive freezes.**<sup>warrant</sup> Europe and North America must thus expect higher health care costs<sup>claim</sup> because global warming is

moving the line of extended hard freezes steadily north. In the last one hundred years, the line of hard freezes lasting more than two weeks has moved north at the rate of roughly . . . *evidence*

We can add warrants to our diagram to show that they connect a claim and its supporting reason:



(We know this matter of warrants is not easy to grasp; we explain it again in more detail in chapter 11.)

### 7.5 BUILDING A COMPLEX ARGUMENT OUT OF SIMPLE ONES

Those five elements constitute the core of a “basic” argument. But arguments in research reports are more complex.

- We almost always support a claim with two or more reasons, each of which must be supported by its own evidence and perhaps justified by its own warrant.
- Since readers think of many alternatives and objections to any complex argument, careful researchers typically have to respond to more than one or two of them.

Moreover, each element of an argument may itself have to be treated as a subclaim, supported by its own argument:

- Each response to an objection may need reasons and evidence to support it.
- If your readers doubt the truth of a warrant, you may have to treat it as a subclaim and support it with its own argument, including reasons, evidence, and perhaps even its own warrant with its own acknowledgments and responses.

Only the evidence “stands alone,” but even then you must explain where you got it and maybe why you think it’s reliable, and that may require yet another argument.

And finally, most arguments include background, definitions, explanations of issues that readers might not understand, and so on. If, for example, you were making an argument about the relationship between inflation and money supply to readers not familiar with economic theory, you would have to explain how economists define “money.” Serious arguments are complex constructions. Chapters 8–11 explain them in detail.

### 7.6 CREATING AN ETHOS BY THICKENING YOUR ARGUMENT

This process of “thickening” an argument is one way that writers earn the confidence of their readers. Readers judge your arguments not just by the facts you offer, but by how well you anticipate their questions and concerns. In so doing, they also judge the quality of your mind, even your implied character, traditionally called your *ethos*. Do you seem to be the sort of person who considers issues from all sides, who supports claims with evidence that readers accept, and who thoughtfully considers other points of view? Or do you seem to be someone who sees only what matters to her and dismisses or even ignores the views of others?

When you acknowledge other views and explain your principles of reasoning in warrants, you give readers good reason to work with you in developing and testing new ideas. In the long run, the ethos you project in individual arguments hardens into your reputation, something every researcher must care about, because your reputation is the tacit sixth element in every argument



you write. It answers the unspoken question, *Can I trust you?* That answer must be *Yes*.

#### COGNITIVE OVERLOAD: SOME REASSURING WORDS

It's at about this point that many students new to research begin to feel overwhelmed. If so, your anxieties have less to do with your intelligence than with inexperience. One of us was explaining to teachers of legal writing how being a novice makes many first-year law students feel like incompetent writers. At the end of the talk, one woman reported that she had been a professor of anthropology whose published work was praised for the clarity 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 going through 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 better she understood the law, the better she wrote about it.

If you feel overwhelmed, you can take comfort in that story, as did one reader who e-mailed us this:

*In Craft of Research* you write about a woman who switched from anthropology to law and suddenly found herself unable to write clearly. After being an assistant professor of graphic design for five years, I recently switched to anthropology and suddenly found that writing anthropology papers is like pulling teeth. I thought to myself that I might have a degenerative brain disorder! I laughed out loud when I read about the anthropologist who switched to law. It made me feel a bit better.



#### QUICK TIP: A Common Mistake—Falling Back on What You Know

Arguments fail for many reasons, but inexperienced researchers often stumble when they rely too much on what feels familiar and fall back on kinds of argument they already know. If you learned in a first-year writing class to take a personal stand and search for evidence in your own experience, do not assume that you can do the same in fields that emphasize “objective data,” such as sociology or experimental psychology. On the other hand, if as a psychology or biology major you learned to gather hard data and subject them to statistical analysis, 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 have to learn what’s distinctive in the way a field handles those elements and be flexible enough to adapt, trusting the skills you’ve learned.

You may oversimplify in a different way after you learn your field’s typical problems, methods, schools of thought, and standard forms of argument. When some new researchers succeed with one kind of argument, they keep making it. They fail to see that their field, like every other, has a second kind of complexity: competing methodologies, competing solutions, competing goals and objectives—all marks of a lively field of inquiry. So when you learn to make one kind of argument, don’t assume that you can apply it to every new claim. Seek out alternative methods, formulate not only multiple solutions but multiple ways of supporting them, ask whether others would approach your problem differently.

If you are new to your topic or to your field, you’ll need ways to manage the complexity of new ideas and new ways of thinking. We discuss many of them in this book. But guard against the easy but risky way: uncritically imposing a familiar method on a new problem. The more you learn, the more you’ll recognize that while things are not as blindingly complex as you first feared, neither are they as simple as you then hoped.