

# The Craft of Research

FIFTH EDITION

WAYNE C. BOOTH, GREGORY G. COLOMB,  
JOSEPH M. WILLIAMS, JOSEPH BIZUP,  
AND WILLIAM T. FITZGERALD

*Over  
1 Million  
Copies  
Sold*



# The Craft of Research

FIFTH EDITION

WAYNE C. BOOTH, GREGORY G. COLOMB,  
JOSEPH M. WILLIAMS, JOSEPH BIZUP,  
AND WILLIAM T. FITZGERALD



*Over  
1 Million  
Copies  
Sold*





# The Craft of Research



## **Chicago Guides to Writing, Editing, and Publishing**

*Writing for Social Scientists*

HOWARD S. BECKER

*Writing Your Journal Article in Twelve Weeks*

WENDY LAURA BELCHER

*Writing Ethnographic Fieldnotes*

ROBERT M. EMERSON, RACHEL I. FRETZ, AND LINDA L. SHAW

*The Chicago Guide to Grammar, Usage, and Punctuation*

BRYAN A. GARNER

*The Art of Creative Research*

PHILIP GERARD

*On Revision*

WILLIAM GERMANO

*From Notes to Narrative*

KRISTEN GHODSEE

*The Craft of Scientific Communication*

JOSEPH E. HARMON AND ALAN G. GROSS

*Thinking Like a Political Scientist*

CHRISTOPHER HOWARD

*Listening to People*

ANNETTE LAREAU

*Cite Right*

CHARLES LIPSON

*How to Write a BA Thesis*

CHARLES LIPSON

*Economical Writing*

DEIRDRE NANSEN MCCLOSKEY

*The Chicago Guide to Writing about Multivariate Analysis*

JANE E. MILLER

*The Chicago Guide to Writing about Numbers*

JANE E. MILLER

*The Chicago Guide to Communicating Science*

SCOTT L. MONTGOMERY

*Where Research Begins*

THOMAS S. MULLANEY AND CHRISTOPHER REA

*The Writer's Diet*

HELEN SWORD

*A Manual for Writers of Research Papers, Theses, and Dissertations*

KATE L. TURABIAN

*Student's Guide to Writing College Papers*

KATE L. TURABIAN

*Tales of the Field*

JOHN VAN MAANEN

*A complete list of series titles is available on the University of Chicago Press website.*

# **The Craft of Research**

**Fifth Edition**

**Wayne C. Booth**

**Gregory G. Colomb**

**Joseph M. Williams**

**Joseph Bizup**

**William T. FitzGerald**

The University of Chicago Press  
Chicago and London

The University of Chicago Press, Chicago 60637

The University of Chicago Press, Ltd., London

© 1995, 2003, 2008, 2016, 2024 by The University of Chicago

All rights reserved. No part of this book may be used or reproduced in any manner whatsoever without written permission, except in the case of brief quotations in critical articles and reviews.

For more information, contact the University of Chicago Press, 1427 E. 60th St., Chicago, IL 60637.

Published 2024

Printed in the United States of America

33 32 31 30 29 28 27 26 25 24    1 2 3 4 5

ISBN-13: 978-0-226-83388-0 (cloth)

ISBN-13: 978-0-226-82667-7 (paper)

ISBN-13: 978-0-226-82666-0 (ebook)

DOI: <https://doi.org/10.7208/chicago/9780226826660.001.0001>

Library of Congress Cataloging-in-Publication Data

Names: Booth, Wayne C., author. | Colomb, Gregory G., author. | Williams, Joseph M., author. | Bizup, Joseph, 1966– author. | FitzGerald, William T., author.

Title: The craft of research / Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, Joseph Bizup, William T. Fitzgerald.

Other titles: Chicago guides to writing, editing, and publishing.

Description: Fifth edition. | Chicago ; London : The University of Chicago Press, 2024. | Series: Chicago guides to writing, editing, and publishing | Includes bibliographical references and index.

Identifiers: LCCN 2023053638 | ISBN 9780226833880 (cloth) | ISBN 9780226826677 (paperback) | ISBN 9780226826660 (ebook)

Subjects: LCSH: Research—Methodology. | Technical writing. | BISAC: LANGUAGE ARTS DISCIPLINES / Writing / General | REFERENCE / Research Classification: LCC Q180.55.M4 B66 2024 | DDC 001.4/2—dc23/eng/20231201

LC record available at <https://lccn.loc.gov/2023053638>

♾ This paper meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

*In Memoriam*

*Wayne C. Booth*

(1921–2005)

*Gregory G. Colomb*

(1951–2011)

*Joseph M. Williams*

(1933–2008)

# Contents

## Preface: The Aims of This Edition

## Introduction: Your Research and Your Audience

- I.1 What Is Research?
- I.2 Connecting with Your Audience
- I.3 Understanding Your Role
- I.4 Imagining the Role of Your Audience
- I.5 How to Use This Book
  - Quick tip: A Checklist for Understanding Your Audience

## I Asking Questions, Seeking Answers

- Prologue: Planning Your Project—An Overview
- Quick Tip: Sustaining a Research Project Alone and in Groups

### 1 From Topics to Questions

- 1.1 From an Interest to a Topic
- 1.2 From Focused Topic to Research Question
- 1.3 The Most Significant Question: *So What?*
- Quick Tip: Finding Topics

### 2 From Questions to a Problem

- 2.1 Understanding Research Problems
- 2.2 Distinguishing Between “Pure” and “Applied” Research

2.3 Connecting Research to Practical Consequences

2.4 Finding a Good Research Problem

2.5 Learning to Work with Problems

► Quick Tip: Making an Opportunity of Inexperience

## **II Sources and Resources**

Prologue: Sources and Authentic Research

### **3 Finding and Evaluating Sources**

3.1 Understanding Three Types of Sources

3.2 Making the Most of the Library

3.3 Locating Sources Online

3.4 Evaluating Sources for Relevance and Reliability

3.5 Looking Beyond Predictable Sources

3.6 Using People to Further Your Research

► Quick Tip: Using Generative Artificial Intelligence

### **4 Engaging Sources**

4.1 Recording Complete Bibliographic Information

4.2 Engaging Sources Actively

4.3 Reading for a Problem

4.4 Reading for Arguments

4.5 Reading for Data and Support

4.6 Taking Notes Systematically

4.7 Annotating Your Sources

► Quick Tip: Managing Moments of Uncertainty

## **III Making Your Argument**

## Prologue: Assembling a Research Argument

### 5 Making Good Arguments: An Overview

- 5.1 Argument as Conversation
- 5.2 Assembling the Core of Your Argument
- 5.3 Explaining Your Reasoning with Warrants
- 5.4 Acknowledging and Responding to Anticipated Questions and Objections
- 5.5 Planning Your Research Argument
- 5.6 Creating Your Ethos
  - Quick Tip: A Common Mistake—Falling Back on What You Know

### 6 Making Claims

- 6.1 Determining the Kind of Claim You Should Make
- 6.2 Evaluating Your Claim
- 6.3 Qualifying Claims to Enhance Your Credibility
  - Quick Tip: Make Your Claim Contestable

### 7 Assembling Reasons and Evidence

- 7.1 Using Reasons to Plan Your Argument
- 7.2 Distinguishing Evidence from Reasons
- 7.3 Determining the Kind of Evidence You Need
- 7.4 Distinguishing Evidence from Reports of It
- 7.5 Evaluating Your Evidence
  - Quick Tip: Assess Your Evidence as You Gather It

### 8 Warrants

- 8.1 Warrants in Everyday Reasoning

- 8.2 Warrants in Research Arguments
- 8.3 Testing Warrants
- 8.4 Knowing When to State a Warrant
- 8.5 Using Warrants to Test Your Argument
- 8.6 Challenging Others' Warrants
  - Quick Tip: Reasons, Evidence, and Warrants

## 9 Acknowledgments and Responses

- 9.1 Questions About Your Research Problem
- 9.2 Questions About the Soundness of Your Argument
- 9.3 Imagining Alternatives to Your Argument
- 9.4 Deciding What to Acknowledge
- 9.5 Framing Your Responses as Sub-Arguments
- 9.6 The Vocabulary of Acknowledgment and Response
  - Quick Tip: Three Predictable Disagreements

## IV Delivering Your Argument

### Prologue: Planning, Writing, and Thinking

## 10 Planning and Drafting

- 10.1 Why a Formal Paper?
- 10.2 Planning Your Paper
- 10.3 Avoiding Three Common but Flawed Patterns
- 10.4 Turning Your Plan into a Draft
  - Quick Tip: Managing Anxiety as a Writer

## 11 Revising and Organizing

- 11.1 Thinking Like a Reader

- 11.2 Revising Your Frame
- 11.3 Revising Your Argument
- 11.4 Revising Your Organization
- 11.5 Checking Your Paragraphs
- 11.6 Letting Your Draft Cool, Then Revisiting It
  - Quick Tip: Abstracts

## 12 Incorporating Sources

- 12.1 Summarizing, Paraphrasing, and Quoting
- 12.2 Creating a Fair Summary
- 12.3 Creating a Fair Paraphrase
- 12.4 Using Direct Quotations
- 12.5 Mixing Summary, Paraphrase, and Quotation
- 12.6 Showing Readers How Evidence Is Relevant
- 12.7 The Social Importance of Citing Sources
- 12.8 Four Common Citation Styles
- 12.9 Guarding Against Inadvertent Plagiarism
  - Quick Tip: Indicating Citations in Your Paper

## 13 Communicating Evidence Visually

- 13.1 Choosing Visual or Verbal Representations
- 13.2 Choosing the Most Effective Graphic
- 13.3 Designing Tables, Charts, and Graphs
- 13.4 Specific Guidelines for Tables, Bar Charts, and Line Graphs
- 13.5 Representing Data Ethically
  - Quick Tip: Look for Opportunities to Include Visual Evidence

## **14** Introductions and Conclusions

- 14.1 The Common Structure of Introductions
- 14.2 Step 1: Stating a Context
- 14.3 Step 2: Stating Your Problem
- 14.4 Step 3: Stating Your Response
- 14.5 Setting the Right Pace
- 14.6 Finding Your First Few Words
- 14.7 Writing Your Conclusion
  - Quick Tip: Use Key Terms in Titles

## **15** Revising Style: Telling Your Story Clearly

- 15.1 Judging Style
- 15.2 The First Two Principles of Clear Writing
- 15.3 A Third Principle: Old Before New
- 15.4 Choosing Between the Active and Passive Voice
- 15.5 A Final Principle: Complexity Last
- 15.6 Editorial Polish
  - Quick Tip: The Quickest Revision Strategy

## **16** Research Presentations

- 16.1 Presenting to Auditors
- 16.2 Giving a Preliminary Presentation
- 16.3 Giving a Final Presentation
  - Quick Tip: Treat Your Presentation as a Performance

## **V** Some Last Considerations

## **17** The Ethics of Research

- [17.1 Your Ethical Obligation to Yourself](#)
- [17.2 Your Ethical Obligations to Your Audience and Fellow Researchers](#)
- [17.3 Research and Social Responsibility](#)
- [17.4 A Final Thought](#)

## **18 Advice for Teachers**

- [18.1 The Risks of Imposing Formal Rules](#)
- [18.2 On Assignment Scenarios: Creating a Ground for Curiosity](#)
- [18.3 Accepting the Inevitable Messiness of Learning](#)

[Our Debts](#)

[Appendix: A Brief Guide to Bibliographic and Other Resources](#)

[Index](#)

## Preface

# The Aims of This Edition

This fifth edition of *The Craft of Research* is the second that we—Joseph Bizup and William T. FitzGerald—have prepared. We have regarded our work as an honor and a responsibility. It is an honor to rework a book that so accessibly captures and conveys the wisdom of three gifted scholars and teachers both of us admire: Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams. We also recognize our responsibility to the book’s readers, both those who are new to it and those it has attracted over the years. Indeed, this audience is an international one; the book has been translated into Arabic, Chinese, Korean, Russian, Spanish, Tibetan, and many other languages. Booth, Colomb, and Williams addressed their book to an audience ranging from advanced high school students and first-year undergraduates in composition classes, to graduate students and other advanced researchers, and even to professionals working in fields such as business, government, medicine, and law.

Like previous editions, this fifth edition aims to help all of these sorts of readers become better researchers, thinkers, and communicators. Specifically, this edition aims to

- guide its readers through the process of identifying a meaningful topic or question and then developing it into a significant research problem and project;
- help them make a rich and compelling argument informed by the results of their research;
- show them how to communicate that argument effectively in writing or in a presentation.

Other guides address these matters, but this one is different. Most acknowledge that researchers rarely move in a straight line from finding a

project, to doing their research, to stating a thesis, and then perhaps to drafting and revision. Experienced researchers loop back and forth, move forward a step or two before going back in order to move ahead again, change directions, all the while anticipating stages not yet begun. But so far as we know, no other guide gives the same balanced attention to the processes of research, argumentation, and communication, as well as to how these processes influence each other.

We have sharpened the conceptual framework of the book (more on that below), but it remains eminently practical. It offers concrete and explicit heuristics and advice for

- how to turn a vague interest into a problem that you care about and that others will think is worth posing and solving;
- how to develop a research project that lets you address that problem;
- how to build an argument that your audience will take seriously;
- how to anticipate and then address the reservations of thoughtful but critical respondents;
- how to create an introduction and conclusion that answer the toughest question researchers face: *So what?*;
- how to read your own writing as readers will and thereby know when and how to revise it;
- how to deliver a research argument not just in writing but also in a talk or presentation.

This advice is grounded in two intellectual and ethical convictions that motivated Booth, Colomb, and Williams and that we also share. The first is that research, argumentation, and communication are inherently communal activities. The book therefore emphasizes throughout that research must matter not just to the researcher but to others, and that research arguments are ultimately not just judged by but created in the service of those who receive them. (As one of our own colleagues, a chemist, put it, “If you aren’t sharing your results, you’re just doing alchemy in your tower.”) The second is that the skills of research, argumentation, and writing and communication can be taught explicitly and learned by everyone. Some aspects of advanced

research can be learned only in the context of a specific community of researchers, but even if you don't yet belong to one, you can still create something like it on your own. Our final chapter, "Advice for Teachers," suggests ways to do that.

## What This Edition Does Not Address

Like the previous editions of *The Craft of Research*, this fifth edition treats research generally. It offers a conceptual framework (how to *think* about research, argumentation, and communication) along with practical advice (how to *do* research, *make* arguments, and *communicate* those arguments effectively) that we hope will help you become a better researcher, thinker, and communicator, whatever your current level of expertise. The book does not attempt to cover the diverse research techniques and myriad special written and oral genres (research report, article, poster, white paper, gray literature, and on and on) characteristic of particular fields. They are important topics, but too large for us to do justice to them here. Likewise, while the book discusses the principles that should guide online research, it does not attempt to describe the vast array of specialized search tools and databases now available online and through the library. Our revised appendix suggests resources addressing all these matters.

## What's New in This Edition

Those familiar with earlier editions will find that this edition remains faithful to the book's original purpose, vision, and overall structure. We have preserved its central content; its characteristic approaches to research, argumentation, and writing; and its distinctive voice and personality. In particular, we endeavored to remember and retain the animating spirit of the book's previous editions, which is that of lively exchange among longtime friends and scholarly collaborators in the service of teaching. And more than that, we endeavored to allow that spirit to motivate our own work, imagining ourselves in dialogue with the book's original authors and engaging in much discussion and debate between ourselves. The result, we hope, is

less a departure or break from previous editions than it is a clarification of the book’s themes and insights coupled with a broadening of its conceptions of research and communication and a refreshing of its presentation.

At the same time, we have made some significant changes, some affecting the book as a whole and others specific to particular parts and chapters. The last edition by the book’s original authors appeared in 2008, a different era for researchers in many key respects. We continue to regard ourselves as stewards as much as coauthors, but the simple passage of time has necessitated that we take a more active hand in shaping this edition than we did with the fourth edition.

Major adjustments include the following:

- In preparing this edition, we remained mindful of the varied reasons people engage in research and of the varied uses to which research can be put. A strength of the book has always been its recognition of the complex interdependence of research, argumentation, and writing, along with its sound practical advice for navigating that complexity. But this very recognition also led previous editions to position some version of the academic paper as the inevitable and necessary end of research, as the product that gives that process meaning. In this edition, we have been careful to keep in mind that meaningful research need not culminate in an academic paper, that it can inform and support other kinds of communications, and that it can sometimes be valuable even when it is not formally communicated to others. This shift led us to differentiate the book’s treatments of research, argumentation, and writing and communication, so that parts I and II focus more deliberately on research, part III on argumentation, and part IV on communicating research arguments.
- We were more consistent in accepting the implications of Booth, Colomb, and Williams’s philosophical commitment to what might be called a “discourse-based” model of knowledge production—that is, to the notion that knowledge and understanding are created when research communities hash things out through conversation and debate. This is a commitment we also share. Previous editions sometimes framed research and writing as a process of

discovering or recovering objective “truths” and then “reporting” those truths to an interested audience. That framing has the virtue of clarity and simplicity, and we acknowledge its usefulness for beginning researchers. But it also implies an overly narrow notion of research and skirts fundamental questions—Who gets to say what’s “true”? What makes an argument sound or persuasive?—that have acquired a heightened import in our time. Ultimately, though, Booth, Colomb, and Williams’s seeming embrace of the ideal of objective “truth” is more a pedagogical conceit than a genuine intellectual conviction. As they themselves acknowledged from their first edition, experienced researchers “know that truth is always partial—both incomplete and partisan” and that “whatever truth they offer is contestable and will be tested by others” who care in turn. After carefully considering previous editions and drawing on what we know from the three authors’ individual writings, we’ve decided to present research in this edition not as the discovery and “reporting” of “truths” but as a collective pursuit of better understanding through argumentation. Indeed, we believe Booth, Colomb, and Williams would have embraced this clarification of their stance as appropriate and necessary for today’s readers.

- Likewise, building on changes initiated in the fourth edition, we’ve adopted a broader and more inclusive posture toward the diversity of genres through which research is communicated. Previous editions focused on teaching the research “report”; we’ve largely abandoned that term and instead treat the academic “paper” as a useful prototype for all kinds of research-based arguments, written and oral. Again, this change is more expansion and clarification than departure. Like previous editions, the current edition devotes significant space and attention to the formal elements common to most genres of research-based writing not just because researchers need to understand their superficial shape but also because these elements help researchers *think*. How we write thus affects how we argue and research, and vice versa. In this sense, to learn the genres of one’s field is to learn the field itself. Consequently, in parts I, II, III, and V, we’ve largely eschewed the term “reader” for the more general term “audience”; we’ve re-

served “reader” for places where we address writing specifically, especially in [part IV](#). This change in vocabulary does not mean that we’ve rejected the advice of previous editions to “side with your readers, to imagine how they will judge what you have written.” We entirely agree. We’d just say “audience.” (We recognize that “audience” might feel more remote than “readers.” So we’ve opted to use the plural pronoun with “audience” to emphasize that audiences are not just abstract composites but also groups of individuals who, while forming a collective, nonetheless retain their distinct identities and perspectives.)

- Perhaps most fundamentally, in addition to being more mindful of the diversity of purposes for which people do research, the diversity of perspectives that might constitute “truth,” and the diversity of ways in which research arguments are communicated, we have also tried to be more mindful of the diversity of researchers themselves and of the book’s contemporary readers. This increased attentiveness is perhaps most evident in our refreshing of the book’s examples, which include both its constructed examples and passages quoted from the work of practicing scholars.

In addition to these general adjustments, we have made a number of local and organizational changes as well:

- We streamlined and converted what was formerly “[Part I: Research, Researchers, and Readers](#)” into a new introduction.
- We divided what was formerly “[Part II: Asking Questions, Finding Answers](#)” into two parts: “[Part I: Asking Questions, Seeking Answers](#),” which focuses on conceptualizing research questions, problems, and projects; and “[Part II: Sources and Resources](#),” which focuses on working with textual sources and other materials.
- We sharpened the treatment of argumentation in “[Part III: Making Your Argument](#),” treating arguments as intellectual constructions distinct from the papers and presentations through which they might be communicated. We also reordered the chapters in this part, so that it ends not with the chapter on warrants (because that

element of argument is, presumably, the most difficult to grasp) but with the chapter on acknowledgments and responses (because those acknowledgments and responses are what connects an argument as a rational or logical structure to the wider conversations of a research community).

- We added a new chapter, “Research Presentations,” to the end of [part IV](#), which we also retitled “Delivering Your Argument.”
- We expanded the treatment of the ethics of research in part V, so that in addition to exhorting researchers to maintain their individual integrity, it also addresses researchers’ broader obligations to their research communities and audiences as well as systemic questions about ethical research practices. We have, however, allowed the argument of the book’s final chapter, formerly “A Postscript for Teachers,” to remain largely what it was in earlier editions because it so clearly reflects the perspectives of the book’s original authors.
- Finally, we have allowed ourselves to make local adjustments to the book’s style and content when we thought it was an improvement.

# **Introduction**

## **Your Research and Your Audience**

### **Becoming a Researcher**

When you think of a researcher, what do you imagine? Someone in a lab coat peering into a microscope? A solitary figure taking notes in a library? That's what most people imagine. But you might also have imagined *yourself*, perhaps looking up hotel or restaurant reviews or gathering statistics to argue as to who is the best basketball player of all time or, more soberly, how students in your district's public schools are negatively impacted by a shortage of qualified teachers. Along the way to making those arguments, you had to determine where to find accurate and reliable information and might have had to challenge misinformation. You might not yet be a *professional* researcher, but you are familiar with the activities of inquiry and investigation that all research requires.

You know that research requires a high degree of trust that information is presented accurately and fairly. And you know that this is not always the case. All of us need to be discriminating with respect to the information we receive daily and be able to judge whether and why we should accept the multitude of facts and claims presented to us. As you grow as a researcher, you will learn that research depends on an implicit contract between researchers and their audiences, between those who do research and those with whom they share it (whether by intention or because research circulates in ways we don't anticipate). We may do research for the sheer pleasure of finding things out or solving a puzzle, but the ultimate goal is to share our research—and the knowledge and insight that comes from it—with others.

The idea that research is shared with others is foundational to this book. The five authors of this book have learned to address different communities over time, each of which expected different things from us. We have learned that research is not one thing, but many things. Even so, we have discovered that there are principles that all researchers follow. We share

these principles in this book. One of these principles is that research rarely moves in a straight line. It zigzags and sometimes doubles back on itself. We lay out the research process in a more linear fashion than is true to life so that you understand the steps clearly and learn how to put the parts together with greater confidence.

*To the beginning researcher:* This book is written especially for you. You may have some familiarity with a “research paper” that uses so-called *outside* sources to support arguments or substantiate facts. These kinds of school-based assignments can prepare you for the kind of *authentic* research for which we advocate in this book: research that expands the understanding of researchers and their audiences because it is motivated by *actual* questions (that is, by questions whose answers are not known in advance). We will help you to understand what your teachers are leading you to learn and do when they assign such papers and other research projects. We hope, in the process, to reduce the anxiety that can afflict even experienced researchers.

When we read about a scientific breakthrough or a crisis in world affairs, we benefit from the research of those who have shared it, as they benefited from the research of others. When we go to a library, physically or virtually, we encounter an accumulated twenty-five centuries of research. When we search online, we have access to countless materials that are the product of research. Many activities fall under the heading of *research*, but we understand this term to mean a particular kind of directed inquiry: one that begins with a question on the part of the researcher and ends with sharing the answer with an interested audience. Typically, research is written up in a paper or report of some kind. But research can also be shared in other ways, including through a presentation, website, or poster. In professional contexts, research is ultimately *published*. Today, however, not all published research finds its way into print or appears in the form of a paper.

## I.1 What Is Research?

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

PROBLEM: You want to know a good place for pizza.

RESEARCH: You ask several friends where they like to go.

PROBLEM: To settle a bet, you need to find out when LeBron James was born.

RESEARCH: You google “LeBron James birthday.”

PROBLEM: You are looking for new books to read at the beach.

RESEARCH: You ask a generative AI tool for suggestions and check them out online.

We all do that kind of practical research every day, although we rarely present it or write it up. Still, we rely on the knowledge of others or on tools others have created to find the answers we need to solve our problems.

If you’re preparing to do a research project not because you want to but because it has been assigned, you might think that it is just make-work and treat it as an empty exercise. We hope you won’t. Done well, your project prepares you to join the oldest and most esteemed of human conversations, one conducted for millennia among philosophers, engineers, biologists, social scientists, historians, literary critics, linguists, and theologians, not to mention CEOs, lawyers, marketers, investment managers, politicians, and activists—the list is endless—as they all strive to answer their questions, solve their problems, and ideally create a better and more just world for all.

Right now, if you are a beginner, you may feel that the conversation is one-sided, that you have to listen more than you can speak because you have little to contribute. If you are a student, you may feel that you have only one reader: your teacher. All that may be true, for the moment. But at some point, you will join a conversation that, at its best, can help to liberate all of us from ignorance, prejudice, and the half-baked ideas that so many frauds and quacks try to impose on us. Maybe not today or tomorrow but one day, the research you do and the arguments you make could improve if not the whole world, then at least your corner of it.

## I.2 Connecting with Your Audience

Whatever form it takes, research depends on a relationship between researchers and their audiences. Most of the important things we do, we do with others. Research is no different. When you read a book or a scientific paper, or view a presentation or lecture online, you silently converse with its creators—and through them with everyone else they have studied and read. And when you share your research, through writing or other means, you add your voice and can hope that others will respond to you. And so it goes.

For us, the idea that communication is a *conversation* is crucial. We mean by it that communication is best understood as a social activity in which writers, speakers, and presenters and their audiences each play a part. In this conversation, do we treat each other as equals, speaking and listening civilly? Do we assume that only one of us is an expert? Writing in particular is a kind of *imagined* conversation conducted through text, where any misunderstanding cannot be repaired in real time. Therefore, in writing especially, it is important to choose our roles carefully. Consider these two sentences:

Interruption of REM sleep has been shown not only to inhibit memory consolidation, especially for declarative memories, but also to significantly impair cognitive processes dependent on working memory function.

If you don't get enough sleep, not only will you struggle to retain facts and concepts, but your working memory function will also be impaired, making it difficult for you to hold information in mind and consequently to understand, think, and learn.

Each sentence reflects judgments by its writer about the readers' needs and goals. The first could be an excerpt from an advanced textbook. It is addressed to knowledgeable colleagues interested in learning about the psy-

chology of sleep and memory, is focused on abstract concepts, and uses technical terms. The second could have come from a guidebook on good study habits. It is the voice of an expert patiently explaining a complicated matter to readers who know little about it and largely avoids technical vocabulary. The reader wants practical advice and is addressed directly as “you.”

Despite their differences, both sentences would be effective if their writers had judged their readers correctly. But if that first sentence was presented to those seeking practical advice, they would find the writer indifferent to their needs; likewise, if that second sentence was presented to more advanced readers, they might think its writer was talking down to them. That’s why it is important to think about your readers—you can write for more than one—and your roles in relation to them before you write a word. This same principle applies if you are presenting your research orally or in some other form.

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

## I.3 Understanding Your Role

Many beginning researchers misunderstand their role as writers or presenters. They offer their audience a relationship that caricatures a bad classroom: *Teacher, I know less than you, so my role is to show you how many facts I can dig up. Yours is to say whether I have found enough to earn a good grade.* In authentic research, the roles of student and teacher are reversed. You learn and share something that others do not necessarily

know. So when you share your research, you must think of your audience as made up of people who don't know what you know but need to, even if they don't yet realize that need themselves. Further, you must think of yourself as someone who is not just delivering facts or information but also offering your audience a reason to care. You must imagine a relationship that goes beyond *Here are some facts I've dug up about fourteenth-century Tibetan weaving*. There are better reasons to share our research.

### I.3.1 I Have Found Some New and Interesting Information

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

### I.3.2 I Have Found a Solution to a Practical Problem

You take a step toward more significant research when you can say to an audience not just *Here are some facts that should interest you*, but also *These facts will help you do something to solve a problem you care about*. People do this kind of research every day in business, government, and many jobs and professions. They confront practical problems whose solutions require research first to understand the problem, then to solve it—problems ranging from insomnia to falling profits to traffic to terrorism.

To help new researchers learn that role, teachers sometimes use problem-based learning addressing “real-world” scenarios. For example, an environmental science professor might assign you to write a report for the director

of the state Environmental Protection Agency on how to clean up a local lake. In this scenario, you play the role of a professional giving practical advice to someone who needs it. To make your report credible, you must use the right terminology, cite the right sources, and find and present the right evidence, all in the right format. But most important, you have to design your report around a specific intention that defines your role: to advise a decision maker on what to do to solve a problem.

### I.3.3 I Have Found an Answer to an Important Question

Although academic researchers sometimes do that sort of practical research, their more common role is simply to help their research communities better understand something. Others might use their findings to solve practical problems—a discovery about the distribution of prime numbers, for example, helped cryptologists design an unbreakable code. But that research itself aimed at solving not the *practical* problem of better protecting secrets but the *conceptual* problem of better understanding prime numbers (we discuss these two kinds of problems in more detail in [chapter 2](#)). Some researchers call this kind of research “pure” as opposed to “applied.”

Teachers occasionally invent “real-world” scenarios involving conceptual problems: a political science professor asks you to play the role of a senator’s intern researching the voting habits of out-of-state college students. But more typically they expect you to imagine yourself as what you are learning to be: a researcher addressing a community of other researchers—your primary audience—interested in issues that they want to understand better. Your research on fourteenth-century Tibetan weaving, for example, could possibly help rug designers sell more rugs, but its main aim is to help scholars better understand something about Tibetan art, such as *How did fourteenth-century Tibetan rugs influence the art of modern China?*

## I.4 Imagining the Role of Your Audience

You establish your side of the relationship with your audience when you adopt one of those three roles: *I have information for you; I can help you fix a problem; I can help you understand something better*. You must, however,

cast your audience in a complementary role: I will play my part if you play yours. That means you have to understand their role. If you cast them in a role they won't accept, you can lose them entirely. You must share your research in a way that motivates your audience to play the role you have imagined for them.

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

### I.4.1 Entertain Me

Imagine that the first group that invited you to speak is the local chapter of the Waffle Lovers Society. Its members are not experts, but they know a lot about waffles. They read about waffles, frequent restaurants that specialize in waffles, and collect a range of waffle-themed novelties. You decide to share some new facts, along with some recipes, that you have found in a letter from your great-grandmother written to your grandparents when they emigrated from Belgium in the 1930s.

In planning your talk, you judge that what's at stake is just a diverting hour of waffle lore. You meet your side of the bargain when you share whatever you think might interest the group, including hunches and speculation. You might share a screenshot of your recently discovered letter, but you won't cite scholarly sources to substantiate any claims. Your audience members will play their role by listening with interest, asking questions, maybe sharing their own anecdotes. You don't expect them to challenge the authenticity of the letter or question how the letter or recipes are relevant to the social history of waffles, much less of northern European foodways. Your job is to give an engaging talk; theirs is to be amiably engaged.

Some beginning researchers imagine their audience is like this Waffle Lovers Society, already fascinated by their topic and eager to hear anything new about it. While that perspective sometimes works for experts with the right audience, it rarely works for students learning to do and share authen-

tic research. Your teachers will expect you not just to share what you find but also to show what you can do with it or why it is significant.

### **I.4.2 Help Me Solve My Practical Problem**

Imagine that your next meeting is with a film company. They plan to make a historical reenactment film set in rural Belgium in the 1930s and want your help to get the historical details right, including a scene in a farmhouse kitchen. They want to know how the kitchen was stocked, what the cooking implements looked like, and so on. They don't care whether your facts are new, only whether they are right, so that they can make the scene authentic. You show them your letter and recipes and describe how waffles were prepared in that era. To succeed in this role, you must help them solve a practical problem whose solution you base not on all the information you can find, no matter how new, but just on those particular facts that are relevant to the problem of authenticity and whose sources you can show are reliable. Your audience will listen intently and critically because they want to get the details right.

This is the kind of task you are likely to face if your teacher invents a “real-world” assignment: write to an EPA official who needs to do something about a polluted lake. Academic researchers sometimes address practical problems like these, but as we said, they typically address conceptual ones. So pose and address a practical problem only if your teacher creates one; otherwise, ask whether your plan is appropriate before you begin.

### **I.4.3 Help Me Understand Something Better**

Now imagine that your audience is the faculty of Cook University’s Department of Culinary Cultures. This is the audience most likely to share your interest. They study all aspects of food history and traditions and participate in international discussions about their social, cultural, and political significance. Through academic journals and books, they compete with other food studies scholars to produce richer accounts of the topics they care about. In this way, they also cooperate to advance their field of study.

These scholars have invited you to talk about your specialty: the social history of food in the first half of the twentieth century. They don't want you just to amuse them with new facts (though they will be happy if you do) or to help them do something (like get a consulting gig on a film). They want you to use whatever new facts and information you have to help them better understand the social history of waffles or, more generally, of regional European foodways prior to World War II.

Because these scholars are committed to understanding the past as deeply and accurately as possible, they expect you to be careful in your thinking and to examine issues from all sides. They will question your reasoning and challenge you on the facts if they think you are anything less than rigorous or correct. They will be happy to see the recently discovered letter and recipes from your great-grandmother, but they will expect you to verify their authenticity and to substantiate any claims you make about their significance. They will be especially receptive if you can convince them that they do not understand the social history of waffles as fully as they thought they did and, unexpectedly, that there is something more to know. If you can't do that, they'll respond not with *I don't agree*—we all learn to live with that—but with a response far more devastating: *I don't care*.

You begin your presentation:

We know that the waffle has a long history in European cuisine, even as it is associated with Belgium. We know that the modern waffle can be either round or rectangular, depending on the cast-iron molds produced for their preparation. What we did not fully realize, however, was that a waffle's shape once had social and even political significance. Resistance to rectangular waffles persisted well into the twentieth century throughout rural Belgium as a marker of national identity, with the rectangular waffle being associated with the Dutch and the round waffle deemed authentically Flemish. A recently discovered letter shared with me by a distant cousin reveals . . .

This is the kind of conversation you join when you share research with a community of scholars. You and they want to understand something better, not strictly for entertainment or profit but because discovering and sharing new knowledge is interesting on its own terms.

Academic audiences will almost always adopt this third role. They will think you've fulfilled your side of the social contract only when you treat them as who they think they are: scholars interested in greater knowledge and better understanding. To be sure, the faculty over in chemistry or philosophy care little about the social history of waffles. But then you don't much care about their issues, either. You are concerned with your *particular* community of scholars or researchers, with *their* interests and expectations, with improving *their* understanding, based on the best evidence you can find.

## I.5 How to Use This Book

The best way to deal with the complexity of research (and its anxieties) is to read this book twice. First skim it to understand what lies ahead (flip past what seems tedious or confusing). But then, as you begin your work, carefully read the chapters relevant to your immediate task. If you are new to research, reread from the beginning. If you are in an intermediate course but not yet at home in your field, skim parts I and II then concentrate on the rest. If you are an experienced researcher, you will find [chapter 2](#) and parts III and IV most useful.

In this introduction, we have addressed how to understand research and why audiences expect us to present our research in particular ways. In [part I](#), we address how to frame and develop your research project:

- how to find a topic in an area of interest, then how to focus it and develop questions about it ([chapter 1](#));
- how to transform those questions into a research problem ([chapter 2](#)).

In [part II](#), we discuss how to work with a range of source materials. We explain

- how to find sources to guide your search for answers ([chapter 3](#));
- how to engage sources in ways that encourage your own best thinking ([chapter 4](#)).

In [part III](#), we discuss how to make a sound case in support of your claim. That includes

- an overview of a research argument ([chapter 5](#));
- how to articulate your claim and evaluate it for its significance ([chapter 6](#));
- how to judge what count as good reasons and sound evidence ([chapter 7](#));
- how to make the logic of your argument clear ([chapter 8](#));
- how to acknowledge and respond to questions, objections, and alternative views ([chapter 9](#)).

In [part IV](#), we lay out the steps in producing a formal paper or presentation:

- how to plan and execute a first draft ([chapter 10](#));
- how to revise and organize that draft ([chapter 11](#));
- how to incorporate sources ([chapter 12](#));
- how to present quantitative evidence clearly and effectively ([chapter 13](#));
- how to write an introduction and conclusion that convince an audience that your argument is worth their time ([chapter 14](#));
- how to edit your style to make it clear, direct, and readable ([chapter 15](#));
- how to deliver your research as a presentation ([chapter 16](#)).

In part V, we reflect on our obligations to conduct research ethically ([chapter 17](#)) and offer particular advice to those who teach the craft of research to others ([chapter 18](#)).

At the end of all of the chapters except for those in part V, you will find “Quick Tips,” brief sections that complement the chapters with practical advice. At the end of the book is a bibliography of resources for beginning and advanced researchers.

Research is hard work, but like any challenging job done well, both its process and its results can bring great satisfaction. No small part of that satisfaction comes from knowing that your work enriches a community that shares your interests, especially when you discover something that you believe can change what and how it thinks.

## ► Quick Tip: A Checklist for Understanding Your Audience

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

1. With whom will I share my work?

- Professionals who expect me to follow every academic convention and use a standard format?
- A well-informed general audience?
- An audience that knows little about the topic?

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

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

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

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

4. How will my audience respond to the solution/answer in my main claim?

- Will it contradict what they already believe? How?
- Will they make standard arguments against my solution?
- Will they want to see the steps that led me to that solution?

## **Part I**

# **Asking Questions, Seeking Answers**

## Prologue

# Planning Your Project—An Overview

If you already have a research question and know how to look for its answer, review the first two chapters quickly; then read the remaining ones carefully as they become relevant to your task. If you are starting from scratch, your first task is to find a research *project* worth investigating. In other words, you must imagine a project that addresses a *topic* specific enough that the research you do is manageable in the time you have to do it. But it's not enough to just have a topic, however specific. A research project begins with a research *question*, one not only interesting to you, but also to others. And that question must be one that has an *answer*.

Of course, you can't know the answer to your research question as you ask it. A genuine research question is one that can only be answered by gathering and analyzing *evidence* in an effort to arrive at an *arguable claim*. A simple question of fact—*On what date did Rosa Parks refuse to relinquish her seat for a white passenger, thus sparking the Montgomery Bus Boycott?*—has an answer: December 1, 1955. But unless that date is in dispute (this one isn't), there is less to argue about than there is with questions such as *Why did Rosa Parks refuse to move on that day?* or *How did Rosa Parks's actions on that day initiate a turning point in the history of civil rights in America?*

Answering these sorts of interpretive questions usually requires more than one piece or even one type of evidence. We talk more about this term *evidence* in later chapters, but we want to say something now about how we use it and other terms throughout the book. By *evidence* we mean all the “stuff” that researchers use to support their claims. Researchers in different fields tend to call this stuff by different names: *facts, findings, data, information*. In this book, we use *data* or *information* more or less interchangeably. The important thing to recognize here is that bits of information or data are, in themselves, inert. They become evidence only when you use them to support a claim that answers your research question.

As you focus on a topic and formulate a research question, you will need to consider what kinds of evidence you will need to support an answer. Will your audience accept data or information from secondary sources or expect you to consult primary sources (see [4.5](#))? Will they expect quantitative data, quotations from authorities, or firsthand observations? You may not know the answers to these questions fully when you begin a research project, and their answers will likely depend on your field of study. But the basic step of formulating a research question is similar across all fields. Once you think you have enough data or information to support at least a plausible answer to your question, you will be ready to start assembling an argument that makes your case (see [part III](#)), then to plan, draft, and revise it (see [part IV](#)).

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

### ► Quick Tip: Sustaining a Research Project Alone and in Groups

A research project is more a marathon than a sprint. But it is not necessarily a grueling process: slow and steady wins the race. Whether a research project spans a few weeks or a year or more, with opportunities to take a break or share work in progress ahead of completing the project (or even allow your project to spawn new projects), it is vital that you take care of yourself. Writing is hard work; but like many activities, doing *more of it* makes it easier over time. And doing it *with others* helps to sustain your efforts.

Resolve to do lots of writing along the way, even if your final product is not a paper. Much of it will be routine note-taking, but you should also write reflectively, to understand. Let your reading become a form of writing: make outlines; explain why you disagree with a source; draw diagrams

to connect disparate facts; summarize sources, positions, and schools of thought; record even random thoughts. Many researchers find it useful to keep a journal for hunches, new ideas, musings, problems, additional questions, and so on. You might not include much of this writing-to-discover in your final draft. But when you write as you go, every day, you encourage your own best critical thinking, understand your sources better, and, when the time comes, draft more productively. Too often, we discover what we *really* think and want to say after we have labored to put thoughts on paper. You can allow those lightbulb moments to come earlier when you write informally well ahead of formal drafting and might even save yourself much grief or regret in the process.

A major downside of academic research in some disciplines is its isolation. Except for group projects, you will read and write mostly alone. (For some people, this time apart from others is the hardest part of researching and writing.) But it doesn't have to be that way. Look for someone other than your teacher or adviser who can talk to you about your progress, review your drafts, or even pester you about how much you have written. That might be a generous friend, but even better is another writer so that you can comment on each other's ideas and drafts. Increasingly, writers turn to the support of one or more partners to respond to their work at various stages in the planning and drafting process.

Best of all is a group of four or five people working on their own projects who meet regularly to read and discuss one another's work. Early on, each meeting should start with a summary of each person's project in this three-part sentence: *I'm working on X because I want to find out Y, so that I (and you) can better understand Z* (more about this in 1.3). As your project advances, develop an opening "elevator pitch," a short summary of your project that you could give someone during an elevator ride on the way to a meeting. It should include your research question, your best guess at an answer, and the kind of evidence you expect to use to support it. The group can then follow up with questions, responses, and suggestions.

Don't limit your talk to just your story, however. Talk about your intended or potential audience: Why should they be interested in your question? How might they respond to your argument? Will they trust your evidence? Will they have other evidence in mind? Such questions help you plan an argument that anticipates what your audience expects. Your group can even

help you brainstorm when you get bogged down. Later, group members can review one another's outlines and drafts to imagine how their final audiences will respond. If your group has a problem with your draft, so will that audience. But for most writers, a writing group is most valuable for the discipline it imposes. It is easier to meet a schedule when you know you must answer to others. But there is value, too, in the spirit of community that arises from sharing our work, our challenges, and our success.

Writing groups are common for those writing theses or dissertations. But the rules differ for class papers or presentations. Some teachers think that a group or writing partner provides more help than is appropriate, so be clear what your teacher allows.

# 1 From Topics to Questions

In this chapter, we discuss how to find a topic among your interests, refine it to a manageable scope, then question it to find the makings of a problem that can guide your research. If you are an experienced researcher or know the topic you want to pursue, skip to [chapter 2](#). But if you are starting your first project, you will find this chapter useful.

For many of us, an early experience with research involves being *assigned* a topic by a teacher, something to learn more about by looking stuff up and reporting on what we found (e.g., the geological process of sedimentation or the life and career of Malala Yousafzai, Pakistani human rights activist and Nobel Peace Prize laureate). You may therefore think of research primarily in terms of a topic. If you are new to research, the freedom to pick your own topic can seem daunting. *Where do I begin? How do I tell a good topic from a bad one? Will I find enough information on this topic to write about it?* These are reasonable questions, but they reflect a basic misunderstanding about research. In this chapter, we offer a better way to think about research projects and how to begin one.

Think of your topic as a starting point for an inquiry. The word comes from the Greek *topos*, meaning *place*. While a subject is a broad area of knowledge (e.g., zoology), a topic is a specific interest within that area (e.g., invertebrate life). Of course, a topic can be narrower still (e.g., insects or even the seven-spotted lady beetle). But choosing a topic to research is not simply a matter of narrowing your subject to the point that you can find enough information, but not too much. The best topic will raise a *question* about a subject whose answer solves a *problem* that you and your audience care about. In this chapter, we focus on how to formulate questions about a topic. In the next chapter, we focus on how research questions not only have *answers* but also solve *problems*.

## 1.1 From an Interest to a Topic

Again, beginning researchers often find it difficult to locate a topic among their varied interests. This is in part because an academic approach to many interests can seem a strange fit at first. It's not easy for students to imagine a community of researchers or scholars who will want to hear what they have to say on a topic or to think that they have the authority to present their research. This is a hurdle that any beginning researcher must overcome. In doing so, it's helpful to remember that research enables you to *become* a relative expert on a topic. You may not know as much as some others do, but you can know enough to join a conversation among scholars already in progress—or even start a new one.

At the same time, those who are new to research in a field often see things with a fresh eye; that alone can be reason enough to enter into a dialogue with other researchers. It may be a cliché, but it's still useful advice: Start with what interests you.

### 1.1.1 Finding a Topic in a Writing Course

Many research projects begin in a writing course where learning to do academic research is a goal. If that's your situation and you can choose topics more or less freely, use this opportunity to explore an interest, however mundane or marginal. Don't limit yourself to what you think you *should* research or what a teacher will approve. Think about what you have read or listened to recently or discussed with friends or family. Think about points of disagreement or elements of surprise, perhaps something that has prompted you to search online to satisfy your curiosity. You might list as many interests as you can (ten or more) to explore further without feeling any need to decide just yet. At this point, you may be just completing the thought *I'd like to learn more about . . .* (e.g., the technology of QR codes) without a specific focus. If no promising topics come to mind, consult the [Quick Tip at the end of this chapter](#).

At this early stage, it can be reassuring to see if there is information *out there* or if others share your interest enough to have researched it. It is easy to google a topic, although it can be overwhelming to wade through the volume of hits you'll likely receive. There are bound to be promising web-

sites that reflect attention to a topic by organizations or interest groups and that spur further thinking on your part. For many topics, you will find useful information on the popular website Wikipedia. However, don't turn to Wikipedia as a reliable source of evidence to use in your research without vetting reference materials on which Wikipedia articles rely (see 3.4).

### **1.1.2 Finding a Topic for a Research Project in a Particular Field**

As you learn more about a particular field or subject, the focus of your research will become more specific. To find a topic, you might still consult general academic resources like *Encyclopaedia Britannica*, but you can also find topics through specialized resources such as the *International Encyclopedia of Political Science* or *Women's Studies International*. You can also explore topics through Google Scholar, a search engine that focuses on scholarly journals and books.

If you have advanced beyond an introductory level in your field of study, you most likely have read some of its *literature* (see 3.1.2) and have some awareness of its areas of debate (which may not be visible to outsiders). If so, a research project is an opportunity to enter into those debates yourself. To better understand them, you can skim the latest issues of journals in your field or read calls for papers for professional conferences. You might also reach out to librarians, especially those who specialize in your field, or examine your institution's special collections and archives.

### **1.1.3 Bringing a Topic into Focus**

You reach a crucial stage in a research project when a topic of interest *cannot* be stated in a few words. For example, the topics “free will in Tolstoy,” “the history of commercial aviation,” and “the World War II-era figure Rosie the Riveter” are too short and too diffuse. They require another level of detail:

The conflict of free will and inevitability in Tolstoy's description of three battles in *War and Peace*

The contribution of the military in developing the DC-3 in the early years of commercial aviation

The evolution of the World War II-era figure Rosie the Riveter as a feminist icon

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

Note what happens when we restate static topics as full sentences. Topics (1), (2), and (3) change barely at all:

(1) Free will in Tolstoy<sub>topic</sub> → There is free will in Tolstoy’s novels.<sub>claim</sub>

(2) The history of commercial aviation<sub>topic</sub> → Commercial aviation has a history.<sub>claim</sub>

(3) The World War II-era figure Rosie the Riveter<sub>topic</sub> → There is a World War II-era figure Rosie the Riveter.<sub>claim</sub>

In fact, (1), (2), and (3) are not useful topics because they do not lead anywhere. Some might say these are not topics at all. But (4), (5), and (6) are useful topics because when they are revised into full sentences, they become claims that an audience might find interesting.

(4) The *conflict* of free will and inevitability in Tolstoy’s *description* of three battles in *War and Peace*<sub>topic</sub> → In *War and Peace*, Tolstoy *describes* three battles in which free will and inevitability *conflict*.<sub>claim</sub>

(5) The *contribution* of the military in *developing* the DC-3 in the early years of commercial aviation<sub>topic</sub> → In the early years of commercial aviation, the military *contributed* to the way the DC-3 *developed*.<sub>claim</sub>

(6) The *evolution* of the World War II-era figure Rosie the Riveter as a *feminist icon*<sub>topic</sub> → Since World War II, the figure of Rosie the Riveter *has evolved* as a *feminist icon*.<sub>claim</sub>

Such claims may at first seem thin, but you will make them richer as you work through your project. And that's the point: developing topics into claims will help you devise your project and imagine the argument you will eventually make.

## 1.2 From Focused Topic to Research Question

Upon identifying a focused topic, many beginning researchers make a mistake: they seek out all the information they can find on it. With a promising topic such as *the evolution of the World War II-era figure Rosie the Riveter as a feminist icon*, a beginner will accumulate notes and summaries, assemble a timeline and a trove of “Rosie” images, and identify competing accounts of the figure’s significance—and then write a paper that includes as many facts as can be packed in.

Many high school teachers would reward such a paper with a good grade because it shows that the writer can focus on a topic, find information on it, and assemble that information into a paper—no small achievement. But in any college course and beyond, this paper falls short if its writer raises no *question* worth asking. Without a question, there is no *answer* worth supporting. And without an answer to support, there is no way to select what’s relevant from all the data on a topic a researcher might find or to argue for the significance of an answer as a contribution to knowledge. To be sure, those fascinated by Mexican wrestling or first-generation video games will read anything new about them. Serious researchers, however, do not docu-

ment information for its own sake but use it to support answers to questions that they (and they hope their audiences) think are worth asking.

A research question helps direct you to the information you need to answer it. Equally, it establishes a purpose for your research, allowing you and your audience to understand what is to be gained from sharing it. This section offers strategies for questioning your topic.

Start with the standard journalistic prompts: *who*, *what*, *when*, and *where*, but focus on *how* and *why*. To engage your best critical thinking, systematically ask questions about your topic’s history, composition, and categories. Then ask any other questions you can think of or find in your sources. Record all the questions, but don’t stop to answer them even when one or two grab your attention. This inventory of possible questions will help to direct your search activities and enable you to make sense of information you find. (Don’t worry about keeping everything straight; your only purpose at this point is to stimulate questions about your topic and organize your answers.)

We’ll use as an example the development of pottery, the process of forming objects out of clay and firing them to high temperatures to make them hard and durable.

### 1.2.1 Ask About the History of Your Topic

- How does it fit into a **larger developmental context**? *How old is pottery? Who invented pottery? Does every civilization have some form of pottery? What came before pottery? Which is older, pottery or agriculture?*
- What is its own **internal history**? *How and why has the topic itself changed over time? What are the stages of pottery’s development over time in terms of methods, materials, and purposes? How and why has pottery production changed over time? Are there new developments in pottery?*

### 1.2.2 Ask About Its Structure and Composition

- How does your topic fit into the **context of a larger structure or function as part of a larger system?** *What is the difference between pottery and ceramics? What is the range of uses of pottery? What role did pottery play in economic trade and cultural exchange?*

## Trust Your Gut

You may have a feeling that a research question is worth asking but not, at least initially, be able to say why. We encourage you to trust your gut, begin your research, and see where it goes. Some of the world's most important research has been done by those who persevered in the face of indifference or even hostility. The geneticist Barbara McClintock struggled for years unappreciated because her research community considered her work uninteresting. But she pressed on. When her colleagues finally realized that she had already answered questions that they were just starting to ask, she won science's highest honor, the Nobel Prize.

- How do its parts **fit together as a system?** *What are the methods and materials for producing pottery? What are its steps and stages? What does one need to know to make pottery?*

### 1.2.3 Ask How Your Topic Is Categorized

- How can your topic be **organized into kinds?** *What are the basic types of pottery? How does making pottery for recreational or artistic purposes differ from its industrial manufacture? Is pottery an art or a craft?*
- How does your topic **compare to and contrast** with others like it? *What are pottery's relationships to basketry, metallurgy, and*

*glassmaking? Why does pottery differ in quality and price? Which is better, things made from pottery or from plastic?*

#### **1.2.4 Ask What If? and Other Speculative Questions**

- How would things be different if your topic never existed, disappeared, or were put into a new context? *What would human culture be like without pottery? Can we do without pottery? What role will pottery play in the future?*

#### **1.2.5 Ask Questions Suggested by Your Sources**

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

- If a source makes a claim you think is persuasive, ask questions that might extend its reach. *Wu et al. propose that “the early dating of East Asian ceramics refutes the idea that the beginning of pottery production was associated with the transition to agriculture” (Science, June 2012). What was the societal context for its invention, if not agriculture?*
- Ask questions that might support the same claim with new evidence. *Do we find evidence for pre-agricultural use of pottery in other parts of the world?*
- Ask questions analogous to those that sources have asked about similar topics. *Smith analyzes glassmaking from the perspective of protecting trade secrets. What would a similar analysis of pottery reveal?*

Now ask questions that reflect **disagreement**:

- Ask if new evidence, or old evidence considered in a new way, might contradict a source's claim. *Martinez claims that pottery developed independently in the Southeast and Southwest regions*

*of the United States. But is there evidence in the archaeological record of cultural exchange between these regions?*

- Notice where two sources disagree. *How can Martinez claim that pottery developed independently in the Southeast and Southwest regions of the United States given Nguyen's argument that . . . ?*

(We discuss in more detail how to use disagreements with sources in [4.4](#) and [chapter 9](#).)

If you are an experienced researcher, look for questions that other researchers ask but don't answer. Many journal articles end with a paragraph or two about open questions, ideas for more research, and so on (see [2.4.2](#) for an example). You might not be able to do all the research they suggest, but you might carve out a piece of it. You can also look for online discussions or social media threads on your topic, then "lurk," just reading the exchanges to understand the debate. Record questions that spark your interest. If you feel ready, contribute something yourself.

### 1.2.6 Evaluate Your Questions

After asking all the questions you can think of, evaluate them, because not all questions are equally good. Look for questions whose answers might make you (and, ideally, your audience) think about your topic in a new way. Avoid questions like these:

- Their answers are settled fact that you could just look up. *What is the primary clay for porcelain?* Questions that ask *how* and *why* invite deeper thinking than *who*, *what*, *when*, or *where*, and deeper thinking leads to more interesting answers.
- Their answers can't be supported by any data you could reasonably expect to find. *What books did William Shakespeare own? Sadly, there's no reliable inventory of Shakespeare's library, despite centuries of interest in this question. So it's not one you can address, unless of course you've made a monumental discovery.*
- Their answers are likely to be dead ends. *What did Abraham Lincoln eat before going to Ford's Theatre?* It is hard to see how an

answer would help us think about any larger issue worth understanding better, so it's a question that's probably not worth asking.

But remember: it's always possible that a question that seems unproductive might not be. Settled facts can become unsettled with new evidence, and questions that once seemed unanswerable (e.g., *What is human consciousness?*) are now subjects of hard scientific research. Even questions that seem trivial or silly can have answers more significant than expected. One researcher wondered why a coffee spill dries up in the form of a ring and discovered things about the properties of fluids that others in his field thought important—and that paint manufacturers found valuable. So who knows where a question about Lincoln's dinner might take you? You can't know until you get there.

Once you have a few promising questions, try to combine them into larger ones. For example, many questions about the recent practice of removing Confederate monuments from public spaces recognize the political implications of defending their removal or preservation: *What purposes does removal serve? What factors contribute to arguments to preserve them? How have politicians used the controversy?* These can be combined into a single question:

*How and why has the preservation or removal of Confederate monuments emerged as a political flash point in the United States?*

A question like this gives direction to your research (and helps avoid the gathering of endless information). And it begins to imagine an audience that will judge whether your question is significant.

### 1.3 The Most Significant Question: *So What?*

Once you have a question that holds your interest, you must pose a tougher one about it: *So what?* Beyond your own interest in its answer, why would others think it a question worth asking? You might not be able to answer

that *So what?* question early on, but it's one you have to start thinking about, because it forces you to look beyond your own interests to consider how your work might strike others.

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

*So what if I don't know or understand how butterflies know where to go in the winter, or how fifteenth-century musicians tuned their instruments, or why the status of Confederate monuments has become such a divisive issue? So what if I can't answer my question? What do we lose?*

Your answer might be *Nothing. I just want to know.* Good enough to start but not to finish, because eventually your audience will ask as well and will want an answer beyond *Just curious.* Answering *So what?* vexes all researchers, beginners and experienced alike, because when you have only a question, it's hard to predict whether others will think its answer is significant. But you must work toward that answer throughout your project. You can do that in three steps.

### **1.3.1 Step 1: Name Your Topic**

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

I am trying to learn about/working on/studying

\_\_\_\_\_.

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

I am studying Arctic ice-core samples . . .

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

### **1.3.2 Step 2: Add an Indirect Question**

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

1. I am studying/working on \_\_\_\_\_
  2. because I want to find out  
who/what/when/where/whether/why/how  
\_\_\_\_\_.
- 
1. I am studying Arctic ice-core samples
  2. because I want to find out the composition  
of the atmosphere in past geological  
eras . . .
- 
1. I am working on Lincoln's beliefs about predestination  
and their influence on his reasoning
  2. because I want to find out how his notion  
of God's will influenced his understanding  
of the causes of the Civil War . . .

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

If you are a new researcher and get this far, congratulate yourself, because you have moved beyond merely collecting data. But now, if you can, take one step more. It's one that advanced researchers know they must take because they know their work will be judged not by its significance to them

but by its significance to others in their field. They must have an answer to *So what?*

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

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

1. I am studying Arctic ice-core samples
  2. because I want to find out the composition of the atmosphere in past geological eras,
  3. **in order to help my audience understand how the earth's climate has changed over time.**
- 
1. I am working on Lincoln's beliefs about predestination and their influence on his reasoning
  2. because I want to find out how his notion of God's will influenced his understanding of the causes of the Civil War,
  3. **in order to help my audience understand how his religious beliefs may have influenced his military decisions.**

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

Some advanced researchers begin with questions that others in their field already care about: *How much methane was in the atmosphere in the Mesozoic Era?* Or: *Is risk taking genetically based?* But many researchers find that they can't flesh out the last step in that three-part sentence until they finish a first draft. So it's not a mistake to *begin* your research without a good answer to that third question—*Why does this matter?*—but you face a problem when you *finish* your research without having thought through each of those three steps. And if you are doing advanced research, you *must* take that third step especially, because answering that last question is your ticket into the conversation of your research community.

Test your progress by talking about your project with others. If you are part of a research team, regularly discuss with your collaborators not just what you are doing but why. If you are working alone, talk with someone who is knowledgeable about your subject. Whenever you can, explain your project also to people who know little about it but whom you respect and trust. Their questions and responses will force you to fill in those three steps. Even if you can't do so fully, you'll know where you are and where you still have to go.

To summarize: Your aim is to explain

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

In the following chapters, we return to those three steps and their implied questions, because they are crucial for framing the research problem that you want your audience to value.

## ► Quick Tip: Finding Topics

If you are a beginner, start with our suggestions about exploring the internet and skimming reference sources (see [1.1](#)). If you still draw a blank, try these steps.

## For General Interest Topics

- What special interest do you have—sailing, chess, finches, old comic books? The less common, the better. Investigate something about it you don’t know: its origins, its technology, how it is practiced in another culture, and so on.
- Where would you like to travel? Scan the internet and social media, finding out all you can about your destination. What particular aspect surprises you or makes you want to know more?
- Wander through a museum with exhibitions that appeal to you—artworks, dinosaurs, old cars. Or browse the collections many museums have now posted online. Stop when something catches your interest. What more do you want to know about it?
- Wander through a store or craft market, asking yourself, *How do they make that?* Or, *I wonder who thought up that product?*
- Skim news sources and reviews of books or movies.
- Listen to podcasts, watch YouTube videos, or tune in to interview programs until you hear a claim that you disagree with. See whether you can make a case to refute it.
- Use a search engine to find websites and other online resources related to your interests. You’ll get hundreds of hits, but look only at the ones that surprise you.
- Ask a generative AI tool to suggest questions. Then evaluate those questions to see if any are worth addressing, and try to fit the best of them into our three steps.
- Consider your own personal identities. What makes you unique? What unites you with others? Look into the histories (personal and social) that make these identities possible.
- Is there a common belief that you suspect is simplistic or wrong? A common practice that you find unjust? Do research to make a

case against it.

- What courses will you take in the future? What research would help you prepare for them?

## **For Topics Focused on a Particular Field**

If you have experience in your field, review [1.1.2](#).

- Find a social media group in your field. Browse its archives, looking for matters of controversy or uncertainty.
- Attend or watch online a public lecture in your field, and listen for something you disagree with, don't understand, or want to know more about.
- Surf the websites and social media feeds of departments at major universities, including class sites. Also check websites of museums, national associations and professional organizations, and government agencies, if they seem relevant.
- If you are a student, ask your teacher about the most contested issues in your field.
- Browse through a textbook for a course that is one level beyond yours or a course that you know you will have to take. Look especially hard at the study questions.

## 2 From Questions to a Problem

In this chapter, we explain how to turn a question into a problem that an audience thinks is worth solving. If you are an advanced researcher, you know how essential this step is. If you are new to research, we hope to convince you of its importance, because what you learn here will be essential to all your future projects.

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

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

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

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

That significance might at first be just for yourself, but you join a community of researchers when you can state that significance *from your audience's point of view*. In so doing, you create a stronger relationship with your audience because you promise something in return for their interest in your research—a deeper understanding of something that matters to *them*. At that point, you have posed a *problem* that they recognize needs a solution.

## 2.1 Understanding Research Problems

Too many researchers, at all levels, proceed as if their task is to answer a question that interests themselves alone. That's wrong: to make your research matter, you must address a problem that others in your community—your audience—also want to solve.

The term *problem* thus has a special meaning in the world of research, one that sometimes confuses beginners. In our everyday world, a problem is something we try to avoid. But in academic research, a problem is something we seek out, even invent if we have to. To understand why, you have to understand what *research problems* look like. And to do that, you have to understand two other kinds of problems, what we will call practical problems and conceptual problems. With this distinction under your belt, you will be able to understand what makes a problem a *research problem*.

### 2.1.1 The Common Structure of Research Problems

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

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

PRACTICAL PROBLEM: The chain on my bicycle broke.

RESEARCH PROBLEM: Can I find a bike shop that will replace it?

RESEARCH SOLUTION: Here it is: Cycle Source, 1401 East 55th Street.

PRACTICAL SOLUTION: Walk over to get my bike fixed.

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

- The Renewable Energy Industries Association is lobbying me to support subsidies for wind power. *How many votes will I lose if I agree?* Do a survey. *Most of my constituents support the development of wind power.* I can agree to the request.
- Costs are up at the Omaha plant. *What changed?* Hire a consulting firm to figure it out. *Increase in turnover.* If we improve training and morale, our workers will stick with us.

Put in general terms, a *practical* problem is caused by some condition in the world that troubles us because it costs us time, money, respect, security, opportunity, or even our lives. We solve a practical problem by *doing* something (or by encouraging others to do something) to eliminate or at least mitigate the condition creating these tangible costs.

But to know what to do, someone first has to *understand* something better. That politician being lobbied by the Renewable Energy Industries Association, for example, needs to understand constituents' views to decide how to vote; the managers of the Omaha plant need to know the cause of their increasing costs so they can address it.

### **2.1.2 Understanding Practical Problems: What Should We Do?**

A practical problem has two parts: a condition, which can be anything that imposes intolerable costs, and those costs. To state a practical problem so that others understand it clearly, you must describe both of its parts.

#### **1. Its condition:**

I missed the bus.

The acidity of the oceans is increasing.

2. The **costs** of that condition that you (or your audience) won't like:

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

It is more difficult for some species of plankton to form their calcium shells.

But a caution: Members of your audience will judge the significance of your problem not by the cost *you* pay, but by the cost *they* pay if you don't solve it. So what *you* think is a problem they might not. To make *your* problem *their* problem, you must frame it from *their* point of view, so that they see its costs to *them*. To do that, imagine posing the condition part of your problem and your audience responding, *So what?*

Those species of plankton are declining.

*So what?*

You answer with another cost:

Marine life that depends on those plankton for food are also struggling.

Suppose they again ask, *So what?*, and you respond this time with an economic rather than environmental cost:

Production from commercial fisheries is declining, leading to higher prices and unemployment in the fishing industry.

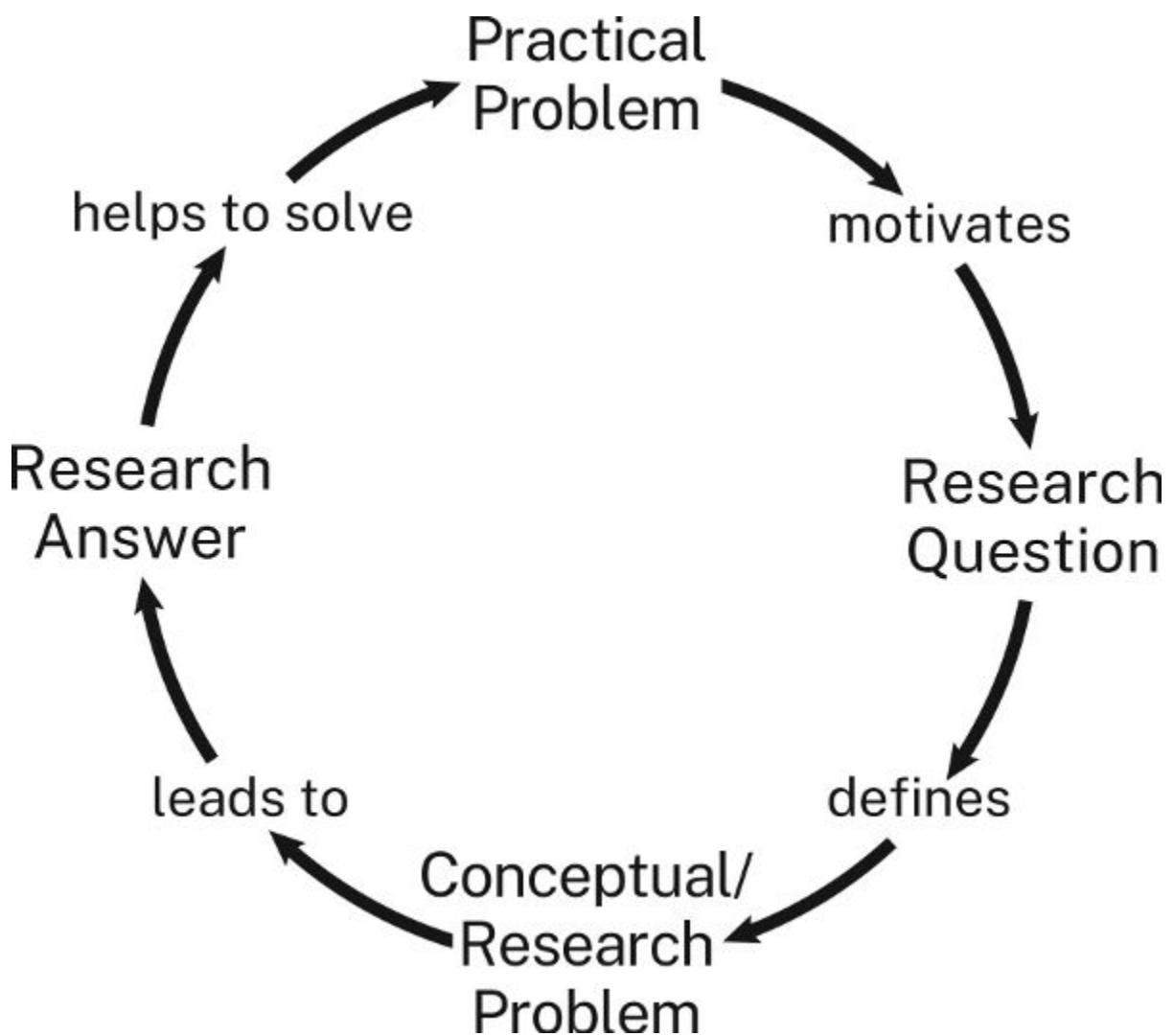
If, however improbably, they ask yet again, *So what?*, you have failed to convince them that *they* have a problem. We acknowledge a problem only when we stop asking, *So what?*, and say, instead, *What do we do about it?*

Practical problems like this one are easy to grasp because they are concrete: when prices go up and people lose their jobs, we don't ask, *So what?* In academic research, however, your problems will usually be conceptual ones, which are harder to grasp because both their conditions and costs are abstract.

### **2.1.3 Understanding Conceptual Problems: What Should We Think?**

That need for knowledge or understanding raises a conceptual problem. In research, a *conceptual* problem arises when we do not understand something about the world as well as we would like. We solve a conceptual problem not by doing something to change the world but by answering a question that helps us understand it better.

We usually answer these questions through research, which is why conceptual problems are sometimes called research problems. The word *conceptual* describes their condition and costs or consequences; the word *research* refers to how we solve them. Graphically, the relationship between practical and conceptual or research problems looks like this:



Inexperienced researchers sometimes struggle with these notions because experienced researchers often talk about their work in shorthand. When asked what they are working on, they often answer with what sounds like one of those general topics we warned you about: *adult measles*, *Emily Dickinson's prosody*, or *mating calls of Wyoming elk*. As a result, beginners sometimes think that having a topic to read about is the same as having a problem to solve.

#### 2.1.4 What Practical and Conceptual Problems Have in Common

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

- The condition of a practical problem can be *any* state of affairs that has a tangible cost for you or, better, for your audience.
- The condition of a conceptual problem, however, is *always* some version of not knowing or not understanding something.

You can identify the condition of a conceptual problem by completing that three-step sentence (see 1.3): The first step is *I am studying/working on the topic of \_\_\_\_\_*. In the second step, the indirect question states the condition of a conceptual problem, what you do not know or understand:

**I am studying the evolution of the World War II-era figure Rosie the Riveter as a feminist icon because I want to understand **how and why that figure has acquired a range of meanings over time.****

That's why we emphasize the value of questions: they force you to state what you don't know or understand but want to. Since your problem will guide your research, be especially attentive to how its formulation might steer you in particular directions or exclude possible answers or perspectives. For example, the problem about Rosie the Riveter as it's phrased might keep you from recognizing, or even looking into, how the original Rosie figure marginalizes women of color. Authentic research at its best elevates us and our audiences out of ignorance and bias, but the most difficult biases to resist are those embedded in our questions and problems themselves.

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

- The **cost** of a practical problem is always some tangible thing or situation we don't like.

A conceptual problem does not have such a tangible cost. In fact, we'll emphasize this difference by calling the cost of a conceptual problem its *consequence*.

- The **consequence** of a conceptual problem is a particular kind of ignorance: it is a lack of understanding that keeps us from understanding something else even more significant. Put another way, because we haven't answered one question, we can't answer another that is more important.

Researchers often choose projects simply because they are curious. In fact, that's how most of us first become interested in the subjects we study. But to make your research matter to others, you have to say more than *Here is something I find interesting*. You have to show them how solving your problem helps them solve theirs. You do that by explaining your problem's consequence.

You express a problem's consequence in the indirect question in step 3 of our formula:

I am studying the evolution of the World War II-era figure Rosie the Riveter as a feminist icon because I want to find out how and why that figure has acquired a range of meanings over time to understand **how images can be repurposed to new ends and also have exclusionary meanings that many viewers didn't recognize**.

All of this may sound confusing, but it is simpler than it seems. The condition and the consequence of a conceptual problem are questions that relate to each other in two ways:

- The answer to the first question (Q1) helps you answer the second (Q2).
- The answer to the second question (Q2) is more important than the answer to the first (Q1).

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

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

Answering the question of how romantic movies have changed in the last fifty years<sub>condition/first question</sub> **helps us answer a more important question: How have our cultural depictions of romantic love changed?**<sub>consequence/larger, more important second question</sub>

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

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

Answering the question of how our depictions of romantic love have changed<sub>second question</sub> **helps us answer an even more important one: How does our culture shape the expectations of young men and women about marriage and families?**<sub>consequence/larger, more important question</sub>

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

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

## 2.2 Distinguishing Between “Pure” and “Applied” Research

Earlier we described authentic research as research motivated by questions whose answers aren't known in advance. We can distinguish two types. We call research *pure* when it addresses a conceptual problem that does not bear directly on any practical situation in the world, when it only improves the understanding of a community of researchers. We call research *applied* when it addresses a conceptual problem that does have practical consequences. You can tell whether research is pure or applied by looking at the last of the three steps defining your project. Does it refer to *knowing* or *doing*?

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

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

In applied research, the second step still refers to knowing or understanding, but that third step refers to doing:

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

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

## 2.3 Connecting Research to Practical Consequences

Some inexperienced researchers are uneasy with pure research because the consequence of a conceptual problem—merely not knowing something—is so abstract. Since they are not yet part of a research community that cares deeply about understanding its part of the world, they feel that their findings aren't good for much. So they try to cobble a practical consequence or significance on to a conceptual question to make it seem more significant:

- 1. Topic:** I am studying the evolution of the World War II-era figure Rosie the Riveter as a feminist icon
- 2. Research Question:** because I want to find out how and why that figure has acquired a range of meanings over time
- 3. Potential Practical Significance:**  
to help graphic artists design more inclusive political posters.

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

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

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

Try that test on this applied astronomy problem:

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

The answer would seem to be Yes.

Now try the test on the Rosie the Riveter problem:

- (a) If my audience wants to design better political campaign posters,
- (b) would they think they could if they knew how and why the figure of Rosie the Riveter acquired a range of meanings over time?

The answer would probably be *No*. We may see a connection, but it's a stretch.

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

1. **Topic:** I am studying the evolution of the World War II-era figure Rosie the Riveter as a feminist icon
2. **Conceptual Question:** because I want to find out how and why that figure has acquired a range of meanings over time
3. **Conceptual Significance:** to understand how images can be repurposed to new ends and also have exclusionary meanings that many viewers didn't recognize,
4. **Potential Practical Application:** so that graphic artists can design more inclusive political posters.

When you state your problem in your introduction, however, present it as a purely conceptual research problem whose significance is in its concep-

tual consequences. Then wait until your conclusion to suggest its practical application. (For more on this, see [chapter 14](#).)

Most research projects in the humanities and many in the natural and social sciences have no direct application to daily life. But as the term *pure* suggests, many researchers value such research more than they do applied research. They believe that the pursuit of knowledge “for its own sake” reflects humanity’s highest calling: to know more, not for the sake of money or power, but for the transcendental good of greater understanding and a richer life of the mind.

As you may have guessed, we are deeply committed to pure research, but also to applied—so long as the research is done well and is not corrupted by malign motives. For example, the potential for profit might compromise the integrity of both pure and applied research in the chemical and biological sciences because it can influence not only what problems some researchers choose to address but also their solutions: *Tell us what to look for, and we’ll provide it!* Such situations raise ethical questions that we touch on in [chapter 17](#), “The Ethics of Research.”

## 2.4 Finding a Good Research Problem

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

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

### **2.4.1 Ask for Help**

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

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

### **2.4.2 Look for Problems as You Read**

You can also find research problems in your sources. Where in them do you see contradictions, inconsistencies, incomplete explanations? Tentatively assume that others would or should feel the same. Many research projects begin with an imaginary conversation with the author of a source: *Wait a minute, you’re ignoring . . .* But before you set out to correct a gap or misunderstanding, be sure it’s real, not just your own misreading. Countless research papers have refuted a point that no one ever made. (In 4.3 we list several common “moves” that writers make to find a problem in a source, variations on *Source thinks X, but I think Y*.)

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

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

And just as the soldier's peacetime experience influenced his battlefield performance, so must the experience of the officer corps have influenced theirs. Indeed, a few commentators after the Russo-Japanese War blamed the Russian defeat on habits acquired by officers in the course of their economic chores. In any event, to appreciate the service habits of Tsarist officers in peace and war, *we need a structural—if you will, an anthropological—analysis of the officer corps like that offered here for enlisted personnel.* [our emphasis]

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

### 2.4.3 Look at Your Own Conclusion

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

## 2.5 Learning to Work with Problems

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

No one expects you to do all that the first time out. But you should begin to develop mental habits that will prepare you for that moment. Research is

more than just accumulating and reporting facts. Try to formulate a question that *you* think is worth answering, so that down the road, you'll know how to find a problem that *others* think is worth solving. Until you can do that, you risk the worst response a researcher can get—not *I don't agree* but *I don't care* (see I.4.3, 6.2, and 9.1).

By now, all this airy talk about academic research may seem disconnected from what some call the “real world.” But in business and government, in law and medicine, in politics and international diplomacy, no skill is valued more highly than the ability to recognize a problem, then to articulate it in a way that convinces others both to care about it and to believe it can be solved, especially by you. If you can do that in a class on Byzantine pottery, you can do it in an office on Main Street or Wall Street, or in a video conference from your kitchen table.

### ► Quick Tip: Making an Opportunity of Inexperience

We all feel anxious when we start work in a new field whose values, concerns, and ways of thinking and arguing we don’t entirely understand. In fact, we authors still experience that newcomer’s anxiety when we begin new kinds of projects on new topics. You can’t avoid experiencing that feeling at times, but there are ways to manage it:

- *Know that uncertainty and anxiety are natural and inevitable.* Those feelings don’t signal incompetence, only inexperience.
- *Get control over your topic by writing about it along the way.* Keep a journal in which you reflect on your progress. This kind of writing not only helps you understand what you read but stimulates your thinking about it. The more you write early on, no matter how sketchily, the easier it will be to face that intimidating first draft.
- *Respond to your sources; don’t just accumulate them.* When you discover a useful source, don’t just snap a photo of it, grab a screenshot of it, or leave it open in a browser tab. That’s easy, but it doesn’t advance your thinking. In addition, write a summary or critique. List any questions that source raises in your mind.

- *Break the task into manageable steps and know that they are mutually supportive.* Once you formulate a good question, you'll draft and revise more effectively. The more you anticipate how you will write and revise a first draft, the more effectively you will produce it.
- *If you are a student, count on your teachers to understand your struggles.* They want you to succeed, and you can expect their help. You can also turn to librarians or your campus writing center.
- *Set realistic goals.* You do something significant when, even if your audience doesn't agree with your claim, they recognize that you argued it well.
- *Most important, recognize the struggle for what it is—a learning experience.* To manage the anxiety and overcome the struggles that all beginners face, do what successful researchers do, especially when discouraged: review your plan and what you've written, then press on. Successful researchers know that while there are no sure things, most well-conceived research projects will turn out OK. Perhaps only “OK—considering,” but probably a lot better than that.

**Part II**

**Sources and Resources**

## Prologue

# Sources and Authentic Research

Research can take many forms, depending on the field of study and the questions that you ask. Some researchers do experiments in laboratories; some observe the natural world or human behavior; some collect data from people through surveys or interviews; some analyze or interpret textual, aural, visual, or material sources, among other methods. In the next two chapters, we focus on research based on sources. We do so because working with sources is the most common form of research and typically the first kind most of us learn. In [chapter 3](#), we focus on locating and evaluating sources for their relevance and reliability. In [chapter 4](#), we focus on preparing to use these sources in arguments. While we treat these as separate steps, in reality they are intertwined. In authentic research, you don't first find all your sources, then read and take notes on them. Rather, once you find one good source, it will lead you to others. You read and explore further using the knowledge you gain along the way to refine your inquiry and inform an answer to your question. This cyclic approach to locating, evaluating, and engaging sources is characteristic of all authentic research.

## 3 Finding and Evaluating Sources

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

Beginning researchers often think of research as just finding information to put into their papers, especially information they believe *backs up* their arguments. This view of research is wrong. It assumes that all evidence is the same and that research involves finding enough sources as specified by an assignment from a teacher. In some cases, of course, students are told to use a minimum number of sources or to use only *scholarly* sources or to avoid Wikipedia as a source. To plan your research project, you must understand what kinds of materials serve as sources and how to use them in your argument.

### 3.1 Understanding Three Types of Sources

Sources are conventionally categorized into three kinds: primary, secondary, and tertiary. Their boundaries are fuzzy, but knowing these categories can help you plan your research. They differ primarily in the uses to which a researcher puts them.

#### 3.1.1 Primary Sources for Evidence

Primary sources are “original” materials that provide you with the “raw data” or evidence you will use to develop and test your hypothesis or claim and ultimately to support the reasons in your argument. What counts as a primary source varies significantly by field. In history, primary sources are

artifacts or documents that come directly from the period or event you are studying: letters, diaries, objects, maps, even clothing. In literature or philosophy, your main primary source is usually the text (e.g., Shakespeare's *Macbeth* or Hannah Arendt's *The Human Condition*) you are analyzing, and your data are the words on the page. In arts criticism, your primary source would be the work of art you are interpreting. In social sciences, such as sociology or political science, census or survey data would also count as primary, as could data obtained through interviews, fieldwork (ethnographic observation), or experiments. In the natural sciences, reports of original research are sometimes characterized as primary sources (although scientists themselves rarely use that term).

### 3.1.2 Secondary Sources for Learning from Other Researchers

Secondary sources are books, articles, or reports that are based on primary sources and are intended for scholarly or professional audiences. The body of secondary sources in a field is sometimes called that field's *literature*. The best secondary sources are books from reputable university presses and articles or reports that have been *peer-reviewed*, meaning that they were vetted by experts in the field before they were published. Researchers read secondary sources to keep up with developments in their fields and, in this way, to stimulate their own thinking. The standard way of framing new research problems is to challenge or build on the conclusions or methods of others, as presented in secondary sources they have written. Secondary sources also include specialized encyclopedias and dictionaries that offer essays by scholars in a field. Secondary sources were once available mainly through college and university libraries, but they are also available through online catalogs and databases, including EBSCOhost and Google Scholar.

You can use secondary sources for three main purposes:

1. **To learn what others have written about your topic.** Secondary sources are the best way to learn what other researchers have said about your topic as well as what kinds of questions they think are important. (Pay attention not only to the research questions they address but also to any additional questions they pose.) You may be able to model your question on one of these.

2. **To find other points of view.** Beginning researchers sometimes believe they will weaken their case if they mention ideas that contradict their own. The opposite is actually true: when you acknowledge opposing views, you show your audience not only that you have considered those views but also that you can respond to them (see [chapter 9](#)). Your research will be complete only when you imagine and respond to your audience's predictable questions and disagreements. You can find those in secondary sources. What alternatives to your ideas do they offer? What evidence do they cite that you must acknowledge? More important, you can use the arguments of others to test and improve your own. You cannot understand what you think until you know why a reasonable person might think differently. So as you search for sources, look not only for those that support your views but also for those that challenge them.
3. **To find models for your own research and writing.** You can use secondary sources to find out not just what others have written about your topic but also *how* they have written about it. If most of your sources use headings, charts, and lots of bullet points, then you might consider doing the same; if your sources never use them, you probably shouldn't. Notice things like the language (technical or broadly accessible?), paragraphs (long or short?), and how they use other sources (quotation or paraphrase?). Pay special attention to the kinds of evidence most of them use and the kinds of evidence they rarely or never use. You can also use secondary sources as models for your own argument. You cannot reuse a source's specific claims and reasons, but you can use the same kind of reasoning in your own argument, perhaps even following the same organization. So if you come across a source that's not precisely on your topic but treats one like it, skim it to see what you can learn about how to argue your case. (You don't have to cite that source if you use only its logic, but you may cite it to give your own more authority.)

### 3.1.3 Tertiary Sources for Introductory Overviews

Tertiary sources are books and articles that synthesize secondary sources for general readers. They include textbooks, articles in encyclopedias (including Wikipedia), articles in publications for broad audiences like *Psychology Today*, or even some educational YouTube videos. In the early stages of research, you can use tertiary sources to get a broad overview of your topic. But if you are making a scholarly argument, you should rely on secondary sources because these make up the conversation in which you are seeking to participate. If you cite tertiary sources in a scholarly argument, you will mark yourself as either a novice or an outsider, and many readers won't take you or your argument seriously.

This response may seem unfair, but it's not. Tertiary sources aren't necessarily wrong—many are in fact written by distinguished scholars—but they are limited. Because they are intended for broad audiences who are unfamiliar with the topics they address, tertiary sources can sometimes oversimplify the research on which they are based, and they are susceptible to becoming outdated. But if you keep these limitations in mind, tertiary sources can be valuable resources: they can inform you about topics that are new to you, and if they have bibliographies, they can sometimes lead you to valuable secondary sources.

### **3.1.4 Differentiating Primary, Secondary, and Tertiary Sources**

Researchers haven't always divided their sources into these three categories. The distinction between primary and secondary sources originated with historians in the nineteenth century and then spread to other fields. The category of tertiary sources was added later. Although this scheme is now the standard way that students are taught to classify sources, it fits some disciplines better than others. It works very well for history, in which primary sources are materials directly connected to a historical event or moment, and for criticism, in which primary sources are the original works of art, music, or literature that you are interpreting. But it works less well for, say, mathematics, chemistry, or nursing.

It is also important to understand that the classifications of primary, secondary, and tertiary are not absolute but relative to a researcher's project. In most instances, an article in a scholarly journal would be considered a secondary source. But it would become a primary source if your research prob-

lem concerned its author or the field itself, for example, if you were writing a biography of the anthropologist Margaret Mead. Likewise, T. S. Eliot’s essay “Hamlet and His Problems” would be a primary source if you were studying Eliot but a secondary source if you were studying Shakespeare. An encyclopedia article would usually be considered a tertiary source, but it would become a primary source if you were studying the way that encyclopedias deal with gender issues. A TED Talk on election campaigns might be a tertiary source in political science but a primary source in media studies. Change your focus and you change the classification of your sources.

If this is confusing, it need not be. Remember that these classifications are just a means to an end. The important thing, ultimately, is not what you *call* your sources but how well you *use* them to address your research problems, develop new ideas, and make interesting arguments. In the next chapter, we will talk more about how you can use sources in your writing.

## 3.2 Making the Most of the Library

Even with the internet, there is no substitute for the library. You can use the library not just to find sources on a topic but to explore and refine topics and research questions you might want to pursue. Whether you visit in person, which we highly recommend, or virtually, the library is an indispensable tool for research. Given the volume of information now available online, you might think libraries are no longer necessary except, perhaps, for highly specialized research. However, the opposite is true. With *so much* information at our fingertips, libraries are more essential than ever in doing research. Libraries not only let us access information but also ensure that our sources are reliable. Even if your public or academic library is comparatively small, it serves as a *portal* to a much broader range of resources—research guides, reference works, and online databases and content—that extends the library’s reach. Of course, to benefit from these resources, you must learn to navigate the library.

### 3.2.1 Planning Your Library Search

Before you can use sources, you must first find and evaluate them. Some materials that will eventually serve as sources will be physically located in your library; others are likely elsewhere, whether online or at another library. To take advantage of what libraries have to offer, then, you must *plan* your search. Fortunately, this is where libraries—and librarians—are most useful.

Knowing where to begin a search can be overwhelming at first. With a topic or a research question in hand, it is tempting simply to enter a few terms in your library's search engine and see what comes up. We do this too, but we also know that the library offers more systematic and productive methods for discovering useful and credible sources.

**Ask a Librarian.** Perhaps the best advice we can offer is to rely on the research expertise of librarians. Both general reference librarians and (in larger libraries) subject-area specialists can help you refine your search parameters and direct you to the right tools for your specific research question. They can help you use the catalog to locate materials held by your library or by other libraries (and obtainable through interlibrary loan). These same librarians typically design research guides that identify reference works and online databases for specific fields.

And don't be shy. Librarians love to assist researchers of all levels and at all stages of the research process. They can help you formulate your research question, develop search terms, and inventory your results to ensure you haven't overlooked something of value. The only embarrassing question is the one you *failed to ask* but should have. Of course, it pays to meet busy librarians halfway by preparing in advance. If you have a well-developed research question ready to share, your librarian will be able to give you better advice. You might describe your project using the three-step rubric from [chapter 1](#):

1. I am working on educational policy in the 1980s
2. to find out how school boards in the Midwest dealt with desegregation

3. because I want to understand regional differences in race relations.

**Consult Reference Works.** If you already know a lot about your topic, you probably also know how to find sources on it. But if you are new to a topic, resist the temptation to go straight to primary or secondary sources that strike you as relevant. This approach is unreliable and unpredictable and probably won't save you any time. A more successful strategy is to allow reference works to shape your search efforts. Compiled by experts, both general reference works such as the *Encyclopaedia Britannica* and more specialized works such as the *Encyclopedia of Philosophy* will give you the lay of the land, so that later it will be easier to see how your sources fit within the bigger picture. In addition, reference works often include citations or bibliographies that can lead you to sources you might otherwise overlook.

Especially valuable at early stages of research are bibliographic works, many of which provide abstracts summarizing significant articles or books on a topic. Look for annotated bibliographies or annual literature reviews that sum up recent books or articles because these often offer promising leads for your research.

**Explore Online Databases.** What sets libraries apart from the publicly available internet are their subscriptions to indexes and databases. After books, these are arguably a library's most valuable assets, since they give researchers access to materials they could not obtain otherwise. Each library's subscriptions will differ, with major research libraries offering the most comprehensive access to specialized indexes and databases. However, every academic library and many public libraries offer a powerful set of online tools that greatly extend their actual collections. You will certainly want to make use of these general and specialized resources in your research. At least become familiar with the major databases to which your library subscribes, such as JSTOR, Academic Search Premier, MLA International Bibliography, or PubMed. Many academic databases either provide abstracts or direct you to articles that include abstracts. Looking at these can help you decide if an article itself is worth reading. Some databases allow

you to access full-text articles and even books. But be aware: if your library does not subscribe to a particular journal included in a database, you might be asked to pay a fee to access a full-text article. Before doing so, *always* speak with a librarian about other means of access.

### 3.2.2 Finding Specific Sources

Having considered your search strategies and resources, you are now in a position to look for specific sources in and beyond the library. Of course, this process is not strictly linear. A single source can lead to others and return you to catalogs and databases you have already visited, only this time with new search terms. Novice researchers often rely too heavily on only a few terms or on terms that prove to be too broad (or narrow) to call up relevant sources. Successful researchers know they have to be flexible: searches typically involve trial and error to discover those terms that will yield the most relevant sources.

**Search Your Library Catalog.** In your research, you will probably need to use your library’s catalog in two complementary ways: keyword searching and browsing. When you have examined some sources to identify a list of *keywords* associated with your topic, you are ready to use these terms to search the catalog. In most libraries, you must choose the category (books, articles, journals, etc.) you wish to use for your search.

If your sources include books, you can use Library of Congress subject headings, found either on the back of a book’s title page or on its “details” page in the online catalog, to search for related materials. On the back of this book’s title page are the terms

Research—Methodology. | Technical writing.

If you search an online catalog for those terms, you will find other books on those subjects. A book may be cross-listed under multiple subject headings. In that case, take a quick look at the titles listed under those headings as well. You may find useful sources you would have missed otherwise. You can also *browse* the catalog for books with similar *call numbers*. Once you

identify a book that seems on target, use its call number to find others shelved along with it. Look for the browse link in your book's catalog entry. This list will be less focused than a keyword list, but it may contain unexpected gems. So don't restrict yourself to books nearest your target. Invest the time to browse widely.

The problem with any online search is that it may produce an overwhelming number of titles. The University of Chicago library has hundreds of books on Napoleon and thousands with the word *environment* in their titles. If your search turns up too many sources, narrow it down. Today's online catalogs let you limit searches in many ways: by date of publication, language, subject, resource type (books, articles, databases, etc.), and possibly others depending on the catalog. If you can't decide how to narrow your search, start with the date of publication. Restrict it to those sources published in the last fifteen years; if that still turns up too many, cut to the last ten years.

After you search the Library of Congress or a large university catalog, you may discover that your library holds only a fraction of what you found. But your library can likely help you borrow what you need through a service such as interlibrary loan. If your library cannot get you something, or cannot get it to you in time for it to be useful, then you might consider buying it.

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

**Browse the Stacks.** Doing research online is faster than on foot, but if you never go into the stacks of your library (assuming you are allowed to), you may miss crucial sources that you will find only there. More important, you'll miss the benefits of serendipity—a chance encounter with a valuable

source that occurs only when a title happens to catch your eye. (All of us have found important sources in this way.)

If you can get into the stacks, find the shelf with books on your topic, then scan the titles on that shelf, then on the ones above, below, and on either side, especially for books with new bindings published by university presses. Then turn around and skim titles behind you; you never know. When examining a promising scholarly book, skim its table of contents and index for keywords related to your question. Then skim its bibliography for other titles that look relevant. You can do all that faster with a book in your hand than you can online. (See [3.4](#) for more on systematic skimming.)

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

If you can't browse your stacks in person, you might be able to browse them virtually. While virtual browsing is no substitute for holding a book in your hands and flipping through its pages, or for running your finger along a shelf to see what you find, it still allows you to experience some of the serendipity of in-person browsing. In fact, you should always browse them both ways because you can only find electronic sources like online journals and ebooks in your library's online catalog. Most library catalogs allow you to scroll through their holdings sequentially by call number. If you don't know how to search that way, ask a librarian.

**Follow Bibliographic Trails.** Most sources will give you trailheads for bibliographic searches. When you find a scholarly source that seems useful, skim its bibliography or works cited for other promising sources. If that source is a book, check its index. Generally, the more extensive a figure's treatment, the more important that figure is. Journal articles usually begin with a review of previous research, all cited. By following this bibliographic trail, you can navigate the most difficult research territory because one source always leads to others, which lead to others, which lead to . . . But remember that following bibliographic trails is a retrospective exercise

—it will lead you to sources other researchers *thought* were important when they were writing, and those sources may or may not be as important today. It can also perpetuate a particular kind of bias, in which sources cited in the past continue to be cited, to the exclusion of other voices.

**Use Citation Indexing.** Many online catalogs and databases let you look up other sources that cite one that you already know. This technique, called citation indexing, is like following a bibliographic trail, but forward rather than backward. Instead of searching for sources that a given source cites, *backward* citation, you can search for sources that cite a given source, or *forward* citation. To do this kind of research, researchers used to have to consult printed citation indexes, a process that could take hours or even days. But today's online catalogs and databases make it easy. Generally, the more a given source is cited, the greater its reputation and impact. Again, be careful: occasionally, sources are cited frequently because they are so *bad* or because they represent ideas that once were prominent but have been debunked.

A source's credibility can thus be gauged both by the sources it cites and by the sources that cite *it*. By following bibliographic trails and using citation indexing in tandem, you can build up a rich network of sources to support your own research.

### 3.3 Locating Sources Online

You already know how to search the publicly available internet: type a few words into the search bar of your browser and pages of links—delivered as URLs, or uniform resource locators—appear on your screen. Your practical experience with such everyday research might lead you to regard the internet as comprehensive and reliable. But that would be a mistake. Again, remember that your library's catalogs and databases will allow you to access a great deal of information that you cannot get through Google (or even Google Scholar).

When using the internet for research, maintain a healthy skepticism: much of what we find through Google, other search engines, or generative

AI is reliable, but not everything is. In contrast to your library's catalogs and databases, the internet is essentially unmonitored. There is no one to vouch for the credibility of materials and content posted to, and sent from, countless websites. And finally, keep in mind that companies offering free search engines make their money by acquiring data about you through your online behavior and by selling advertising, and that webmasters routinely modify their sites to make them appear higher in search results. These practices are not necessarily nefarious, but you should remember that search engine companies and websites themselves have an interest in where you go and what you see online.

But if you keep these limitations in mind, using the internet can be a valuable component of your research plan. Here are some ways in which we use the internet in our own research:

- To get our bearings with respect to a new topic—regarding everything we learn at this stage as provisional.
- To explore potential keywords to use in a more systematic search.
- To remind ourselves of dates or facts—again remembering to check these against more reliable sources.
- To locate the authors of sources whom we might wish to contact: profiles of many scholars and researchers are available on college and university websites.
- To get a “ballpark” sense of what we are likely to find through a search of specialized databases by a quick search using Google Scholar.

Publicly available general tertiary sources such as Wikipedia and specialized ones such as the Internet Encyclopedia of Philosophy for philosophy, Sociosite for sociology, and the Victorian Web for Victorian studies are often quite reliable. But you should still view them skeptically. In general, don't treat online articles (aside from those in scholarly journals) as secondary sources, as these depend for their credibility on the checks inherent in the academic publishing system, especially that of peer review. You can, however, use the internet freely as a primary source. For example, if you study how soap opera story lines respond to their fans' reactions, fan blogs

would be fine primary sources. (We discuss evaluating sources in the next section.)

**Respecting Authors' Rights.** Sites such as Project Gutenberg and Google Books can provide reliable online copies of older texts no longer in copyright. But postings of more recent texts (in the United States, those published within the past ninety-five years) may violate the author's copyright. You should avoid relying on unauthorized copies—not only because those copies are illegal but also because they are often inaccurately reproduced.

## 3.4 Evaluating Sources for Relevance and Reliability

When you start looking for sources, you will probably find more than you can use, so you must quickly evaluate their usefulness. To do so, use two criteria: relevance and reliability.

### 3.4.1 Evaluating Sources for Relevance

If your source is a book or an ebook, do this:

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

If your source is an online or print journal article, do this:

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

If your source is another type of online material, do this:

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

This kind of speedy reading can guide your own writing and revision. If you do not structure your paper so your readers can skim it quickly and see the outlines of your argument, your paper has a problem, an issue we discuss in chapters [10](#) and [11](#).

### **3.4.2 Evaluating Sources for Reliability**

You need to develop a feel for the reliability of your sources. This is something that comes with experience and practice and from cultivating a certain degree of skepticism about the accuracy of and motivations behind the claims sources make. It’s usually safe to rely on the institutions that exist to support authentic research, such as universities, university presses, aca-

demic journals, and some independent research foundations. But those institutions themselves can also be limited in what they allow into the conversation: they may perhaps exclude new ideas that conflict with more established ones or that come from people with diverse insights, backgrounds, and experiences. So you must also exercise your own judgment, and you can always discuss your concerns about specific sources with a teacher, mentor, or librarian.

Here are some signs of reliability:

- 1. Is the source published in print or online by a reputable press?** Most university presses and the books and journals they publish are reliable, especially if you recognize the name of the university. Some commercial presses, which are presses not associated with a university, are reliable in some fields, such as Norton in literature, Elsevier in the sciences, or West in law. Be skeptical of commercial and especially self-published books that make sensational claims, especially about hotly contested issues. Even if authors have “PhD” after their names, their scholarship may still not be trustworthy (it’s a matter of ethos; see 5.6). Be especially skeptical of organizations, such as lobbying or trade organizations, that adopt the trappings of academic institutions but are not.
- 2. Was the book or article peer-reviewed?** Most reputable presses and journals ask experts to review a book or article for accuracy and soundness of content before it is published; this is called peer review. Essay collections published by university presses are often but not always peer-reviewed; sometimes they are reviewed only by the named editor or editors. Few commercial presses or magazines use peer review. If a publication hasn’t been peer-reviewed, be cautious.
- 3. Is the author a reputable scholar?** This is hard to answer if you are new to a field. Most publications cite an author’s academic credentials; you can find more with a search engine. Most established scholars are reliable, but even reputable scholars can have axes to grind, especially if their research is financially supported

by a special interest group. Use a search engine to check out who authors thank, including foundations that supported their work.

4. **If the source is a public website, is it sponsored by a reputable organization?** A website is only as reliable as its sponsor. You can usually trust one that is sponsored and maintained by a reputable organization. If you are unfamiliar with a website's sponsor, do a search to find out more about it. But be aware that some organizations adopt names that seem objective as cover for partisan advocacy. For example, in the twentieth century, cigarette manufacturers created the Tobacco Institute, later renamed the Council for Tobacco Research, whose mission was not to engage in authentic research on tobacco but to counter it. Some sites supported by individuals are reliable, but since anyone with certain skills can create web content, many (perhaps most) are not.
5. **Is the source current?** You must use up-to-date sources, but what counts as current depends on the field. In computer science, a journal article can be out-of-date in months; in the social sciences, ten years pushes the limit. Publications have a longer shelf life in the humanities: literary or art criticism, for example, can remain relevant for decades. In general, a source that sets out a major position or theory that other researchers accept will stay current longer than those that respond to or develop it. Assume that most textbooks are *not* current. If you are unsure whether a source will be considered current, take your lead from the practice of established researchers in the field. Look at the dates of articles in the works cited lists of a few recent books or articles in the field: a good rule of thumb is that you can cite works as old as the older ones in that list (but to be safe, perhaps not as old as the oldest). Try to find a standard edition of primary works such as novels, plays, letters, and so on—it is usually not the most recent. Be sure that you consult the most recent edition of a secondary or tertiary source: researchers often change their views, even rejecting ones they espoused in earlier editions. And if an online source has not been updated recently, it may have been abandoned and may no longer be reliable.

- 6. If the source is a book or article, does it have notes and/or a bibliography?** If not, be suspicious, because you have no way to follow up on anything that the source claims.
- 7. If the source is a public website, does it include bibliographic data?** You cannot judge the reliability of a site that does not indicate who sponsors and maintains it, who wrote what's posted there, and when it was posted or last updated.
- 8. If the source is a public website, does it approach its topic judiciously?** Authentic research presumes a willingness to consider ideas other than one's own (see [chapter 9](#)). So be wary of websites (like sources in general) that make wild claims, use abusive language, or attack those who hold alternative views.
- 9. Does the source display a basic level of editorial care?** Any source might include an occasional typo, but if you find yourself noticing errors of spelling, punctuation, and grammar that suggest carelessness, be wary. That carelessness might extend to the content as well. For example, if a source includes obvious factual errors, distrust it.
- 10. If the source is a book, has it been well reviewed?** Many fields have indexes to published reviews that tell you how others have evaluated a source.
- 11. Has the source been frequently cited by others?** You can roughly estimate how influential a source has been by how often others cite it. Citation indexing makes this easy to do (see [3.2.2](#)). If you find that a source is cited repeatedly, you can infer that experts in the field regard it as reliable and significant. Such sources are said to have a high "impact factor." You should keep an eye out for such sources and use them to orient yourself in your field of research. But just because a source hasn't been cited often doesn't mean it's unreliable. Sometimes experts overlook or discount the perspectives of younger scholars or those from marginalized backgrounds, but if their work meets the other criteria described here and it is relevant to your research, you should certainly consult and cite it yourself.

These indicators do not guarantee reliability. Reviewers, while experts, are people too. They might misjudge a work or miss shortcomings that others, after publication, discover. So don't assume that you can read uncritically just because a source is written by a reputable researcher and published by a reputable press.

## 3.5 Looking Beyond Predictable Sources

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

## 3.6 Using People to Further Your Research

One of the paradoxes of twenty-first-century research is that even as new technologies allow us to access an unprecedented wealth of materials with ease, research has also become more personal. So as you undertake your project, don't forget about the human element.

## When Someone Gets There First

Don't panic if you find a source that seems to pose and solve your research problem. You may be right, but probably not. If the source does in fact solve your *exact* problem, you have to formulate a new one. But your source's problem or its solution is likely not as close to yours as first feared. In this case, use proximity to your advantage by acknowledging the strength of your source's claim and noting where and how your claim differs. Indeed, this is precisely the kind of dialogue that makes research a conversation.

Most obviously, people can be sources of primary data, collected through observation, surveys, or interviews. Be creative when using people for primary research: don't ignore people in local business, government, or civic organizations. For example, if you are researching the social and economic effects of redlining in your town, you might go beyond the documents to ask longtime residents whether they have any memories or stories to share. We can't explain the complexities of interviewing here (there are many guides to that process), but remember that the more thoroughly you plan what you want to ask, the more efficiently you will get what you need. You don't necessarily need to ask an interviewee a fixed list of questions—in fact, that can be a bad idea if it makes the interviewee freeze up. But prepare so that you don't question your source aimlessly. You can always re-read a book for what you missed, but you can't keep going back to people because you didn't prepare well enough to get what you needed the first time.

People can also lead you to good secondary sources or serve as such sources themselves. We already encouraged you to discuss your research with one kind of expert: a reference librarian. Librarians are experts on the processes of library research. You can also benefit from talking directly with experts on your topic. Ask them about the important open questions in the field. Ask them what they think of your project or provisional thesis.

Ask them to suggest secondary sources for you to read. This kind of personal guidance can be invaluable to a beginning researcher, and many experts will be happy to talk with you (or at least engage in a little email correspondence).

All of us have made these kinds of queries with great success in our own research, and all of us have responded to them in turn, by helping those who have contacted us. One of us once invited an eminent scholar to talk about his research process to a group of first-year college students. He began his talk by saying, “I don’t really have a research process; I just ask my smart friends what I should read.” This scholar was being at least a bit tongue-in-cheek, but we could all do worse than to rely on such smart friends, at least to get us started.

Finally, when you use people in research, be sure to do so ethically (see [chapter 17](#)). Colleges and universities have become increasingly aware that research using people may harm them—not just physically but by embarrassing them, violating their privacy, and so on. Every college and university now has guidelines for the responsible conduct of research directly or indirectly involving people, as well as a committee that reviews all such projects, whether done by students or professional researchers. These safeguards exist for good reason: because people, especially the most vulnerable, have been grievously harmed by researchers who believed their work so important that it justified disregard for, or even abuse of, the people and communities they studied. So don’t dismiss these important checks as so much bureaucratic make-work. They are in place to protect you, your institution, and, most important, those you study.

### ► Quick Tip: Using Generative Artificial Intelligence

In late 2022, a new kind of “source,” a generative artificial intelligence (AI) tool able to respond to questions and prompts with passages of cogent text, became publicly available for free online. This technology will almost certainly revolutionize much about our lives, including how we research, argue, and communicate (the specific concerns of this book). We can’t tell you what specific changes are coming (although we have our speculations), but we can offer you some general principles that will help you use generative AI productively and ethically.

*Explore:* Every new technology is accompanied by new *affordances*, that is, things it allows you to do that you could not do as easily, or at all, before. Generative AI is no exception: we have a sense of its marvelous potential, but we don't yet know all that it can do. So play around with it. Put it through its paces. Ask it questions about your research project or to come up with research questions of its own, and see what it produces. Use it to prod your thinking, to generate information, to recommend additional sources, even to create text that you might revise as part of a paper. You won't know how it can help you until you try.

*Communicate:* Just as we don't yet know all the affordances of generative AI, we don't yet have agreed-upon standards for how and when it can be used appropriately in research and writing. If you are a student, discuss that question with your teachers and advisers. Know your school's policies. If you are a researcher, talk with other members of your research community. Learn what practices are endorsed by your field's professional associations or leading journals. And share your own thoughts and suggestions.

*Be honest:* Just as we'll continue to discover new legitimate uses for generative AI, so there are some who will continue to invent new ways to use it to cheat. Don't use generative AI to falsify data, solve problems you are supposed to solve without such assistance, draft text that you pass off as your own, and so on. Remember that your reputation and integrity are among your greatest assets, as a researcher and writer and as a person. A good rule of thumb is this: if you would feel uncomfortable telling a teacher, mentor, or journal editor how you used generative AI, don't use it in that way.

*Be critical:* Generative AI is in its infancy, and it will get better and better. But right now, its results are not always reliable. We ourselves, and other researchers and scholars we know and trust, have tested it by asking it questions related to our own areas of expertise. We've found that it can produce useful information and insights but that it can also offer false facts, misattribute quotations, even make up references. So be careful: understand that generative AI is powerful but fallible, and confirm your results using other methods.

*Be transparent:* Let your audience (whether a teacher or other researchers) know exactly how you used generative AI in your research and writing. We suggest—at least until there are established conventions governing the

matter—that when presenting your research orally or in writing, you acknowledge how and to what extent you used generative AI, just as you would acknowledge any other source. If you are writing a paper, include a statement on your works cited page or in your bibliography. If you are delivering a presentation, consider giving a brief acknowledgment at its beginning or end.

## 4 Engaging Sources

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

In this chapter, we show you how to get the most out of your sources, especially your secondary sources. We have chosen this focus for a simple reason: it's a topic on which we can offer useful, general advice. The ways that researchers find or create their data, and the kinds of data audiences expect as evidence, vary wildly from field to field. Historians and literary critics typically mine primary sources for evidence. Other researchers, however, don't use primary sources at all. Depending on their fields, they might analyze soil samples in a lab, administer a survey, or build a computer model to conduct simulations. But every field has its body of secondary sources, sometimes called its *literature*. Researchers in all fields engage these sources in similar ways.

How you use your secondary sources depends on where you stand in your search for a project. Experienced researchers read secondary sources regularly to keep up with work in their fields, and so they usually begin their projects with a question or problem in mind. But if you are new to a subject or have only a topic, you may have to read a lot of sources to find a problem to pursue and then even more to figure out how to solve it. In this chapter, we show you how to read secondary sources as experienced researchers do: not just for data you can use in your own argument but more importantly for questions, problems, and arguments that spur your own thinking.

## 4.1 Recording Complete Bibliographic Information

First things first: once you decide a source is worth reading, record *all* of its bibliographic information. Do this before you do anything else—it only takes a moment, and we promise that no habit will serve you better for the rest of your career.

You need the bibliographic information for your sources not only so that you can recall what you have read, but also so that you can credit your sources when you write. In your own notes, you can record bibliographic data in whatever format you like—so long as your records are complete; when you cite sources in your writing, you should follow the citation style of your field (see 12.8). Most libraries and database interfaces let you export citations in the format of your choice with a few clicks.

For print books, record

- author(s)
- title (including subtitle)
- editor(s) and translator(s) (if any)
- edition (if not the first)
- volume number (if any)
- publisher
- year published
- page numbers of chapters consulted
- library call number (if any)
- ISBN

For ebooks, record everything you would record for a print book plus

- URL (if any)
- name of database (if any)
- date of access (if consulted online)
- electronic format of the book

For print journal articles, record

- author(s)
- title (including subtitle) of article
- title of journal
- volume and issue number
- date
- page numbers of article
- library call number (if any)

For online journal articles and other types of online sources, record as much of the above as applies. Also record

- URL or, if the source has one, its digital object identifier (DOI), a stable code unique to that source (often presented as a URL beginning with <https://doi.org/>)
- name of database (if any)
- owner or sponsor of the site
- date of access

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

If you scan or photocopy a passage from a book, also scan or photocopy its title page and the bibliographic information on the reverse side. Then add the library call number if you know it. You won't need to include the call number when you cite the source, but having it will allow you to find the source again easily if you need it.

You may think this advice is overly cautious, but it isn't. Nothing is more frustrating than having the perfect quotation or bit of data in your notes and being unable to use it in your writing or presentation because you didn't completely document your source and can't find it again.

## 4.2 Engaging Sources Actively

Taking notes is not just about recording and accumulating sources and data; it's also about processing and understanding them. In fact, this second purpose is the more important one. Today, with access to the internet and the databases in a research library, you can summon an infinitude of sources to your screen instantaneously. This applies not just to secondary sources but also to primary ones. (See the anecdote about Williams on the next page: if he were writing today, he'd quite likely find that the list of renters had been digitized and made available to researchers worldwide.)

### Wrong Place

Williams once had to withhold a publication on Elizabethan social history for more than a year because he failed to document a source fully. Years earlier he had come across some data—a list of renters in London in 1638—he thought he would someday find useful. But he had failed to record complete information on his source, so when that day came, he could not use its data. He searched the library at the University of Chicago for hours, until one night he sat up in bed, realizing that the source was in a different library!

Experienced researchers know that just recording a source in a spreadsheet or having it open in a browser tab doesn't mean that they have understood it or that it has benefited their own thinking. They don't read passively; they engage their sources actively, entering into conversation with them. If you can, read important sources twice. First, read generously. Pay attention to what sparks your interest. Reread passages that puzzle or confuse you. Don't look for disagreements right away, but read in ways that help the source make sense. Otherwise, you'll be tempted to emphasize its weaknesses if it presents an argument that rivals yours. Resist that temptation, at least at first.

Then, if your source seems important or seems to challenge your own position, read it a second time slowly and more critically. When you read a passage, think not only about what it says but about how you would respond. Record those responses in your notes or—if you own the source or are working from a copy—in the margins of the source itself. Test your understanding by summarizing: if you can't sum up a passage in your mind, you don't understand it well enough to disagree.

Don't accept a claim just because an authority asserts it. That assertion may be wrong or, depending on the date of the source, obsolete. For example, an older source might refer to the nine planets of our solar system, but today that would be incorrect, since in 2006 Pluto was demoted to a “dwarf planet.” And understand that experts frequently disagree. If expert A says one thing, B will assert something else, and C will claim to be an expert but not actually be one. When some students hear experts disagree, they become cynical and dismiss expert knowledge as just opinion. But don't mistake informed and thoughtful debate over legitimately contested issues for mere opinion. In fact, it's the mark of an active field.

## Check—and Check Again

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

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

## 4.3 Reading for a Problem

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

### 4.3.1 Look for Creative Agreement

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

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

Smith uses anecdotes to show that Rosie the Riveter resurfaced as a feminist symbol in the 1980s, but images from magazines offer better documentary evidence.

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

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

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

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

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

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

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

### 4.3.2 Look for Creative Disagreement

If you read actively, you'll inevitably find yourself disagreeing with your sources. Don't brush those disagreements aside, because they often point to new research problems. Look for these types (the list is not exhaustive, and some kinds overlap):

1. **Disagreements about classification or definition.** A source says something is one kind of thing, but it is another.

Smith says that graffiti is merely vandalism,  
but it is better understood as a form of  
public art.

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

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

- Though a source says \_\_\_\_\_ is *not* a kind of \_\_\_\_\_, I can show that it is.

2. **Disagreements about parts and wholes.** You can show that a source mistakes how the parts of something are related.

Smith has argued that coding is irrelevant to a liberal education, but, in fact, it is essential.

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

**3. Disagreements about history or development.** You can show that a source mistakes the origin or development of a topic.

Smith argues that tragedy developed from religious ritual, but it didn't.

- Source claims that \_\_\_\_\_ is changing, but it's not.
- Source claims that \_\_\_\_\_ originated in \_\_\_\_\_, but it didn't.
- Source claims that \_\_\_\_\_ developed in a certain way, but it didn't.

**4. Disagreements about cause and effect.** You can show that a source mistakes a causal relationship. Be especially alert to confusions of *causation* (A results in B) with *correlation* (A occurs simultaneously with B).

Smith claims that school voucher programs don't decrease funding to public schools, but evidence from three school districts that tried such programs suggests that they do.

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

5. **Disagreements of perspective.** Most disagreements do not change a conceptual framework, but when you oppose a “standard” view of things, you urge others to think in a new way.

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

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

can analyze it from a new point of view and see it in a new way.

## 4.4 Reading for Arguments

Experienced researchers also read to improve their own arguments by accounting for the opposing views of others and by being open to arguments of others as models of reasoning and analysis.

### 4.4.1 Read for Arguments to Respond To

No argument is complete until it acknowledges and responds to its audience's predictable questions and disagreements. You can find some of those competing views in secondary sources. What alternatives to your claims do they offer? What evidence do they cite that you must acknowledge? Some new researchers think that they weaken their case if they mention any views opposing their own. The opposite is true. When you acknowledge the views of others, you show that you not only know those views, but have carefully considered and can confidently respond to them (for more on this, see [chapter 9](#)).

Experienced researchers also use those competing views to improve their own. You can't really understand what you think until you understand why a rational person might think differently. So as you look for sources, don't look just for those that support your claims. Be alert for sources that challenge them. If those sources are well known to your audience, you increase your credibility as a researcher by engaging them. If they are not, you do a valuable service to your research community by bringing new voices and perspectives into the conversation.

### 4.4.2 Read for Models of Reasoning and Analysis

You can use secondary sources in another way as well: as models of reasoning and analysis. If you have never made an argument like the one you plan to, you might follow the pattern of other arguments that you find in your

secondary sources. You can't use specific ideas (that would be plagiarism), but you do not plagiarize a source when you borrow its ways of arguing or of analyzing data. Don't worry that using a source as a model will make your research seem unoriginal. Research arguments are often unoriginal in their methods and ways of reasoning. Readers will look for originality in your problem, claim, and evidence.

Suppose you want to argue that the American story of the first Thanksgiving thrived because it served the political interests of those who created it and contributed to it over time and because it satisfied the emotional needs of those who repeated it. You will need reasons and evidence unique to your claim, but you can raise the *kinds* of issues that are in similar arguments about other legends, real or fictional. If, for example, a source shows how the King Arthur legend helped to shape English society and politics, you might make a similar argument about Thanksgiving and the United States. You are not obliged to cite your model, but to gain credibility, you might note that it makes an argument similar to yours:

Just as the Arthurian legends helped to forge a definitively English social and political identity (Weiman 2019), so the story of the first Thanksgiving . . .

## 4.5 Reading for Data and Support

You can use secondary sources to locate data to use as evidence and to support your argument.

### 4.5.1 Read for Data to Use as Evidence

Beginning researchers regularly mine secondary sources for data, but if you can, check the primary source. If, for example, an important quotation is available in its original form and context, it's a risky intellectual shortcut not to look it up. You don't have to agree with a source to use its data; in fact, its argument does not even have to be relevant to your question, so

long as its data are. However, use statistical data only if you can judge for yourself whether they were collected and analyzed appropriately.

But a word of caution: *Always* cite the source you consult. Some beginning researchers think that when they use data reported in a secondary source, they should cite the original, primary source (and some think the opposite). But they are only half right in both cases. If you cite just the primary source, you imply that you consulted that source yourself. If you cite just the secondary source, you imply it is the ultimate source of your data. Instead, you should cite *both* sources. For example, if you use a secondary source written by Anderson for primary data in an article by Wong, your citation (in APA style) would look like this: (Wong, 1989, p. 45; quoted in Anderson, 2015, p. 19).

A function of citations is to allow readers to retrace your steps, should they want to do so. In some disciplines, especially in the sciences, research publications include links as well as or even instead of conventional citations. Some teachers also accept or even prefer links instead of citations because those links allow them to review their students' sources easily and efficiently. If you are considering using links instead of or in addition to citations, check the conventions of your field or with your teacher.

#### **4.5.2 Read for Claims to Use as Support**

Researchers often use the results they find in secondary sources to bolster their own arguments. If you find a useful claim, you can cite it to support your own, especially if it has been well supported and widely accepted. But many claims show nothing more than that another researcher agrees with you. To use such claims as evidence, you have to report not only the conclusion of the source but its reasoning and supporting evidence as well. In other words, you have to give *your* audience the opportunity to judge for themselves the relevance and the reliability of the evidence you choose to use from others.

### **4.6 Taking Notes Systematically**

Once you find a source that you think you can use, you must read it carefully and purposefully. But that will do you little good if you can't locate it later or remember it well enough to use. So again, before you do anything else, record the source's full bibliographic information. Then take notes in a way that will help you not only to remember and use what you have read but also to further your own thinking. Careful, systematic note-taking will also protect you from inadvertent plagiarism (see [chapters 12](#) and [17](#)).

You can take notes electronically, for example, by downloading and annotating PDFs or by bookmarking useful websites. You can also take notes by hand, manually typing them into your computer, tablet, or phone, or even writing them out on index cards or in a notebook. Similarly, you can organize your notes using an online reference-management system, a spreadsheet, a folder on your computer, or even a shoebox. Each of these approaches has its advantages and disadvantages. You need to understand them and pick the approach that will work best for you.

#### 4.6.1 Taking Notes on Paper

Years ago, the standard way to take notes on sources was to create a file of index cards:

Sharman, Swearing, p. 133

HISTORY/ECONOMICS (GENDER?)

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

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

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

GT3080/S6

At the top left is the author, short title, and page number(s). At the top right are keywords that let the researcher sort and re-sort notes into different categories and orders. The body of the card summarizes the source, records a direct quotation (where appropriate), and includes the researcher's questions and responses. A card like this may seem old-fashioned, but it provides a template for efficient note-taking:

- Record complete bibliographic information for each source so that you can cite it properly and find it again easily.
- Separate notes on different topics, even if they come from the same source.
- Make sure your notes are accurate because you need to be able to rely on them later. If you want to quote more than a few lines, copy or save the passage or the whole document. Be alert for transcription errors: when hand-copying or typing out quotations, it is surprisingly easy to alter their wording, even when you think you are being careful. (This risk in transcription is tied to its benefit—when you actually write or type out a quotation, rather than just copying-and-pasting it, you have to think about it.)
- Record not only the source's claim but any data or support you find interesting.
- Note your agreements, disagreements, speculations, questions, and so on. Do you see any complications or contradictions in the source's argument? Did the source raise any questions? That will encourage you to do more than simply record the content of what you read.
- *Clearly distinguish (1) what you quote from a source, (2) what you paraphrase or summarize from a source, and (3) your own thoughts.* If you are writing on paper, use headings or brackets or different colors of ink to differentiate these different kinds of note. If you are using a computer or taking notes online, use different fonts or different colors of type. You must *unambiguously* distinguish your own words from those of your sources because it is so easy to confuse the two.

Why, you might wonder, would anyone bother with paper notes when they could just type their notes into a device? As cumbersome as paper notes can be to store, back up, index, and access, they still have their uses. For example, a notebook or pack of index cards is cheap and portable, and paper can sometimes go where technology cannot—some archives still require patrons to take notes with paper and pencil. The main reason some researchers continue to rely on paper notes is that they help with thinking. Since you can't write out everything, using paper forces you to think about what is most important. Likewise, if your notes are on cards or sheets of paper, you can group them, shuffle them, or lay them out on a desk, a table, or even the floor. And the very act of *writing out* your notes can help you not only remember what is in them but also see connections and develop your own ideas.

Still, very few researchers today rely on paper notes alone. Most take notes electronically as well, thinking on paper but using electronic notes to ensure the accuracy of their quotations, references, and citations.

#### **4.6.2 Taking Notes Electronically**

When you take notes using a computer, tablet, phone, or other electronic device, you have several options:

- You can use a program like Word or Google Docs. Create a separate file (or at least a separate page) for each source, and be sure to unambiguously distinguish your own words from those of your source. Such programs are easy to use, but they also limit your ability to index, organize, sort, and search your notes. For long or complex projects especially, you may want to consider other options.
- You can use a dedicated note-taking application to create and organize your notes. Such applications can help you to index, sort, and access your notes, but since they sometimes use proprietary formats, they can sometimes make it difficult for you to export your notes or use them with other programs.

- You can use a full-featured citation-management system. In addition to helping you make your notes, these programs can often pull information directly from online library catalogs and databases, and they can format and update your citations and bibliographies when you write. Some will even store full electronic copies of your sources within the reference-management system, helping you build and maintain your personal library of sources. But like note-taking applications, these systems sometimes use proprietary formats—and you have to learn to use them.

All three types of application are also available in web-based versions, meaning that the application and your notes reside not on your own computer but in the cloud. This protects your data from inadvertent loss or corruption and can help you share information and collaborate with other researchers.

But whatever technology you use, you have to consider some basic questions:

- How will you stay organized? For example, if you plan to create a separate document for each source, you then need a system for naming and storing your files. Without such a system, it is very easy to “lose” your notes on your computer or device.
- How will you use your notes? You may decide to store your notes differently for small projects and large ones, for discrete projects and ongoing ones, for individual projects and collaborative ones.
- What applications are available through your school or library? Many schools and libraries offer note-taking or reference-management systems to faculty, students, and patrons, sometimes integrating these tools with their catalogs. If you have access to such resources, consider using them.
- How will you back up your notes? However you decide to take and organize your notes, make sure you can recover them if something goes wrong: you spill coffee on your laptop, you lose your phone, your files are incompatible with the new version of your note-taking app, mice in your basement chew through your box of index cards. Our suggestion is that you store your notes in,

or at least back them up to, the cloud. Backup software can do this for you automatically.

- Most important: What approach best suits your own ways of writing, thinking, and working? As you grow as a writer and researcher, you will develop ways of working that are particular to you. Others may find them cumbersome or confusing or even incomprehensible. No matter. Remember that your goal is not to create an elaborate set of notes but to research and write capably and intelligently. If a piece of software doesn't help you do that, it isn't useful—to you.

#### **4.6.3 Deciding Whether to Quote, Paraphrase, or Summarize**

If you can photocopy, scan, download, or cut-and-paste your source, or you know that you can access it online when you write, you can focus less on preserving its exact words than on your own engagement with it. That's a great advantage. Summarize the source, which will also help you understand it, and note passages you may want to quote or paraphrase when you write. Note also your own responses to the source. Where did you find yourself agreeing with it? Disagreeing? Wanting to say, *Yes, but . . . ?*

If you can't preserve your entire source and don't know whether you will be able to access it later, you have a tougher choice: what parts of the source to record exactly (by transcribing them, cutting-and-pasting, taking a screenshot, or snapping a photo) and what parts to summarize or paraphrase. In this situation, you have to consider how you plan to use your notes later. Your field will affect your choices: When they write, researchers in the humanities quote most often; social and natural scientists usually paraphrase and summarize (see [chapter 12](#)).

- Summarize when you need only the point of a passage, section, or even a whole article or book. Summary is useful for context or views that are related but not specifically relevant to your research project. A summary of a source never serves as good evidence.

- Paraphrase when the specific words of a passage are less important than its meaning. Paraphrasing doesn't mean changing just a word or two. You must replace most of the words and phrasing of the original with your own. A paraphrase is never as good evidence as a direct quotation.
- Record exact quotations for these purposes:
  - The quoted words are evidence that backs up your reasons. If, for example, you claim that different groups respond differently to renaming buildings named for enslavers, you would quote exact words from different news sources. You would paraphrase them if you needed only their general sentiments.
  - The words are from an authority you plan to rely on or challenge.
  - The words are strikingly original or so compelling that the quotation can frame the rest of your discussion.
  - The source makes a claim that you disagree with, and to be fair you want to state that claim exactly.

*Never* abbreviate a quotation thinking you can accurately reconstruct it later. You can't. And if you misquote, you will undermine your credibility.

#### **4.6.4 Getting the Context Right**

You can't record *everything*, but you have to record *enough* to ensure that you accurately capture the source's meaning. As you use material from your sources, record not just what they say but how they use the information.

- 1. When you quote, paraphrase, or summarize, be careful about context.** You cannot entirely avoid quoting out of context, because you cannot quote all of an original. So when you draft a paraphrase or summary or copy a quotation, do so within the con-

text that matters most—that of your own grasp of the original. When you note an important argument or conclusion, record the author's line of reasoning:

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

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

BUT: Bartolli: The war was caused by X, Y, and  
Z (p. 123). But the most important cause  
was Z (p. 123), for two reasons: first, . . . (pp.  
124–26); second, . . . (p. 126).

Even if you care only about a conclusion, you will use it more accurately if you record how an author reached it.

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

ORIGINAL BY JONES: "Researchers recognize that lung cancer has a number of causes, including genetic predisposition and exposure to environmental factors such as asbestos, radon, and fine particulates. But no one who has studied the data doubts that lung cancer's leading cause is smoking."

MISLEADING NOTE ABOUT JONES: Smoking is just one cause of lung cancer among many. Jones, for example, claims that “lung cancer has a number of causes, including genetic predisposition and exposure to environmental factors such as asbestos, radon, and fine particulates.”

Jones did not make that point at all. She *conceded* a point to set up the point she wanted to make. Anyone who deliberately misreports in this way violates basic standards of truth. But you can make such a mistake inadvertently if you note only a source’s words and not their role in an argument.

To avoid such mistakes, distinguish statements that are central to an argument from qualifications or concessions that the author acknowledges but downplays. Unless you are reading “against the grain” of the writer’s intention—to expose hidden tendencies, for example—do not report minor aspects of a source as though they were major or, worse, as if they were the source’s whole point.

3. **Record the scope and confidence of a claim.** Don’t make a claim seem more certain or far-reaching than it is. The second sentence doesn’t accurately or fairly report the first:

ORIGINAL: One study on the perception of risk (Clark, 2008) suggests a link between high-stakes gambling and childhood concussions.

MISLEADING NOTE: Clark (2008) says childhood concussions cause high-stakes gambling.

4. **Don't mistake a summary of another writer's views for those of an author summarizing them.** Some writers do not clearly indicate when they summarize another's argument, so it is easy to quote them as saying what they set out to disprove rather than what they in fact believe.
5. **Note why sources agree and disagree.** *How* and *why* sources agree is as important as the fact *that* they do. In the same way, sources might disagree because they interpret the same evidence differently or take different approaches to the problem. It is risky to attach yourself to what any one researcher says about an issue. It is not "research" when you uncritically summarize another's work. Even if your source is universally trusted, be careful. If you rely on at least two sources, you'll usually find that they do not agree entirely, and that is where your own research can begin. *Which has the better argument? Which better respects the evidence?* In fact, you have a research problem right there: *Whom should we believe?*

## 4.7 Annotating Your Sources

There are some techniques for engaging your sources systematically through *annotation*. While mechanically recording passages from sources by downloading, cutting-and-pasting, photocopying, or retyping can help you quote or paraphrase accurately, if you don't talk back to your sources, you will simply accumulate inert data that you will have to sift through at some point. To advance your thinking, annotate key sentences and passages by highlighting or labeling them so that you can find them later. Mark ideas or data that you expect to use in your argument. Summarize what you have

highlighted or sketch a response to it or add notes in the margin that help you interpret your highlighting. The more you write about a source now, the better you will understand it later.

### 4.7.1 Marginal Annotations

As an alternative to taking notes on paper or a computer, you can directly annotate many sources in print or digital form. Annotation is a technique of marking up a source through comments, questions, and cross-references to other sources. Annotating in the margins of textual sources is generally more productive than simply highlighting because it brings into relief the relevance of a source to your project.

In annotating, you document the active reading practices discussed in this chapter. You can use annotations to identify a source's claims and keywords or "argue" with a source by questioning (or extending) its reasons, evidence, and warrants (see [part III](#)). As your project develops, you can return to an annotated source to see what you were thinking earlier.

Of course, not every source is equally available for annotation. You can't write in the margins of library books or other texts you do not own. Many texts are accessible only (or most conveniently) in digital form. Fortunately, however, there are digital annotation tools that let you document your reading in digital environments. You can use these tools to annotate a wide range of sources, including texts, images, recordings, and video, and to link your responses to various sources to create a searchable database for later reference.

## The Value of Reading Widely

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

### 4.7.2 Annotated Bibliography

One approach to engaging sources is an annotated bibliography—a list of possible sources featuring a citation and brief summary for each source. (For more on citations, see [chapter 12](#).) There are multiple types of annotations based on the motive for creating them. For a research project, an annotated bibliography offers a bird's-eye view of a range of sources and the roles they might play in your argument. Often the assembling of an annotated bibliography is a distinct stage in a research process, one that allows you (and your teacher) to reflect on the sources you have collected. Each annotation is an opportunity to evaluate the credibility of a source, summarize its argument, and explain its relevance to your project.

Compiling an annotated bibliography can help you gauge how thoroughly you have conducted your research and how deeply you have engaged the sources you have collected.

### 4.7.3 Keywords That Categorize Your Notes for Sorting

Finally, a conceptually challenging task: as you take notes, categorize each one under two or more keywords (see the upper-right corner of the note card on [p. 85](#)). Don't mechanically use words from the source; categorize the note by what it implies for your question, by a general idea larger than its specific content. Use the same tags or keywords for related notes; don't create a new one for every new note.

This step is crucial because it forces you to find the central ideas in a note. If you take notes electronically, the keywords let you instantly group related notes with a single Find command. If you use more than one keyword, you can recombine your notes in different ways to discover new relationships (especially important when you feel you are spinning your wheels).

### ► Quick Tip: Managing Moments of Uncertainty

As you get deeper into your project, you may experience a moment when everything seems to run together into a hopeless muddle. That usually happens when you accumulate notes faster than you can sort them. Such moments can be stressful, but they can also be a sign that you are on the verge of a new insight or discovery.

You can minimize anxiety by taking every opportunity to organize and summarize what you have gathered by *writing as you go* and by returning to the central questions: *What question am I asking? What problem am I posing?* Keep rehearsing that formula, *I am working on X to learn more about Y, so that my audience can better understand Z*. Writing regularly about these questions does more than help you stay focused; it also helps you think.

You can also turn to friends, classmates, teachers—anyone who will serve as a sympathetic but critical audience. Explain how what you have learned bears on your question and helps you solve your problem. Ask them, *Does this make sense? Am I missing anything important? What else would you like to know?* You will profit from their reactions, but even more from the mere act of explaining your ideas to non-specialists.

## **Part III**

# **Making Your Argument**

## Prologue

# Assembling a Research Argument

You can't wait to plan your argument until after you've gathered every last bit of data and found every last relevant source. In the first place, you'll never get them all. In the second, you'll end up researching mechanically or aimlessly, accumulating more and more stuff with no sense of what you'll do with it or following trails of bread crumbs who knows where. Of course, you have to do some research to get a handle on your project. But as soon as you have a sense of your problem and its likely solution, you should begin planning your argument. Your plan will change as your research progresses—if it doesn't, you probably aren't doing your best thinking—but making a plan early and modifying it as you go will help you grasp your material better and research more purposefully. Only when you try to make a *research argument* that answers your audience's predictable questions can you see what research you have yet to do.

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 how late to keep the lights on, drivers over 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 kind of argument is not what 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 and sometimes skeptical colleagues. It is a conversation in which you and your imagined audience *cooperatively* seek answers to shared questions: the goal is not for one side to coerce the other into agreement but for everyone to grow in understanding and knowledge. In this sense, the best answers are often not those that end the conversation but those that generate new questions, inquiry, and arguments.

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 show an audience why our claims are important and then to support our claims with good reasons and evidence, responding to the quite reasonable question *Why should I believe that?*

In fact, although we more easily notice the heated disputes, we have these collaborative arguments every day, each time we trade good reasons for deciding what to do—when discussing with a friend what cell phone to buy, what books to read, even whether to order pizza or Thai food. Like those friendly discussions, a research argument doesn’t force a claim on anyone. Instead, you start where your audience does, 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 audience’s behalf. It’s those imagined questions and your answers that make your argument part of an ongoing conversation. In [chapter 5](#), we survey the elements that constitute a research argument. In [chapters 6–9](#), we explain each element in detail. In [part IV](#), we’ll show you how to put that argument into writing or a presentation.

## Getting to Know You

You've been told endlessly to think about your audience, but nothing is harder than imagining questions from someone you don't know. Experienced researchers have the advantage of knowing many members of their research communities, and thus their audiences, personally. They talk with them about research projects, trying out ideas before writing them up. If you are a beginning researcher or a student, you may not yet know your audience in this personal way. But you can do some homework to understand how they write, argue, and think:

- Read journals that publish research like yours. Notice the kinds of questions the articles ask and the kinds of problems they raise.
- Rehearse your argument with a more experienced researcher or a teacher. After you have a plan but before you draft, talk over your ideas, asking whether any seem doubtful or confusing.
- When writing, ask a few people you trust to read your drafts and indicate where they have questions or see alternatives. Find people as much like your intended audience as possible.

You can even try to get to know some actual members of your audience. For example, a group of physicists once wanted biologists to notice their research but 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 biology department's faculty lounge. After they figured out how biologists think, they rewrote their arguments and published papers that influenced the field. If you are a student, you may not be able to travel to conferences or hang out in a faculty lounge, but you can still get to know faculty and students on your campus working in your field. The better you know them, the better you will be able to imagine questions they might ask you.

# 5 Making Good Arguments

## An Overview

In this chapter, we explain what a research argument is and the five questions whose answers constitute one.

In part I, we explained that authentic research involves more than just amassing information on a topic; it means developing solutions to problems you and your audience care about. Likewise, sharing the results of your research involves more than just giving your audience a “data dump” that says, *Here are some facts about my topic*; it means explaining your problem and justifying your solution in a *research argument*.

### 5.1 Argument as Conversation

In a research argument, you make a *claim*, support it with *reasons* based on *evidence*, *acknowledge* and *respond* to other views, and sometimes explain your *principles* of reasoning. There’s nothing arcane about these things. Consider the kind of conversation you have every day:

**Abby:** I hear you had a hard time last semester. How do you think this one will go? [*Abby poses a problem in the form of a question.*]

**Brett:** Better, I hope. [*Brett answers the question.*]

**Abby:** How so? [*Abby asks for a reason to believe Brett’s answer.*]

**Brett:** I'm taking courses in my major. [*Brett offers a reason.*]

**Abby:** Like what? [*Abby asks for evidence to back up Brett's reason.*]

**Brett:** History of Art, Intro to Design. [*Brett offers evidence to back up his reason.*]

**Abby:** Why will taking courses in your major make a difference? [*Abby doesn't see the relevance of Brett's reason to his claim that he will do better.*]

**Brett:** When I take courses I'm interested in, I work harder. [*Brett offers a general principle that relates his reason to his claim that he will do better.*]

**Abby:** What about that math course you have to take? [*Abby objects to Brett's reason.*]

**Brett:** I know I had to drop it last time I took it, but now I have a good tutor. [*Brett acknowledges Abby's objection and responds to it.*]

If you can imagine yourself in that conversation, you'll find nothing strange about assembling a research argument. That's because the five elements of any argument are just answers to the kinds of questions that Abby asks Brett—and that you must ask yourself on your audience's behalf:

1. **Claim:** *What do you want me to believe? What's your point?*
2. **Reasons:** *Why do you say that? Why should I agree?*
3. **Evidence:** *How do you know? Can you back it up?*
4. **Warrant:** *How does that follow? Can you explain your reasoning?*
5. **Acknowledgment and Response:** *But what about . . . ?*

Think of your research as the process of figuring out answers to these questions.

## 5.2 Assembling the Core of Your Argument

At the core of every research argument are three elements: your claim, your reasons for accepting it, and the evidence on which those reasons are based. To that core you'll add one and perhaps two more elements: warrants where you need to justify your reasoning (see [chapter 8](#)) and acknowledgments of and responses to questions, objections, and alternative points of view (see [chapter 9](#)). Imagine these elements as answers to the predictable questions an audience will ask.

### 5.2.1 Support Claims with Reasons

The first kind of support, a reason, is a statement that leads an audience to accept your claim. We often join a reason to a claim with *because*:

Elementary schools should make teaching multiple languages a priority.*claim* because we acquire languages best and most easily when we are young.*reason*

You often need more than one reason to support a claim, and in a complex argument, your reasons will usually require support from still more reasons:

Elementary schools should make teaching multiple languages a priority.*claim 1* because we acquire languages best and most easily when we are young.*reason 1 supporting claim 1/claim 2* In fact, those who begin new languages as adults rarely attain the level of fluency of those who learn them as children.*reason 2 supporting reason 1 and claim 2/claim 3* Teaching multiple languages at the elementary school level also contributes to

children's ethical development<sup>*reason 3 supporting claim 1/claim 4*</sup> because it fosters an awareness of cultures and societies beyond their own.<sup>*reason 4 supporting reason 3 and claim 4/claim 5*</sup>

## 5.2.2 Base Reasons on Evidence

The second kind of support is the evidence on which you base your reasons. We've said that reasons often require support from additional reasons, but these chains don't go on forever. Eventually you have to show some concrete data or information. That's your evidence. The terms *reasons* and *evidence* sometimes seem interchangeable:

On what reasons do you base your claim?

On what evidence do you base your claim?

But they mean different things. Compare these two sentences:

On what evidence do you base your reasons?

On what reasons do you base your evidence?

That second sentence is odd: we don't base evidence on reasons; we base reasons on evidence. We *think up* reasons: they are statements that support our claims. We have to *search* for evidence "out there" in the world and then make it available for everyone to see. Evidence is the information or data—statistics, examples, quotations, images, models, and so on—that we use to back up our reasons. Reasons need the support of evidence; evidence should need no support beyond careful demonstration or a reference to a reliable source.

## Clarifying Some Terms

So far, we've used two terms to name the statement that expresses the idea you are advancing in your argument. 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 an assertion (which can be a single sentence or more) that demands support: *The giant panda is a species of bear; Medicare spending will continue to rise; Toni Morrison's most important novel is Beloved*. Your *main claim* is the assertion that your whole research argument supports. Some call this assertion your *main point* or your *thesis*.
- A *reason* is an assertion that supports a claim: *[Because] genetic testing shows that other bears are their closest relatives; [Because] the US population is aging; [Because] in Beloved, Morrison's major themes find their fullest development*.
- *Evidence* is information deployed to support a reason. Unlike a claim or a reason, evidence is not always framed as an assertion: figures showing the genetic and anatomical similarities between giant pandas and other bears; a chart or data table documenting the median age of US residents over the past twenty years; quotations from

*Beloved* illustrating Morrison's major themes would be forms of evidence.

These distinctions might be confusing, because claims and reasons are both assertions, and reasons and evidence are both kinds of support. But if you stick with us, you'll see why they matter.

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

We should leave.*claim* It looks like rain.*reason*

Few ask, *What's your evidence that it looks like rain?* But in a research argument you also have to give evidence because a careful audience won't accept reasons at face value:

Elementary schools should make teaching multiple languages a priority.*claim 1* because we acquire languages best and most easily when we are young.*reason 1 supporting claim 1/claim 2* In fact, those who begin new languages as adults rarely attain the level of fluency of those who learn them as children.*reason 2 supporting reason 1/claim 3* In a study of over one hundred language learners, Jones (2013) identified an inverse correlation between new-language proficiency and . . . (see table 1).*evidence supporting reason 2*

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



But in most cases, this core alone isn't enough: you also have to flesh out your research argument by (sometimes) offering *warrants* that show how a reason is *relevant* to a claim and by *acknowledging and responding* to other points of view.

## 5.3 Explaining Your Reasoning with Warrants

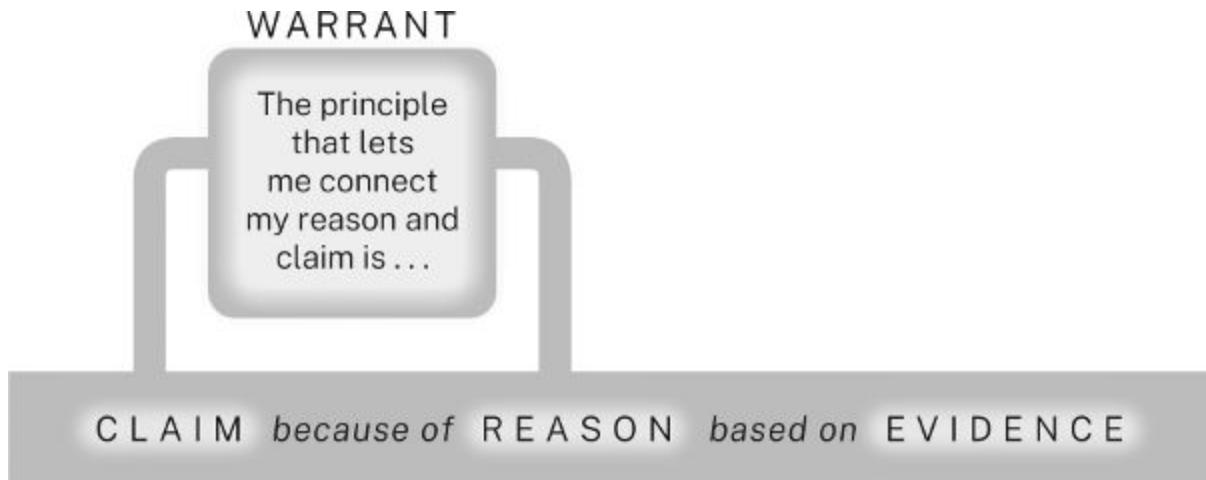
Even when your audience agrees that a reason is true, they may still be puzzled or even object if they cannot see its *relevance* to your claim. Consider this argument:

Since the yield curve in Treasury bonds recently inverted,<sub>reason</sub> a recession seems likely.<sub>claim</sub>

Someone unfamiliar with finance and investing might wonder, *Why does that inverted yield curve make a recession likely? I don't see the connection.* To answer, you must explain your reasoning by offering a *general* principle that connects your *particular* reason to your *particular* claim:

Well, since at least the mid-twentieth century, an inversion in the yield curve for Treasury bonds has reliably predicted coming recessions.<sub>warrant</sub>

This warrant expresses the principle, learned from experience, that inverted yield curves are a sign of rough economic times ahead. Like all warrants, it establishes (if true) that we can infer some general consequence (likelihood of a recession) from some general circumstance (an inverted yield curve). If a claim is a good instance of that general consequence, and its reason is a good instance of that general circumstance, then the argument follows.



As we'll see in [chapter 8](#), it's not easy to decide when you even need a warrant. Experienced researchers usually state them on only two occasions: when they think an audience in their field might ask how a reason is relevant to a claim or when they are explaining their fields' ways of reasoning to a general audience.

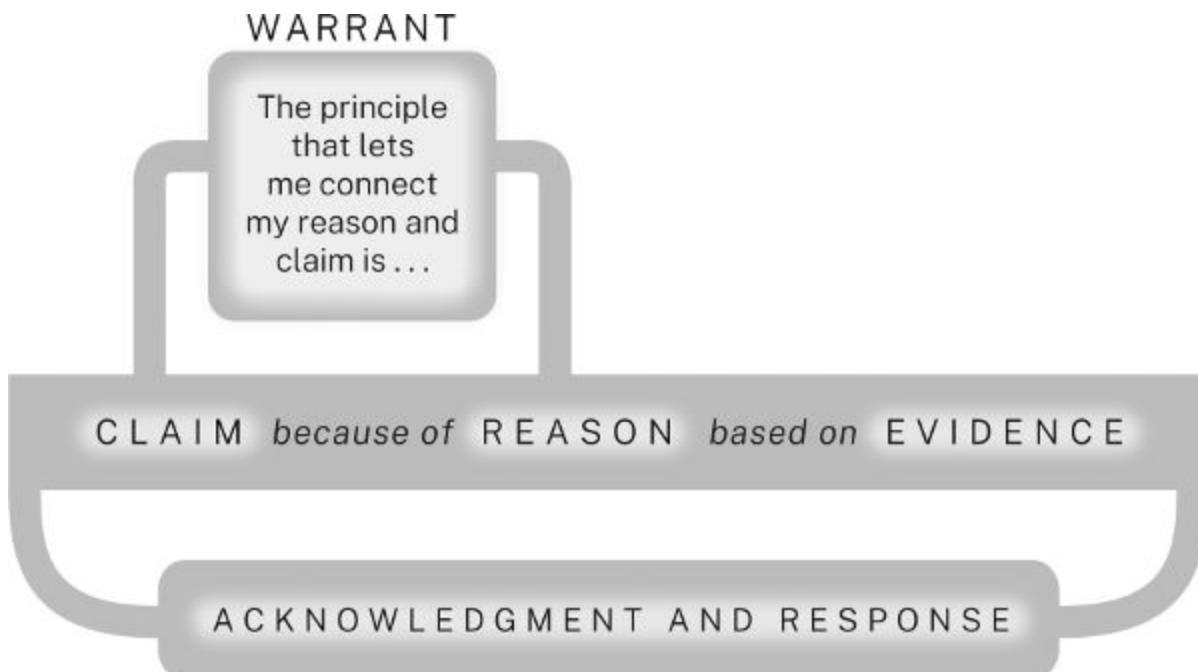
## 5.4 Acknowledging and Responding to Anticipated Questions and Objections

Careful audiences 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 an audience considers the claim that schools should make language instruction a priority, they may wonder if doing that might detract from the teaching of other subjects. If you think they might ask that question, you would be wise to acknowledge and respond to it:

Elementary schools should make teaching multiple languages a priority<sup>*claim 1*</sup> because we acquire languages best and most easily when we are young.<sup>*reason 1 supporting claim 1/claim 2*</sup> Of course, if schools increase the attention they give to languages, quality of instruction in other subjects might de-

cline.*acknowledgment* But little evidence exists to support that fear and much dispels it. . . .*response*

No research argument is complete without acknowledgments and responses, so we add them to our diagram to show how they relate to all the other parts of an argument:



## 5.5 Planning Your Research Argument

Research arguments are composed of the same five elements as everyday arguments: claims, reasons, evidence, warrants, and acknowledgments of and responses to other views. They are just more complex. In addition to its main claim, a research argument may include a number of subordinate claims. And each of these claims is likely to be supported by additional reasons and evidence and perhaps justified by one or more warrants. It will almost certainly acknowledge and respond to anticipated questions, alternatives, and objections, with each of these responses demanding its own argument.

Finally, most research arguments include background, definitions, explanations of issues that an audience might not understand, and so on. If, for example, you were making an argument about the relationship between inflation and money supply to an audience unfamiliar with economic theory, you would have to explain how economists understand those concepts. Serious arguments are complex constructions, but you can manage them if you break them down into simpler ones.

To plan your argument, you can make a traditional outline or visualize your argument in other ways. We recommend using a chart-like outline or visual organizer known as a *storyboard*. A storyboard is like an outline broken into pieces and spread over several pages, with lots of space for adding data and ideas as you go. Storyboards are more flexible than outlines. You can create them using an app or online tool or, as we do, with index cards, sticky notes, or sheets of paper. To start a storyboard, write your main claim and each reason (and sub-reason) at the top of separate cards or pages. Then below each reason (or sub-reason), list the evidence that supports it. If you don't have the evidence yet, note the *kind* of evidence you'll need. If you expect that you will have to explain how your reason supports its claim, add a page for its warrant. You can also add pages for acknowledgments of other views and your responses.

You can leave storyboard pages unfinished until you are ready to fill them, and you can move pages around as you figure out your argument and the organization of your paper. You can spread pages across a wall, group related pages, and put minor sections below major ones so that you can see at a glance the design of your whole argument. Picturing your argument in this way can help you identify places where it needs to be developed more fully, and it can let you try out different ways of organizing it so that you can choose the best one.

Here is part of a storyboard for a research project on teaching languages in elementary schools. It's a snapshot of the researchers' thinking at the present moment, and it can and should change as the researchers' project progresses and ideas develop. The first page states the researchers' question and working claim—that is, a provisional claim that will guide research but probably change as the project progresses—along with some alternatives, including one the researchers have rejected. The reasons fall into two groups, one focused on when languages are best learned and the other on

their benefits. The plan includes an acknowledgment and response, but the page for cultural awareness is almost blank, because the researchers have not yet discovered the right evidence to support that reason (and if further research doesn't produce it, they may have to abandon that reason and even change the claim).

**Question:** Should elementary schools teach languages other than English?

**Claim:** Elementary schools should make teaching languages other than English a priority.

**Alternative claim 1:** Elementary schools should focus on teaching reading, writing, and mathematics (the "three R's"), not languages.

**Alternative claim 2:** Elementary schools should teach languages other than English only if doing so does not interfere with other more important priorities.

**Reason:** Children's learning ability.

Children learn languages more easily when they are young.

(Group with point about adult language learners' level of proficiency; relevant to when languages are best taught.)

**Evidence:**

Johnson 2018: Comparative study of child language learners of different ages. Good quantitative data.

McDaniel 2020: Cognitive psychology research. Argues that young children are "neurologically receptive" to languages.

**Teacher interviews:** Our group interviewed four teachers who have taught Spanish at different levels. Teachers report younger language learners picking it up more quickly.

(How do our interviews compare with Johnson's findings? Do teachers' perspectives align with Johnson's perspective?)

**Reason:** Adult language learners' proficiency.

Adult language learners struggle to become fluent.

(Group with "children's learning ability": also addresses when languages are best taught.)

**Evidence:**

Johnson 2018: Comparative study of child language learners of different ages. Good quantitative data.

Franklin 2014: Study of multilingual households in New York City. Reports that many first-gen adult immigrants continue to speak their first language primarily.

<p><b>Reason:</b> Mental training.</p> <p>Learning a second language trains the mind and makes better, more flexible thinkers.</p> <p>(Group with "cultural awareness" as a <u>benefit</u> of language learning. Could this point be one of our main reasons? Which is more important, cultivating cultural awareness or mental training?)</p> <p><b>Evidence:</b></p> <p>Yamato 2006: Reports that students in schools with language programs do better on tests of quantitative reasoning.</p> <p>(How generalizable is this study? Does the specific language studied affect the result?)</p>	<p><b>Reason:</b> Cultural awareness.</p> <p>Learning a second language teaches students about other cultures.</p> <p>(Group with "mental training" as a <u>benefit</u> of language learning.)</p> <p><b>Evidence:</b> ???</p>
<p><b>Acknowledgment:</b> Conflict with other priorities.</p> <p>Teaching languages might distract schools from teaching the "three R's": reading, writing, arithmetic.</p> <p><b>Responses:</b></p> <p>Fixed-pie fallacy?</p> <p>Use Yamato 2006? If students who learn languages perform better on quantitative reasoning tests than those who don't, doesn't that mean that language learning is helping with at least one of the "R's"?</p> <p>Chase 2007 makes a similar point.</p>	<p><b>Acknowledgment:</b> Resources.</p> <p>Some schools lack the staff or the funding to teach languages.</p> <p><b>Responses:</b></p> <p>A lack of resources does not mean that teaching languages is not valuable or should not be a priority.</p> <p>Teaching languages in some schools is still better than not teaching languages at all.</p> <p>Are there alternative sources of funding available? State or federal grants? Private foundations?</p>

## 5.6 Creating Your Ethos

A final word: In this chapter, we have introduced you to the five elements—claims, reasons, evidence, warrants, and acknowledgments and responses—from which all arguments are composed. But arguments have an implicit sixth element as well: what is traditionally called your *ethos*. Your audience will judge your arguments not just as intellectual constructions but also by the character you project when you make them. Do you seem to be the sort

of person who brings the audience along by providing necessary background information, who offers sufficient (neither thin nor excessive) support for your claims, who thoughtfully considers issues from all sides? Or do you seem to be someone who sees only one point of view and dismisses or even ignores the views of others? Likewise, in your style of writing or your manner of presenting, do you show that you are sensitive to your audience's needs and respectful of their time and attention, or do you come off as terse, arrogant, or self-indulgently opaque? (We'll consider these concerns in chapters [15](#) and [16](#).)

## Cognitive Overload: Some Reassuring Words

At about this point, many students new to research begin to feel overwhelmed. If that's how you are feeling, it may help to know that your anxieties have less to do with your intelligence and ability 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 its 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 the painful transition most of us experience 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 *The 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.

When you communicate clearly and respectfully and anticipate and address your audience’s questions and concerns (this is another reason acknowledgments and responses are so important), you earn their confidence and give them 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 make. It answers the unspoken question *Can I trust you?* That answer must be Yes.

### ► Quick Tip: A Common Mistake—Falling Back on What You Know

If you are an inexperienced researcher, you may be tempted to rely too heavily on what feels familiar. You might embrace a claim too early, perhaps even before you have done much research, because you “know” you can prove it. But falling back on that kind of certainty will just keep you from doing your best thinking. Being a researcher means allowing yourself to be surprised by your discoveries and insights. So when you start a project, begin not with a claim you know you can prove but with a problem you want to explore and solve.

Likewise, when you are new to a field, you may be tempted to rely on ways of arguing that are familiar to you from your education or experience. If, in a literature class, you learned to support your claims by presenting and analyzing quotations, do not assume that you can do the same in fields that emphasize “objective data,” such as biology or experimental psychology. On the other hand, if as a biology or psychology major you learned to support your claims by gathering hard data and performing statistical analyses, 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. Arguments in all fields rely on the elements 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.

And as you become more familiar with your field, you may be tempted to oversimplify in a different way. When some beginning researchers succeed at making one kind of argument, they just keep making it over and over. Their mastery of one kind of complexity keeps them from recognizing another: they fail to see that their field, if it is an active one, is marked by

competing methodologies, competing solutions, competing goals and objectives. Don't fall into this trap. If you can make one type of argument, try others: seek out alternative methods, formulate not only multiple solutions but multiple ways of supporting them, ask whether others would approach your problem differently.

## 6 Making Claims

In this chapter, we discuss how to recognize the kind of claim that answers your research question and how to tell if a claim is specific and significant enough to serve as the main claim of your argument.

You need a provisional answer to your research question—that is, a provisional claim—to focus your search for data or information to use as evidence in your research argument. As you refine that claim, you must also be sure it is specific enough to be arguable and significant enough to need arguing for. Ask yourself three questions:

1. What kind of claim should I make?
2. Is it specific enough to suggest an argument for it?
3. Will my audience think it is significant enough to need an argument supporting it?

When you can answer those three questions, you’re ready to assemble your argument.

### 6.1 Determining the Kind of Claim You Should Make

The kind of problem you pose determines the kind of claim you make and the kind of argument you need to support it. As we saw in [chapter 2](#), academic researchers usually pose not *practical* problems but *conceptual* ones, the kind whose solution asks someone not to *act* but to *understand*.

We can make a similar distinction when it comes to claims by noticing that they can address a range of questions: *Does a thing or a situation exist? If so, how should we characterize it? How did it get this way? Is it good or bad? What can or should be done about it?* Answers to the first four of these questions are conceptual claims. Answers to the fifth are practical claims. The claims you can make will fall into one (or more) of the following classes:

## **CONCEPTUAL CLAIMS**

- Claims of fact or existence:

Together, China and India grow more than half of the world's peanuts.

- Claims of definition and classification:

A peanut sheller is a specialized machine used to shell peanuts after they are roasted.

Peanuts are legumes, not nuts.

- Claims of cause and consequence:

Just touching a peanut can provoke severe reactions in those who are highly allergic to them.

- Claims of evaluation or appraisal:

Peanuts are absolutely delicious.

## PRACTICAL CLAIMS

- Claims of action or policy:

The federal government should lower trade barriers to increase peanut exports.

For claims of fact or existence, you must provide evidence that a situation is, in fact, as you characterize it. Claims of definition or classification depend on reasoning about similarities or differences that assigns an entity to some broader class or distinguishes it from other entities. Claims of cause or consequence connect sets of facts to show that some situation does (or doesn't) follow from or lead to another. Claims of evaluation or appraisal depend on criteria of judgment to justify why something is good or bad (or better or worse than something else). These are all conceptual claims.

The fifth type, a claim of action or policy, is a practical claim and usually rests on prior conceptual claims: one that defines the problem or demonstrates that a problem exists, another that identifies its causes, and still another that explains how doing what you propose will fix it. When arguing for a practical claim, you may need to explain the following:

- Why your solution is feasible; how it can be implemented with reasonable time and effort.
- Why it will cost less to implement than the cost of the problem.
- Why it will not create a bigger problem than the one it solves.
- Why it is better than alternative solutions.

If your audience expects these sub-arguments and you don't make them, your audience may reject your whole argument. Finally, don't inflate the importance of a conceptual claim by tacking on a practical action, at least not early on. If you want to suggest a practical application of your conceptual claim, do so at the end of your argument, in the conclusion to your paper or presentation. There, you can offer it as an action worth considering without having to develop a case for it (we return to this point in [chapter 14](#)).

## 6.2 Evaluating Your Claim

We can't tell you how to find a good claim, but we can show you what good claims look like and how to evaluate the one you have. Above all, your claim should be both specific and significant.

### 6.2.1 Make Your Claim Specific

Vague claims lead to vague arguments. The more specific your claim, the more it helps you plan your argument. Compare these two claims:

Remote work is detrimental to society.

Remote work threatens the social fabric of urban centers by reducing ridership on public transportation and eroding the natural customer base for downtown retailers and restaurants.

The first is so vague that we have little idea about what's to come. The second includes a set of specific concepts that give the researcher ideas or themes to develop in the argument that follows. The claim's specificity signals how the argument is likely to proceed.

### 6.2.2 Make Your Claim Significant

After the specificity of a claim, an audience looks most closely at its *significance*, a quality they measure by how much it asks them to change what they think. While we can't quantify significance, we can roughly estimate it: *If an audience accepts a claim, how many beliefs must they change? And how foundational are those beliefs?* The most significant claims ask an audience to change their most strongly held beliefs (and they will resist such claims accordingly).

Research communities sometimes consider a claim significant if it simply offers new information on a topic of interest:

I describe here six thirteenth-century Latin grammars of the Welsh language. Found just recently, these grammars are the only examples of their kind. They help us better appreciate the range of grammars written in the medieval period.

(Recall the members of that Waffle Lovers Society from the introduction [[I.4.1](#)], who just wanted to be entertained by some interesting facts.)

But research communities value claims more highly when they not only offer new information but *use* that information to settle what seems puzzling, inconsistent, or otherwise problematic:

There has been a long debate about how fluctuations in consumer confidence affect the stock market, but new statistical tools suggest little relationship between . . .

And they value claims most highly when they *upset* what seems long settled:

It has long been an article of faith in modern physics that the speed of light is constant everywhere at all times, under all conditions, but new data suggest it might not be.

A claim like that would be contested by legions of physicists because if true, it would mean that physicists would have to change their minds not just about the speed of light but about lots of other things as well.

One simple way to signal the significance of your claim is to acknowledge the current understanding it challenges (see [chapter 9](#)). That second claim about remote work is specific enough, but it might still seem one-sided. So “thicken” it by introducing it with a qualifying clause beginning with a word or phrase like *although*, *while*, or *even though*:

**Although remote work offers many benefits to companies and employees, it also threatens the social fabric of urban**

centers by reducing ridership on public transportation and eroding the natural customer base for downtown retailers and restaurants.

You can use an introductory clause beginning with *although* or a similar word to acknowledge three kinds of alternative views:

- Something that your audience believes but your claim challenges:

Although many assume that remote work has few if any negative consequences . . .

- A point of view that conflicts with yours:

Although some older research suggests that remote work does not significantly reduce consumer spending in cities . . .

- A condition that limits the scope or confidence of your claim:

Although it is difficult to gauge the long-term effects of remote work on cities because it is so new . . .

If your audience might think of those qualifications, acknowledge them first. You not only imply that you understand their views, but you commit yourself to responding to them in the course of your argument.

If you are an advanced researcher, you measure the significance of your claim by how much it changes what your community thinks and how it does its research. Few scientific accomplishments have been as significant as the model of the double-helix structure of DNA traditionally credited to James Watson and Francis Crick. Not only did it make scientists think about ge-

netics differently, but it created new research questions and opportunities in disciplines from biology to mathematics to history. Watson and Crick knew what they were looking for. To arrive at their model, they built on and integrated research findings by many other scientists going back decades, including crucial empirical data belonging to Maurice Wilkins and Rosalind Franklin (see [17.2](#) for more about the ethics of this situation).

But significant discoveries also come by surprise. One of our colleagues, the anthropologist Fallou Ngom, found among his deceased father's papers a piece of writing in an Arabic-like script that read like the West African language Wolof. Ngom was puzzled: although he had been raised in Senegal, he was unaware that such a writing system existed; in fact, he had thought that his father couldn't write at all. Curious, he began looking for other examples of such writing and found it everywhere. What he discovered (from the perspective of Western scholarship) was 'Ajami, a writing system adapted from Arabic used to write a host of West African languages. Ngom's discovery upended the long-established Eurocentric belief that many West African societies were illiterate when in fact they have rich written cultures going back centuries. And in so doing, it opened up new horizons for research.

These stories show the complex relationship between discovery and expertise: Watson and Crick drew on the work of their research community to solve one of its most important problems; Ngom's expertise in the Western disciplines of history and anthropology (he received his training as a researcher at French and American universities) allowed him to see the importance for those disciplines of that note in his father's papers.

You don't have to offer a sweeping claim to make a useful contribution to a research community. Even small findings can be significant if they challenge current knowledge or raise new questions (see [chapter 1](#)). If, for example, you discovered that Martin Luther King Jr. wrote a high school paper on some philosopher, historians would comb King's later writings for traces of that influence.

Of course, if you are a student or a new researcher in a field, you may not be able to make claims that challenge the experts (or to recognize such claims when you find them). But you can still experience what it means to make arguments for a research community by considering your claims in the context of your own knowledge and thinking, and that of your class or

peers. Imagine an audience made up of people like yourself. What did *you* think before you began your research? How much has your claim changed what *you* now think? What do *you* understand now that you didn't before? That's the best way to prepare to answer the most important question any researcher can face: not *Why should I believe this?* but *Why should I care?* (See I.4.3, 2.5, and 9.1.)

## 6.3 Qualifying Claims to Enhance Your Credibility

Some new researchers think their claims are most credible when they are stated most forcefully. But nothing damages your ethos more than arrogant certainty. As paradoxical as it seems, you make your argument stronger and more credible by modestly acknowledging its limits. You gain the trust of your audience when you acknowledge and respond to their views, showing that you have not only understood but considered their positions (see [chapter 9](#)). But you can lose that trust if you then make claims that over-reach. Limit your claims to what your argument can actually support by qualifying their scope and certainty.

### 6.3.1 Acknowledge Limiting Conditions

Every claim has limiting conditions:

We expect the blue crab population in the Chesapeake Bay to continue expanding, **assuming today's conservation measures remain in place.**

**Based on available economic data,** a global recession appears unlikely.

**According to current climate models**, the earth could warm to two degrees Celsius over pre-industrial levels as soon as the mid-2030s.

So mention only those that your audience might plausibly think of. Scientists rarely acknowledge that their claims depend on the accuracy of their instruments because that limitation applies to every scientific measurement. But economists often acknowledge limits on their claims because their predictions are subject to changing conditions and because they want to signal what conditions to watch for. In this next example, the writer's mention of limiting conditions allows for a fuller and more accurate statement of the claim:

Today Franklin D. Roosevelt is widely revered, but toward the end of his second term, he was quite unpopular, **at least among certain segments of American society**.<sup>claim</sup> 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 Wiggin (1973), both of whom offer anecdotal reports that Roosevelt was always in high regard,<sup>acknowledgment</sup> but these reports are supported only by the memories of those who had an interest in deifying FDR.<sup>response</sup> Unless it can be shown that the newspapers critical of Roosevelt were controlled by special interests,<sup>limitation on claim</sup> their attacks demonstrate significant popular dissatisfaction with Roosevelt's presidency.<sup>restatement of claim</sup>

### 6.3.2 Use Hedges to Limit Certainty

Only rarely can we state our claims with absolute certainty. Careful writers qualify their certainty with words and phrases called *hedges*.

Watson and Crick understood the tremendous significance of their model of DNA, but when they announced it, they still hedged their claims (hedges are boldfaced; the introduction is condensed):

We wish to suggest a [note: not *state 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 diagrams is the salt, not the free acid. . . . (2) Some of the van der Waals distances appear to be too small. (J. D. Watson and F. H. C. Crick, "Molecular Structure of Nucleic Acids")

Without the hedges, these sentences would be more concise but also more aggressive. Compare that cautious passage with this more forceful version (much of the aggressive tone comes from the *lack* of 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.

In most fields, audiences distrust pat certainty expressed in words like *all*, *no one*, *every*, *always*, *never*, and so on, but if you hedge too much, you will seem timid. Different research communities use hedges to different degrees, and finding the right balance is a matter of experience. So notice how experts in your field hedge their arguments and do likewise.

## ► Quick Tip: Make Your Claim Contestable

You can gauge the potential significance of your claim by asking whether anyone would bother to contest it. If not, then your claim may not be worth arguing. Here are three claims, which are weak for different reasons:

This report summarizes recent research on the disappearance of bees.

Barack Obama was the first Black president of the United States.

Hamlet is not an important character in Shakespeare's *Hamlet*.

To assess whether these claims are worth contesting, consider their opposites:

This report does not summarize recent research on the disappearance of bees.

Barack Obama was not the first Black president of the United States.

Hamlet is an important character in Shakespeare's *Hamlet*.

That first claim is merely an assertion of the report's topic. Its opposite is just nonsensical. (To be precise, it is a claim of fact, but the fact is about the report, not about the bees.) The second (also a claim of fact) is easily verifiable. Its opposite is demonstrably false. The third (a claim of evaluation) may seem strong, but its opposite is so obvious that it goes without saying. Shakespeare presumably titled his play *The Tragedy of Hamlet, Prince of*

*Denmark* for a reason. So none of these claims are worth arguing—probably.

The test isn't foolproof, and some great thinkers have successfully contradicted apparently self-evident claims, as Copernicus did when he asserted foolishly—or so it seemed at the time—that *the sun does not go around the earth*.

# 7 Assembling Reasons and Evidence

In this chapter, we discuss two kinds 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.

Audiences look first for the core of an argument: a claim and its support. They look particularly at its set of reasons to judge its plausibility and their order to judge its logic. If they think those reasons make sense, they will look at the evidence you present to back them up. If they don't believe the evidence, they'll reject the reasons and, with them, your claim.

So as you assemble your argument, you must offer a plausible set of reasons in a clear, logical order, based on evidence your audience will accept. This chapter shows you how to do that.

## 7.1 Using Reasons to Plan Your Argument

When you order your reasons, you build a logical structure for your argument. Earlier, we recommended that you plan your argument using a *storyboard* (see 5.5). If you do, you can use it to test your argument's logic or flow. Looking at the cards or pages in your storyboard, read the reasons, not the details, to see if their order makes sense. If it doesn't, try different arrangements until it does. At this point, you are planning and developing only your argument, not your paper, report, or presentation. When you turn from your argument itself to figuring out how best to communicate it to others, you may need to make further adjustments. We'll say more about drafting and delivering arguments in part IV.

## 7.2 Distinguishing Evidence from Reasons

Once you've arranged your reasons in a plausible order, be sure you have sufficient evidence to support each one. Your evidence is the information you use to back up your reasons. The problem is you don't get to decide whether your evidence is sufficient; your audience does. To count as evidence, a statement must report something they can be expected not to question, at least for the purposes of the argument. But if they do question it, what you think is hard evidence becomes for them only another reason.

Consider this argument:

American higher education must curb escalating tuition costs.<sup>claim</sup> because the price of college is becoming an impediment to lower-income students entering the professional middle class.<sup>reason</sup> Today many students leave college with a crushing debt burden.<sup>evidence</sup>

That last sentence offers as evidence a statement its writers take to be a hard “fact.” But we could still question it: *That's just a generalization. What hard numbers do you have to back up “many students” or “crushing debt burden”?* When we do, we treat that statement not as evidence but as a secondary reason that must rest on evidence of its own. To satisfy us, the writers would have to add something like this:

In 2020–21, 43 percent of students at public four-year colleges and over 75 percent of students at private four-year institutions held federal student loans, and the average debt of borrowers at graduation was over \$30,000.<sup>evidence</sup>

If we were *really* skeptical, we could again ask, *What backs up those numbers? What justifies the claim that this situation is a crisis?* If so, the writers would have to provide still harder data, breaking down those numbers to document the consequences of debt for recent graduates. If they have it, they could show the raw data. If they drew those facts from a sec-

ondary source, they could cite the source. But even then, those facts could be questioned: *How did you collect your data? Why should we believe your source is reliable?* Such questions can, in principle, be asked forever, but at some point, we expect reasonable audiences to stop—or none of us would be able to make any arguments at all. Your responsibility is to offer evidence up to that point.

## Our Foundational Metaphors for Evidence

When we talk about evidence, we typically use foundational metaphors: good evidence is *solid* or *hard*, *the bedrock foundation* on which we *build* arguments. Bad evidence is *flimsy*, *weak*, or *thin*. Language like that encourages readers to think of evidence as a reality independent of anyone's interpretation and judgment of it. But data are always constructed and shaped by those who collect and use them as evidence. As you build your argument, keep in mind that your evidence will *count* as evidence only if your audience is willing to accept it, at least for the moment.

### 7.3 Determining the Kind of Evidence You Need

The kind of claim you make will determine the kind of reason you need to support it and the kind of evidence you need to present to back up that reason. Researchers in different fields tend to rely on characteristic sorts of evidence—economists and chemists might prefer empirical data and statistical models; anthropologists and sociologists might rely on interviews and ethnographies; literary scholars and historians might want quotations from textual or oral sources—and learning how to do research in a field means not just understanding its problems and questions but also learning how to find or produce the kinds of evidence its arguments require. But no field

“owns” a particular sort of evidence or relies solely on any single kind, especially today, when interdisciplinary research is so prized.

So as you plan your argument, consider both the sorts of evidence your audience will value and the kind of evidence you need to support any particular reason. Here are two claims that sound similar but need different kinds of reasons and evidence:

In *Native Speaker*, Chang-rae Lee powerfully represents the double consciousness experienced by the children of first-generation immigrants.

In *Native Speaker*, Chang-rae Lee accurately captures the racialized politics of late twentieth-century New York City.

For the first, you would need quotations from the novel; for the second, you would need quotations coupled with historical evidence. The kind of evidence you need will influence the kind of research you do.

## 7.4 Distinguishing Evidence from Reports of It

Now a complication: Researchers rarely include in any paper or presentation *the evidence itself*. Even if you collect your own data, counting rabbits in a field or interviewing voters exiting from a polling station, you can only refer to or represent those rabbits and voters in words, numbers, tables, graphs, pictures, and so on. For example, when a prosecutor says in court, *Jones is guilty of counterfeiting goods, and here is the evidence to prove it*, that prosecutor can hold up a fake Gucci handbag recovered from Jones’s garage and even let jurors hold it in their own hands. (Of course, both the prosecutor and the jurors must believe the officer who testifies to finding it there in the first place.) But when the prosecutor writes a brief on the case, the handbag can’t be stapled to the page; it can only be referred to or described.

In the same way, researchers cannot share with their audiences “the evidence itself.” For example:

Emotions play a larger role in rationality than many think.*claim* In fact, without the emotional centers of the brain, we could not make rational decisions.*reason 1 supporting claim* Some people whose brains have sustained physical damage to their emotional centers cannot make the simplest decisions.*reason 2 supporting reason 1* For example, consider the case of Mr. Y, who . . .*report of evidence*

That argument doesn’t offer as evidence real people with damaged brains; it can only report observations of their behavior, copies of their brain scans, tables of their reaction times, and so on. (In fact, we prefer to read reports of others than to have to test brains and read fMRI scans ourselves.)

We know this distinction between evidence and reports of evidence must seem like a fine one, but we insist on it to emphasize an important point: Evidence rarely stands alone or speaks for itself; it is almost always used to support some reason, and it is shaped by that use. When you take data or information from a source, remember that it has been put into a form that serves that source’s ends. Likewise, when you present as evidence data or information you gathered or discovered yourself, remember that you inevitably shape it to your ends, through your research methods and how you choose to report it. In fact, even before you started collecting anything at all, you had to decide what to count, how to categorize the numbers, how to order them, whether to present them in the form of a table, bar chart, or graph. Even photographs and video recordings reflect a particular point of view. In short, facts are shaped by those who collect them and again by the intentions of those who use them.

This squishy quality of reports of evidence is why people who read lots of research are so demanding about the reliability of evidence. For example, if you collect quantitative data yourself, they will want to know how you did it. If you depend on quotations, they will expect them to come from primary sources, or as close to primary sources as you can get. And they will want

complete citations and a bibliography so that they could, if they chose to, look at your sources themselves. Again, your ethos as a researcher is important: your audience wants to know they can trust the complete chain of reports between what's "out there" in the world and what they are reading, and the best guarantee that they can have is your reputation for competence and integrity.

## Trusting Evidence Three Hundred Years Ago and Now

In the early days of experimental science, researchers conducted experiments before what they called "witnesses," reputable scientists who observed the experiments so that they could attest to the accuracy of the reported evidence. Researchers don't rely on witnesses anymore. Instead, each area of study has standardized its methodologies for collecting and reporting evidence to ensure that it is reliable (assuming the researchers are honest). When you observe the standard procedures in your field, you encourage your audience to accept your evidence at your word, without needing to examine it themselves. So as you read secondary sources, note the kind of evidence they cite and how they cite it, then do likewise. When in sociology, do as sociologists do.

We live in an age awash in information, much of it of dubious reliability, and much of it created—increasingly not even by other people but by computerized "bots"—with the intent of manipulating or deceiving us. The last link in that chain of credibility is you, so be thoughtful about whose data you use and how you use them.

## 7.5 Evaluating Your Evidence

Once you know the kind of evidence your research community expects, you can test your evidence by asking five questions: *Is your evidence, or your reports of it, accurate? Appropriately precise? Sufficient and representative? Authoritative? Clear and understandable?* (We'll add a sixth criterion, relevance, in [chapter 8](#).) These questions get at criteria we apply to evaluate evidence not just in academic and professional research but also in ordinary conversations, even with children.

**Child:** I need a new backpack for school.<sup>*claim*</sup> Look. This one is too small.<sup>*evidence*</sup>

**Parent:** You shouldn't have to carry much more stuff this year than you did last year, and it was perfectly fine before [*i.e.*, *your evidence could be relevant, but I reject it because it is not accurate and because even if it were accurate, "too small" is not adequately precise*].

**Child:** But it's too worn-out for school.<sup>*reason*</sup> Look how dirty it is—and this broken zipper.<sup>*evidence*</sup>

**Parent:** The dirt will wash off, and the zipper is just stuck. That's not enough to buy a new backpack [*i.e.*, *you may be factually correct, but dirt and a stuck zipper alone are not sufficient evidence that the backpack is unfit for school*].

**Child:** It hurts my back.<sup>*reason*</sup> Look at how stiff I am.<sup>*evidence*</sup>

**Parent:** You were fine just a minute ago [*i.e.*, *your evidence is not representative*].

**Child:** Everybody thinks I should get a new one.<sup>*reason*</sup> Harry said so.<sup>*evidence*</sup>

**Parent:** Harry's opinion doesn't matter in this house [i.e., *Harry may have said that, but his opinions are not authoritative*].

**Child:** It's going to break my computer.<sub>reason</sub> Look at how this pocket is stitched!<sub>evidence</sub>

**Parent:** I don't see that at all [i.e., *it's not evident that the stitching will lead to a broken computer*].

As you assemble your evidence, screen it for those criteria before you add it to your storyboard.

### 7.5.1 Is Your Evidence Accurate?

People often confuse accuracy and precision. Accuracy refers to how closely your report of your evidence matches the evidence itself. (If someone else were to redo your measurements, would they get the same numbers you did? If they were to check your quotations from a novel, would they discover that you mistranscribed a word here and there?) Precision refers to how close repeated measurements of a value are to each other. (When you ran your experiment three times, how close were your measurements to each other?) Both are important.

The audiences for research arguments are predisposed to be skeptical, so they regard mistakes in your evidence as signs of your broader unreliability. Whether your research argument depends on information collected in a lab, in the field, in an archive, or from sources you found in the library or on-line, record that information completely and clearly, then double-check it when you use it in your paper or presentation (see [chapter 4](#)). Getting the small things right demonstrates your carefulness.

You can sometimes use even questionable evidence, *if you acknowledge its dubious 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, self-critical, and thus trustworthy.

### **7.5.2 Is Your Evidence Appropriately Precise?**

Audiences also want you to state your evidence with appropriate precision. They become wary when you hedge in ways that seem intended not to acknowledge legitimate uncertainties but to excuse vagueness:

**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 probable is *a high probability*—30 percent? 80 percent? What counts as *large* and *costly*? Watch for words like *some*, *most*, *many*, *almost*, *often*, *usually*, *frequently*, *generally*, and so on. Such words can appropriately limit the breadth of a claim, but they can also fudge it if the researcher didn't work hard enough to get the precise numbers.

What counts as appropriately precise, however, differs by field. A physicist measures the life of quarks in fractions of a nanosecond, so the tolerable margin of error is vanishingly small. A historian gauging when the Soviet Union reached the point of inevitable collapse would estimate it in months. A paleontologist might date a newly discovered species 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. Only a foolhardy historian would assert that the Soviet Union reached its point of inevitable collapse at 2:13 p.m. on August 18, 1987.)

### **7.5.3 Is Your Evidence Sufficient and Representative?**

Beginners typically offer too little evidence. They think they prove a claim with one quotation, one number, one personal experience (though sometimes only one bit of evidence is sufficient to *disprove* it). For example:

*Shakespeare must have been a feminist because the women in *Twelfth Night* and *Much Ado about Nothing* are so self-confident.*

An audience needs more than that to accept such a significant claim.

Even if you offer lots of evidence, your audience will still expect it to be *representative* of the full range of variation in what's available. The women in one or two Shakespearean plays do not represent all his women, any more than Shakespeare represents all Elizabethan drama. Audiences are especially wary when your evidence is a small sample from a large body of data, as in surveys. Whenever you use sampled data, not only must your data *be* representative, but you must *show* that it is.

Evidence is sometimes questioned for being *anecdotal*. An *anecdote* is a short report of a personal experience or episode. Anecdotal evidence is evidence gathered not systematically by applying a research method but arbitrarily through personal experience. It might be representative but, then again, it might not. Of course, people tend to be moved by stories, so anecdotal evidence can sometimes be persuasive in ways that statistics are not. The very persuasiveness of the telling example, the perfect case study, or the exception that proves the rule makes argument by anecdote powerful but also risky.

A related charge is that of *cherry-picking*, of presenting only those bits of evidence that support a reason and claim and ignoring available pieces of evidence that don't. This charge is one of the most devastating a researcher can face because it implies not just carelessness but dishonesty. To avoid it, you must show that you have considered all of the evidence available to you.

#### 7.5.4 Is Your Evidence Authoritative?

In general, researchers assign degrees of authority to sources based on their reputation for rigor and objectivity. That's why it's important to consider not just *what* a source says but also *what kind* of source it is. For example, most scientists would accept data on the transmission of viruses obtained from the US Centers for Disease Control as credible, even allowing for the possibility of error (and even if some skeptics doubt the CDC's objectivity and see its guidance as being tainted by politics). However, few would trust data on the same topic taken from Wikipedia—or cite Wikipedia in a research report—because in the research communities to which they belong, Wikipedia is not regarded as authoritative.

This example raises an important point: In research arguments, judgments about the authority of sources are typically made by research communities, not individuals. They are backed by processes of *peer review*, in which members of a research community vet research arguments before they are published, and by the credibility of the institutions and organizations that support scholarly and scientific research and propagate its results: universities and university presses, governmental organizations such as the CDC, even commercial enterprises such as those that own many academic journals and databases.

### 7.5.5 Is Your Evidence Clear and Understandable?

Your evidence may be accurate, precise, sufficient and representative, and authoritative, but if your audience finds it perplexing, if they can't *understand* how it supports your argument, then you might as well have offered no evidence at all. Whether you are offering quotations, quantitative data, or visual evidence, be sure your audience will notice in it what you want them to notice.

Quotations, for instance, rarely "speak for themselves"; you need to explain and interpret them to be sure your audience gets a connection that may be self-evident to you. Here, a claim about Hamlet is based on the evidence of the quotation that follows:

When Hamlet comes upon his uncle, Claudius, at prayer, he demonstrates cool rationality:*claim*

Now might I do it [kill him] pat, now 'a is a-praying,  
And now I'll do't. And so 'a 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. (3.3)<sub>report of evidence</sub>

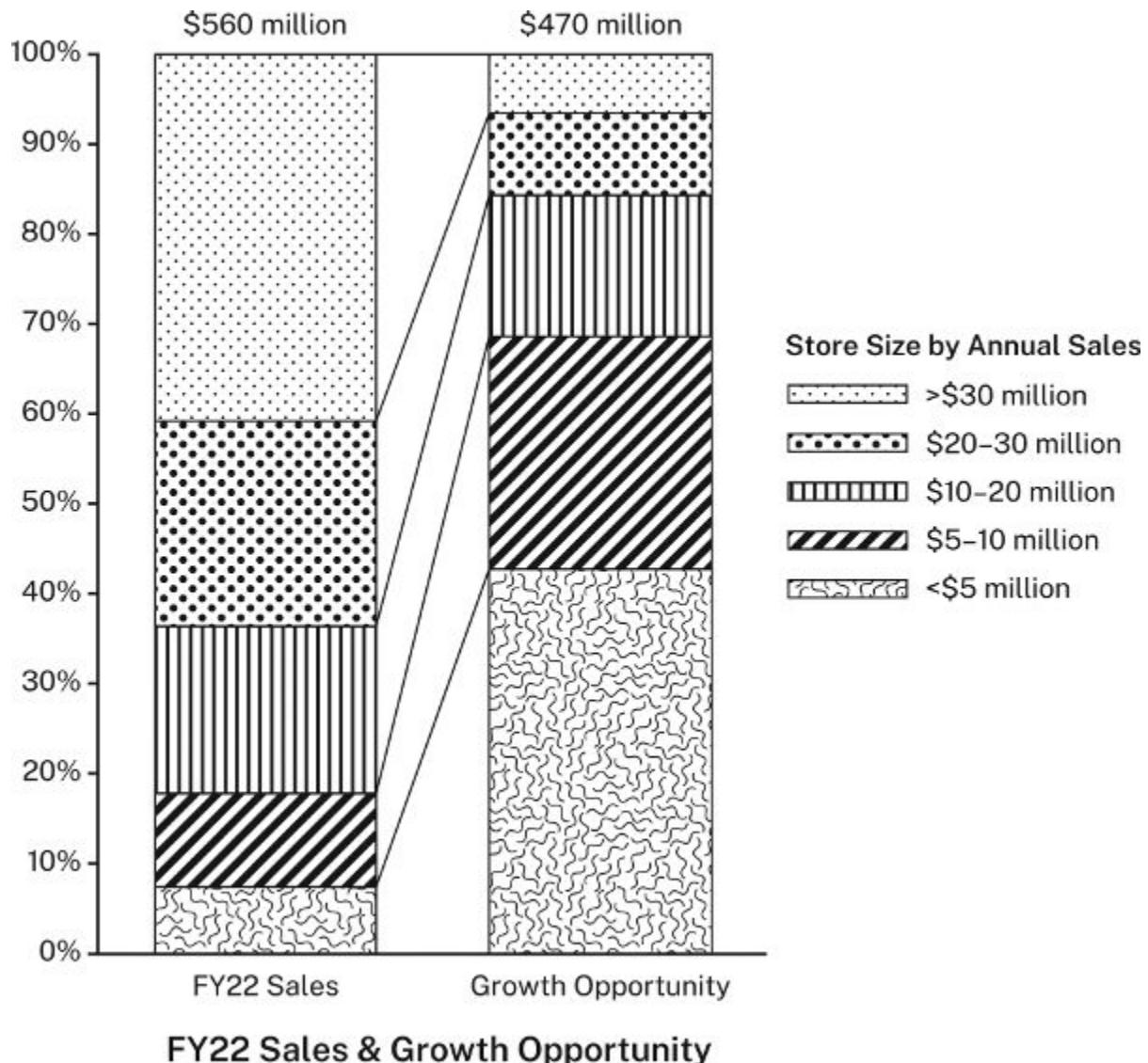
But it's not clear how that quotation supports the claim because nothing in it explicitly refers to Hamlet's rationality. In contrast, compare this:

When Hamlet comes upon his uncle, Claudius, at prayer, he demonstrates cool rationality.<sub>claim</sub> **He impulsively wants to kill Claudius but pauses to reflect—if he kills Claudius while praying, he will send his soul to heaven, but he wants Claudius damned to hell, so he coolly decides to kill him later:**<sub>reason</sub>

Now might I do it [kill him] pat, . . .<sub>report of evidence</sub>

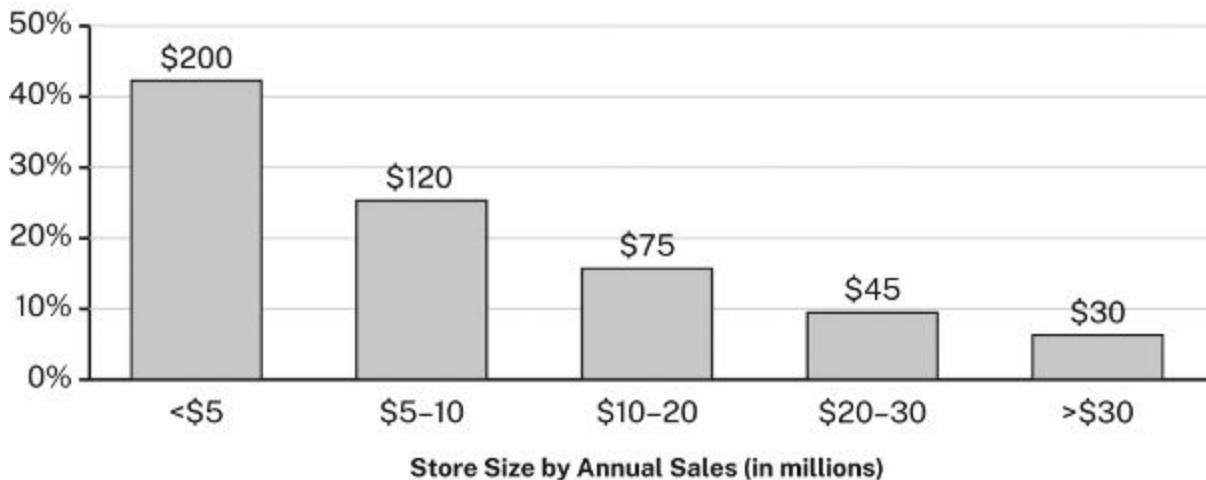
Now we see the connection.

The same principle applies when you present quantitative data or visual images. Here's an example from a consulting firm's presentation to a client. The client, a global retailer, wanted to know whether its large-volume or small-volume stores had greater potential for growth. The consulting firm's research showed that while the large-volume stores currently had more sales, its smaller-volume stores offered a better growth opportunity. The first version of the report included this chart:

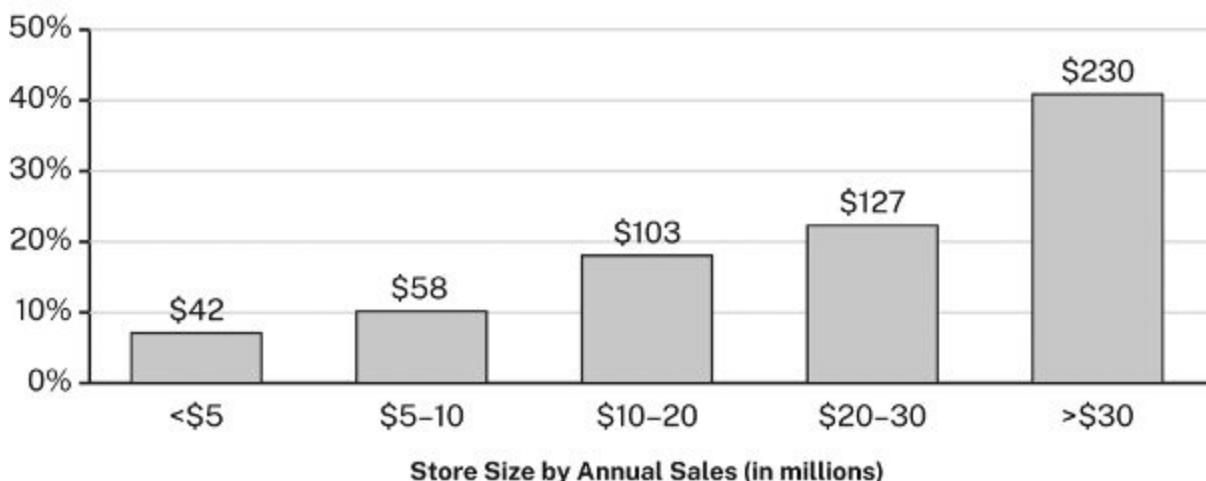


But that chart obscures its point because it emphasizes total sales and total opportunity, not the relative sales and opportunity of different-sized stores. In the final version of the report, the consulting firm broke the original chart into two, to better show the comparison:

### Growth Opportunity



### FY22 Sales



Now, because both charts share a common horizontal axis, we can see the relationship: as store size increases, the anticipated growth opportunity goes down even though fiscal-year sales for 2022 go up.

The same holds for images. If viewers don't notice in an image what a researcher wants them to, they might not understand that image as evidence. For this reason, researchers sometimes enhance their images to highlight or bring out certain features. But be careful that your "enhancements" don't amount to fabricating evidence. It can be a slippery slope.

#### ► Quick Tip: Assess Your Evidence as You Gather It

In [chapter 4](#), we encouraged you to engage sources actively in your notes, to include in them not just quotations or bibliographic information but your own thoughts and reactions (see [4.3–4.5](#)). Doing that is especially important when you are recording data or information that you might use as evidence because of the three elements that make up your argument’s core—a claim, reasons, and evidence—your evidence is the only one that you don’t formulate yourself. Remember, your claims are *statements* of your ideas, and your reasons are statements that support them. But your evidence isn’t a statement (although you might make statements to report it); it’s the data or information on which those other statements are based (see [5.2](#) and [7.2](#)). You need to know that it has been recorded accurately, but you also need to understand its value and limitations. So begin assessing it as you gather it. Consider how far you can trust it and what you might do with it. Note your sense of its reliability, any concerns you have about it, even lines of argument it suggests (*Why did you choose to record those numbers or that quotation?*). Let the questions in this chapter guide you (see [7.5](#)). Assessing your evidence as you gather it will help you in at least three ways: It will protect you from the trap of mechanically recording more and more and more data and information, which can be a kind of procrastination (if you keep taking notes, you can put off the hard work of drafting). It will enable you to evaluate your evidence more rigorously later because you’ll have your initial reactions to it. And it will get you thinking early about the argument you will eventually make.

## 8 Warrants

Warrants are general principles that connect reasons to claims. This chapter explains when and how to use them. All research arguments have warrants, just as they have claims, reasons, and evidence. But unlike these core elements, warrants are often left unstated. In general, you should state your warrants only when your audience will not understand your argument otherwise or when you expect your audience to challenge your reasoning.

Consider this argument:

Japan faces a declining standard of living.*claim* because its fertility rate is only 1.3 and falling.*reason*

Someone responds:

Well, you're right about Japan's fertility rate, but I don't see why that means Japan's standard of living will decline. How does that follow?

If you were making that argument, how would you answer? Offering evidence of Japan's fertility rate wouldn't help because the question is not about the truth of the reason itself but about how it supports the claim. The question gets at the fourth and most abstract element of an argument: its warrants. Warrants are general principles that connect reasons to claims. They are essential because they explain or authorize the reasoning that makes arguments possible. They are important for you to understand because you may face questions not just about the truth of a reason but about its *relevance* as well. In that case, you need to be able to explain not just

*what* your reasons and evidence are, but *why* they support your claim (which can be harder than it sounds). Every question about your warrants is, ultimately, a question about the basis of your beliefs: it challenges you to recognize that your argument makes sense only because you accept certain principles (your warrants) and to acknowledge that when others who hold different principles consider your reasons and evidence, they may arrive at different conclusions than you did or at no conclusions at all.

Luckily, most of the time, we are spared from such philosophizing. That's because most of our warrants are given to us by the communities in which we participate, including not just our research and professional communities but also our social and familial groups, political and religious affiliations, and even our cultures.

As a practical matter, the basic principle is this: state your warrants only if your audience holds different ones, will not be able to understand your reasoning unless you do, or may challenge your reasoning. When making arguments for experts in a field, you can leave most of your warrants unstated because those experts will usually take them for granted.

## 8.1 Warrants in Everyday Reasoning

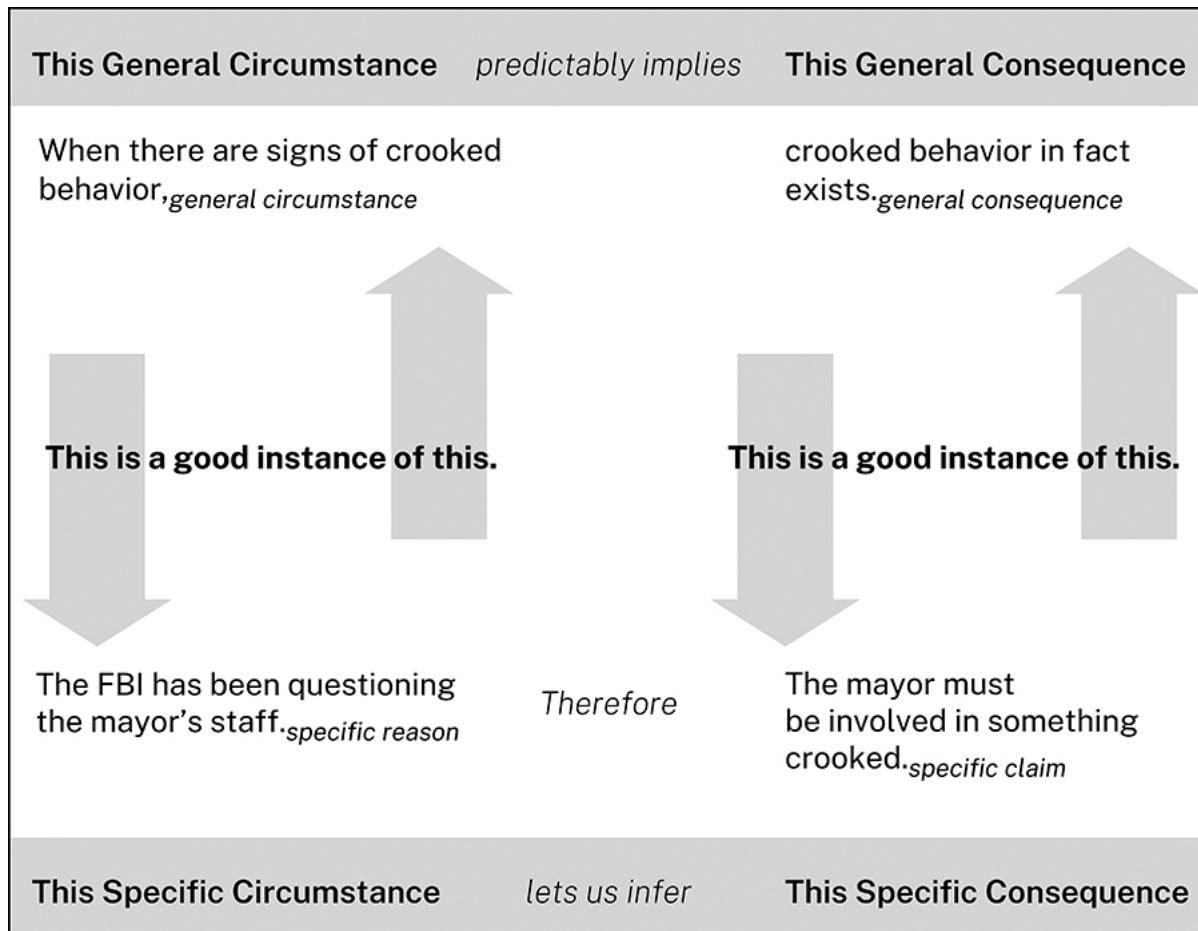
While the concept of warrants is abstract, we rely on them all the time. We understand them easily enough when we offer proverbs to justify our reasoning. That's because proverbs are cultural warrants that we all know. For example, someone says:

I hear the FBI has been questioning the mayor's staff.*reason*

The mayor must be involved in something crooked.*claim*

Another person might object, *You're right. The FBI has been questioning the mayor's staff, but why does that mean the mayor is crooked?* To explain the reasoning that led to that conclusion, the first person might offer the proverb, *Well, where there's smoke, there's fire.* That is, when we see a sign of something wrong, we can infer that something is in fact wrong.

The reasoning works like this. Most proverbs have two distinct parts: a circumstance (*Where there's smoke . . .*) and its consequence (. . . *there's fire*). If a circumstance implies a consequence in general, then we can rely on that connection to license our inferences in specific instances. In the case of the proverb about smoke and fire and that situation with the FBI and the mayor, the reasoning looks like this:



We use proverbs to justify many kinds of everyday reasoning: cause and effect (*Haste makes waste*); rules of behavior (*Look before you leap*); reliable inference (*One swallow does not a summer make*). But such proverbs are not our only examples of everyday warrants. We use warrants everywhere: in sports (*Defense wins championships*); in cooking (*Serve oysters only in months with an "r"*); in definitions (*A prime number can be divided only by itself and one*); even in research (*When an audience finds an error in one bit of evidence, they distrust the rest*).

## 8.2 Warrants in Research Arguments

In the specialized arguments of researchers and other professionals, warrants work in exactly the same way, but they differ in some respects that can make them difficult to manage, especially for those new to a field.

First, the warrants in research arguments aren't always commonplaces we share; they are often specialized principles of reasoning that belong to particular research communities. It just takes time for new researchers to grasp the warrants of their fields—in fact, that's much of what it means to learn to think like a biologist, a historian, a physician, and so on.

Second, experts rarely state their warrants explicitly when they address their fellow specialists because they can safely assume their fellow specialists already know them. (To state warrants that should be obvious could seem condescending or—worse—unmask a purported expert as no expert at all.)

While this practice of leaving accepted warrants unstated serves research communities well, it is also useful to be able to identify warrants at work, both for those assessing arguments they've been offered and for novices just learning their fields. Assuming the available evidence supports the reason, biologists would accept this argument:

A whale is more closely related to a hippopotamus than to a cow.<sup>claim</sup> because it shares more DNA with a hippopotamus.<sup>reason</sup>

No biologist would ask, *What makes DNA relevant to measuring relationship?* So no biologist writing for fellow biologists would offer a warrant answering that question. If, however, a non-biologist asked that question, the biologist would answer with a warrant other biologists take for granted:

When a species shares more DNA with one species than it does with another,<sup>circumstance</sup> we infer that it is more closely related to the first.<sup>consequence</sup>

Of course, the biologist would probably then have to explain that warrant as well. The point is this: whether or not a warrant gets stated explicitly depends not only on the argument but also on the audience. Members of a research community state principles that are obvious to other members only when they communicate with those outside their community—or when challenged.

Third, the specialized warrants belonging to research communities are often stated in ways that compress their circumstances and consequences. In most proverbs, these parts are distinct: *Where there's smoke*,<sub>circumstance</sub> *there's fire*.<sub>consequence</sub> But we can also compress those two parts into one short statement: *Smoke means fire*. That's something we rarely do with proverbs but that experts do often:

Shared DNA is the measure of the relationship between species.

Phrased this way, our biologist's warrant doesn't explicitly distinguish a circumstance from its consequence, but we can. For purposes of clarity, we'll state warrants in their most explicit form: *When X, then Y*.

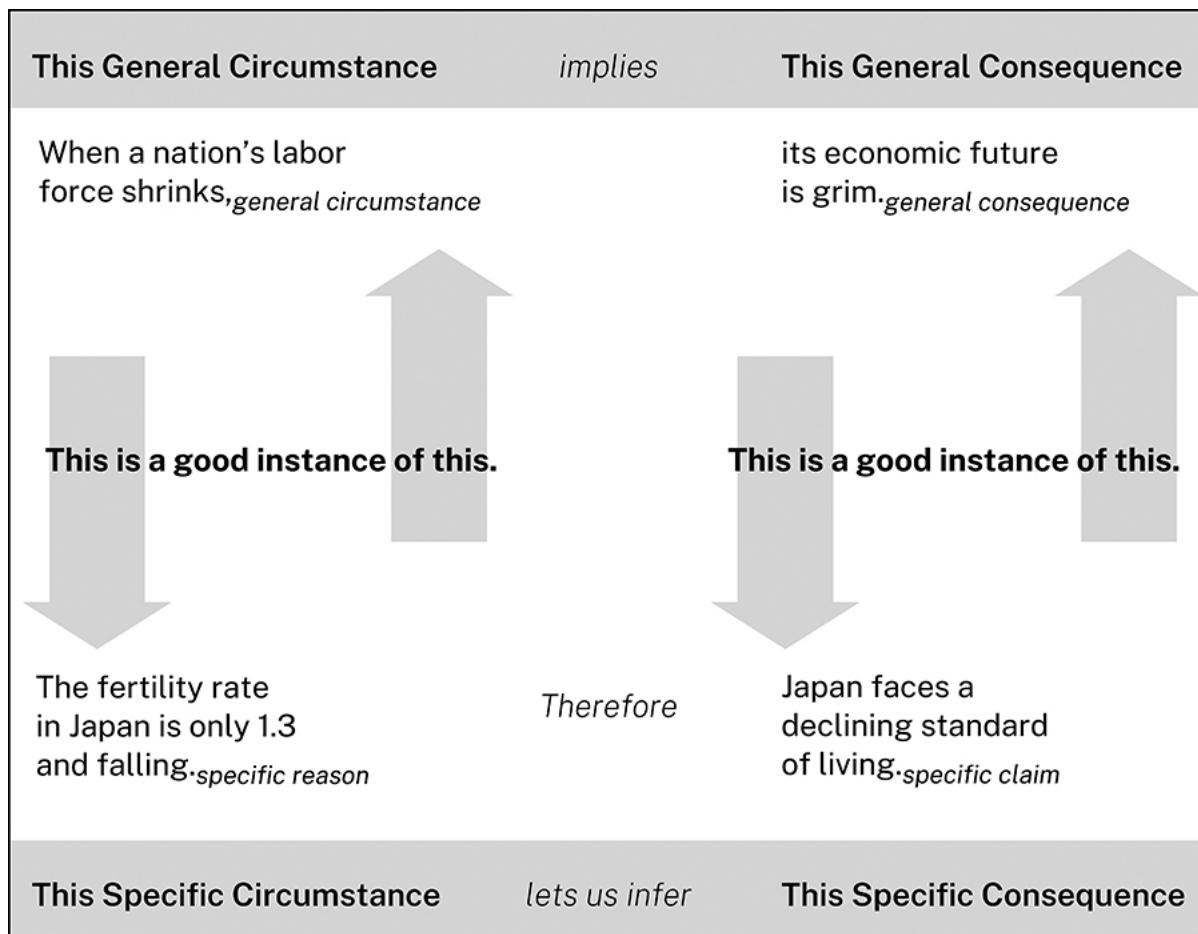
Here again is that argument about Japan's economic future:

Japan faces a declining standard of living<sub>claim</sub> because its fertility rate is only 1.3 and falling.<sub>reason</sub>

If someone objects that the reason seems *irrelevant* to the claim, the person making the argument would have to offer a warrant to justify the connection:

When a nation's labor force shrinks,<sub>general circumstance</sub> its economic future is grim.<sub>general consequence</sub>

Both the circumstance and consequence have to be more general than the specific reason and claim. Visually, that logic looks like this:



The pattern is the same in everyday and specialized reasoning.

## 8.3 Testing Warrants

Audiences challenge warrants in predictable ways. Consider this argument:

It seems unlikely that in early eighteenth-century New England, many farmers other than the most affluent owned a clock.<sup>claim</sup> because clocks are rarely mentioned in farmers' wills.<sup>reason</sup> A review of 124 such wills filed in four Massachusetts counties between 1700 and 1750 shows that only 14 percent mention a clock of any sort.<sup>report of evidence</sup>

Such a claim is likely to be questioned by those whose beliefs it challenges. Even if they accept that the reason is true—that clocks were in fact rarely mentioned in wills—they may still object: *But I don't see how that counts as a reason to believe that few farmers owned clocks. It's irrelevant.* If a historian making this argument anticipated that objection, that historian might introduce it with its warrant:

In early eighteenth-century New England, wills listed valuable household objects, **so when a will fails to mention such an object, the testator did not own one.** warrant It therefore seems unlikely that . . . claim

Note that this argument depends on a second warrant as well: that what's true of farmers in Massachusetts is true of farmers in New England more broadly. But if the historian believes it won't be questioned, it can go unstated.

A successful warrant must meet five conditions. That is, an audience must be able to say “yes” to the following questions:

1. Is that warrant reasonable?
2. Is it sufficiently limited?
3. Is it superior to any competing warrants?
4. Is it appropriate to this field?
5. Is it able to cover the reason and claim?

### 8.3.1 Is Your Warrant Reasonable?

A warrant seems reasonable when an audience can accept that its consequence follows from its circumstance. If your audience won't accept your warrant on its face, then you have to convince them to accept it by treating it as a claim in its own argument, supported by its own reasons and evidence:

In early eighteenth-century New England, wills listed valuable household objects, so when a will fails to mention such an object, the testator did not own one.<sup>warrant/claim</sup> Myles and Winn (2018) confirm that to be the case.<sup>reason</sup> Their study of inheritance practices in eighteenth- and nineteenth-century America shows that . . .<sup>evidence</sup>

### 8.3.2 Is Your Warrant Sufficiently Limited?

Most warrants are reasonable only within certain limits. For example, the warrant about clock ownership is too rigid because it seems to allow no exceptions:

In early eighteenth-century New England, wills listed valuable household objects, so when a will fails to mention such an object, the testator did not own one.

It might seem more plausible if it were qualified:

In early eighteenth-century New England, wills **usually** listed household objects **considered especially valuable by their owners**, so when a will fails to mention such an object, the testator **probably** did not own one.

But once you start qualifying a warrant with words like *usually*, *probably*, and *especially*, you may then have to show that its exceptions do not exclude your reason and claim: *What frequency are usually and probably? Were clocks considered especially valuable?*

### 8.3.3 Is Your Warrant Superior to Any Competing Warrants?

You may think your warrant is reasonable and sufficiently limited, but other warrants might compete with or supersede it. Here are two competing warrants, both arguably reasonable:

**When people believe a medical procedure may harm them, they have a right to refuse it.** Taylor believes that the COVID-19 vaccine causes myocarditis, so he has a right to refuse it.

**When medical decisions concern matters of public health, the state has a right to regulate them.** Widespread vaccination for COVID-19 makes everyone safer, so the state can compel government employees to receive it.

Which warrant should prevail? That's a matter for argument.

You can sometimes reconcile competing warrants by limiting them:

**When people believe a medical procedure may harm them, they have a right to refuse it, so long as that does not jeopardize the health of others.**

**When medical decisions concern matters of public health, the state has a right to regulate them, so long as the state encroaches as little as possible on individuals' right to control what happens to their bodies.**

Finding the right balance, or any balance at all, is not always easy. In fact, so-called “culture wars” arguments (like those over COVID-19 vaccine requirements) are often so heated and intractable because they are more about competing values and principles (that is to say, warrants) than about reasons or evidence.

### **8.3.4 Is Your Warrant Appropriate to This Field?**

Your warrant may be reasonable, sufficiently limited, and superior to others, but it still has to be accepted as appropriate to the field to which an argument contributes. Law students get a painful lesson in the law when they find that many everyday warrants have no place in legal arguments. Most start law school holding this commonsense belief:

When a person is wronged, the law should correct it.

But law students have to learn that legal warrants may supersede such commonsense ideas. For example:

When one ignores legal obligations, even inadvertently, one must suffer the consequences.

Therefore:

When elderly home owners forget to pay real estate taxes, others can buy their houses for back taxes and evict them.

Law students must learn that justice, in a strictly legal sense, is not the outcome they believe to be ethical but the one that the law and the courts support.

### **8.3.5 Is Your Warrant Able to Cover Your Reason and Claim?**

Finally, you must be sure that your reason and claim are good instances of your warrant's general circumstance and general consequence. For example:

**Ahmed:** Maybe you should start using a productivity app,*claim* because you keep missing our staff meet-

ings.*reason*

**Beth:** Why do you think a productivity app will get me to attend our staff meetings?

**Ahmed:** If you're more organized,*general circumstance* you're more likely to remember your appointments.*general consequence*

**Beth:** Well, I don't skip those meetings because I'm unorganized.

Beth objects not that Ahmed's reason is false but that it is not a valid *instance* of his warrant's general *circumstance*. She doesn't deny missing those staff meetings; she only denies that the reason she's missing them is because she's unorganized. (Maybe she just finds them a waste of time.) To her, Ahmed's reason isn't covered by his warrant and is therefore not *relevant*.

Beth might also have responded that using a productivity app would make her less organized:

**Beth:** I've always used a day planner, so I really don't think an app would help me.

In that case, she would be objecting that Ahmed's claim isn't a good instance of the warrant's *consequence*, in other words, that it doesn't *follow* from his reason: even if she were unorganized, a productivity app wouldn't help her.

Most real-world arguments are like this one, in which what "counts" as an instance of a warrant's general circumstance or what follows as a specific consequence is a matter of debate and negotiation rather than one of uncontested definition. Ahmed and Beth might reasonably disagree about what makes a person "unorganized" as they never would about what makes a geometrical figure a triangle. This is yet another reason arguments about warrants lead to further arguments and, ideally, to better understanding.

## 8.4 Knowing When to State a Warrant

Arguments in any field depend on countless principles of reasoning, but most of these are so embedded in researchers' tacit knowledge or so generally accepted that they go unnoted and even unnoticed. There are three occasions, however, when you may have to state a warrant explicitly:

1. **You are addressing an audience outside your field.** When you make an argument for an audience that does not share your expertise, you may need to explain how experts in your field draw conclusions and support their claims, especially if these ways of reasoning are unusual.
2. **You use a principle of reasoning that is new or controversial in your field.** When you rely on unconventional principles of reasoning, you can anticipate that your argument will be received at least by some with skepticism. So defuse that skepticism by stating your warrant and justifying it. Refer to respected figures in your field who also use it. If you can't do that, make an argument of your own defending your reasoning.
3. **You make a claim that some will resist because they just don't want it to be true.** In this case, a good strategy is to offer a warrant you hope they will accept *before* you lay out a reason and claim you suspect they will resist. They may not like the claim any better, but you will at least encourage them to see that it is not unreasonable. For example:

We should accept that human actions are  
largely responsible for climate change<sub>claim</sub>  
because virtually all climate scientists hold  
that view.<sub>reason</sub>

An audience may resist that claim because it threatens other strong convictions they hold. A researcher confronting such an audience might encourage them at least to consider

that claim by giving them a warrant that they should be able to accept:

## What You Don't Say Says Who You Are

You treat your audience courteously when you state and support warrants to explain principles of reasoning that they may not recognize. But you make an equally strong (though less friendly) gesture when you keep silent about warrants you should state for an audience not in the know. One way or the other, warrants significantly affect how audiences perceive the ethos you project through your arguments.

**When an overwhelming majority of competent experts arrive at the same conclusion, we can probably trust it.** warrant We should therefore accept that human actions are largely responsible for climate change claim because virtually all climate scientists hold that view. reason

When an audience accepts that a warrant is reasonable, that a reason is true, and that the reason and claim are good instances of the warrant's general circumstance and consequence, then they are logically obliged at least to *consider* the claim. If they don't, no rational argument is likely to change their minds.

## 8.5 Using Warrants to Test Your Argument

You can test the soundness of an argument by trying to imagine a warrant for it. Here's a flawed argument:

Children aged 12–16 today are significantly more prone to mental health problems than were their counterparts from a generation ago.*reason* Brown (2021) has shown that since 2010, the incidence of anxiety and depression in children has risen by . . .*evidence* We must conclude that social media is having a detrimental effect on children's mental health.*claim*

To understand what's wrong here, we can try to imagine a warrant that would connect the stated reason—children's mental health problems are increasing—to the claim that social media is at least in part responsible for that increase. That claim seems commonsensical and may even be true, but there is no satisfying warrant (that is, one that satisfies the five criteria noted in 8.3) that can connect *that* specific reason to *that* specific claim. The warrant would need to be something like this:

When children's mental health is affected for the worse,*general circumstance* social media is to blame.*general consequence*

That doesn't seem reasonable. Why single out social media specifically? What about all the other influences that might adversely affect children?

To fix that argument, we need to revise the reason so that it is a good instance of the general circumstance of a warrant the audience will accept, which may also mean producing new evidence to support that revised reason:

**The more children are subjected to adverse influences they cannot control, the more severe the negative effects on their mental health will be.***warrant* Social media use, a

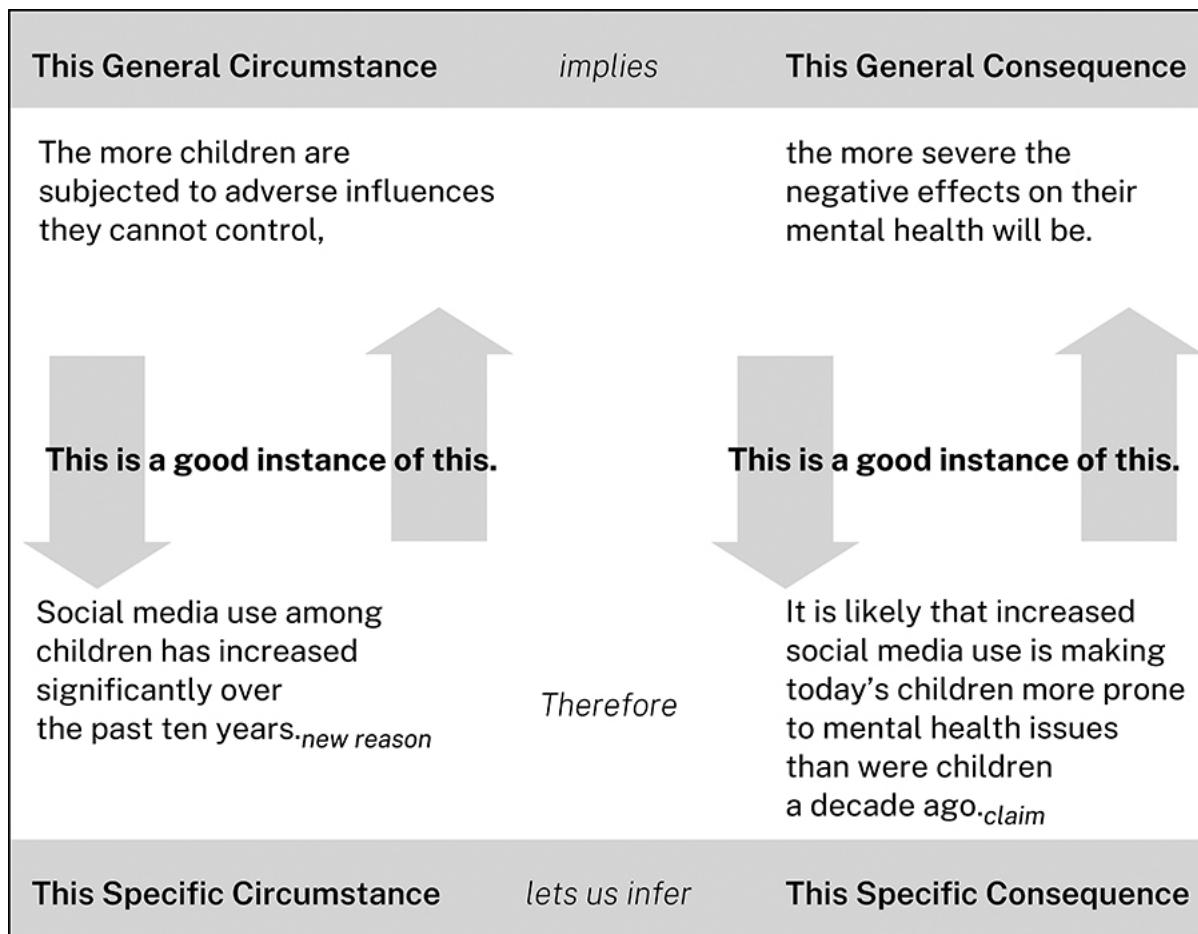
known risk factor for anxiety and depression in children aged 12–16, has increased significantly over the past ten years.<sup>*new reason*</sup> Jones (2022) shows that . . .<sup>*new evidence*</sup> Given these facts, it seems likely that increased social media use is making today's children more prone to mental health issues than were children a decade ago.<sup>*claim*</sup>

Now the reason and claim seem closer to what the warrant covers or includes. We show this argument's logic in the figure on [p. 149](#).

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

Wait. Social media isn't always an "adverse influence" that children "can't control." Couldn't it have positive effects as well? Granted, social media use among children is tied to a risk of anxiety and depression, but it also allows children to connect with friends when otherwise they might remain isolated . . .

In response, the researcher would have to deal with those challenges. Now you understand why important issues are so endlessly contested, why even when you feel your case is airtight, others can still say, *Wait a minute. What about . . . ?*



## 8.6 Challenging Others' Warrants

The most difficult arguments to make are those that challenge not just claims and evidence but the warrants a research community embraces. No argumentative task is harder, because in doing so, you ask a community to change not just *what* they believe but *how* they reason. To challenge a warrant successfully, you must first imagine how those who accept it would defend it. Warrants can be based on different kinds of supporting arguments, so you have to challenge them in different ways.

### 8.6.1 Challenging Warrants Based on Experience

We base some warrants on our experience or on reports by others.

When people habitually lie, we shouldn't trust them.

Where there's smoke, there's fire.

When the yield curve in government bonds inverts, a recession is likely.

To challenge those warrants, you must challenge the reliability of the experience, which is rarely easy, or find counterexamples that cannot be dismissed as special cases.

### **8.6.2 Challenging Warrants Based on Authority**

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

When authority X says Y, Y must be so.

The easiest—and friendliest—way to challenge an authority is to argue that, on the matter in question, the authority does not have all the evidence or reaches beyond its expertise. The most aggressive way is to argue that the source is in fact not an authority at all.

### **8.6.3 Challenging Warrants Based on Systems of Knowledge**

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 BIOLOGY: When an organism reproduces sexually, its offspring differ from either parent.

FROM LAW: When a precedent exists, a judge should follow it.

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.

#### **8.6.4 Challenging Cultural Warrants**

Cultural warrants are backed not by individual experience but by the common experience of an entire culture and therefore seem to be unassailable “common sense”:

What goes around comes around.

An insult justifies retaliation.

What doesn't kill you makes you stronger.

Warrants like these may change over time, but slowly. You can challenge them by offering competing warrants or by noting their cultural specificity.

#### **8.6.5 Challenging Methodological Warrants**

These warrants are general patterns of thought with no content until applied to specific cases. We use them to explain abstract reasoning (they are the source of many proverbs):

GENERALIZATION: When every known case of X has quality Y, then all Xs probably have quality Y. (*Seen one, seen them all.*)

**ANALOGY:** When X is like Y in most respects, then X will be like Y in other respects. (*The acorn doesn't fall far from the tree.*)

**SIGN:** When Y regularly occurs before, during, or after X, Y is a sign of X. (*Cold hands, warm heart.*)

Philosophers have questioned 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 . . .*

### **8.6.6 Challenging Warrants Based on Articles of Faith**

Some warrants are beyond challenge: Thomas Jefferson invoked one when he wrote in the Declaration of Independence, *We hold these truths to be self-evident, that all men are created equal. . . .* Others include

When a claim is based on natural law, it must be true.

When a claim is based on divine revelation, it must be true.

Such warrants are backed not by arguments but by the conviction of those who espouse them, and they are therefore almost impossible to contest directly with competing warrants. When a warrant is used to short-circuit the give-and-take of argumentation by placing a particular claim beyond dispute, we have left the domain of research and research argument. A claim *assumed* to be true—rather than *judged* to be true or at least plausible because of the reasons and evidence supporting it—cannot be considered a product of research.

#### **► Quick Tip: Reasons, Evidence, and Warrants**

You can justify your reasons in two ways: by offering evidence to support them or by deriving them from a warrant. Each of these ways leads to a dif-

ferent kind of argument. Researchers generally trust the first kind more than the second, so base your reasons on solid evidence when you can. Compare these two arguments:

We should do what we can to discourage teenagers from texting and driving.*claim* because distracted driving is a leading cause of teenage deaths.*reason* According to the CDC, motor vehicle accidents are responsible for over a third of all fatalities among people aged 12–19, and texting while driving exponentially increases the likelihood that any driver will be involved in one. Moreover, . . .*evidence*

We should do what we can to discourage teenagers from texting and driving.*claim* because when they do, their risk of having an accident increases.*reason* Driving is difficult and texting a distraction,*reason 2 supporting reason 1* and we know that when people are distracted while performing complex tasks, their performance suffers.*warrant linking reason 2 and reason 1*

If you are like most people, you probably preferred the first of these arguments. That's because its warrant is not controversial (and therefore goes without saying) and its claim is supported by a reason based on solid evidence. That second argument is plausible because reason 1 and reason 2 are good instances of that warrant's general consequence and condition. But most people still want evidence.

In particular, you can't support a claim of fact (see 6.1) with a warrant and reason alone:

Texting and driving is a leading cause of teenage deaths.*claim off fact* because texting while driving is very distracting.*reason* When drivers are distracted, they increase their risk of having serious, even fatal accidents.*warrant*

Are you thinking, *I could believe that, but I'd like some proof?* That commonsense response is telling. We can't just *reason* our way to the conclusion that texting while driving is a *leading* cause of teen fatalities, or even that it causes teen fatalities *at all*. Except in a few fields—some branches of mathematics, philosophy, theology—the way to demonstrate a claim of fact is to show with evidence that what you are claiming is, *in fact*, the case.

The lesson is this: whenever you can, rely not on elaborate lines of reasoning based on warrants but on hard evidence.

## 9 Acknowledgments and Responses

An argument is not complete if it fails to recognize other points of view. This chapter shows how you can make your argument more convincing by acknowledging and responding to questions, objections, and alternatives others might raise.

The core of your argument, again, is a claim supported by reasons based on evidence. You thicken it with additional sub-reasons and their evidence and perhaps also with warrants that connect that claim to its reasons. But if you give your audience only claims, reasons, evidence, and warrants—no matter how compelling these are to you—they may still find your argument thin or dismissive of their views. Arguments are not just logical constructions; they are also social interactions.

To craft a successful argument, you must do more than assemble a sound edifice of claims, reasons, and evidence; you must also bring your audience into your argument by positioning those claims as contributions to an ongoing conversation in which your audience is invested (see the [introduction](#) and [5.1](#)). You can do this by presenting your main claim as a solution to a problem your audience cares about (that's an important function of introductions, which we will talk more about in [chapter 14](#)). You can also do it by anticipating, acknowledging, and responding to questions, objections, and alternatives that you think an audience might raise. As you plan and draft your paper or presentation, those others won't be there to question you or to offer their own views. So you have to *imagine* their questions and views and take them into account. That's how you establish a cooperative relationship with your audience, by imagining yourself conversing with its members.

In this chapter, we show you how to imagine and address three kinds of questions an audience may ask about your argument:

- They may challenge the research question or problem it addresses, wondering why the argument is worth making at all.
- They may question your argument's soundness or coherence—the clarity of your claim, the quality of your reasons and evidence, or your logic and reasoning.
- They may ask you to consider alternatives—different ways of framing the problem, other possible claims or solutions, evidence you've overlooked, or what others have written on your topic.

When you anticipate, acknowledge, and respond to all three kinds of questions, you create an argument that your audience will more likely trust and accept. Don't go easy on yourself: the time to fix a problem with your argument is when you find it.

## 9.1 Questions about Your Research Problem

In part I, we noted that good research begins with good questions leading to interesting problems—that is, problems research communities believe are significant and worth solving. Questions about your research problem are less questions about your argument itself than questions that precede your argument. But if you can't answer them, you risk your audience not attending to your argument at all. The first question a researcher needs to be able to answer to an audience's satisfaction is *Why should I care?* (See I.4.3, 2.5, and 6.2.)

An audience will care about a research argument when they appreciate the significance of the question or problem it addresses and when they believe in your research project—that is, when they believe your project could lead to a trustworthy solution or answer. Here are some questions you can address to create that confidence.

Start with your research problem:

1. *Why do you think there's a problem at all?* The costs or consequences of the situation need to be significant, for you and your audience.

2. *Have you properly defined the problem?* Be sure the problem involves the issue you raise and not another one and that its scope is manageable (not too big, not too small).
3. *Is the problem practical or conceptual?* That is, does it call for action or for understanding as its solution?
4. *Why is the problem significant?* You need an answer to this question that your audience will accept.
5. *Will your audience believe your project will allow you to solve the problem? Why or why not?* Sometimes you have to persuade your audience that you can answer a research question (for instance, by demonstrating that you have the necessary capabilities or expertise or that you can get the necessary data) before you proceed to answer it.

## 9.2 Questions about the Soundness of Your Argument

These next questions are about the core of your argument—your claim, reasons, and evidence—and your warrants. They concern the quality of your argument itself, or how well its parts hang together. Start with the solution to your problem, or your claim:

1. *Is your solution or claim practical or conceptual, and does it match the problem?*
2. *Does your solution or claim solve the problem?*
3. *Is your claim specific enough, or is it too sweeping or vague?*
4. *Is your claim contestable?*
5. *Is your claim appropriately hedged, or have you stated your claim too strongly?*

Note where your argument might seem weak but actually isn't. If, for example, you anticipate that your audience will think your solution has costs

that it doesn't, you can defuse that concern by acknowledging and responding to it:

It might seem that by focusing on the actions of specific banks, we are minimizing the systemic forces that contributed to the financial crisis, but, in fact, our case studies will show . . .

Next, question your support—your reasons and evidence. Start with your reasons:

1. *Do you have enough reasons?*
2. *Are your reasons consistent, or do they contradict each other?*
3. *Are your reasons relevant to your claim?*

Next, imagine challenges to your evidence. An audience might question its kind or currency:

1. “You have the wrong kind of evidence for our field”; “I want to see a different *sort* of evidence—hard numbers, not anecdotes (or stories about real people, not cold numbers).”
2. “This evidence is out-of-date”; “There’s newer research than this.”

If you present the right kind of evidence and your evidence is current, an audience might still question its quality:

1. “It isn’t accurate. The numbers don’t add up.”
2. “It isn’t precise enough. What do you mean by ‘many’?”
3. “It isn’t sufficient or representative. You didn’t get data on all the groups.”
4. “It isn’t authoritative. Smith is no expert on this matter.”
5. “It isn’t understandable. I can’t make sense of your data.”

## 6. “I don’t get it. How is this relevant?”

An audience can be particularly skeptical when they have a stake in a solution that differs from yours. So if you feel your evidence has limitations, you may want to admit them candidly, before your audience objects. In sum, when assembling your argument, test your claims, reasons, and evidence as you expect the most skeptical members of your audience will. You can then address at least the most important objections that you can imagine them raising. Show your audience that you’ve put your argument through your own “stress test” before they put it through theirs. Even then, some might remain unpersuaded. Either they were not willing to be persuaded (and therefore not genuine conversational partners to begin with) or they were simply unconvinced. So be it.

## 9.3 Imagining Alternatives to Your Argument

When you recognize your argument’s limitations, you build credibility by showing your audience that you are making an honest case and dealing with them fairly. You will seem even more credible if you show not just that you understand the strengths and limitations of your argument, but also that you understand and have thought about the alternatives to it.

Those who see the world differently from you are likely not just to hold views that differ from yours but also to define terms differently, to reason differently, even to offer different evidence. Do not simply dismiss these differences; instead, bring the most important of them into your argument by acknowledging and responding to them.

If you know your subject and audience very well, you can try to imagine those alternatives yourself. But usually the best way to identify alternative views is to look to your sources. In [chapter 4](#), we encouraged you to actively *engage* your sources during your research, to use them not just as sources of information but to stimulate your own thinking. Your sources also offer a ready supply of alternative views that you can respond to.

You can think of your secondary sources as a written record of the conversation about your topic, question, or problem. Knowing that conversation allows you to contribute to it. When you read your sources, note where

they advance claims different from yours, take different approaches, focus on different aspects of the problem, and so on. Note especially where—and why—you and your sources disagree. Also note where one source disagrees with another. All those disagreements can help you identify alternatives to acknowledge in your own argument. If you know how you would respond to a particular source, add that response to your notes as you read.

You can respond not only to your sources' claims but also to their reasons and evidence, and their reasoning. If you find a source that your audience might take seriously but that you don't find persuasive, don't ignore it. Instead, explain why. Finally, your sources also help you imagine your audience and anticipate their reactions to your argument. Often your audience will be made up of people like your sources' authors—and sometimes may even include them.

## 9.4 Deciding What to Acknowledge

If you can imagine just a few alternatives and objections to your argument, you'll face a Goldilocks moment: Acknowledge too many and you distract from the core of your argument; acknowledge too few and you seem dismissive or even ignorant of your audience's views. You need to figure out how many acknowledgments will feel "just right."

### 9.4.1 Choosing What to Respond To

To narrow your list of alternatives and objections, consider these priorities:

- plausible charges of weaknesses that you can rebut
- alternative lines of argument important in your field
- alternative conclusions that an audience *wants* to be true
- alternative evidence that an audience knows
- important counterexamples that you have to address

Look for opportunities to reiterate parts of your argument. For example, if an audience might misconstrue your argument's scope, acknowledge their concern and use your clarification to remind them of your point:

There is reason to worry about heavy metal contamination in some farmed fish, but our study focuses on the nutritional value of wild-caught . . .

Or if your audience might think of an alternative solution close to yours, use it to emphasize the virtues of your solution:

Most researchers argue that rules and other forms of formal writing advice degrade rather than improve performance because writing "is a non-conscious act of making meaning, not a conscious process of following rules." That is true for parts of the process: writers should not consult rules as they draft sentences. But writing involves not just drafting but many conscious processes as well. What we show here is what kinds of formal advice do and do not work for *conscious* aspects of writing. . . .

Finally, acknowledge alternatives that may particularly appeal to your audience but only if you can respond substantively, without appearing to brush them aside.

#### **9.4.2 Acknowledging Weaknesses in Your Argument**

If you discover a weakness in your argument that you cannot fix, try to redefine your problem or rebuild your argument to avoid it. But if you cannot, you face a tough decision. You could just ignore the weakness and hope your audience doesn't notice it. But that's dishonest. If they do notice it, they will doubt your competence, and if they think you tried to hide it, they

will question your honesty. Our advice may seem naive, but it works. Candidly acknowledge the issue and respond that

- the rest of your argument more than compensates for the weakness.
- while the weakness is serious, more research will show a way around it.
- while the weakness makes it impossible to accept your claim fully, your argument offers important insight into the question and suggests what attributes a better answer would have.

Occasionally researchers turn failure into success by treating a claim they wanted to support but couldn't as a hypothesis that others might find reasonable. Then they show why it isn't:

It might seem that when jurors hear the facts of a case in a form that focuses on victims' suffering, they will be more likely to blame the accused. That is, after all, the standard practice of plaintiffs' lawyers and what we expected our research to affirm. But in fact, we found no correlation between . . .

### **9.4.3 Acknowledging Questions You Can't Answer**

Beginning researchers sometimes aim to have the last word on a topic, to make an argument that allows for no response but total agreement. That's a mistake. Experienced researchers know that the goal of research is usually to advance the collective understanding of a research community, to keep its conversation going. In fact, the most stimulating research is often that which provides not answers to existing questions but new questions we haven't yet thought to ask. This is especially true for research addressing conceptual problems, but it can be true for applied research as well.

A knowledgeable audience will think better of your argument and of you if, rather than pretending you have all the answers, you are candid about

questions that still remain.

## 9.5 Framing Your Responses as Sub-arguments

You can't respond to alternatives and objections simply by asserting competing claims. Even a minimal response demands explanation:

While some organizations, such as the US Preventive Services Task Force (USPSTF), recommend against routine PSA screening of men over 55,*acknowledgment of objection* we are concerned specifically with the value of screenings for higher-risk populations such as men with a family history of prostate cancer.*explanation of why objection does not apply*

That initial explanation may be enough, but if you feel you need more, offer additional support:

While some organizations, such as the US Preventive Services Task Force (USPSTF), recommend against routine PSA screening of men over 55,*acknowledgment of objection* we are concerned specifically with the value of screenings for at-risk populations such as men with a family history of prostate cancer.*explanation why objection does not apply* We recognize that routine PSA screenings have resulted in overdiagnosis and overtreatment, subjecting many men to adverse side effects unnecessarily,*additional concession to the objection* but Tsai et al. (2021) have shown that coupled with effective counseling, the testing of at-risk populations reduces the incidence of . . .*report of additional evidence*

If you feel you need more still, you will need to offer a full sub-argument. Again, when responding to alternatives, you face a Goldilocks choice: not too much, not too little. Only experience can teach you how to find this balance. So notice how experts achieve it and do likewise.

## 9.6 The Vocabulary of Acknowledgment and Response

When you want to acknowledge and respond to an objection or alternative, you have to decide how much attention to give it: options range from just mentioning an objection and dismissing it to addressing it at length. We present our advice roughly in that order, from the briefest and most dismissive to the most sustained and respectful. (Brackets and slashes indicate alternative choices.)

### 9.6.1 Acknowledging Objections and Alternatives

Acknowledge an objection or alternative in language that shows how much weight you give it. Here are some options.

1. You can downplay an objection or alternative by introducing it with *despite*, *regardless of*, or *notwithstanding*:

#### [Despite/Regardless of/Notwithstanding]

the mayor's claims that she wants to reduce property taxes, *acknowledgment* her latest budget proposals suggest that . . . *response*

Use *although*, *while*, and *even though* in the same way:

**[Although/While/Even though]** Even though some smaller and midsize banks have failed,<sup>acknowledgment</sup> the retail banking sector as a whole remains strong . . .<sup>response</sup>

2. You can signal an acknowledgment indirectly with *seem*, *appear*, *may*, or *could*, or with an adverb like *plausibly*, *justifiably*, *reasonably*, *surprisingly*, or even *certainly*:

In his personal journals, Gandhi expresses what [**seem/appear**] to be symptoms of clinical depression.<sup>acknowledgment</sup> But those who observed him . . .<sup>response</sup>

This proposal [**may have/plausibly has**] some merit,<sup>acknowledgment</sup> but we . . .<sup>response</sup>

3. You can attribute an objection or alternative to an unnamed source, which gives it a little weight:

It is easy to [**think/imagine/say/claim/argue**] that taxes should . . .<sup>acknowledgment</sup> But there is [**another/alternative/possible**] [**explanation/line of argument/account/possibility**].<sup>response</sup>

Some evidence [**might/may/can/could/does**] [**suggest/indicate/point to/lead some to think**] that we should . . .<sup>acknowledgment</sup> but . . .<sup>response</sup>

4. You can attribute an objection or alternative to a generic interlocutor, giving it more weight:

There are [some/many/a few] who  
[might/may/could/would] [say/think/ar-  
gue/claim/charge/object] that carbon cap-  
ture technologies are not . . . *acknowledgment*  
But, in fact, . . . *response*

Although [some researchers/critics/schol-  
ars] have argued that . . . , *acknowledgment* our  
research shows . . .

Note that you can weaken your ethos and your case if you prematurely or excessively denigrate views you disagree with or, especially, those who hold them.

The **ill-conceived claim** that . . .

Some **naive** researchers have claimed that . . .

The **often-careless** historian has even  
claimed that . . .

Save criticism for the response, and direct it at the work rather than the person.

5. You can acknowledge an objection or alternative in your own voice, using *I* or *we*, a passive verb, or a word or phrase such as *admittedly*, *granted*, *to be sure*, and so on, which concedes it some validity:

I [understand/know/realize] that progressives believe . . . ,*acknowledgment* but . . .*response*

It is [true/possible/likely] that heat pumps are more efficient than natural-gas furnaces.*acknowledgment* However, . . .*response*

It [must/should/can] be [admitted/acknowledged/noted/conceded] that no good evidence proves that . . .*acknowledgment* Nevertheless, . . .

[Granted/Certainly/Admittedly/True/To be sure/Of course], Adams has claimed . . .*acknowledgment* However, . . .*response*

We [would/could/can/might/may] [say/argue/claim/think] that programs such as free mental health screenings might discourage . . .*acknowledgment* but these effects are outweighed by . . .*response*

## 9.6.2 Responding to Objections and Alternatives

Begin your response with a term or phrase that signals disagreement, such as *but*, *however*, or *on the other hand*. If you haven't already explained the basis of your response, you may have to support it with its own reason or even with a complete subordinate argument.

You can respond in ways that range from tactful to blunt.

1. You can regret not that the source is unclear, but that *you* don't entirely understand:

But [I do not quite understand how/I find it difficult to see how/It is not clear to me how] X can claim that, when . . .*response*

2. Or you can note that there are unsettled issues:

But there are other issues here . . . /But there remains the problem of . . .*response*

3. You can respond more forcefully, claiming the acknowledged position is irrelevant or unreliable:

But as insightful as that may be,*acknowledgment* it [ignores/is irrelevant to/does not bear on] the issue at hand.*response*

But the [evidence/reasoning] is [unreliable/shaky/thin].*response*

But the argument is [untenable/weak/confused/simplistic].*response*

But the argument [overlooks/ignores/misses] key factors.*response*

You have to decide how blunt your response should be. If an alternative seems obviously wrong, say so, but again focus on the work rather than the person.

4. When you think another researcher seems to have not thought through an issue carefully, you usually should say so civilly. Here are a few possibilities:

Smith's evidence is important,*acknowledgment*  
**but we must look at all the available evidence.***response*

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

That principle holds in many cases,*acknowledgment*  
**but not in all.***response*

### ► Quick Tip: Three Predictable Disagreements

There are three kinds of alternatives that at least some members of your audience are likely to think of.

1. **There are causes in addition to the one you claim.** If your argument is about cause and effect, remember that no effect has a single cause and no cause has a single effect. If you argue that X causes Y, everyone will think of other causes. Honeybee colonies may be collapsing because of pesticide use, but someone knowledgeable about honeybees could also list other possible factors, including loss of habitat, disease, genetically modified crops, and parasites. So if you focus on one cause out of many, acknowledge the others. And if you feel your audience might think that some cause deserves more attention than you give it, acknowledge that view and explain why you de-emphasized it.
2. **What about these counterexamples?** No matter how rich your evidence, some skeptical members of your audience are likely to think of exceptions and counterexamples that they believe under-

mine your argument. So you must think of them first, acknowledge the more plausible ones, especially if they are vivid, and then explain why you don't consider them as damaging as those skeptics might. Be particularly wary when you make claims about a phenomenon with a wide range of variation, such as the climate. People who do not understand statistical reasoning will focus on an aberrant case, even though it falls within a normal distribution: a cold Fourth of July in Miami does not disprove a claim about climate change, any more than a warm New Year's Day in Montreal proves it.

3. **I don't define X as you do. To me, X means . . .** It helps an audience accept your claim if they accept your definitions: if you are researching "addiction" to social media, your audience must understand what you mean by that term. Do you mean it literally (that is, that social media creates physical cravings like cigarettes and some drugs) or just metaphorically (that it's merely hard to stop using)? You can find definitions ranging from a few lines in a dictionary to pages in a medical reference work. But regardless of what those sources say, people tend to redefine terms they encounter to suit their own views. Big-tech executives have argued that social media is not addictive because people are free to stop using it; their critics argue that it is addictive because many people can't.

When your argument hinges on the meaning of a term, define it to support your solution and offer a subordinate argument for your definition. Don't treat a dictionary definition as authoritative (never begin, "According to Webster's, 'addiction' means . . ."). Be aware of plausible alternative definitions that you may need to acknowledge. If you use a technical term that also has a common meaning (like *social class* or *theory*), acknowledge that common meaning and explain why you have adopted the technical one. Conversely, if you do not use a technical term as an expert would expect you to, acknowledge that and explain why you've opted for another meaning.

**Part IV**

# **Delivering Your Argument**

## Prologue

# Planning, Writing, and Thinking

Not all research projects culminate in a formal paper or presentation. But if yours will, you will eventually need a plan. Many writers begin without a plan, but as things become clearer, they have to discard good but irrelevant pages. Others can't get going without elaborate outlines, summaries, or storyboards. And some of us compose drafts in our heads well before turning to a serious draft in writing. You have to find your own way to start a first draft, but you can prepare for that moment if you keep writing your way toward the paper from the start through summaries, analyses, and critiques.

Here's how you know when you're ready to plan a draft:

- You know who your audience is, what they know, and why they should care about your problem.
- You know the kind of ethos or character you want to project.
- You can sketch your question and its answer in two or three sentences.
- You can sketch the reasons and evidence supporting your claim.
- You know when your audience may not see the relevance of a reason to a claim and can state the warrant that connects them.
- You know the questions, alternatives, and objections that are likely to be raised, and you can respond to them.

Even when they have a plan and are ready to draft, though, experienced writers know that they won't march straight through to a finished product. They know they'll make some wrong turns but also some new discoveries and maybe even rethink their whole project. They also know that a lot of their early drafting will not make it into their final draft, and so they start early enough to leave time for revision.

**Part IV** will lead you through the process of creating your final paper or presentation. In [chapter 10](#), we walk through planning and drafting, then in [chapter 11](#) organizing your argument. In [chapter 12](#), we discuss the demanding task of incorporating and citing sources. In [chapter 13](#), we discuss how to present quantitative data in visual form, and in [chapter 14](#) how to write effective introductions and conclusions. In [chapter 15](#), we offer principles for writing in a clear and direct style. Finally, in [chapter 16](#), we discuss how to deliver your research as a presentation.

Before that, let's consider an essential activity of research: sharing it with others. As we stress throughout this book, sharing the results of our research with an interested research community is the ultimate goal of research. It is why we find a good question, search for sound data, and formulate and support a good answer. Sometimes, the audience for our work may be a single teacher, at least initially. You may think, *My teacher knows all about my topic. What do I gain from writing up my research, other than proving I can do it?* Well, your teacher's job is not just to verify that you can research and write but to help you develop these skills. Another answer is that we write not only to share our work, but to improve it before we do.

Beyond sharing our research, there are at least three reasons to write *as we research*:

- Write to remember:

Experienced researchers first write to remember what they have read. A few talented people can hold in mind masses of information, but most of us need to take notes on what we read. If you don't, you are likely to forget or, worse, misremember.

- Write to understand:

A second reason for writing is to see larger patterns in what we read and in the data

we collect. When you arrange and rearrange the results of your research in new ways, you discover new implications, connections, and complications. Even if you could hold it all in mind, you would need help to line up arguments that pull in different directions, plot out complicated relationships, and sort out disagreements among experts.

### Sorting Out Terms: Answer, Solution, Claim, Point

In parts I and II, we used the terms *answer* and *solution* to name the proposition that resolved the central issue of your research. In part III, we used the term *claim* to refer to an answer or solution for which you argue and *main claim* for the claim that constitutes the key assertion the rest of your argument supports. Here in part IV, we use *point* to name the sentence that states a claim in a paper (some use the term *thesis*). *Answer*, *solution*, *claim*, and *point*—all those terms refer to the same thing, viewed in different ways.

That's why practiced researchers don't put off writing until they have gathered all the data they need: they write from the start of their projects to help them assemble their information in new ways.

- Write to test your thinking:

A third reason to write is to get your thoughts out of your head and onto paper, where you will see what you *really* think. Just about all of us, students and professionals alike, believe our ideas are more compelling than they turn out to be in the cold light of print. You cannot know how good your ideas are until you separate them from the swift and muddy flow of thought and fix them in an organized form that you—and your readers—can study.

We offer one additional reason for writing up your research: writing *is* thinking. Writing up your research is, finally, thinking *with* and *for* your audience. When you write for others, you untangle your ideas so that you and they can explore, expand, combine, and understand them more fully. Thinking for others is more careful, more sustained, more insightful—in short, more thoughtful—than just about any other kind of thinking.

# 10 Planning and Drafting

Once you've assembled your argument, you might be ready to draft it. But experienced writers know they can benefit from a plan. A plan helps you organize the elements of your argument into a form that will be both coherent and persuasive.

Some fields do some of the work of planning for you because they have standard forms through which research is communicated. In the experimental sciences, for example, readers expect research reports to follow a format something like this:

Introduction—Methods and Materials—Results—Discussion  
—Conclusion

If your field requires you to follow a conventional plan, ask your teacher for a model or find one in a secondary source. In most fields, however, you must create a plan of your own, but that plan must still help readers find what they are looking for.

## 10.1 Why a Formal Paper?

Even those who agree that writing is an important part of learning, thinking, and understanding may still wonder, *Why can't I write the way I write? Why must I satisfy the demands of a community I have not joined (and may not want to)?* Such concerns are legitimate, and most teachers wish students would raise them more often. But it would be a shallow education that did not change you at all, and the deeper your education, the more it will change the “you” that you are or want to be.

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

We have encouraged you to write as you go, as a way of clarifying your ideas as you develop them. But all researchers can recall moments when, in writing to meet readers' expectations, they detected a flaw in their thinking or discovered a new insight they missed when writing just for themselves. That happens only once you imagine and then meet the needs and expectations of readers, especially informed and careful ones.

Even so, you might think, *OK, I'll write for readers, but why not in my own way?* The conventional forms that readers expect are more than just empty vessels into which you pour your ideas. They also allow writers to think and communicate in ways they might not be able to otherwise, and they embody the shared values of the research communities that use them. Whatever research community you join, you'll be expected to show that you understand its practices by presenting your research in the recognized forms, or *genres*, that the community uses to represent not just *what* it knows but also *how* it knows.

The various genres of research-based writing—research paper, scholarly article, research report, conference paper, legal brief, and many others—have evolved to meet the needs of the communities that use them. Relatively stable, they allow both newcomers and longtime members of those communities to come together through shared practices and expectations. Once you know the genres that belong to your particular research community, you'll be better able to answer your community's predictable questions and understand what its members care about and why.

But again, you might think, *Why should I adopt language and forms that are not mine? Aren't you just trying to turn me into an academic like yourselves? If I write as you expect me to, I risk losing my identity.* And again, we acknowledge the legitimacy of such concerns about identity and change. However, we do not believe that learning to use the conventional

forms of a field requires you to surrender your personal identity. Quite the opposite. It allows you to share your ideas and perspectives in ways that can be heard by others.

In fact, as you learn to write the genres of a field or profession, you become a member of that research community. In that sense, your learning changes *you*. But know, too, that as you use these forms, you also change *them*, however incrementally. Many forms of research-based writing look very different today from how they looked one hundred, fifty, or (in some fields) ten years ago, and they continue to evolve as research communities tackle new problems, adopt new methods, capitalize on new communication technologies, and incorporate new members and new ways of knowing.

## 10.2 Planning Your Paper

### 10.2.1 Sketch a Working Introduction

Writers are often advised to write their introductions last, but most of us need a working introduction to start us on the right track. Expect to write your introduction twice, then: a sketch for now, for yourself, and a final one later for your readers. That final introduction will usually have three parts (see [chapter 14](#)), so you might as well sketch your working introduction to anticipate them. If you have followed our earlier suggestion, you have written your main claim at the bottom of the first page of your storyboard. Now fill in the page above it with what leads up to that claim.

#### 1. Context (*What Your Readers Now Think or Do*)

Since the core of your introduction is your research question, you must first offer readers something your argument will disrupt.

Briefly state a belief or condition your argument will challenge. For example, you might set up a question about the Apollo mission to the moon by asking readers to think about its status as a symbol of America's identity as a technologically advanced nation. You can state that context in terms of

- what you believed before you began your research (*I used to think . . .*).

I always thought of the Apollo mission as a symbol of American ingenuity.

- what others believe (*Most people think . . .*).

The Apollo mission has always been recognized not only as a signature achievement in human history but also as a symbol of America's preeminence in technology.

- an event or situation (*What events seem to show is . . .*).

Half a century after human beings first set foot on the moon, the Apollo mission remains a symbol of American national pride.

- what other researchers have found (*Researchers have shown . . .*).

Researchers generally agree that the Apollo mission accelerated technological innovation across a range of industries.

Of course, you can't use *all* of these approaches in one paper; you would choose one or two for your introduction that best set up your argument. And if you summarize sources at this point, use only those sources whose findings you intend to extend, modify, or correct.

## **2. Problem (What Your Readers Need to Know but Don't, and Why That Matters)**

A research problem, we noted in [part I](#), responds to a research question and consists of two parts: a condition and its costs or consequences, which establish its significance. Research problems, remember, can be conceptual or practical (see [2.1](#)); here we take as an example a conceptual problem. In your introduction, express that question or condition as a *motivating statement* about what those in your research community don't know or understand. Start with *but*, *yet*, *however*, or something similar.

### **Research Question:**

How did the Apollo mission become a symbol of American national identity?

### **Motivating Statement:**

I always thought of the Apollo mission as a symbol of America's national identity. A unique moment in human history, the moon landing was also a major moment in American history. We know almost everything about how Apollo got to the moon, several times over,<sup>context</sup> yet even today we don't fully understand why this particular mission was deemed so central to American national identity.*motivating statement*

Writers introduce a motivating statement in many ways. As you read, note how your sources do it, then use them as models.

Next, if you can, explain the *significance* of your question by answering *So what if we don't find out?* In [part I](#), we said this was the most important question you need to answer about any research project, because it gets at why your project matters to you and should matter to others. Your introduction is your best opportunity to explain this significance to your readers:

If we can explain how the Apollo mission became a symbol of American national identity, we can better understand how specific historical events function as symbols of national identity more generally.

When you are drafting, you may find the answer to *So what?* hard to imagine. If so, don't dwell on it. You can return to that question as you revise.

### **3. Response (*What Your Readers Should Know*)**

Revise your claim to answer the question in terms that match those you used to explain the context and problem:

The Apollo mission to land human beings on the moon served as a symbol of national identity not only because it celebrated American ingenuity and technological prowess but because it did so against the Soviet Union, a competitor with the United States in the space race. A successful mission symbolized, for Americans, the superiority of their way of life.

If you can't do that, at least give your paper a "launching point" by describing how your paper *will* answer your question:

This paper begins by summarizing the political context surrounding the Apollo mission. It then examines treatments of the mission in contemporary print media . . .

Sketchy as it is, this introduction is enough to get you started. In your final draft, once you have actually written your argument, you'll flesh out and refine your introduction (see [chapter 14](#)).

## **10.2.2 Identify Key Terms That Will Run Through Your Whole Paper**

For your paper to seem coherent, readers must recognize a few key concepts running through its parts. But they may not if you refer to those concepts in many different ways. So choose terms for your concepts that you will use with some consistency. Make these choices carefully because your terms will both signal how you imagine your audience and affect how your audience responds to you. For example, if you are writing for a broad audience, you might opt for *fruit fly* rather than *Drosophila melanogaster*. Some writers worry about repeating terms too much. That's fair, but you will notice that repetition more than your readers will because you already know what you are trying to say. In fact, thoughtful repetition can be an effective strategy for helping readers follow your argument.

Look in your notes or storyboard for terms that name your key concepts, especially where you state your claim and its significance. Try to identify the four or five terms that seem most important. Suppose, for example, that you are writing about mixing in electronic dance music. Your paper might have as one organizing theme the legal concept of "fair use." But readers might miss it if you use too many related terms in your paper: *copyright*, *creativity*, *fair use*, *freedom*, *intellectual property*, *remix*, *royalty*. In their sheer number, they might obscure your larger theme.

As you draft, you may find new themes and drop some old ones, but you'll write more coherently if you keep your most important terms and concepts in the front of your mind.

## **10.2.3 Plan the Body of Your Paper**

- 1. Sketch background and define terms.** After the introduction page of your storyboard, add a page on which you outline necessary background. You may have to define terms, review research in more detail, spell out your problem, set limits on your project, locate your problem in a larger historical or social context, and so on. Keep it short.
- 2. Create a storyboard page for each major section of your paper.** At the top of each of these pages, write the point that the rest

of that section supports, develops, or explains. Usually, this will be a reason supporting your main claim.

3. **Find a suitable order.** When you developed your argument (see [7.1](#)), you ordered its parts in a way that made sense to you. Now, as you plan, you must figure out an order that will make sense to your readers. Consider these options. The first two are based on your topic:

- **Part-by-part.** If you can break your topic into its parts, you can deal with each in turn, but you must still order those parts in a way that will help readers understand them—by their functional relationships, hierarchy, and so on.
- **Chronological.** This is the simplest: earlier to later or cause to effect.

These next six options are based on your readers' knowledge and understanding.

- **Short to long, simple to complex.** Most readers prefer to deal with simple issues before they work through more complex ones.
- **More familiar to less familiar.** Most readers prefer to read about more familiar issues before they read about new ones.
- **Less contestable to more contestable.** Most readers move more easily from what they agree with to what they don't.
- **More important to less important (or vice versa).** Most readers prefer to read more important reasons first (but those reasons may have more impact if they come last).

- **Earlier understanding to prepare for later understanding.** Readers may have to understand some events, principles, definitions, and so on before they can understand something else.
- **General analysis followed by specific applications.** Readers may have to understand the outlines of your overall position before they can follow how you apply it to specific texts, events, situations, and so on.

Often these principles cooperate: what readers agree with and easily understand might also be short and familiar. But these principles may also conflict: you may have to decide whether to lead with your main point or lead up to it with necessary background. Whatever order you choose, be sure it addresses *your readers'* needs and doesn't just reflect how your ideas occurred to you.

Finally, when you start to draft, begin each section or paragraph with a word or phrase that signals the order you chose: *First . . . , second . . . ; Later . . . , finally . . . ; More important . . . ; A more complex issue is . . . ; As a result . . .* Don't worry if these signals feel awkward. You can revise or even delete them later.

#### 10.2.4 Plan Each Section and Subsection

1. **Highlight the key terms in each section and subsection.** Just as your paper needs an introduction, so does each of its sections. Earlier we told you to state the point of each section at the top of its storyboard page. Now, just as you picked out key terms to run through your whole paper, highlight in your storyboard the ones that uniquely distinguish each section from all the others. If you cannot find such terms, look closely at how that section contributes to the whole. It may offer little or nothing.

As you draft, use these key terms to create headings for each section. If papers in your field do not use headings, you can re-

move them from your last draft.

2. **Indicate where to put evidence, warrants, acknowledgments and responses, and summaries.** Add these parts to the storyboard page for each section. They may, in turn, need to be supported by their own arguments.

- **Evidence.** Most sections consist primarily of evidence supporting reasons. If you have several pieces of evidence supporting the same reason, arrange them in a way that will make sense to readers. Note where you may have to explain your evidence—where it came from, why it's reliable, exactly how it supports a reason.
- **Acknowledgments and responses.** Imagine what readers might object to, then outline a response. Responses may be sub-arguments with at least a claim and reasons (*Some researchers have said . . . , but I believe . . . because . . .*). They may include evidence and even a second response to an imagined response to your first response.
- **Warrants.** Generally speaking, if you need to state a warrant, state it *before* you offer its claim and supporting reason. The following argument, for example, needs a warrant if it's intended for non-experts in Elizabethan social history:

Since most students at Oxford University in 1580 signed documents with only their first and last names,<sup>reason</sup> most of them must have been commoners.<sup>claim</sup>

That argument is clearer to everyone (even experts) when introduced by a warrant:

In late sixteenth-century England, when someone was not a gentleman but a commoner, he did not add “Mr.” or “Esq.” to his signature.<sup>warrant</sup> Most students at Oxford University in 1580 signed documents with only their first and last names,<sup>reason</sup> so most of them must have been commoners.<sup>claim</sup>

If you think readers might question your warrant, sketch an argument to support it. If readers might think that your reason or claim isn’t a valid instance of the warrant, sketch an argument showing that it is.

If your draft is long and “fact-heavy” with dates, names, events, or numbers, you might briefly summarize the progress of your argument at the end of each major section. What have you established? How does your argument shape up so far? If in your final draft those summaries seem clumsy, cut them.

### 10.2.5 Sketch a Working Conclusion

State your point again at the top of a conclusion page of your storyboard. After it, if you can, sketch its significance (another answer to *So what?*).

As you plan your introduction, body, and conclusion and begin to draft, you may discover that you can’t use all the notes you collected. That doesn’t mean you wasted time. As Ernest Hemingway said, you know you’re writing well when you discard stuff you know is good—but not as good as what you keep.

## 10.3 Avoiding Three Common but Flawed Patterns

Not all patterns for organizing your paper are equally good. Our first efforts often so closely track our thinking and activities as researchers and writers that they don't serve the interests of our readers. Here are three unhelpful organizational patterns:

- 1. Do not organize your paper as a narrative of your thinking.**

This pattern is fine and even natural in early drafts, as you are still figuring out what you think and want to say. But it's less helpful to readers, who want to know your point and reasons for believing it, but not necessarily every step, false start, reversal, and change of mind (or heart) you experienced along the way. Readers become especially annoyed when they have to slog through the history of your project to get to a main point you have saved for the end.

To test your draft for this problem, look for sentences that refer not to the results of your research but to how you did it or to what you were thinking. You see signs of this in language like *The first issue was . . . ; Then I compared . . . ; Finally, I conclude . . .* If you discover more than a few such sentences, you may not be supporting a claim but rather telling the story of how you arrived at it. If so, reorganize your paper around the core elements of your argument—your claim and the reasons and evidence supporting it.

- 2. Do not assemble your paper as a patchwork of your sources.**

This pattern, like the preceding one, can be useful in early drafts. It depends on how you write: some researchers like to “block out” their evidence and then flesh out their arguments around them. Others prefer to focus first on their own ideas and “fill in” their evidence later. But ultimately, readers want *your* analysis, not a summary of your sources. Beginning researchers go wrong when they stitch together quotations, summaries, and loose paraphrases of sources into a patchwork that reflects little of their own thinking. Such “patch writing” invites the charge *This is all summary,*

*no analysis.* It is a particular risk if you do most of your research online, because it is so easy to cut-and-paste from your sources. Experienced readers recognize patch writing, and you risk a charge of plagiarism (see 12.9).

3. **Do not map your paper directly on to the language of an assignment.** While an assignment might seem to provide a ready-made organizational scheme, adopting it is risky, even in early drafts. If you echo the language of your assignment in your first paragraph, your teacher may think that you've contributed no ideas of your own, as in this example:

ASSIGNMENT: Different theories of perception give different weight to cognitive mediation in processing sensory input. Some claim that input reaches the brain unmediated; others that receptive organs are subject to cognitive influence. Compare two theories of visual, aural, or tactile perception that take different positions on this matter.

PAPER'S OPENING PARAGRAPH: Different theorists of visual perception give different weight to the role of cognitive mediation in processing sensory input. In this paper I will compare two theories of visual perception, one of which . . .

If your assignment lists a series of issues to cover, address those issues in the order that best helps you communicate your particular argument to your readers, not the order in which they were given in the assignment. If, for example, you were asked to “compare and

contrast Freud and Jung on the imagination and unconscious,” you would not have to organize your paper into two parts, the first on Freud and the second on Jung. That kind of organization too often results in a pair of unrelated summaries. Instead, try breaking the topics into their conceptual parts, such as elements of the unconscious and the imagination, their definitions, and so on; then order those parts in a way useful to your readers.

## 10.4 Turning Your Plan into a Draft

Some writers think that once they have an outline or, better, a storyboard, they can just grind out sentences. Experienced writers know better. They know that like planning, drafting can also be an act of discovery. It is when drafting that we often experience one of research’s most exciting moments: we discover ideas that we didn’t have until we expressed them.

### 10.4.1 Draft in a Way That Feels Comfortable

Many experienced writers begin to write as they fill up their storyboards. They use early drafts to explore what they think, then refine their plans based on what they discover. They know that much of that early writing will not survive. Exploratory drafting can help you discover ideas you never imagined, but it takes time. If you are writing to a tight deadline, draft when you have a clearer plan.

Many writers draft quickly: they let the words flow, omitting quotations and data that they can plug in later, skipping ahead when they get stuck. If they don’t remember a detail, they insert a “[?]” and keep writing until they run out of gas, then go back to look it up. But quick drafters need time to revise, so if you draft quickly, start early.

## Deadlines and Drafting

Deadlines come too soon: we long for another month, a week, just one more day. (We fought deadlines for every edition of this book.) So start drafting as soon as you can. Some researchers tell themselves that before they can begin writing, they have to read one more article, do one more experiment, check their math or quotations one more time. But if you don't start, you'll never finish. Similarly, some researchers think they have to keep working on their writing until it is perfect. Well, that perfect paper, dissertation, or book has never been written and never will be. All you can do is to make yours as good as you can in the time available. When you've done that, you can say: *Reader, after my best efforts, here's what I believe, put as best as I can. These ideas are important to me, and I hope they will be to you. I have tested and supported them as fully as time and my abilities allow, so that you might find my argument strong enough to consider or perhaps even to accept.*

Other writers can work only slowly and deliberately: they have to get every sentence right before they start the next one. To do that, they need a meticulous plan. So if you draft slowly, create a detailed outline or storyboard.

Most writers work best when they draft quickly, revise carefully, and toss what's irrelevant. But draft in any way that works for you.

### 10.4.2 Use Keywords and Headings to Stay on Track

One problem with drafting is staying on track. A storyboard helps, but you might also keep your key terms in front of you and, from time to time,

check how often you use them, especially those that distinguish each section. But don't let your storyboard or key terms stifle fresh thinking. If you find yourself wandering, follow the trail until you see where it takes you. You may be on the track of an interesting idea.

Published articles and papers in most fields use headings and subheadings to orient their readers, and we suggest that you use them also when you draft. Create each heading or subheading from words that are important to its section or subsection:

## Remixing in Electronic Dance Music: Intellectual Property and the Limits of Fair Use

Again, these headings also show the structure of your paper at a glance and can keep you focused as you draft. When you revise, you can decide which to keep and which to remove.

### ► Quick Tip: Managing Anxiety as a Writer

Writing, we know, can provoke a lot of anxiety, and for good reasons. It's hard: one psychologist has compared its cognitive difficulty to that of playing expert-level chess. It's personal: when we write, even about academic and professional subjects, we inevitably reveal something of ourselves—if not the details of our lives, then at least our habits of mind and thought. It's time-consuming: for most people, writing well requires an investment of time, and writing under the pressure of tight deadlines is stressful. It's often high stakes: the quality of our writing as students and researchers has major consequences, not just for our research communities but for ourselves—our grades, publications, promotions, even jobs can depend on it.

Writing anxiety also has serious consequences. It can exacerbate broader mental health challenges and pressures, and if that's your situation, we encourage you to seek out and use the mental health resources available to you. Anxiety can keep us from doing our best work. It can even lead us to make reckless and unethical choices: for example, many of those who plagiarize, whether students or professionals, do so not because they see nothing wrong with it but because they rationalize their choices under pressure.

Here are some tips that might help. They are based on our experience teaching thousands of writers as well as our own personal experience with writing anxiety (we struggle too—even when writing this book!):

- **Give yourself adequate time.** When planning any project, most people underestimate how long it will take. The same is true for writing. So make your best estimate, then double it.
- **Divide large and abstract tasks into smaller and more concrete ones.** If the prospect of “writing a paper” feels daunting, break it down to more manageable tasks: make a storyboard, draft a provisional introduction, summarize and respond to a source, edit your sentences for clarity, and so on.
- **Focus on your writing’s strengths, not its weaknesses.** This bit of advice might seem counterintuitive: *How can I write a better paper if I don’t catch and fix all my mistakes?* Before you submit it, you should of course give your writing a good editorial polishing. But focusing obsessively on a paper’s deficits is not just discouraging; it can also keep you from fully developing your ideas and producing your best work. One of the most important abilities you can cultivate as a writer is the ability to recognize and then build on moments of potential in a draft.
- **Don’t go it alone.** Whenever you can, share your writing with others. You will benefit from their responses, and just talking it through will stimulate your thinking.
- **Adopt reasonable standards.** We all want our writing to be as good as it can be, but no one’s writing is perfect. Remember the saying *Don’t let the perfect be the enemy of the good*. If you feel that you must make every sentence or paragraph perfect before you move to the next one, you risk paralysis. It helps if you write informally along the way. In any event, know that every researcher compromises on perfection to get the job done.
- **Recognize when you are stuck, and then do something different.** There’s a name for that feeling of not being able to put words down on a page or up on a screen, no matter how hard you try: writer’s block. Many inexperienced writers hope they can just push through it, but that rarely works. One cause of writer’s block

is the cognitive phenomenon of “anchoring.” It’s a kind of cognitive bias that keeps us from letting go of the first idea or phrasing that occurs to us and imagining others. You can’t combat anchoring just by trying harder, because that only reinforces it. Instead, you have to step back and purposefully open your mind to alternatives. You can take a break (of twenty minutes, or a day or two, or months or years, depending on your project and the time you have) to let your unconscious mind work on the problem. You can talk with others about your paper or even something unrelated to it. You can even leverage generative AI: plug in the passage that’s got you stuck and ask for alternatives—but if you do, be sure to acknowledge this practice and clear it with your teacher (see the [Quick Tip at the end of chapter 3](#)).

- **Accept that you are not your paper.** For many, writing—even the kinds of academic and professional writing we address in this book—is deeply personal. But confusing the quality of your paper with your capacities or value as a person can be debilitating. We suggest that you regard any piece of writing not as an extension of yourself but as a product you craft: do your best to make it as good as possible, then let it go.
- **Finally, visit a writing center if one is available to you.** Most colleges and universities, many high schools, and increasing numbers of public libraries and workplaces sponsor writing centers through which you can receive a personal consultation about your writing and that can direct you to additional information about productive writing practices and techniques.

## 11 Revising and Organizing

This chapter explains how to revise and organize your drafts so that your argument is as clear to your readers as it is to you. At first this method may seem a bit mechanical, but that's its virtue. If you follow it one step at a time, you can analyze and improve the organization of your draft efficiently and reliably.

Some new researchers think that once they've churned out a draft, they're done. The best writers know better. They write a first draft not to show to readers, but to discover what case they can actually make for their point and whether it stands up to their own scrutiny. Then they revise and revise until they think their readers will agree with their argument too. Revising for readers is hard, though, because we all know our own work too well to read it as others will. You must first know what readers look for, then determine whether your draft helps them find it. To do that, you have to analyze your draft objectively; otherwise, you'll just read into it what you want your readers to get out of it.

Some writers resist *any* revising for readers, fearing that if they accommodate their readers, they compromise their integrity. They think that the truth of their discovery should speak for itself, and if readers have a hard time understanding it, well, they just have to work harder. But revising for readers doesn't mean pandering to them. In fact, you only improve your ideas when you imagine drawing readers into an amiable conversation in which they engage your beliefs as you engage theirs.

In this chapter, we show you how to diagnose and revise your organization and argument so that readers get out of it what you think you put into it.

## 11.1 Thinking Like a Reader

Readers do not read word by word, sentence by sentence, as if they were adding up beads on a string. They want to begin with a sense of the whole, its structure, and, most important, why they should read your paper in the first place. Then they use that sense of the whole to interpret its parts. So when you revise, it makes sense to attend first to your overall organization, then to sections, then to the coherence of your paragraphs and the clarity of your sentences, and, finally, to matters of spelling and punctuation. In reality, of course, no one revises so neatly. We all revise as we go, correcting spelling as we rearrange our argument, clarifying evidence as we revise a paragraph. But when you systematically revise top-down, from global structure to local sentences and words, you are more likely to read as your readers will than if you start at the bottom, with words and sentences, and work up. You will also revise more efficiently because you won't spend time fine-tuning whole sections that you later decide to rearrange or even cut.

## 11.2 Revising Your Frame

Readers must recognize three things instantly and unambiguously:

- where your introduction ends
- where your conclusion begins
- what sentence in one or both states your main point

To ensure that readers recognize these, do the following:

1. **Put an extra line space after your introduction and before your conclusion.** If your field approves, put headings at those breaks so that readers can't miss them.
2. **State your main point at or close to the end of your introduction.** Then compare that point with the one in your conclusion. They should at least not contradict each other. Nor should they be

identical: make the one in your conclusion more specific and definitive.

3. **Include in the point sentence of your introduction key terms that name concepts and themes that run through your paper.** Do this not only when your point sentence announces your main claim but also if it is just a launching point (see [10.2.1](#), [14.4.2](#)).

For example, consider this introductory paragraph (much abbreviated). What does it imply about the point of the paper?

In the eleventh century, the Roman Catholic Church initiated several Crusades to recapture the Holy Land. In a letter to King Henry IV in the year 1074, Gregory VII urged a Crusade but failed to carry it out. In 1095 his successor, Pope Urban II, gave a speech at the Council of Clermont in which he also called for a Crusade, and in the next year, in 1096, he initiated the First Crusade. In this paper, I will discuss the reasons for the Crusades.

The closest thing to a point sentence appears to be that vague last one. But it merely announces the Crusades as a topic.

Here are the first few sentences from the first paragraph of the conclusion (again, much abbreviated). Which is the point sentence?

As these documents show, popes Urban II and Gregory VII did urge the Crusades to restore the Holy Land to Christian rule. But their efforts were also shrewd political moves to unify the Roman and Greek

churches and to prevent the breakup of the empire from internal forces threatening to tear it apart. In so doing, they . . .

The point sentence in the conclusion seems to be the second one (“But their efforts . . . apart”). That point is specific, substantive, and plausibly contestable. We could add a shortened version of that point to the end of the introduction, or we could write a new sentence for the introduction that, while not revealing the full point, would at least introduce the key concepts of the paper more clearly:

In a series of documents, the popes proposed their Crusades to restore Jerusalem to Christendom, but their words suggest other issues involving **political concerns** about European and Christian **unity** in the face of **internal forces** that were **dividing** them.

## 11.3 Revising Your Argument

Once you determine that the frame of your paper will work for readers, analyze your argument section by section. We know this seems to repeat earlier steps, but once drafted, your argument may look different from the way it did in your storyboard or outline.

### 11.3.1 Identify the Substance of Your Argument

Does the structure of your paper match the structure of your argument?

1. **Is each reason supporting your main claim the point of a section of its own?** If not, the organizing points of your paper may conflict with the structure of your argument.
2. **Do you strike the right balance between reasons and evidence?** In each section, identify everything that counts as evidence, all the summaries, paraphrases, quotations, facts, figures, graphs, tables. If you devote little space to presenting and explaining your evidence, your argument may be thin. If you have lots of evidence but few or no reasons, you may have just a data dump.

### 11.3.2 Evaluate the Quality of Your Argument

What might cause your readers to doubt your argument?

1. **Is your evidence reliable?** In [chapter 7](#), we said that evidence should be accurate, precise, sufficient and representative, authoritative, and clear and understandable (see [7.5](#)). If you are close to a final draft, it may be too late to find more or better evidence. But you can check other matters:
  - Check your data and quotations against your notes.
  - Make sure your readers see how quotations and data relate to your claim.
  - Be sure you haven't skipped intermediate sub-reasons between a major reason and its supporting evidence.
2. **Have you appropriately qualified your argument?** Can you drop in a few appropriate hedges like *probably*, *most*, *often*, *may*, and so on?
3. **Have you expressed all the warrants you should?** There is no easy test for this question. Once you identify each section and

subsection of your argument, write in the margin its most important unstated warrant. Then ask whether readers will accept it. If not, you have to state and support it.

4. **Does your paper read like a conversation with peers or colleagues asking hard but friendly questions?** If it reads like a contest between competitors or if you haven't acknowledged and responded to alternative views or objections, go back through your argument and imagine a sympathetic but skeptical reader asking, *Why do you believe that? Are you really making that strong a point? Could you explain how this evidence relates to your point? But what about . . . ?* (Review [chapter 9](#).) Then address those objections that seem most important.

## 11.4 Revising Your Organization

Once you are confident about the outer frame of your paper and the substance of its argument, make sure that readers will find the whole paper coherent. Check the following:

### 1. Do key terms run through your whole paper?

- Highlight key terms in the main point in your introduction and conclusion.
- Highlight those same terms in the body of your paper.
- Underline other words related to concepts named by those highlighted terms.

Here again is that concluding paragraph about the Crusades, with its key terms highlighted:

As these documents show, popes Urban II and Gregory VII did urge the Crusades to

restore the Holy Land to Christian rule. But their efforts were also shrewd political moves to unify the Roman and Greek churches and to prevent the breakup of the empire from internal forces threatening to tear it apart.

If readers don't see at least one of those key terms in most paragraphs, they may think your paper wanders.

If you find a passage that lacks key terms, you might shoehorn a few in. If that's difficult, you may have gotten off track and need to rewrite or even discard that passage.

2. **Is the beginning of each section and subsection clearly signaled?** Could you quickly and confidently insert headings to mark where your major sections begin? If you can't, your readers probably won't recognize your organization. If you don't use headings, add an extra line space between major sections.
3. **Does each major section begin with words that signal how that section relates to the one before it?** Readers must not only recognize where sections begin and end, but understand why they are ordered as they are. Have you signaled the logic of your order with phrases such as *More important . . .*; *The other side of this issue is . . .*; *Some have objected that . . .*; *One complication is . . .*; or even just *First, . . . Second, . . .*?
4. **Is it clear how each section relates to the whole?** For each section ask, *What question does this section answer?* If it doesn't answer one of the five questions whose answers constitute an argument (see 5.1), does it create a context, explain a background concept or issue,

or help readers in some other way? If you can't explain how a section relates to your point, consider cutting it.

5. **Is the point of each section stated in a brief introduction (preferably) or in its conclusion?** If you have a choice, state the point of a section at the end of its introduction. Never bury it in the middle. If a section is longer than a few pages, you might conclude by restating your point and summarizing your argument, especially if your argument is fact-heavy with names, dates, or numbers.
6. **Does each section have key terms running through it?** Each section needs its own key terms to distinguish it from the others. If you find no terms that differ from those running through the whole, then your readers may not see what new ideas that section contributes. If you find that some of the terms also run through another section, the two sections may only repeat each other. If so, consider combining them.

## 11.5 Checking Your Paragraphs

You may have learned that every paragraph should begin with a topic sentence and be directly relevant to the section in which it appears. Those are good rules of thumb, but applied too strictly they can make your writing seem stiff. The important thing is to structure and arrange your paragraphs so that they lead your readers through the conversation you are orchestrating. Open each paragraph with a sentence or two that signal its key concepts. Doing that will help readers better understand what follows. If your opening doesn't also state the paragraph's point, then your last sentence should. Never bury the point in the middle.

Paragraphs vary in length depending on the type of writing in which they appear. For example, they tend to be shorter in brief research reports and longer in, say, critical essays or book chapters. Paragraphs should be long enough to develop their points but not so long that readers lose focus, which is simply to say they should be "just right" (another Goldilocks moment). If

you find yourself stringing together choppy paragraphs of just a few lines, it may mean your points are not well developed. If you find yourself rolling out very long paragraphs of more than a page, it may mean that you are digressing. You can sometimes vary the lengths of your paragraphs for effect: use short paragraphs to highlight transitions or statements that you want to emphasize.

Some writers find it more natural to think not about their paragraphs but about their paragraph breaks. Use your paragraph breaks as you would the pauses in a conversation, for example, to rest after you make a strong point, to give your readers a moment to process a complex passage, or to signal a transition to a new idea.

## 11.6 Letting Your Draft Cool, Then Revisiting It

If you start your project early, you'll have time to let your revised draft cool, that is, to put it aside so that you can get some distance from it and then approach it afresh. What seems good one day often looks different the next. When you return to your draft, don't read straight through; skim its top-level parts: its introduction, the first paragraph of each major section, and its conclusion. Do the argument and organization still seem right to you? If not, adjust them. Even better, ask someone you trust to skim your paper and summarize it: if they get something wrong, your final readers likely will too, so clarify it. Finally, always consider your reader's advice, even if you do not follow every suggestion.

### ► Quick Tip: Abstracts

An abstract is a paragraph that tells readers what they will find in a paper, article, or report. It should be shorter than an introduction but do three things that an introduction does (see [10.2.1](#) and [chapter 14](#)):

- state the research problem
- announce key themes
- state the main point or a launching point that anticipates the main point

Abstracts differ from field to field, and some fields don't use them at all. But most abstracts follow one of three patterns. To determine which best suits your field, ask your teacher or look in a standard journal. Here are examples of these patterns, adapted from the abstract to an article in political science (the third is the original).

### **1. Context + Problem + Main Point**

This kind of abstract is an abbreviated introduction. It begins with a sentence or two to establish the context of previous research, continues with a sentence or two to state the problem, and concludes with the main point.

Scholars have long assumed that democracy improves the quality of life for its citizens.<sup>context</sup> But recent research has called this orthodoxy into question, suggesting that there is little or no relationship between a country's regime type and its level of human development.<sup>problem</sup> In this article, we argue that democracy can be shown to advance human development, but only when considered as a historical phenomenon.<sup>main point</sup>

### **2. Context + Problem + Launching Point**

This pattern is the same as the previous one, except that the abstract states not a specific point but outlines how the article will unfold.

Scholars have long assumed that democracy improves the quality of life for its citizens,<sup>context</sup> but recent research has called this orthodoxy into question, suggesting that there is little or no relationship between a country's regime type and its level of human development.<sup>problem</sup> In this article, we review this body of work, develop a series of causal pathways through which democracy might improve social welfare, and

test two hypotheses: (a) that a country's level of democracy in a given year affects its level of human development and (b) that its stock of democracy over the past century affects its level of human development.*launching point*

### **3. Summary**

A summary also states the context and the problem; but before reporting the result, it summarizes the rest of the argument, focusing either on the evidence supporting the result or on the procedures and methods used to achieve it. Here is the abstract as it was published:

Does democracy improve the quality of life for its citizens? Scholars have long assumed that it does,*context* but recent research has called this orthodoxy into question.*problem* This article reviews this body of work, develops a series of causal pathways through which democracy might improve social welfare, and tests two hypotheses: (a) that a country's level of democracy in a given year affects its level of human development and (b) that its stock of democracy over the past century affects its level of human development. Using infant mortality rates as a core measure of human development, we conduct a series of time-series—cross-national statistical tests of these two hypotheses. We find only slight evidence for the first proposition, but substantial support for the second.*summary* Thus, we argue that the best way to think about the relationship between democracy and development is as a time-dependent, historical phenomenon.*main point*

Since this version includes a summary, its statement of the problem is shorter than in the other versions (an abstract can only be so long). Notice,

too, the opening sentence. Rather than stating the context in standard fashion, this version begins with what seems to be a rhetorical question—"Does democracy improve the quality of life for its citizens?"—just so it can then upend the implied answer. Even as compressed a form as an abstract allows for the occasional stylistic flourish.

A final tip: if you publish your research, some researcher down the line may want to find it, using a search engine that looks for keywords. So imagine searching for your paper yourself. What keywords would you look for? Use them in your title and abstract.

## 12 Incorporating Sources

This chapter explains three ways you can incorporate language from sources into your paper (summary, paraphrase, and quotation), how to cite your sources correctly, and why you must.

Most of your paper or presentation should be in your own words and reflect your own thinking. But that thinking should be supported by evidence from your research and thickened with acknowledgments of and responses to relevant arguments from other researchers. The main place you find these other arguments is in your secondary sources, the published “conversations” of a research community preserved in its *literature*, the books, articles, reports, and papers its members have produced. We have talked about the importance of establishing your ethos, of earning the trust of your audience. How much they trust you will be determined, largely, by how you use your sources, especially those secondary sources. So you need to understand the choices you have.

### 12.1 Summarizing, Paraphrasing, and Quoting

When you *summarize*, you distill or compress and then state the main points of a longer passage or source (summaries are typically much shorter than the original); when you *paraphrase*, you restate a passage from a source in your own words; when you *quote*, you reproduce a source’s words exactly. Different fields use these techniques to different degrees: researchers in the humanities quote their sources more than do social and natural scientists, who typically paraphrase and summarize. But you must decide each case for itself, depending on how you use the information or ideas you find in your sources. Here are some principles:

- Summarize when you are using a source's overall ideas and the details are unimportant.
- Paraphrase when your argument depends on specific points or pieces of information from a source but not on its specific words.
- Quote for these purposes:
  - The words themselves are your evidence, and you need to present them exactly as they appear in the original source.
  - The words are so strikingly original or elegantly expressed that it is useful to quote rather than paraphrase.
  - The words express key concepts so clearly or memorably that quoting them helps to frame an extended discussion.
  - The words are from an authority who backs up your claims.
  - The words express a view you disagree with, and you want to demonstrate your fairness by stating it exactly.

For every summary, paraphrase, or quotation, cite its bibliographic data in the appropriate style (see 12.8 and [this chapter's Quick Tip](#)). Remember that your goal is to communicate *your* ideas and argument, so don't just stitch together summaries, paraphrases, and quotations of your sources with few words of your own (see 10.3). If you are a student, your teacher will find such work disappointing, and audiences for advanced research reject such patchworks out of hand.

## 12.2 Creating a Fair Summary

Use a summary to report information from a source when only its main points are relevant to your argument. Because a good summary leaves out details, it is shorter than the original. In some cases, a summary will cover all of a source's main points but not always. It is fine to focus on the points and information most relevant to your argument. But you cannot slant your summary so much that you misrepresent your source or change its overall meaning. It's another case in which you'll have to exercise some judgment.

## 12.3 Creating a Fair Paraphrase

When you paraphrase, you restate a passage from a source in your own words. For this reason, a paraphrase is usually about the same length as the original. Some new researchers wonder why they should bother to paraphrase when quoting would be easier and safer (it's harder to distort a source's meaning if you use its exact words). There are a couple of reasons. When you paraphrase rather than quote, you focus attention on a source's ideas rather than its words. You show your audience not just *that* you understand the source but *how* you understand it. Also, because you maintain your own voice, your paper or presentation will seem more unified than it otherwise would if it constantly moves between your sources' words and your own.

But paraphrasing can be hard because a source's words can get into your head and stay there. Here's a tip: When you paraphrase, read the passage until you think you fully understand it. Then, without looking back at the source, state your understanding out loud as though you were explaining it to a listener. When you are happy with your spoken version, write it down. For example, here is a passage from Malcolm Gladwell's *Outliers: The Story of Success*.

Achievement is talent plus preparation. The problem with this view is that the closer psychologists look at the careers of the gifted, the smaller the role innate talent seems to play and the bigger the role preparation seems to play. (38)

This paraphrase is sufficiently distinct from the original passage:

As Gladwell observes, summarizing studies on the highly successful, we tend to overestimate the role of talent and underestimate that of preparation (38).

We took Gladwell's idea and put it in our own words. Notice also that we chose not to put *talent* or *preparation* in quotation marks. We decided that those words are common enough to use as our own.

This paraphrase is too close to the original passage:

Success seems to depend on a combination of talent and preparation. However, when psychologists closely examine the gifted and their careers, they discover that innate talent plays a much smaller role than preparation (Gladwell 38).

If you can run your finger along your sentences and find similar words expressing the same ideas in the same order as they appear in your source, your paraphrase is too close. Try again.

## 12.4 Using Direct Quotations

Signal direct quotations in one of two ways:

- For a quotation shorter than a hundred words or so, use a *run-in quotation* by putting the quoted language on the same line as your text and enclosing it in quotation marks.
- For a longer quotation, use a *block quotation* set off as a separate, indented unit, without quotation marks.

You can insert run-in and block quotations in your text in three ways:

- Drop in the quotation with a few identifying words (*Author says*, *According to Author*, *As Author puts it*, etc.).

As historian Tiya Miles explains, “Despite the prominence of a Cartesian duality in Western philosophy that proposed a clear split between spirit and matter, enslaved Blacks knew that people could be treated like things and things prized over people” (268).

As historian Tiya Miles explains:

Despite the prominence of a Cartesian duality in Western philosophy that proposed a clear split between spirit and matter, enslaved Blacks knew that people could be treated like things and things prized over people. Awash in this awful knowledge, African Americans may have been early theorists of the mercurial nature of things. In this understanding, they would have joined Native Americans, the first thing-makers on this continent who affirmed in their stories and lived through their actions a belief that many things have a kind of spirit and are capable of relationship. (268)

- Introduce the quotation with a sentence that interprets or characterizes it.

Historian Tiya Miles argues that the conception of the material world fostered by slavery challenges

dominant Western metaphysical assumptions and has affinities with that of Indigenous American peoples: “Despite the prominence of . . .” (268).

- Weave the quotation into the grammar of your own sentence. You can use this technique combined with paraphrase to emphasize particularly meaningful or memorable phrases from the original. (Note that the verb “may have” and the term “African Americans” are common enough that they need not be quoted.)

Historian Tiya Miles argues that the “awful knowledge,” fostered by the experience of slavery, that “people could be treated like things and things prized over people” may have made African Americans “early theorists of the mercurial nature of things” (268).

You can modify a quotation so long as you don’t change its meaning and you signal deletions with three dots (called *ellipses*) and changes with square brackets. This version modifies the quotation to fit the grammar of the writer’s sentence:

Historian Tiya Miles argues that because “[t]hey lived each day in haunted awareness of the thin boundary line between human and non-human. . . . African Americans may have been early theorists of the mercurial nature of things” (268).

## 12.5 Mixing Summary, Paraphrase, and Quotation

In practice, experienced writers often mix summary, paraphrase, and quotation. For example, when you weave a quotation into your own sentence, that sentence usually includes some paraphrase (the paraphrase is underlined):

In his discussion of religion, Posner says of American society that “a notable feature . . . is [its] religious pluralism.” He argues that to understand how well social norms control what we do, we should consider “the historical importance of religion as both a source and enforcer of such norms” (299).

You can similarly embed quotations in a summary. Use this technique to take advantage of a particularly memorable phrase from your source or to recruit key terms and concepts without surrendering your own style or voice.

## 12.6 Showing Readers How Evidence Is Relevant

As we noted in [chapter 7](#), evidence rarely speaks for itself, especially not long quotations, images, or complex charts or tables (see [7.5.5](#)). You must speak for such evidence by explaining what you want your readers to get out of it. When you quote a passage from a primary source, analyze or interpret it for your readers by stating in your own words how it supports your point. If you don’t, they may not get the connection. The length of your explanation should be proportional to the length of your quotation: you can often explain a short quotation in a sentence or two, but a long block quotation might require a paragraph or more. Don’t skimp on your explanation: remember that your readers are interested in your ideas, not just your evidence. The same holds for charts and tables (see [chapter 13](#)).

## 12.7 The Social Importance of Citing Sources

Giving credit to others by properly citing your sources is more than just a formality. It is one of the main ways you participate in a research community, especially as you become more advanced as a researcher. Through your citations, you show how others have influenced you, and you signal the kind of reader that you hope will be interested in your ideas in turn. For example, if you aspire to publish in a certain journal, cite some sources from it to show that you are familiar not just with your field's general literature but with the specific debates and perspectives that journal represents. In fact, when skimming a source, many experienced researchers turn to the citations first, because the citations let them know which research community the author is addressing.

### **12.7.1 Citations Benefit You**

Correct citations protect you from a charge of plagiarism, but beyond that, they contribute to your ethos. First, readers don't trust sources they can't find. If they can't find your sources because you failed to document them adequately, they won't trust your evidence; and if they don't trust your evidence, they won't trust your argument or you. Second, many readers believe that when writers can't get the little things right, they can't be trusted on the big ones. That may not be fair, but it's a fact.

### **12.7.2 Citations Help Your Readers**

Readers use citations before, while, and after they read your paper. Before, many experienced readers will preview your paper by skimming your list of sources to see whose work you read and whose you didn't. As they read, readers use citations to assess the reliability, currency, and completeness of your evidence. Readers can be skeptical of papers whose sources are outdated or all very recent. But papers whose citations show a range and depth of sources reassure readers. Finally, just as you depended on citations to start your bibliographic trail, so will some readers depend on *your* list to start theirs.

### **12.7.3 Citations Honor Your Sources**

Few academic researchers get rich writing on topics such as “Ohio education, 1825–1850.” Their reward isn’t money; it’s the reputation they earn for doing good work and the pleasure they take in knowing that colleagues respect it enough to cite it—even in disagreement. The authors of your sources may never know you cited them, but that doesn’t matter. When you cite sources, you honor them by acknowledging your intellectual debts. In short, when you cite sources fully and accurately, you sustain and enrich the sense of community that gives written research both its scholarly and social value.

## 12.8 Four Common Citation Styles

It might seem easier if we all cited sources in the same style, but there are good reasons we don’t. The many differences among citation styles can seem picky and irrelevant, but they matter to readers. So be sure to find out which style you should use, and consult the proper guide. (You can also find reliable online guides.)

Some teachers insist that students learn to create citations manually. That’s because learning a field’s citation conventions can tell you much about the kinds of sources and evidence it values. For example, fields that rely heavily on quotation, like literary studies, prefer citation formats that allow specific pages, passages, and even lines to be located precisely. Fields that place a premium on sources’ currency, like some branches of computer science and data science, prefer styles that emphasize their publication dates.

But today, much of the work of creating citations can be automated. Many researchers use citation software to automatically generate citations in the style they choose, and many academic databases will export citations in any number of styles. If you are a student, be sure you know your teacher’s view: some teachers encourage this practice while others object to it. And be aware that automatically generated citations aren’t perfect; a knowledge of the details will help you to identify and fix the kinds of errors and omissions that commonly occur.

For academic research, there are two basic patterns, *author-title* and *author-date*, each with two common versions.

### **12.8.1 Two Basic Patterns: Author-Title and Author-Date**

All citation forms begin with the name of the author, editor, or whoever else is responsible for the source. We distinguish styles by what follows the author. If the title follows the author, the style is called *author-title*.

Ghosh, Amitav. *The Nutmeg's Curse: Parables for a Planet in Crisis*. University of Chicago Press, 2021.

This pattern is common in the humanities.

If the date follows the author, the style is called *author-date*.

Ghosh, Amitav. 2021. *The Nutmeg's Curse: Parables for a Planet in Crisis*. University of Chicago Press.

This pattern is used in the natural sciences and most of the social sciences because in those rapidly changing fields, readers want to know quickly how old a source is. They can spot dates more easily when they come at the beginning of a citation.

### **12.8.2 Two Author-Title Styles**

There are two versions of author-title style, each based on a well-known style manual.

- **Chicago Author-Title Style:** *The Chicago Manual of Style*, 18th ed. (University of Chicago Press, 2024). It is sometimes called Turabian style, based on a widely used condensed manual: Kate L. Turabian, *A Manual for Writers of Research Papers, Theses, and Dissertations*, 9th ed. (University of Chicago Press, 2018). When using this style, you list your sources in a bibliography and cite them in your text with footnotes or endnotes.
- **MLA Style:** *MLA Handbook*, 9th ed. (Modern Language Association, 2021). You are most likely to learn MLA style in a literat-

ure or composition course. In this style, you give a list of works cited and cite your sources parenthetically in your text.

These styles differ only in minor details, but those details matter, so be sure to consult the proper style guide.

### 12.8.3 Two Author-Date Styles

There are two versions of author-date style, each based on a well-known style manual.

- **Chicago Author-Date Style:** This style is also described in *The Chicago Manual of Style* and sometimes called Turabian style. When using it, you list your sources in a bibliography and cite them parenthetically in your text.
- **APA Style:** *Publication Manual of the American Psychological Association*, 7th ed. (American Psychological Association, 2020). This style uses parenthetical citations as well.

Like the author-title styles, these styles differ only in minor details. But again, those details matter, so be sure to follow the prescriptions of the style you use down to the last comma, space, and capital letter.

## 12.9 Guarding against Inadvertent Plagiarism

If you are not careful as you draft, you may lead readers to think that you are trying to pass off as your own the work of another writer. Students know they cheat when they put their name on a paper purchased online or “borrowed” from a friend. Most also know they cheat when they pass off as their own long passages copied directly from their sources or created wholesale through generative AI.

You risk being charged with plagiarism when, intentionally or not, you do any of the following:

- You quote, paraphrase, or summarize a source but fail to cite it.
- You use the exact words of a source and you do cite it, but you fail to put those words in quotation marks or in a block quotation.
- You paraphrase a source and cite it, but you use words so similar to those of the source that anyone can see that as you paraphrased, you followed the source word by word.
- You use ideas or methods from a source but fail to cite it.

### **12.9.1 Cite the Source of Every Quotation, Paraphrase, or Summary**

You must cite a source every time you use its words, even if you only paraphrase or summarize them. If the quotations, paraphrases, or summaries come from different pages of a source, cite each one individually. If a paraphrase or summary extends over several paragraphs, cite it only once at the end. (The [Quick Tip at the end of this chapter](#) offers guidance on citing sources in your text.)

Writers often slip into inadvertent plagiarism not because they don't know what they should cite but because they lose track of which words are theirs and which are borrowed. That's why in [chapter 4](#) we urged you to distinguish in your notes between quotations, paraphrases, and summaries of sources and your own analyses, thoughts, and commentary. Always include the citation as soon as you add a quotation because you may not remember to do so later. Be especially careful to cite a paraphrase or summary as you draft it; otherwise, you may not even remember that it originated with a source.

### **12.9.2 Signal Every Quotation, Even When You Cite Its Source**

Even when you cite a source, readers must know exactly which words are not yours. It gets complicated, however, when you quote phrases or individual words. Consider these sentences from *Guns, Germs, and Steel* by the historian Jared Diamond:

Because technology begets more technology, the importance of an invention's diffusion potentially exceeds the importance of the original invention. Technology's history exemplifies what is termed an autocatalytic process: that is, one that speeds up at a rate that increases with time, because the process catalyzes itself. (Diamond 1997, 258)

If you are writing about Diamond's ideas, you would probably have to use some of his words, such as *the importance of an invention*. But you wouldn't put that phrase in quotation marks because it shows no originality of thought or expression.

Two of his phrases, however, are so striking that they do require quotation marks: *technology begets more technology* and *autocatalytic process*. For example:

The power of technology goes beyond individual inventions because "technology begets more technology." It is, as Diamond puts it, an "autocatalytic process" (258).

Once you cite those words, you can use them again without quotation marks or citation:

As one invention begets another one and that one still another, the process becomes a self-sustaining catalysis that spreads across national boundaries.

This is a gray area: words that seem striking to some are not to others. If you put quotation marks around too many ordinary phrases, readers might think you're naive, but if you fail to use them when readers think you should, they may suspect you of plagiarism. Since it's better to seem naive than dishonest, especially early in your career, use quotation marks freely. (You must, however, follow the standard practices of your field. Lawyers,

for example, often use the exact language of a statute or judicial opinion with no quotation marks.)

### **12.9.3 Don't Paraphrase Too Closely**

You paraphrase appropriately when you represent an idea in your own words more clearly or pointedly than the source does. But readers will think that you plagiarize if they can match your words, phrasing, or even sentence structure with those of your source (see [12.3](#)).

### **12.9.4 Usually Cite a Source for Ideas Not Your Own**

The basic principle is simple: cite a source for a borrowed idea whenever a reader might think you are claiming that it is original to you. But when you try to apply it, the rule becomes more complicated because few of our ideas are entirely our own. You aren't expected to find and cite a source for every familiar idea. But you are expected to cite the source for an idea when (1) the idea is associated with a specific person *and* (2) it's new enough not to be part of a field's common knowledge. For example, many people have noticed that time seems to slow down during moments of intense danger, such as a car accident or a physical attack. No one would expect you to cite the source for that observation because no one would think you were taking credit for it. On the other hand, some researchers argue that this perception is caused by the way the amygdala captures memories of these experiences. You would have to cite the source of that idea because it is so closely tied to those particular researchers. (The same principle applies if you borrow a method unique to a source.)

### **12.9.5 Inadvertent Plagiarism Is Still Plagiarism**

It's your responsibility as a researcher and writer to know when you need to cite a source. Teachers sometimes treat unintentional plagiarism as a learning opportunity when students are just learning the conventions of academic and scholarly writing—but not always. If you are unsure how to cite, consult with your teacher or your writing center, if one is available to you. Ex-

perienced researchers and writers have no excuse. Here is how to think about this issue: If the author whose ideas you borrowed read your writing, would that author recognize your words or ideas, including paraphrases, summaries, or even general ideas or methods as their own? If so, you must cite that source and enclose exact words from that source in quotation marks or set them off in a block quotation.

Why the fuss over honest slip-ups? First, they harm your credibility. One failure to acknowledge a source can lead readers to doubt your honesty, which can be a career-ending judgment for an advanced student or professional academic. (We have seen job offers rescinded and tenure denied for this reason.) But they matter even to a beginner. Your teachers are preparing you to write not for them but for others who will judge you in part by how carefully and completely you cite your sources. Second, plagiarism is not a victimless offense. Even when inadvertent, it deprives other researchers of deserved credit for their work and, worse, by erasing a bibliographic trail that could lead to it, hinders an entire research community.

### ► Quick Tip: Indicating Citations in Your Paper

You must indicate in your paper every place where you use a source. Three of the four most common citation styles—Chicago author-date style, MLA style, and APA style (see 12.8)—use parenthetical citations that direct readers to specific pages in the source, with enough information to find the corresponding entry in a list of sources.

Some have noted how Muslim American youth draw on Black popular culture as they navigate American racial politics (Khabeer, 2016, 5–6).

If you use Chicago author-title style, you may instead use a raised note number, or superscript, that directs readers to a correspondingly numbered note at the bottom of the page or at the end of the paper.

Some have noted how Muslim American youth draw on Black popular culture as they navigate American racial polit-

ics.<sup>5</sup>

5. Su'ad Abdul Khabeer, *Muslim Cool: Race, Religion, and Hip Hop in the United States* (NYU Press, 2016), 5–6.

### **Parenthetical Citations**

A parenthetical (or in-text) citation includes only the information a reader needs to locate the source in a list of sources at the end of your paper. Depending on your field, that list will be called your bibliography, references, or works cited. What you include in a parenthetical citation depends on whether you use author-title or author-date citation style. For example, here are the author-title forms for citing a single-author work if you do not mention the author in your sentences and you have only one work by that author in your list of sources:

#### **Chicago Author-Title (Author, page[s])**

Only one writer provides data on this matter (Kay, 220).

#### **MLA (Author page[s])**

Only one writer provides data on this matter (Kay 220).

Chicago author-title style is normally used with notes (see next section), but parenthetical citations may be useful for repeated references to the same source. If your list of sources includes more than one publication by the same author, you must add a short title so that readers will know which publication you are citing. In this case, the format in both styles is the same:

#### **Chicago Author-Title and MLA (Author, *Short Title*, page[s])**

Only one writer provides data on this matter (Kay, *A Life*, 220).

In author-date style, you must add the date to every citation:

**Chicago Author-Date** (Author date, page[s])

Only one writer provides data on this matter (Kay 2006, 220).

**APA** (Author, date, p. xxx)

Only one writer provides data on this matter (Kay, 2006, p. 220).

If you have mentioned the author, drop the name from the citation regardless of which style you're using:

**Chicago Author-Title and MLA:** Kay is the only writer who provides data on this matter (220).

**Chicago Author-Date:** Kay is the only writer who provides data on this matter (2006, 220).

**APA:** Kay is the only writer who provides data on this matter (2006, p. 220).

There are additional rules for citations if a work has more than one author, if you cite more than one work by the same author from the same year, if you need to cite multiple sources in a single passage, and so on. For these, consult the appropriate guide.

## **Notes and Bibliography**

In Chicago author-title style, you use notes—footnotes at the bottom of the page or endnotes following the paper—to direct readers to sources in a bibliography. Notes include the same information as a bibliography entry, but the form differs in three ways: notes list the first author's name not by last name, first name, but first name last name; individual elements of a note are separated by commas rather than periods; and publication data are in parentheses.

NOTE FORM: 5. Su'ad Abdul Khabeer, *Muslim Cool: Race, Religion, and Hip Hop in the United States* (NYU Press, 2016), 5–6.

BIBLIOGRAPHY FORM: Khabeer, Su'ad Abdul. *Muslim Cool: Race, Religion, and Hip Hop in the United States*. NYU Press, 2016.

For details, consult the Turabian guide or *The Chicago Manual of Style*.

Researchers are increasingly using parenthetical citations rather than notes because notes duplicate the information listed in a bibliography. If in doubt, ask your teacher or an experienced researcher in your field.

# 13 Communicating Evidence Visually

Most readers grasp quantitative evidence more easily in tables, charts, and graphs than they do in words. But some visual forms suit particular data and messages better than others. In this chapter, we show you how to choose the graphic form that best helps readers both grasp your data and understand how they support your argument.

The cliché that a picture is worth a thousand words is often true in terms of the impact that the visual representation of numerical data can have in research-based arguments. In this chapter, we provide a brief overview of major types and rhetorical uses of graphics that can support an argument. For a more comprehensive treatment of graphics, see this book’s appendix, which features additional resources on the visual representation of data.

First, a note on terminology: We use the term *graphics* for all visual representations of data. Traditionally, graphics are divided into *tables* and *figures*. A table is a grid with columns and rows. Figures are all other graphic forms, including graphs, charts, photographs, drawings, and diagrams. Figures that present quantitative data are divided into *charts* and *graphs*. Charts typically consist of bars, circles, points, or other shapes; graphs consist of continuous lines.

## 13.1 Choosing Visual or Verbal Representations

When the data you need to present are few and simple, readers can grasp them as easily in a sentence as in a table (see [table 13.1](#)):

In 2020, on average, men earned \$64,217 a year and women \$53,387, a difference of \$10,830. (In percentage terms, women earned \$.83 to every \$1 earned by a man.)

**Table 13.1. Median non-farm salaries for men and women (\$), 2020**

---

Men	64,217
Women	53,387
Difference	10,830

---

But if you present more than a few numbers, readers will struggle to keep them straight without a table (see [table 13.2](#)) or other visual aid:

Between 1980 and 2020, the historical wage gap between men and women has contracted substantially. In 1980, the median average wage for non-farm work for men was \$58,428, while for women it was \$35,150. On average women earned \$0.60 to every \$1 earned by a man. This divide has varied over time but has shrunk in recent years to its lowest point. In 2000, the wage gap between women (\$43,327) and men (\$58,772) was 26% but narrowed in 2020 to 17%, with men's average earnings of \$64,217 compared to women's \$53,387.

## 13.2 Choosing the Most Effective Graphic

When you graphically present data as complex as the data in that paragraph, the most common choices are tables, bar charts, and line graphs, each of which has a distinctive effect.

A table seems precise and objective. It emphasizes discrete numbers and requires readers to infer relationships or trends on their own (unless you state them in an introductory sentence).

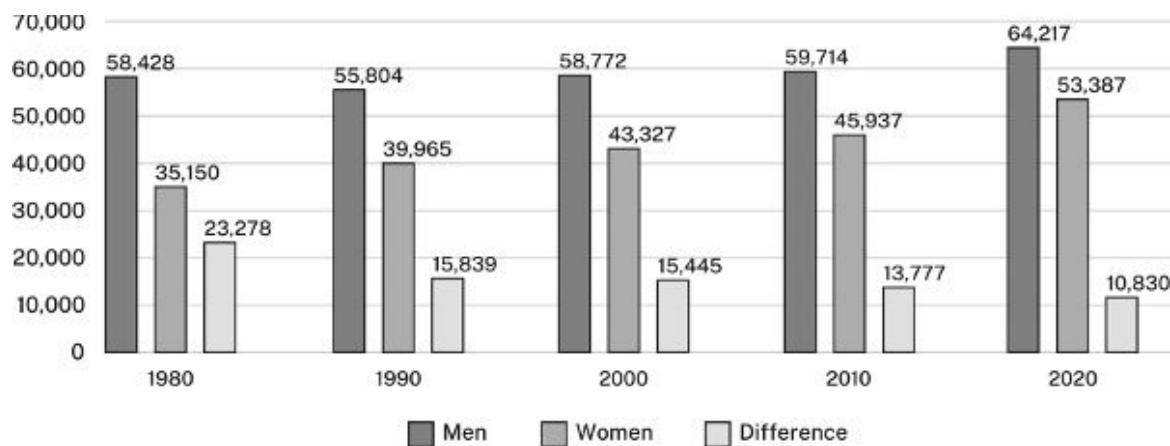
**Table 13.2. Change in wage gap between men and women, 1980–2020**

---

## Median earnings for full-time non-farm workers by gender in real dollars (\$) and by percentage (%)

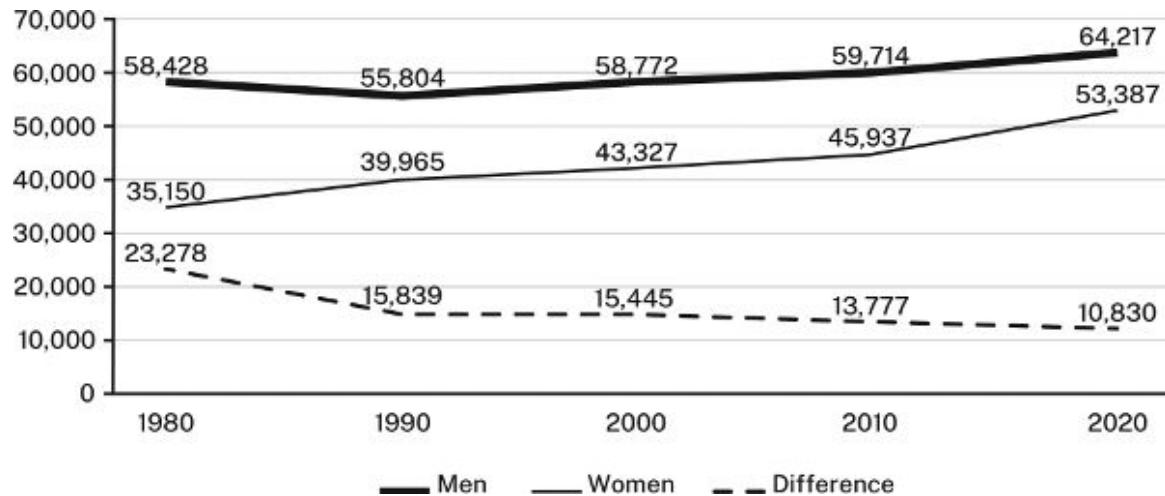
Gender	1980	1990	2000	2010	2020
Men	58,428	55,804	58,772	59,714	64,217
Women	35,150	39,965	43,327	45,937	53,387
Difference (\$)	23,278	15,839	15,445	13,777	10,830
Gap (%)	60%	72%	74%	77%	83%

Charts and line graphs present a visual image that communicates values less precisely than do the exact numbers of a table but with more impact. But charts and graphs also differ. A bar chart emphasizes contrasts among discrete items:



**Figure 13.1.** Change in wage gap between men and women, 1980–2020

A line graph suggests continuous change over time:



**Figure 13.2.** Change in wage gap between men and women, 1980–2020

Choose the form that achieves the effect you want, not the one that first comes to mind. If you are new to quantitative research, limit your choices to basic tables, bar charts, and line graphs. Your computer software offers more choices, but ignore those you are not familiar with. If you are doing advanced research, readers will expect you to draw from a larger range of graphics favored in your field. In that case, consult [table 13.6](#), which describes the rhetorical uses of other common forms. You may have to consider even more creative ways of representing data if you are writing a dissertation or article in a field that routinely displays complex relationships in large data sets. (See the [appendix](#) for additional resources.)

What follows is a guide to the basics of tables, charts, and graphs.

## 13.3 Designing Tables, Charts, and Graphs

Presentation software can create graphics so dazzling that many writers let their software determine their design. That is a mistake. Readers don't care how fancy a graphic is if it doesn't communicate its point clearly. Here are some principles for designing effective graphics.

### 13.3.1 Frame Each Graphic to Help Readers Understand It

A graphic representing complex relationships among numbers rarely speaks for itself. You must frame it to show readers what to see in it and how to un-

derstand its relevance to your argument:

1. Label every graphic in a way that describes its data. For a table, the label is called a *title* and is set flush left above the table; for a figure, the label is called a *legend* and is set flush left below the figure. Keep titles and legends short but descriptive enough to distinguish every graphic from every other one.

- Avoid making the title or legend a general topic.

NOT: Heads of households

BUT: Changes in one- and two-parent heads  
of households, 2005–2020

- Do not give background information or characterize what the data imply.

NOT: Weaker effects of counseling on de-  
pressed children before professionalization of  
staff, 2012–2022

BUT: Effect of counseling on depressed chil-  
dren, 2012–2022

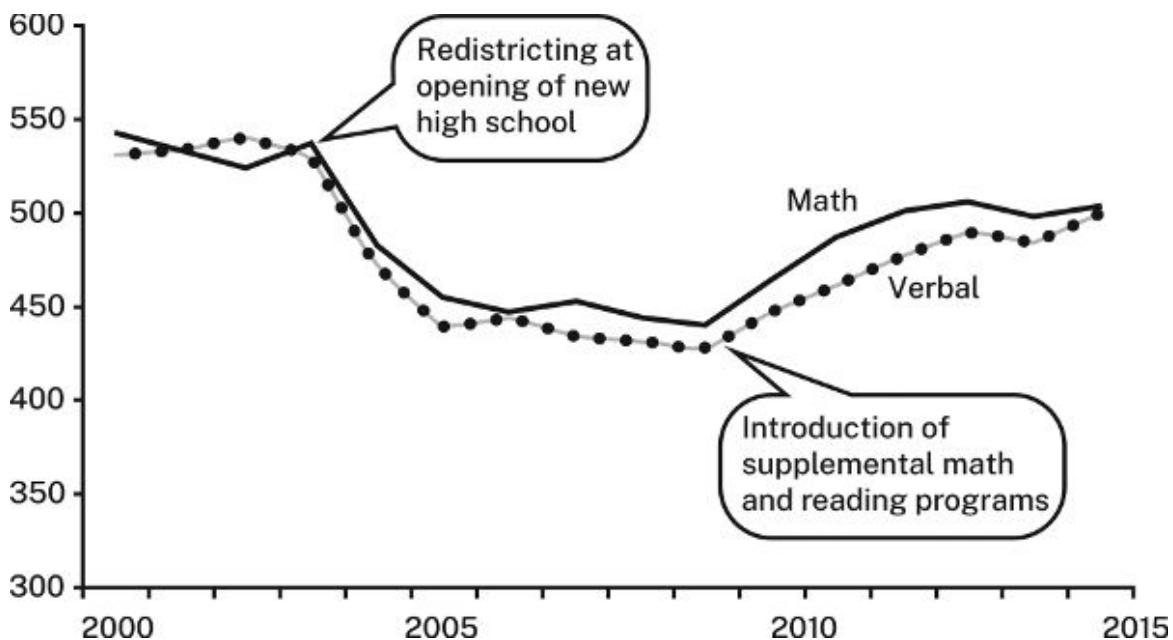
- Be sure labels distinguish graphics presenting similar data.

NOT: Risk factors for high blood pressure

BUT: Risk factors for high blood pressure  
among men in Cairo, Illinois

2. Insert into the table or figure information that helps readers see how the data support your point. For example, if numbers in a table show a trend and the size of the trend matters, indicate the change in a fi-

nal column. If a line on a graph changes in response to an influence not mentioned on the graph, add text to the image to explain it.



**Figure 13.3.** SAT scores for Mid-City High, 2000–2015

Although reading and math scores declined by almost 100 points following redistricting, that trend reversed when supplemental math and reading programs were introduced.

3. Introduce the table or figure with a sentence that explains how to interpret it. Then highlight what in the table or figure you want readers to focus on, particularly any number or relationship mentioned in that introductory sentence. For example, we have to study [table 13.3](#) to understand how it supports the sentence before it:

Most predictions about increased gasoline consumption have proved wrong.

**Table 13.3. US Domestic Demand for Gasoline, 1990–2020 (in billions of gallons)**

	1990	2000	2010	2020
Annual consumption	113.6	131.9	137.7	127.7

We need a more informative title, a sentence to explain how the numbers support or illustrate the claim, and visual cues that guide us to what we should see in the table:

Gasoline consumption has not grown as predicted. Through the 2000s and 2010s, gasoline consumption leveled off, and it even declined in 2020, likely as an effect of quarantining during the COVID-19 pandemic.

### 13.3.2 Keep All Graphics as Simple as Their Content Allows

Some guides encourage you to cram as much data as you can into a graphic. But readers want to see only the data relevant to your point, free of distractions. For all graphics:

1. Include only relevant data. To provide data only for the record, label it accordingly and put it in an appendix.
2. Keep the visual impact simple.
  - Box a graphic only if you group two or more figures.
  - Do not color or shade the background.

#### FOR TABLES

- Never use both horizontal and vertical dark lines to divide columns and rows. Use light gray lines only if the

table is complex or you want to focus your reader's attention on its rows or its columns.

- For tables with many rows, lightly shade every fifth row.

## FOR CHARTS AND GRAPHS

- Use background grid lines only if the graphic is complex or readers need to see precise numbers. Make them light gray.
- Use patterns or shading to mark a contrast. Do not mark contrasts using colors or shades of color alone because people with certain visual impairments may not be able to distinguish them. Instead, rely on patterns or (better) labels wherever possible. Also, avoid using color if your graphic will be printed or photocopied in black-and-white later.
- Never use iconic bars (for example, images of cars to represent automobile production) or three dimensions merely for effect. Both look amateurish and can distort how readers judge values.
- Plot data on three dimensions only when your readers are familiar with such graphs and you cannot display the data in any other way.

### 3. Use clear labels.

- Label all rows and columns in tables and both axes in charts and graphs.
- Use tick marks and labels to indicate intervals on the vertical axis of a graph.
- If possible, label lines, bar segments, and the like on the image rather than in a legend set to the side or

below. Use a legend only if labels would make the image too complex to read easily.

- When specific numbers matter, add them to bars or segments in charts or to dots on lines in graphs.

## 13.4 Specific Guidelines for Tables, Bar Charts, and Line Graphs

### 13.4.1 Tables

Tables with lots of data can seem dense, so organize them to help readers.

- Order the rows and columns by a principle that emphasizes what you want readers to see. Do not automatically choose alphabetic order.
- Round numbers to a relevant value. If differences of less than 1,000 don't matter, then 2,123,499 is irrelevantly precise.
- Sum totals at the bottom of a column or at the end of a row, not at the top or left.

Compare [tables 13.4](#) and [13.5](#):

**Table 13.4. Unemployment in major industrial nations, 2000–2015**

	2000	2015	Change
Australia	5.2	6.1	1.0
Canada	8.0	6.9	(1.1)
France	9.7	10.7	1.0

	2000	2015	Change
Germany	7.1	5.2	(1.9)
Italy	8.4	11.9	3.5
Japan	5.0	3.9	(1.1)
Sweden	8.6	7.7	(0.9)
United Kingdom	7.9	6.6	(1.3)
United States	9.6	6.2	(3.4)

[Table 13.4](#) looks cluttered, and its items aren't helpfully organized. In contrast, [table 13.5](#) is clearer because it has an informative title, less visual clutter, and items organized to let us see the pattern of changes in comparative terms more easily.

**Table 13.5. Changes in unemployment rates of industrial nations, 2000–2015**

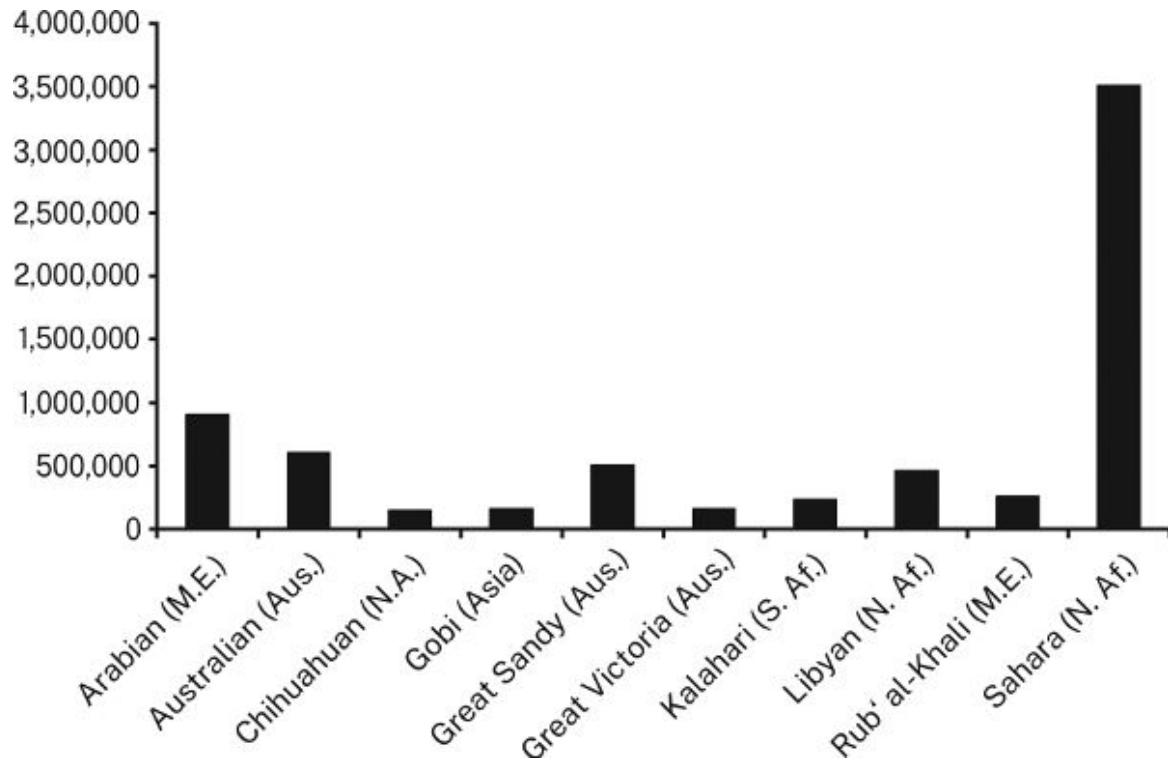
	2000	2015	Change
United States	9.6	6.2	(3.4)
Germany	7.1	5.2	(1.9)
United Kingdom	7.9	6.6	(1.3)

	2000	2015	Change
Canada	8.0	6.9	(1.1)
Japan	5.0	3.9	(1.1)
Sweden	8.6	7.7	(0.9)
Australia	5.2	6.2	1.0
France	9.7	10.7	1.0
Italy	8.4	11.9	3.5

### 13.4.2 Bar Charts

Bar charts communicate as much by visual impact as by specific numbers. But bars arranged in no pattern imply no point. If possible, group and arrange bars to create an image that matches your message. For example, look at figure 13.4 in the context of the explanatory sentence before it. The items are listed alphabetically, an order that doesn't help readers see the point:

Most of the world's deserts are concentrated in North Africa and the Middle East.



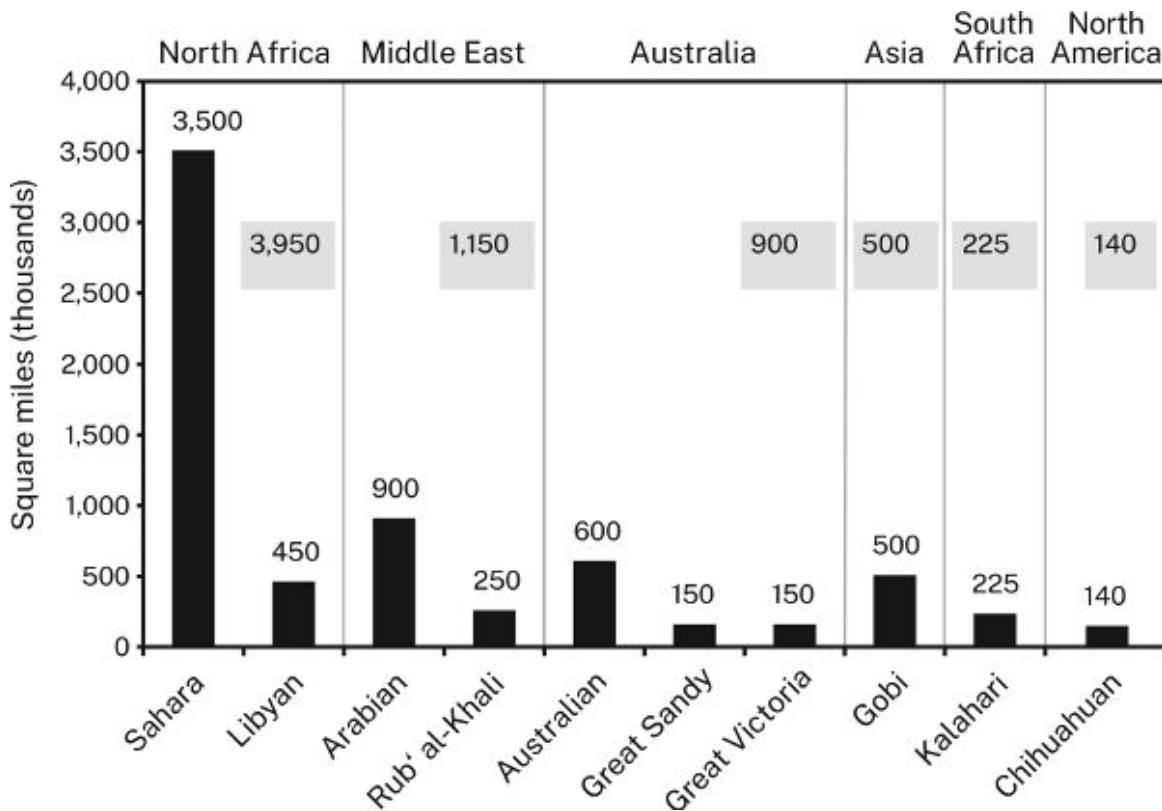
**Figure 13.4.** World's ten largest deserts

In contrast, [figure 13.5](#) on the next page supports the claim “Most of the world’s deserts are concentrated in North Africa and the Middle East” with a corresponding image.

. . .

In standard bar charts, each bar represents 100 percent of a whole. But sometimes readers need to see specific numbers for parts of the whole. You can provide them in two ways:

- Divide the bars into proportional parts, creating a “stacked” bar.
- Give each part of the whole its own bar, then group the parts into clusters.



**Figure 13.5.** World distribution of large deserts

Use stacked bars only when you want readers to compare whole values for different bars rather than their divided segments, because readers can't easily compare the proportions of segments by eye alone. If you do use stacked bars, do this:

- Arrange segments in a logical order. If possible, put the largest segment at the bottom in the darkest shade.
- Label segments with specific numbers to assist comparisons; connect corresponding segments with gray lines.

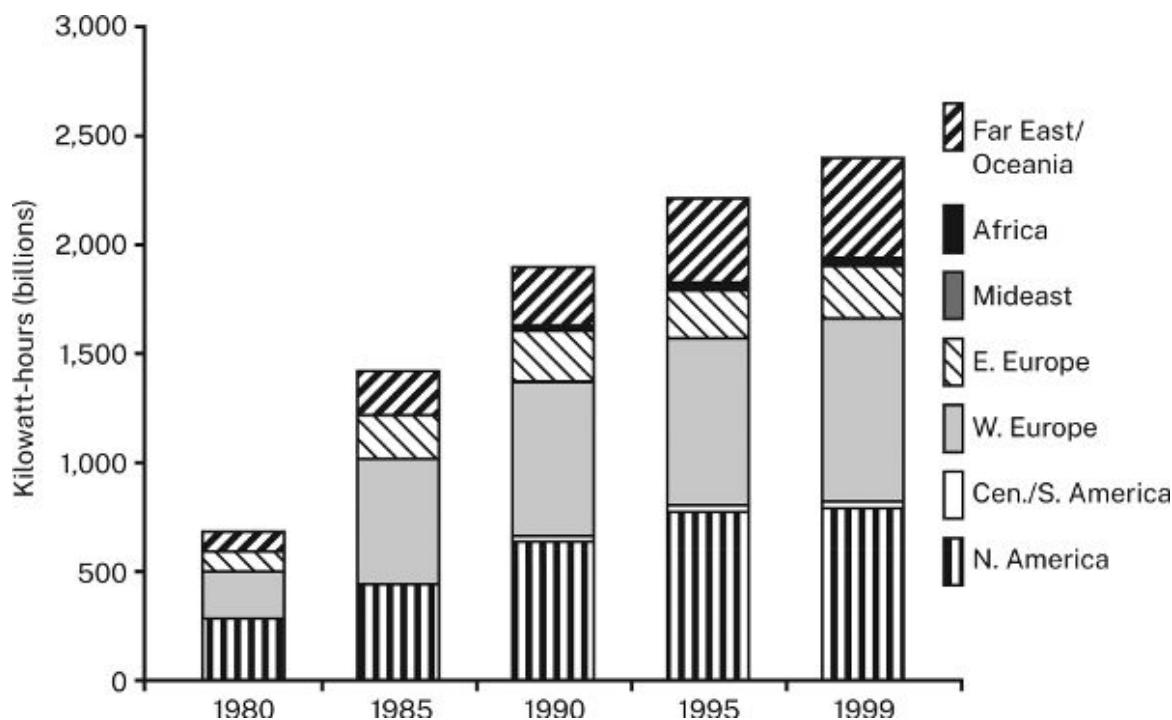
Compare [figures 13.6](#) and [13.7](#) on the facing page.

If you group bars because segments are as important as the wholes, do this:

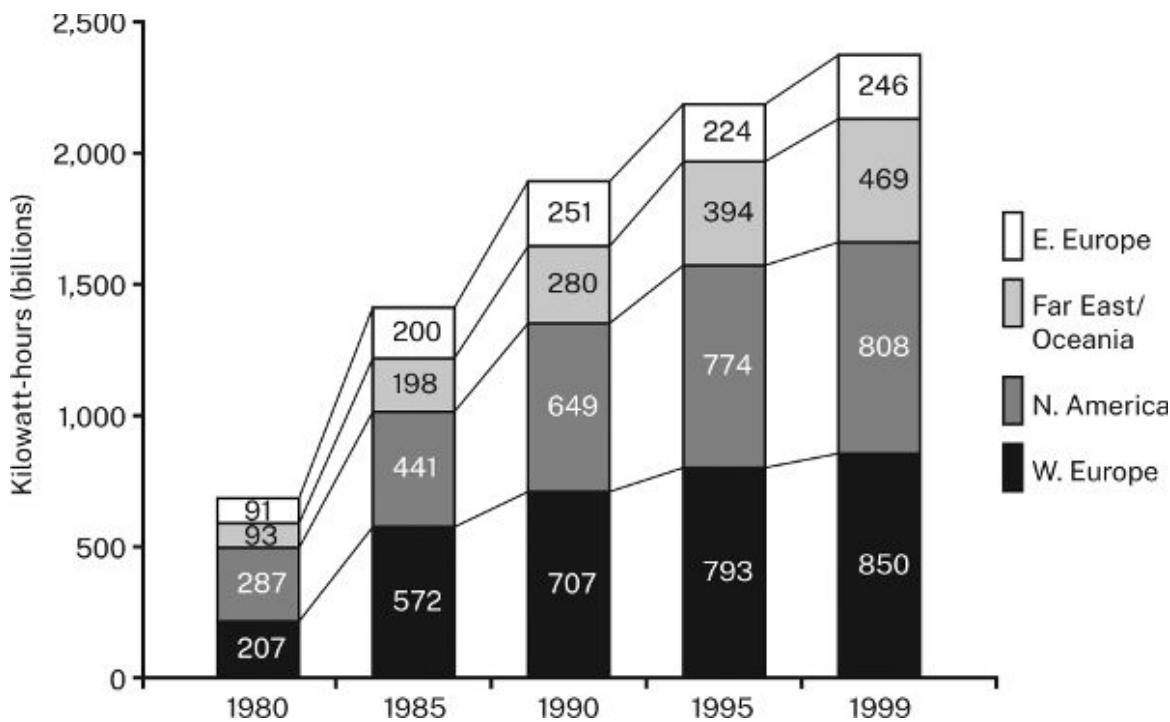
- Arrange groups in a logical order; if possible, put bars of similar size next to one another (order bars in the same way through all the groups).

- Label groups with the number for the whole, either above each group or below the labels on the bottom.

Most data that fit a bar chart can also be shown in a pie chart. Pie charts are popular in magazines, tabloids, and annual reports. While splashy, they are harder to read than bar charts. Readers must compare proportions of segments whose sizes are often hard to judge. But pie charts have their place, especially to communicate qualitative impressions about the comparative size of data, either to show that one segment is disproportionately larger than the rest or that the data are divided into many small segments. Avoid using pie charts to convey quantitative data in any detail. For that, use bar charts.



**Figure 13.6.** World generation of nuclear energy, 1980–1999



**Figure 13.7.** Largest generators of nuclear energy, 1980–1999

### 13.4.3 Line Graphs

Because a line graph emphasizes trends, readers must see a clear image to interpret it correctly. Do the following:

- Choose the variable that makes the line go in the direction, up or down, that supports your point. If the good news is a reduction (down) in high school dropouts, you can more effectively represent the same data as a rising line indicating increase in retention (up). If you want to emphasize bad news, find a way to represent your data as a falling line.
- Plot more than six lines on one graph only if you cannot make your point in any other way.
- If you have fewer than ten or so data points, indicate them with dots. If only a few are relevant, insert numbers to show their exact value.
- Do not depend on different shades of gray to distinguish lines, as in [figure 13.8](#).

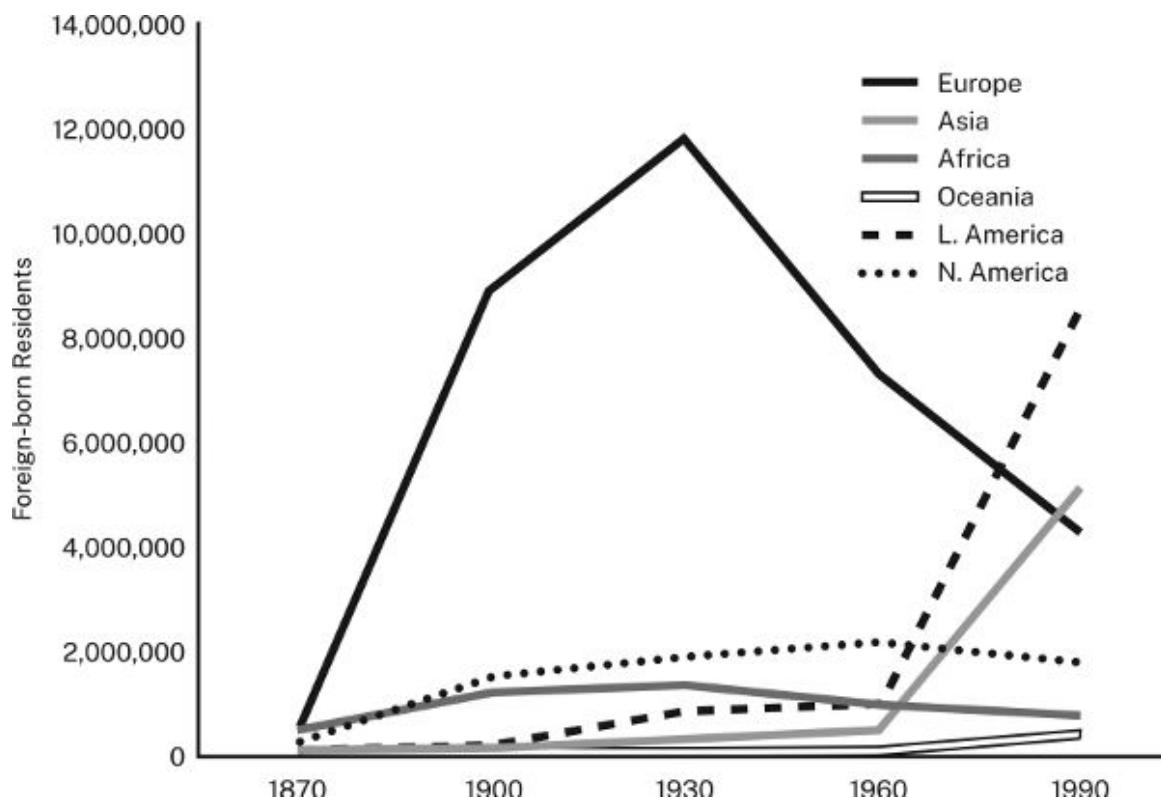
Compare [figure 13.8](#) and [figure 13.9](#) on the facing page.

[Figure 13.8](#) is harder to read because the shades of gray do not distinguish the lines well against the background and because our eyes have to flick back and forth to connect the lines to the legend. [Figure 13.9](#) makes those connections clearer.

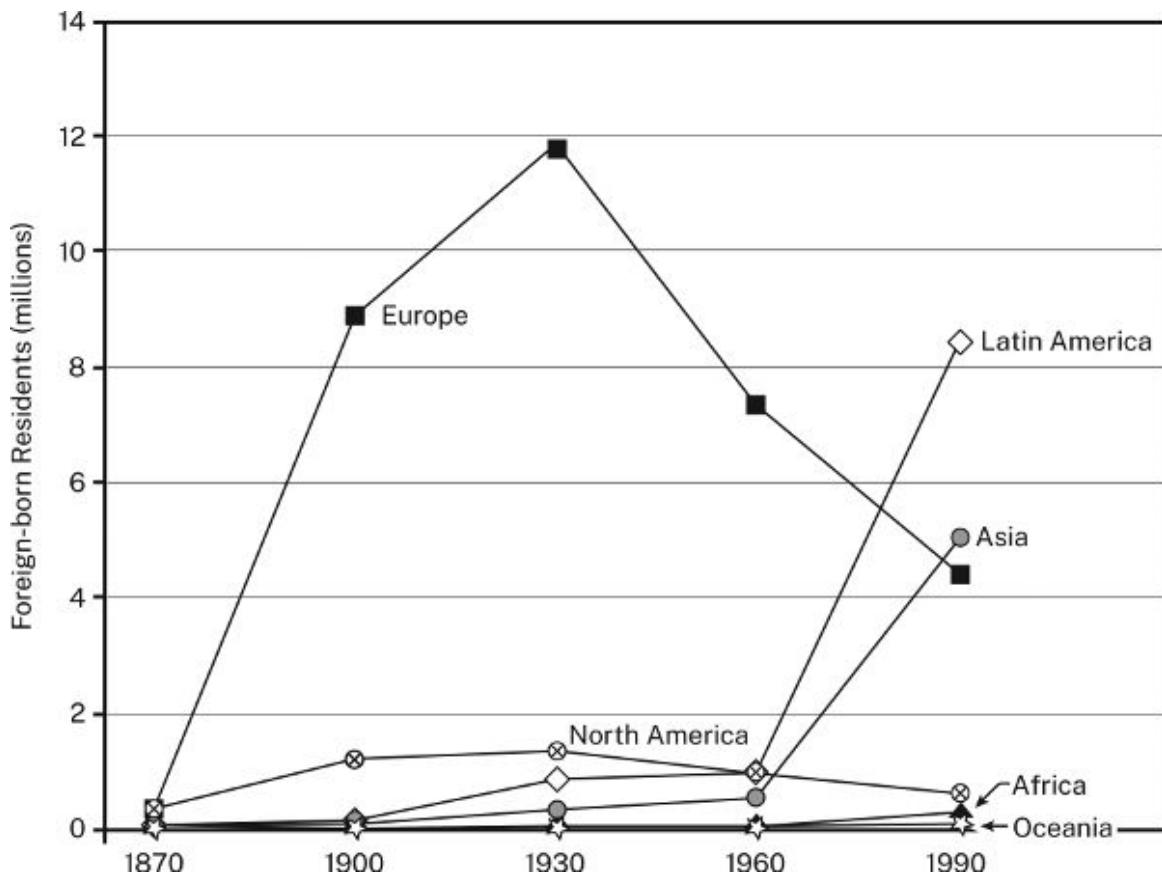
These different ways of showing the same data can be confusing, so test different options. Construct alternative graphics, then ask someone unfamiliar with the data to judge those alternatives for impact and clarity. Be sure to introduce the figures with a sentence that states the claim you want them to support.

## 13.5 Representing Data Ethically

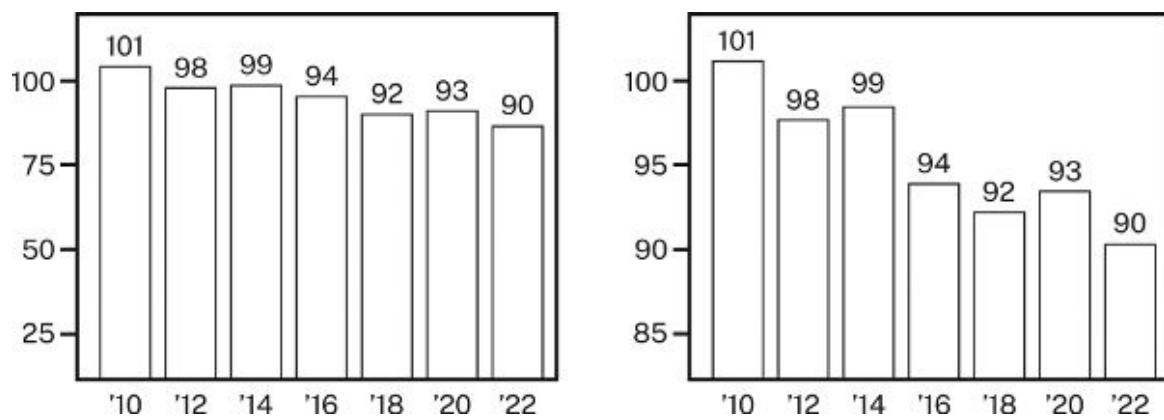
Your graphic must be not only clear and accurate, but honest. Do not distort the image of the data to make your point. On page 230, the two bar charts display identical data, yet imply different messages.



**Figure 13.8.** Foreign-born residents in the United States, 1870–1990



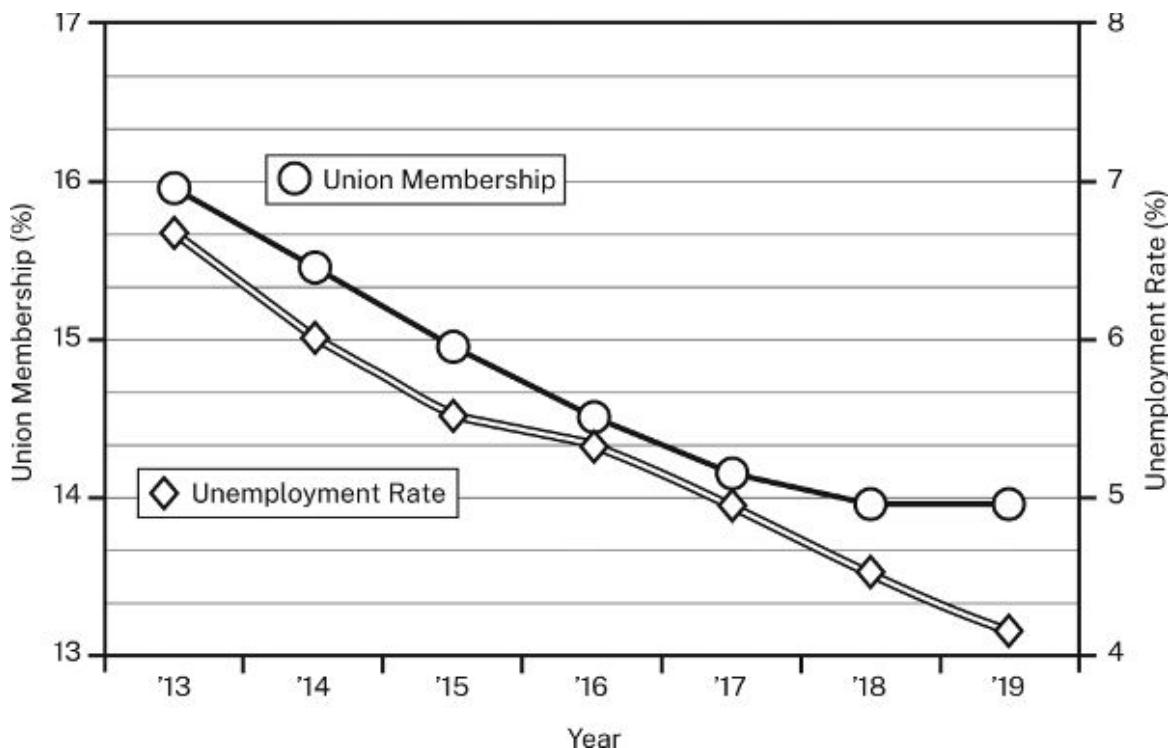
**Figure 13.9.** Foreign-born residents in the United States, 1870–1990



**Figure 13.10.** Capitol City pollution index, 2010–2022

The 0–100 scale on the left in figure 13.10 creates a fairly flat slope, which makes the drop in pollution seem small. The vertical scale on the right, however, begins not at 0 but at 80. When a scale is so truncated, it creates a sharper slope that exaggerates small contrasts.

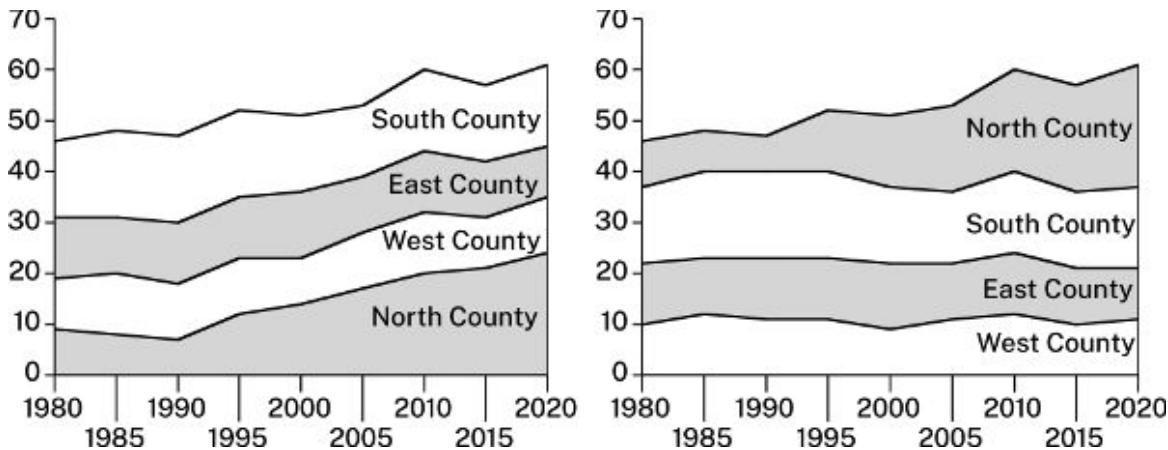
Graphs can also mislead by implying false correlations. Someone might claim that unemployment goes down as union membership goes down and offer [figure 13.11](#) as evidence. And indeed, in that graph, union membership and the unemployment rate do seem to move together so closely that a reader might infer one causes the other:



**Figure 13.11.** Union membership and unemployment rate, 2013–2019

But the scale for the left axis (union membership) differs from the scale for the right axis (the unemployment rate), making it seem that the two trends could be causally related. They may be, but that distorted image doesn't prove it.

Graphs can also mislead when they encourage readers to misjudge values. The two charts in [figure 13.12](#) represent exactly the same data but seem to communicate different messages:



**Figure 13.12.** Representation of collar counties in state university undergraduates (percent of total), 1980–2020

The charts in [figure 13.12](#) are both stacked area charts. Charts such as these represent changes in values not by the *angles* of the lines, but by the areas *between* them. In both charts, the bands for south, east, and west are roughly the same width throughout, indicating little change in the values they represent. The band for the north, however, widens sharply, representing a sharp increase in the numbers it represents. In the chart on the left, readers could easily misjudge the top three bands, because they are on top of the rising north band, making those bands seem to rise as well. In the chart on the right, on the other hand, those three bands do not rise because they are on the bottom. Now only the band for the north rises.

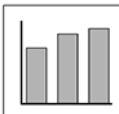
Here are four guidelines for avoiding visual misrepresentation:

- Do not manipulate a scale to magnify or reduce a contrast.
- Do not use a figure whose image distorts values.
- Do not make a table or figure unnecessarily complex or misleadingly simple.
- If the table or figure supports a point, state it.

**Table 13.6. Common graphic forms and their uses**

Data	Rhetorical Uses
------	-----------------

#### Bar Chart

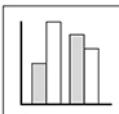


Compares the value of one variable across a series of items called cases (e.g., average salaries for service workers<sub>variable</sub> in six companies<sub>cases</sub>).

Creates strong visual contrasts among individual cases, emphasizing individual cases. For specific values, add numbers to bars. Can show ranks or trends. Vertical bars (called columns) are most common but can be horizontal if cases are numerous or have complex labels.

See 13.4.2.

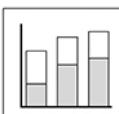
#### Bar Chart, Grouped or Split



Compares the value of one variable, divided into subsets, across a series of cases (e.g., average salaries<sub>variable</sub> for men and women service workers<sub>subsets</sub> in six companies<sub>cases</sub>).

Contrasts subsets within and across individual cases; not useful for comparing total values for cases. For specific values, add numbers to bars. Grouped bars show ranking or trends poorly; useful for time series only if trends are unimportant. See 13.4.2.

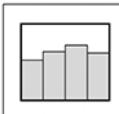
#### Bar Chart, Stacked



Compares the value of one variable, divided into two or more subsets, across a series of cases (e.g., harassment complaints<sub>variable</sub> segmented by region<sub>subsets</sub> in six industries<sub>cases</sub>).

Best for comparing totals across cases and subsets within cases; difficult to compare subsets across cases (use grouped bars). For specific values, add numbers to bars and segments. Useful for time series. Can show ranks or trends for total values only. See 13.4.2.

#### Histogram



Compares two variables, with one segmented into ranges that function like the cases in a bar graph (e.g., service workers<sub>continuous variable</sub> whose salary is \$0–5,000, \$5,001–10,000, \$10,001–15,000, etc.<sub>segmented variable</sub>).

Best for comparing segments within continuous data sets. Shows trends but emphasizes segments (e.g., a sudden spike at \$5,000–10,000 representing part-time workers). For specific values, add numbers to bars.

#### Image Chart



Shows value of one or more variables for cases displayed on a map, diagram, or other image (e.g., states<sub>cases</sub> colored red or blue to show voting patterns<sub>variable</sub>).

Shows the distribution of the data in relation to preexisting categories; de-emphasizes specific values. Best when the image is familiar, as in a map or diagram of a process.

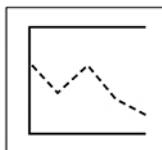
#### Pie Chart



Shows the proportion of a single variable for a series of cases (e.g., the budget share<sub>variable</sub> of US cabinet departments<sub>cases</sub>).

Best for comparing one segment to the whole. Useful only with few segments or segments that are very different in size; otherwise comparisons among segments are difficult. For specific values, add numbers to segments. Common in popular venues but frowned on by professionals. See 13.4.2.

#### Line Graph



Compares continuous variables for one or more cases (e.g., temperature<sub>variable</sub> and viscosity<sub>variable</sub> in two fluids<sub>cases</sub>).

Best for showing trends; deemphasizes specific values. Useful for time series. To show specific values, add numbers to data points. To show the significance of a trend, segment the grid (e.g., below- or above-average performance). See 13.4.3.

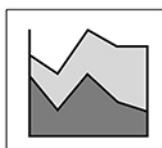
#### Area Chart



Compares two continuous variables for a single case (e.g., reading test scores<sub>variable</sub> over time<sub>variable</sub> in a school district<sub>case</sub>).

Shows trends; deemphasizes specific values. Can be used for time series. To show specific values, add numbers to data points. Areas below the lines add no information but will lead some readers to misjudge values. Confusing with multiple lines/areas.

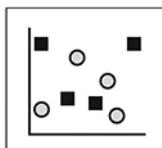
#### Area Chart, Stacked



Compares two continuous variables for two or more cases (e.g., profit<sub>variable</sub> over time<sub>variable</sub> for several products<sub>cases</sub>).

Shows the trend for the total of all cases, plus how much each case contributes to that total. Likely to mislead readers on the value or the trend for any individual case, as explained in 13.5.

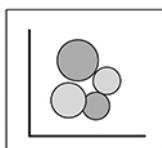
#### Scatterplot



Compares two variables at multiple data points for one or more cases (e.g., housing sales<sub>variable</sub> and distance from downtown<sub>variable</sub> in two cities<sub>cases</sub>).

Best for showing the distribution of data, especially when there is no clear trend or when the focus is on outlying data points. If only a few data points are plotted, it allows a focus on individual values.

#### Bubble Chart



Compares three variables at multiple data points for one or more cases (e.g., housing sales<sub>variable</sub>, distance from downtown<sub>variable</sub>, prices<sub>variable</sub> in two cities<sub>cases</sub>).

Emphasizes the relationship between the third variable (bubbles) and the first two; most useful when the question is whether the third variable is a product of the others. Readers easily misjudge relative values shown by bubbles; adding numbers mitigates that problem.

## ► Quick Tip: Look for Opportunities to Include Visual Evidence

Increasingly, papers and presentations in all fields are multimodal—that is, they include visual as well as verbal information. Multimodal arguments have long been the norm in the natural sciences and many social sciences and are becoming accepted in fields that have traditionally avoided them. More than ever then, beginning researchers must learn how and when to present data or information in graphic form, rather than in words alone. Even if your paper or presentation doesn't *need* visual evidence, it might benefit from having it because multiple modes of representing evidence, working together, make it

more likely that your audience will understand and be convinced by your arguments. So be on the lookout for opportunities to represent that data visually:

- **Notice how sources in your field use visual evidence.** Pay attention not just to the kinds of data or information that get represented but to the forms those representations take.
- **Ask experienced researchers how they use visual evidence in their own work.** When you understand the choices experts make, you will make better choices yourself.
- **Decide to use at least one graphic in your paper.** That decision alone will focus your attention on ways you can use visual evidence in your argument.
- **Ask your teachers for assignments that invite the use of visual evidence.** Most teachers appreciate it when students aspire to make moves in their own work that they see and admire in their sources. Even if your assignment doesn't explicitly call for you to use graphics, don't be shy about asking your teachers for the option to do so.

# 14 Introductions and Conclusions

A good introduction encourages readers to read your work with interest and prepares them to understand it better. A good conclusion leaves them with a clear statement of your point and renewed appreciation of its significance. In this chapter, we show you how to write both. The time you spend on your introduction and conclusion may be your most important.

Once you think you have a draft that works, you’re ready to write your final introduction and conclusion. Some writers think that means following the standard advice: *Grab their attention with something snappy or cute*. That advice is not useless, but your audience wants more than cute and snappy. In part I, we showed you how to develop a project around a research problem. Here, we show you how to use that problem to engage your audience. A catchy opening might spark readers’ attention, but what keeps their attention is a problem they think needs a solution and a promise that you have found it. As we have said, you can always work with readers who say, *I don’t agree*. You can’t do much with those who shrug and say, *I don’t care*.

## 14.1 The Common Structure of Introductions

As we have noted, different research communities do things in different ways. While their introductions may look different on the surface, their underlying structures are the same. Consider these three condensed examples from the fields of cultural criticism, computer design, and legal history:

- (1) Why can’t a machine be more like a man? In almost every episode of *Star Trek: The Next Generation*, the android Data wonders what makes a person a person. In the original *Star*

*Trek*, similar questions were raised by the half-Vulcan Mr. Spock, whose status as a person was undermined by his machinelike logic and lack of emotion. In fact, Data and Spock are only two examples of “quasi-persons” who have explored the nature of humanity. The same question has been raised by and about creatures ranging from Frankenstein’s monster to the Terminator. But the real question is why these characters who struggle to be persons are almost always white and male. As cultural interpreters, do they tacitly reinforce destructive stereotypes of what it means to be “normal”? The model person seems in fact to be defined by Western criteria that exclude most of the people in the world.

(2) As part of its program of Continuous Quality Improvement (CQI), Motodyne Computers plans to redesign the user interface for its Unidyne™ online help system. The specifications for its interface call for self-explanatory icons that let users identify their function without verbal labels. Motodyne has three years’ experience with its current icon set, but it has no data showing which icons are self-explanatory. Lack- ing such data, we cannot determine which icons to redesign. This report provides data for eleven icons, showing that five of them are not self-explanatory.

(3) In today’s society, would Major John André, a British spy in civilian clothes captured behind American lines in 1780, be hanged? Though considered a noble patriot, he suffered the punishment mandated by military law. Over time our tradi- tions have changed, but the punishment for spying has not. It is the only offense that mandates death. Recently, how- ever, the Supreme Court has rejected mandatory death sen-

tences in civilian cases, creating an ambiguity in their application to military cases. If Supreme Court decisions apply to the military, will Congress have to revise the Uniform Code of Military Justice? This article concludes that it will.

The topics and problems posed in those three introductions differ as much as their intended audiences, but behind them is a shared pattern that readers look for in all introductions, regardless of field. That common structure consists of three elements:

- statement of the context
- statement of the problem
- statement of a response

Not every introduction has all three elements, but most do.

Here is that pattern of *context + problem + response* in each of those introductions:

(1) CONTEXT: Why can't a machine be more like a man? . . . The same question has been raised by and about creatures ranging from Frankenstein's monster to the Terminator.

PROBLEM: But the real question is . . . do they tacitly reinforce destructive stereotypes of what it means to be "normal"?

RESPONSE: The model person seems in fact to be defined by Western criteria that exclude most of the people in the world.

(2) CONTEXT: As part of its program of Continuous Quality Improvement (CQI), Motodyne Computers plans to redesign

the user interface. . . . Motodyne has three years' experience with its current icon set . . .

PROBLEM: . . . but it has no data showing which icons are self-explanatory. Lacking such data, we cannot determine which icons to redesign.

RESPONSE: This report provides data for eleven icons, showing that five of them are not self-explanatory.

(3) CONTEXT: In today's society, would Major John André . . . be hanged [for spying]? . . . It is the only offense that mandates death.

PROBLEM: Recently, however, the Supreme Court has rejected mandatory death sentences in civilian cases, creating an ambiguity in their application to military cases. . . . [W]ill Congress have to revise the Uniform Code of Military Justice?

RESPONSE: This article concludes that it will.

Each of those elements plays its own role in motivating readers to read your paper and in helping them to understand it.

## 14.2 Step 1: Stating a Context

Consider the opening of a fairy tale:

One sunny morning Little Red Riding Hood was skipping through the forest on her way to Grandmother's house.<sup>stable</sup>

*context [imagine butterflies dancing around her head to flutes and violins]*

Like the opening to most fairy tales, this one establishes a stable, even happy context, just so that it can be disrupted with a problem:

... when suddenly Hungry Wolf jumped out from behind a tree<sub>disrupting condition [imagine trombones and tubas]</sub> frightening her [and, if they've lost themselves in the story, little children as well].<sub>cost</sub>

The rest of the story elaborates that problem and then resolves it.

Most introductions follow the same strategy. To establish *common ground*—a shared understanding between audience and writer about the larger issue the writer will address—they state a *stable context*, some apparently unproblematic account of what is already known or accepted. The writer then disrupts it with a problem, saying in effect: *Reader, you may think you know something, but your knowledge is imperfect or incomplete.*

(3) STABLE CONTEXT: In today's society, would Major John André, a British spy . . . be hanged? . . . [Spying] is the only offense that mandates death.

DISRUPTING PROBLEM: Recently, **however**, the Supreme Court has rejected mandatory death sentences. . . .

Writers sometimes skip the context when they are sure their readers already recognize their problem *as a problem*, usually because it is well established in a particular research community. This introduction opens directly with a problem:

The most recent scientific models predict that rising sea levels will threaten the world's coastal cities well before the

end of this century.

But usually, readers need some context to understand a problem's significance, so writers introduce it with the seemingly unproblematic context of an accepted understanding or prior research, *specifically so they can disrupt it*:

Because of their effectiveness in lowering cholesterol and seemingly minor side effects, statins have long been prescribed as a routine preventative treatment for cardiovascular disease and strokes.<sup>stable context</sup> However, several studies conducted in the 2010s suggested that statins may increase risk of cognitive impairment and dementia,<sup>destabilizing condition</sup> leading to some uncertainty in the medical community about their widespread use.<sup>consequence</sup>

Readers now have not one reason to be interested in the problem, but two: not just the problem itself, but also their incomplete understanding of the whole matter.

Your context can describe a misunderstanding:

**The Crusades are widely believed to have been motivated by religious zeal to restore the Holy Land to Christendom.**<sup>stable context</sup> In fact, the motives were at least partly, if not largely, political.

It can survey obsolete understandings or research:

**Few sociological concepts have fallen out of favor as fast as the notion that religious faith provides a protective influence against suicide. Once one of sociology's basic beliefs, it has been called into question by a series of recent**

**studies. . .** *stable context* **However,** certain studies still find an effect of religion . . .

Or it can point to a misunderstanding about the problem itself:

**American education has focused on teaching children to think critically, to ask questions and test answers.** *stable context* **But** the field of critical thinking has been taken over by fads and special interests.

Some inexperienced researchers skimp on context, opening their papers as if they were picking up a class conversation where it left off. Their introductions are so sketchy that only others in the course would understand them:

In view of Hofstadter's failure to respect the differences among math, music, and art, it is not surprising that the response to *The Embodied Mind* would be stormy. It is less clear what caused the controversy. I will argue that any account of the human mind must be interdisciplinary. . . .

When you draft your introduction, imagine you are writing to someone who has read some of the same sources as you and is generally interested in the same issues, but does not know what specifically happened in your class.

Others make the opposite mistake, thinking they should list every source they read that remotely touches their topic. Survey only those sources whose findings you will *directly* modify. Add more only if you need to locate the problem in a wider context.

## 14.3 Step 2: Stating Your Problem

Once you state a stable context, disrupt it with a problem (see [chapter 2](#)). As we have said, the statement of a research problem has two parts:

- a *condition* of incomplete knowledge or understanding, and
- the *consequences* of that condition, a more significant gap in understanding

You can state the condition directly:

... but Motodyne has no data showing which icons are self-explanatory.

Or you can imply it in an indirect question:

The real question is why these characters are almost always white and male.

You make this condition of ignorance or flawed understanding part of a full research problem only when you imagine someone asking, *So what?*, and then spell out as an answer that condition's *consequence*. You can state that consequence as a direct cost:

Lacking such data, we cannot determine which icons to redesign.<sub>cost</sub>

Or you can transform the cost into a benefit:

With such data, we could determine which icons to redesign.<sub>benefit</sub>

The choice between stating a cost and stating a benefit is not just a matter of style. Readers are typically more motivated by a real cost than by a poten-

tial benefit. Our suggestion: state costs or consequences when presenting your problem; state benefits to intensify your solution.

That's the standard way to state a problem, but there are options.

### 14.3.1 Should You State the Condition of a Problem Explicitly?

Occasionally, you tackle a problem so familiar that its name implies both its condition and consequence to those in the field: *the role of DNA in personality*; *Shakespeare's knowledge of languages*. Likewise, in some fields like mathematics and the natural sciences, many research problems are widely known, so just stating the condition is enough to bring to mind its consequence. Here again is that (condensed) introduction to Crick and Watson's landmark account of the double-helix structure of DNA:

We wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest. A structure for nucleic acid has already been proposed by Pauling and Corey. They kindly made their manuscript available to us in advance of publication. Their model consists of three intertwined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion, this structure is unsatisfactory. . . .

It was enough for them merely to “suggest” a structure for DNA, because they knew everyone wanted to know what it was. (Note, though, that they do raise a problem by mentioning Pauling and Corey’s *incorrect* model.)

In the natural sciences and most social sciences, researchers usually address questions familiar to their readers. In these fields, you might think you do not need to spell out your problem. But readers will not know the particular gap in their knowledge that your research will fill unless you tell them.

In the humanities and some social sciences, researchers more often pose questions that they alone have found or even invented, questions that read-

ers find new and often surprising. In these fields, you must explicitly describe the imperfect or incomplete understanding that you intend to remedy.

### 14.3.2 Should You State Consequences and Benefits?

For readers to take your problem seriously, they must recognize the cost *they* will pay if it is not resolved or the benefits *they* will gain if it is. When these costs and benefits are obvious, not just for you but for your readers, you may omit them. But if not, you need to make them explicit. If in doubt, state them.

Sometimes you can describe tangible costs that your research helps your readers avoid:

Last year the River City Supervisors agreed that River City should add the Bayside development to its tax base. Their plan, however, was based on little economic analysis. If the Board votes to annex Bayside without understanding what it will cost the city, **the Board risks worsening River City's already shaky fiscal situation.** When the burden of bringing sewer and water service up to city code are included in the analysis, the annexation will cost more than the Board assumes.

This is how to introduce a problem of *applied* research, in which the area of ignorance (no economic analysis) has tangible consequences (higher costs). To introduce a problem of pure research, you explain the consequence not in tangible terms such as money but as misunderstanding or, alternatively, as the possible benefit of better understanding:

For decades, American cities have annexed upscale neighborhoods to prop up tax bases, often bringing disappointing economic benefits. But those results could have been predicted had they done basic economic analysis. The annexa-

tion movement is a case study of how political decisions at the local level fail to use expert information. What is puzzling is why cities do not seek out that expertise. **If we can discover why cities fail to rely on basic economic analyses, we might better understand why their decision-making fails so often in other areas as well.** This paper analyzes the decision-making process of three cities that annexed surrounding areas without consideration of economic consequences.

#### 14.3.3 Testing Conditions and Consequences

In [chapter 2](#), we suggested a way to test how clearly you articulate the consequences of not solving a problem: after the sentences that best state your readers' condition of ignorance or misunderstanding, ask, *So what?*

Motodyne has no data showing which icons are self-explanatory. [*So what?*] Without such data, it cannot determine which icons to redesign.

The resurgent interest in the World War II-era figure Rosie the Riveter in the 1980s and after shows how an iconic image may be turned to new political and cultural ends that in retrospect we acknowledge as also exclusionary.

[*So what?*] Well . . .

Answering *So what?* can be exasperating. If you like images of Rosie the Riveter, you can explore them without answering to anyone, but if you want others to appreciate this interest as research, you have to “sell” them on its significance.

To convince an audience to care, you have to show them that your problem is *their* problem—even if they don’t know it yet. You have to convince them that learning how the World War II-era figure of Rosie the Riveter was recast as a feminist icon in the 1980s and then later—in this century—recognized as a symbol of specifically white women’s empowerment will help them understand something more important *both* about how cultural identities are formed and changed *and* about the partiality of our own understanding.

To be sure, some audiences will ask again, *So what? I don’t care about cultural identities.* To which you can only say, *Wrong audience.* Successful researchers know how to find and solve interesting problems, but they also know how to find (or create) an audience interested in the problems they solve.

If you are sure your audience knows the consequences of your problem, you might decide not to state them explicitly. Crick and Watson did not specify the cost of not knowing the structure of DNA because they knew their audience already recognized that without understanding the structure of DNA, they could not understand genetics (something more important). Had Crick and Watson spelled out that consequence, it might have seemed redundant or condescending.

If you are tackling your first research project, no reasonable teacher will expect you to state the consequences of your problem for your field in detail. But you take a big step in that direction when you can state the consequences of your problem for yourself. You take an even bigger step when you can show that by better understanding one thing, you better understand something much more important, even if only to you.

## 14.4 Step 3: Stating Your Response

Once you disrupt your readers’ stable context with a problem, they expect you to resolve it in one of two ways: by stating your main point or by promising that you will do so later on. Readers look for this statement or promise at the end of your introduction.

#### **14.4.1 State the Gist of Your Solution**

You can state your main point/solution explicitly toward the end of your introduction:

Because of their effectiveness in lowering cholesterol and seemingly minor side effects, statins have long been prescribed as a routine preventative treatment for cardiovascular disease and strokes.<sup>*stable context*</sup> However, several studies conducted in the 2010s suggested that statins may increase risk of cognitive impairment and dementia,<sup>*destabilizing condition*</sup> leading to some uncertainty in the medical community about their widespread use.<sup>*consequence*</sup> **Our meta-analysis of over three dozen more recent studies suggests not only that this concern is unfounded but that, in fact, statins may have some inhibitory effect on cognitive decline in older adults.**<sup>*gist of solution/main point*</sup>

Unless you have a good reason not to, adopting this pattern is the best approach.

Some new researchers fear that if they reveal their main point too early, or even outline the organization of their argument, their readers will be “bored” and stop reading. Others worry about repeating themselves. Both fears are baseless. When you choose this structure, you put your readers in charge. You say to them, *You control how to read this paper. You know my problem and its solution, my point. You can decide how—even whether—to read on. No surprises.* If you wait until your conclusion to state your main point, you ask them to trust that following your paper through every twist and turn will be worth it in the end. Many won’t.

For audiences of presentations, knowing your main point up front is even more valuable because they won’t have your text in front of them (see 16.3.2). Unlike readers, they can’t look back if they get lost.

#### 14.4.2 Promise a Solution

But you may have reasons not to give your main point up front. For example, in some fields and professions, readers expect claims to appear at the end of sections or whole documents, and if you violate that expectation, you may confuse them. Likewise, your main point may be too involved to summarize succinctly at the outset (although often when we think it is, we're wrong). In such cases, you can explain how your paper will proceed and where it is headed, promising or implying that you will present your main point/solution in your conclusion:

Several studies conducted in the 2010s suggested that statins may increase risk of cognitive impairment and dementia. [So what?] The medical community, therefore, has become uncertain about their widespread use. [Well, what have you found?] **In this report, we analyze over three dozen more recent studies of statins' efficacy and side effects, giving special emphasis to their effects on cognition. We then discuss . . . promise of point to come**

Like some abstracts (see the [Quick Tip in chapter 11](#)), such introductions offer a “launching point” that propels readers into the paper. That launching-point sentence should include terms naming the key concepts that will run through your paper, to alert readers to them. The weakest promise is one that merely announces a vague topic:

This study investigates the side effects of statins.

Again, when you save your point for the end of your paper, you ask your readers to trust that getting to it is worth the effort. They'll trust you more if you provide not just a general topic but an outline of your solution or argument (or both):

There are many designs for hydroelectric turbine intakes and diversion screens, but on-site evaluation of potential configurations is not cost-effective. A more viable alternative is computer modeling. **This study will assess three computer models for evaluating intake and screen configurations—Quattro, AVOC, and Turbo-plex—to determine their relative reliability, speed, and ease of use.**

This kind of plan is common in the sciences and social sciences, but less frequent in the humanities, where some consider it a bit heavy-handed.

## 14.5 Setting the Right Pace

When crafting your introduction, you must decide how quickly to raise your problem. That depends on how much your readers know. The pace of an introduction varies by field. Researchers whose problems are already familiar to their research communities can open quickly; those who work in fields where problems are not widely shared must start more slowly.

But the pace of your introduction signals something else as well. When you open quickly, you imply an audience of peers; when you open slowly, you imply an audience that knows less than you. In this next example, the writer devotes one sentence to announcing a consensus among well-informed engineers and then briskly disrupts it:

Fluid-film forces in squeeze-film dampers (SFDs) are usually obtained from the Reynolds equation of classical lubrication theory. **However, the increasing size of rotating machinery requires the inclusion of fluid inertia effects in the design of SFDs. Without them . . .**

(We have no idea what any of that means, but the structure of *context + problem* is clear.)

This next writer also addresses technical concepts but patiently lays them out for an audience with less technical knowledge:

A method of protecting migrating fish at hydroelectric power developments is diversion by screening turbine intakes . . . [another 110 words explaining screens]. Since the efficiency of screens is determined by the interaction of fish behavior and hydraulic flow, screen design can be evaluated by determining its hydraulic performance . . . [40 more words explaining hydraulics]. **This study provides a better understanding of the hydraulic features of this technique, which may guide future designs.**

It is important to get the pace right. If your audience is knowledgeable and you open slowly, they may think you know too little. But if the audience knows little and you open quickly, they may find you inconsiderate.

## 14.6 Finding Your First Few Words

Many writers find the first sentence or two especially difficult to write, and so they fall into clichés:

- Repeating the language of an assignment. (If you are struggling to begin, jump-start your writing by paraphrasing it, but rewrite those sentences when you revise.)
- Citing a dictionary entry: “*Webster’s* defines *ethics* as . . .” If a word is important enough to define, a dictionary definition won’t serve.
- Making a sweeping claim about history or society: “Throughout history/In today’s society, women have . . .”
- Starting grandly: “The most profound philosophers have for centuries wrestled with the important question of . . .” If your subject

is grand, it will speak its own importance.

These miscues arise from a good impulse: they are attempts to establish common ground with a research community. The problem in all cases is that it is the wrong community. In that first example, the community is too narrow: it is just the student's teacher. In the rest, the community is too broad: those writers are groping for a context that all of humanity could agree to. To avoid these missteps, open in a way that is likely to appeal to the *specific research community* you hope to interest.

Here are three suggestions for how to begin.

#### **14.6.1 Open with a Noteworthy Fact**

Those who think that tax cuts for the rich stimulate the economy should contemplate the fact that the top 1 percent of Americans control one-third of America's total wealth.

#### **14.6.2 Open with a Striking Quotation**

Do this only if its words anticipate key terms in the rest of your introduction:

"From the sheer sensuous beauty of a genuine Jan van Eyck there emanates a **strange fascination** not unlike that which we experience when permitting ourselves to be **hypnotized by precious stones**." Edwin Panofsky suggests here something **strangely magical** in Jan van Eyck's works. His images hold a **jewel-like** fascination . . .

#### **14.6.3 Open with a Relevant Anecdote**

This article opens with an anecdote about a political protest:

In October 1989, several thousand citizens of the German Democratic Republic (GDR) protested in the city of Leipzig to demand economic and political reforms. To scholars of authoritarian politics, citizens protesting and demanding economic improvements is a familiar sight. . . . However, the protesters in Leipzig also displayed a number of signs whose messages feature less prominently in the literature on authoritarian politics. The protesters wanted to “saw down the kleptocrats, not the trees” and demanded “Leipzig air, without sulfuric odor” (quoted in Bölsche et al. 1989, 92). Thus, they signaled grievances about environmental pollution.

The surprising conjunction of economic and environmental concerns in the anecdote frames the question the article explores: how authoritarian regimes navigate the trade-off between economic growth (through which they seek to forestall political discontent) and the increased pollution that accompanies it (which encourages political discontent).

## 14.7 Writing Your Conclusion

Even if your argument doesn’t have a section labeled *Conclusion*, it will have a paragraph or two that serve as one. Your conclusion is an occasion to sum up your argument, but just as important, it is an opportunity to extend the conversation by suggesting new questions your research has allowed you to see. One way to write a conclusion is to use the same elements you used in your introduction but in reverse order.

### 14.7.1 Start with Your Main Point

State your main point near the beginning of your conclusion. If you already stated it in your introduction, repeat it here but more fully; do not simply re-

peat it word for word.

### **14.7.2 Add a New Significance or Application**

After your point, say why it's significant, preferably with a new answer to *So what?* For example, the writer of this conclusion introduces an additional consequence of the Supreme Court's decision on military death sentences:

In light of recent Supreme Court decisions rejecting mandatory capital punishment, the mandatory death penalty for treason is apparently unconstitutional and must therefore be revised by Congress. **More significantly, though, if the Uniform Code of Military Justice is changed, it will challenge the fundamental value of military culture that ultimate betrayal requires the ultimate penalty. Congress will then have to deal with the military's sense of what is just.**

This observation belongs in the conclusion rather than in the introduction because it suggests *further questions* the article doesn't take up: *How exactly will the military respond to that challenge to its values? How should Congress respond in turn?* Just as in your introduction you establish the import of your problem by stating its consequences, so in your conclusion you can expand the significance of your solution by noting its additional implications.

### **14.7.3 Call for More Research**

Just as your opening context surveys research already done, so your conclusion can call for research still to do:

These differences between novice and expert diagnosticians define their maturation and development. But while we

know how novices and experts think differently, we do not understand which elements in the social experience of novices lead them to think as experts. We need longitudinal studies on how mentoring and coaching affect outcomes and whether active explanation and critique help novices become skilled diagnosticians more quickly.

When you state what remains to do, you keep the conversation alive. So before you write your last words, imagine someone fascinated by your work who wants to follow up on it: What more would they like to know? What research would you suggest they do? After all, that may have been how you found your own problem.

### ► Quick Tip: Use Key Terms in Titles

The first thing that readers read—and the last thing you should write—is your title. Beginning writers just attach a few words to suggest the topics of their papers. That's a mistake: a title is useful when it helps readers understand *specifically* what is to come. Compare these three titles:

Microfinance

Microfinance and Economic Development

Microfinance as a Strategy for Economic Development: Realizing Its Potential for Improving the Standing of Women

Put into your title the key terms that run through your paper (see [10.2.2](#) and [11.4](#)), so that when readers encounter those terms, they will feel that your text has met their expectations. (Two-part titles give you more room for key terms. End the main title with a colon that introduces a more specific second part, or *subtitle*.) This advice also applies to headings of sections.

## **15 Revising Style**

### **Telling Your Story Clearly**

So far we have focused on the argument and organization of your paper. In this chapter, we show you how to revise your sentences so that readers will think they are clear and direct.

Readers will accept your claim only if they understand your argument, but they won't understand your argument if they can't understand your sentences. When revising, after you attend to your argument and organization, find time to make a last pass to make your sentences as easy to read as the complexity of your ideas allows. But there's a catch: you probably won't be able to tell which sentences need revising just by reading them. Since you already know what you want them to mean, you will read into them what you want your readers to get out of them. To ensure that your sentences will be as clear to your readers as they are to you, you need a way to identify difficult sentences even when they seem fine to you.

#### **15.1 Judging Style**

If you had to read an article in the style of one of the following examples, which would you choose?

- 1a. Conventional management practice assumes that interaction and collaboration enhance organizational performance by improving employee creativity and productivity. But unless collaboration is punctuated by isolation, and unless workspace configurations provide isolation opportunities,

erosion rather than enhancement of organizational effectiveness may result.

1b. Managers want the people who work for them to interact and collaborate. They assume that when people do this, they become more creative and productive. The organization then performs better. But people also need opportunities to work alone, and workplaces need to provide these opportunities. Otherwise, the organization may become less effective.

1c. Managers conventionally assume that when employees interact and collaborate, they become more creative and productive, thus leading the whole organization to perform better. But unless employees also have opportunities to work alone, and unless workspaces are configured to provide them, the organization may become less rather than more effective.

Few readers choose (1a): it sounds dense, abstract, opaque. Some choose (1b), but to many it sounds simplistic. Most choose (1c), which sounds like one colleague speaking to another. One of the worst problems in academic writing is that too many researchers sound like (1a).

A few researchers prefer (1a), claiming that heavy thinking demands heavy writing, that when they try to make complicated ideas clear, they sacrifice nuances and complexity of thought for too-easy understanding. If readers don't understand, too bad; they should work harder.

Perhaps. Dense writing may occasionally indicate the irreducible difficulty of a work of genius, but more often it's a sign of hazy thinking by writers who aren't considering their readers. Some writers do go too far in avoiding a dense style, using simplistic sentences like those in (1b) above. But we assume that most of you do not have that problem. We address here the problem of a style that is too "academic," which is to say, more difficult

than it has to be. Convoluted and indirect prose is not what good writers aim for.

This problem especially affects those just starting advanced work because they are hit by double trouble. When we write about new and complex ideas that challenge our understanding, we write less clearly than we ordinarily would. But new researchers compound that problem when, believing that a complex style signals status and expertise, they imitate the tangled prose they read. That we can avoid.

## 15.2 The First Two Principles of Clear Writing

### 15.2.1 Distinguishing Impressions from Their Causes

If we asked you to explain why you chose (1c) over (1a) above, you would probably say that (1a) was *unclear*, *wordy*, and *dense* while (1c) was *clear*, *concise*, and *direct*. But strictly speaking, those words describe not those sentences but how you *felt* as you read them. If you said that (1a) was *dense*, you were really saying that *you* had a hard time getting through it; if you said (1c) was *clear*, you were saying that *you* found it easy to understand. Such impressionistic words don't help you *fix* sentences like (1a) because they don't explain *what it is about the words on the page or screen that makes you feel as you do*. For that, you need a way to think about sentences that connects an impression like *confusing* to what it is *in the sentence* that confuses you. More important, you have to know how to revise your own sentences when they are clear to you but won't be to your readers.

There are a few principles of style that distinguish the feeling of density created by (1a) from the feeling of mature clarity created by (1c). These principles focus on only two parts of a sentence: its beginning (the first six or seven words) and its ending (the last five or six words). Get those parts right and the rest of the sentence will (usually) take care of itself. To use these principles, though, you must understand five grammatical terms: *simple subject*, *whole subject*, *verb*, *noun*, and *clause*. (If you haven't used those terms for a while, review them before you read on.)

This is important: don't try to apply these principles as you write new sentences. If you follow them *as you draft*, you may tie yourself in knots.

Rather, let them guide you when you revise sentences you have already written.

### 15.2.2 The First Principle: Make Subjects Characters

This first principle may remind you of something you learned in elementary school: every sentence has a subject and a verb. In school you probably learned that subjects are the “doers” or agents of an action. But that’s not always true, because subjects can be things other than doers, even actions. Compare these two sentences (the whole subject in each clause is underlined):

2a. Locke frequently repeated himself because he did not trust the power of words to name things accurately.

2b. The reason for Locke’s frequent repetition lies in his distrust of the accuracy of the naming power of words.

The two subjects in (2a)—*Locke* and *he*—fit that elementary school definition: they are doers. But the subject of (2b)—*The reason for Locke’s frequent repetition*—does not because *reason* doesn’t really do anything here. The real doer is still *Locke*.

To get beyond such definitions, we have to think not only about the grammar of sentences—their subjects and verbs—but also about the *stories* they tell—about doers and their actions. Here is a story about rain forests and the biosphere:

3a. If rain forests are stripped to serve short-term economic interests, the earth’s biosphere may be damaged.

3b. The stripping of rain forests in the service of short-term economic interests could result in damage to the earth’s biosphere.

In the clearer version, (3a), look at the whole subjects of each clause:

3a. If rain forests<sub>subject</sub> are stripped<sub>verb</sub> . . . the earth's biosphere<sub>subject</sub> may be damaged.<sub>verb</sub>

Those subjects name the main characters in that story in a few short, concrete words: *rain forests* and *the earth's biosphere*. Compare (3b):

3b. The stripping of rain forests in the service of short-term economic interests<sub>subject</sub> could result<sub>verb</sub> in damage to the earth's biosphere.

In (3b) the simple subject (*stripping*) names not a concrete character but rather an action; it is only part of the long abstract phrase that is the whole subject: *the stripping of rain forests in the service of short-term economic interests*.

Now we can see why that elementary school definition of a sentence's subject, while simplistic linguistically, nevertheless suggests good advice about writing. The first principle of clear writing is this:

Readers will judge your sentences to be clear and readable to the degree that their subjects name the main characters in your story. When they do, those subjects will be short, specific, and concrete.

### 15.2.3 The Second Principle: Express Actions as Verbs

A second difference between clear and unclear writing lies in how writers express the crucial *actions* in their stories—as verbs or as nouns. Look again at the pairs of sentences (2) and (3) below. (Words naming actions are boldfaced; actions that are verbs are underlined; actions that are nouns are double-underlined.)

2a. Locke frequently repeated himself because he did not trust the power of words to name things accurately.

2b. The reason for Locke's frequent repetition lies in his dis-trust of the accuracy of the naming power of words.

3a. If rain forests are stripped to serve short-term economic interests, the earth's biosphere may be damaged.

3b. The stripping of rain forests in the service of short-term economic interests could result in damage to the earth's biosphere.

Sentences (2a) and (3a) are clearer than (2b) and (3b) not just because their subjects are characters but also because their actions are expressed not as nouns but as verbs. (We'll discuss passive verbs like *are stripped* and *be damaged* in 15.4.)

When you express actions not with verbs but with abstract nouns, you also clutter a sentence with articles and prepositions. Look at all the articles and prepositions (boldfaced) in (4b) that (4a) doesn't need:

4a. Having standardized indices for measuring mood disorders, we can quantify how patients respond to different treatments.

4b. **The** standardization **of** indices **for the** measurement **of** mood disorders has made possible our quantification **of** patient response **as a function of** treatment differences.

Sentence (4b) adds one *a*, *as*, and *for*; two *thes*, and four *ofs*, all because four verbs were turned into nouns: *standardize* → *standardization*, *measure* → *measurement*, *quantify* → *quantification*, *respond* → *response*. (In that

sentence, an adjective was turned into a noun as well: *different* → *differences*.)

When you turn verbs and adjectives into nouns, you can tangle up your sentences in two more ways:

- You have to add verbs that are less specific and less relevant to your story than the verbs you could have used. In (4b), instead of the specific verbs *standardize*, *measure*, *quantify*, and *respond*, we have the single vague verb *made*.
- You are likely to make the characters in your story modifiers of nouns or objects of prepositions or to drop them from a sentence altogether: in (4b), the character *we* becomes the possessive pronoun *our*, and *patients* is demoted to a modifier of the noun *response*.

## Nominalizations

There is a technical term for turning a verb (or adjective) into a noun: we *nominalize* it. (This term defines itself: when we nominalize the verb *nominalize*, we create the nominalization *nominalization*.) Most nominalizations end with suffixes such as *-tion*, *-ness*, *-ment*, *-ence*, *-ity*.

Verb	→ Nominalization	Adjective	→ Nominalization
de-cide	decision	precise	precision
fail	failure	frequent	frequency
resist	resistance	intelligent	intelligence

But some are spelled like the verb: *change* → *change*; *delay* → *delay*; *report* → *report*.

So here are two principles of a clear style:

- Make your central characters subjects; keep those subjects short, concrete, and specific.

- Express crucial actions in verbs.

### 15.2.4 Diagnosis and Revision

Given how readers judge sentences, we can offer ways to diagnose and revise yours.

#### To diagnose:

1. Highlight the first six or seven words of every clause, whether main or subordinate, and ask:
  - Do you get through each clause's whole subject, or at least to its simple subject, in those highlighted words?
  - If so, are those simple subjects concrete characters, not abstractions?
2. Look at your verbs: Do they name concrete and specific actions (like *strip* or *damage*), not vague or general ones (like *result* in [3b] or *made* in [4b] above)?

If the sentence fails either of these tests, you should probably revise.

#### To revise:

1. Find the characters you want to tell a story about. If you can't, invent them.
2. Find what those characters are doing. If their actions are expressed as nouns, change those nouns into verbs.
3. Create clauses with your main characters as subjects and their actions as verbs.

You may have to recast your sentence to express cause and effect by using some version of *If X, then Y*; *X because Y*; *Although X, Y*; *When X, then Y*; and so on.

That's the simple version of revising dense prose into something clearer. Here is a more nuanced one.

### 15.2.5 Who or What Can Be a Character?

You may have wondered why we called *rain forests* and *the earth's biosphere* "characters" when we usually think of characters as flesh-and-blood people. For our purposes, a character is anything that you can tell a story about, including things like *rain forests* and even abstractions like *thought disorders*. In your field, you may have to tell a story about *demographic changes, social privilege, isotherms, or gene pools*.

Sometimes you have a choice: you can tell a story about real or virtual people or about the abstractions associated with them. A paper in economics, for example, might tell a story about *consumers* and the *Federal Reserve* or about *savings* and *monetary policy*. Note that you can still treat those abstractions as characters by making them the subjects (underlined) of action verbs (boldface):

5a. When consumers **save** more, the Federal Reserve **changes** its monetary policy to **influence** how banks **lend** money.

5b. When consumer savings **rise**, Federal Reserve monetary policy **adapts** to **influence** bank lending practices.

All things being equal, readers prefer characters to be at least concrete things or, better, flesh-and-blood people.

Experts, however, like to tell stories about abstractions (boldfaced; subjects are underlined).

6. Standardized indices to measure mood disorders help us quantify how patients respond to different treatments.

These measurements suggest that treatments requiring long-term hospitalization are no more effective than outpatient care for most patients.

The abstract nouns in the second sentence—*measurements, treatments, hospitalization, care*—refer to concepts as familiar to its intended readers as *doctors* and *patients*. Given those readers, the writer would not need to revise them.

In a way, that example undercuts our advice about avoiding nouns made out of verbs because now, instead of revising every abstract noun into a verb, you have to choose which ones to change and which ones to leave as nouns. For example, the abstract nouns in the second sentence of (6) are the same as the first three in (7a):

7a. The **hospitalization** of patients without appropriate **treatment** results in the unreliable **measurement** of outcomes.

But we would improve that sentence if we revised those abstract nouns into verbs:

7b. We cannot **measure** outcomes reliably when patients are **hospitalized** but not **treated** appropriately.

So what we offer here is no iron rule of writing, but rather a principle of diagnosis and revision that you must apply judiciously.

### 15.2.6 Avoiding Excessive Abstraction

You create difficulties for readers when you make abstract nouns the main characters and subjects of your sentences, then sprinkle more abstractions

around them. Here is a passage about two abstract characters, *democracies* and *institutionalization*. Still, the passage is still clear enough for its intended readers because those main characters are subjects and because additional abstractions are avoided (main characters are italicized; whole subjects are underlined; verbs are boldfaced):

8a. We expect that older *democracies* will benefit from greater *institutionalization* in the political sphere. Although political institutionalization is difficult to define, there seems to be general consensus that procedures in a well-institutionalized polity are functionally differentiated, regularized (and hence predictable), professionalized (including meritocratic methods of recruitment and promotion), rationalized (explicable, rule based, and non-arbitrary), and infused with value. Most long-standing democracies fit this description.

Note how the story becomes less clear when those main characters are displaced from subjects and the key abstraction *institutionalization* is surrounded by other abstract nouns (main characters are italicized; whole subjects are underlined; the additional abstractions are boldfaced):

8b. Our expectation is that greater *institutionalization in the political sphere* will be of benefit to older *democracies*. Although definition of political institutionalization is difficult, there seems to be general consensus that functional differentiation, regularization (and hence predictable), professionalization (including meritocratic methods of recruitment and promotion), rationalization (explicable, rule based, and non-arbitrary), and the infusion of value are characteristic of procedures in a well-institutionalized polity. This description is a fit for most long-standing *democracies*.

We're not suggesting that you change every abstract noun into a verb. This story about democracies and institutionalization would be difficult to transpose into one about flesh-and-blood characters like *citizens* or *you* without changing its meaning. (If you don't believe us, give it a try.) But if your main characters *are* abstractions, avoid others you don't need. The skill of knowing those you need from those you don't comes with reading, practice, and criticism.

### 15.2.7 Creating Main Characters

Having qualified our principle once, we complicate it again. Most stories have several characters, any one of which you can turn into a main character by using it repeatedly as a subject. Take the sentence about rain forests:

9. If rain forests are stripped to serve short-term economic interests, the earth's biosphere may be damaged.

That sentence tells a story that implies other characters but does not specify them: Who is stripping the forests?

9a. If loggers strip rain forests to serve short-term economic interests, they may damage the earth's biosphere.

9b. If developers strip rain forests to serve short-term economic interests, they may damage the earth's biosphere.

9c. If Brazil strips its rain forests to serve short-term economic interests, it may damage the earth's biosphere.

Which sentence is best? It depends on which character you want *your readers to focus on*. As you revise sentences, put characters in subjects and actions in verbs, when you can. But tell the right story, which is not always the most concrete one.

## 15.3 A Third Principle: Old before New

There is a third principle of reading and revising even more important than the first two. Fortunately, all three principles are related. Compare the (a) and (b) versions in the following. Which seems clearer? Why? (Hint: Look at the beginnings of sentences, this time not just for characters as subjects but also for whether those beginnings express information that is familiar or information that is new and therefore unexpected.)

10a. Because the naming power of words was distrusted by Locke, he repeated himself often. Seventeenth-century theories of language, especially Wilkins's scheme for a universal language involving the creation of countless symbols for countless meanings, had centered on this naming power. A new era in the study of language that focused on the ambiguous relationship between sense and reference begins with Locke's distrust.

10b. Locke often repeated himself because he distrusted the naming power of words. This naming power had been central to seventeenth-century theories of language, especially Wilkins's scheme for a universal language involving the creation of countless symbols for countless meanings. Locke's distrust began a new era in the study of language, one that focused on the ambiguous relationship between sense and reference.

Most readers prefer (10b), saying not just that (10a) is *too dense* or *inflated*, but that it's also *disjointed*; it doesn't *flow*—impressionistic words that again describe not the passage but how we *feel* about it.

We can explain those impressions if we apply the “first six or seven words” test. In the disjointed version, (10a), the two sentences after the first one begin with information readers cannot predict:

## Seventeenth-century theories of language

### A new era in the study of language

For that reason, readers can't easily see the "topic" of the whole passage.

In (10b), in contrast, each sentence after the first opens with words referring to ideas that readers recall from previous sentences:

This naming power [a phrase repeated from the previous sentence]

Locke's distrust [a useful abstract noun that echoes a verb from the first sentence]

So readers can see how all of those sentences relate to the passage's topic.

Readers follow a story most easily when sentences begin with characters or ideas that are familiar to them either because they were already mentioned or because they come from the context. From this principle of reading, we can infer a procedure for diagnosis and revision.

#### **To diagnose:**

1. Highlight the first six or seven words of every sentence.
2. Have you highlighted words that your readers will find familiar and easy to understand (usually words used before)?
3. If not, revise.

#### **To revise:**

1. Make the first six or seven words refer to familiar information, usually something you have mentioned before (typically your main characters or ideas).

- Put at the ends of sentences information that your readers will find unpredictable and therefore harder to understand.

This old-before-new principle happily cooperates with the one about characters and subjects, but should you ever have to choose between beginning a sentence with a character or with familiar information, *always choose the principle of old before new*.

Unfortunately, applying this principle can be difficult because your familiarity with your own ideas may keep you from distinguishing what is familiar and what is new for your readers. So check each sentence to be sure the information at its beginning is anticipated by something that came before. If it isn't, revise.

## 15.4 Choosing between the Active and Passive Voice

You may have noted that in our examples, some of the clearer sentences have verbs in the passive voice (that is, a past participle preceded by a form of *to be*), which seems to contradict common advice from English teachers to avoid it. Followed mechanically, that advice will make your sentences less clear. Rather than worrying about active and passive, ask a simpler question: *Do your sentences begin with familiar information and preferably a main character?* If you put familiar information in your subjects, you will use the active and passive properly.

For example, which of these two passages “flows” more easily?

- The quality of our air and even the climate of the world depend on healthy rain forests in Asia, Africa, and South America. But the increasing demand for more land for agricultural use and for wood products for construction worldwide now threatens these forests with destruction.

11b. The quality of our air and even the climate of the world depend on healthy rain forests in Asia, Africa, and South America. But these rain forests are now threatened with destruction by the increasing demand for more land for agricultural use and for wood products used in construction worldwide.

Most readers think (11b) flows more easily. Why? Note that the beginning of the second sentence in (11b) picks up on the character introduced at the end of the first sentence:

11b. . . . rain forests in Asia, Africa, and South America. But these rain forests . . .

The second sentence of (11a), on the other hand, opens with information seemingly unconnected to the first sentence:

11a. . . . rain forests in Asia, Africa, and South America. But the increasing demand for more land . . .

In other words, the passive allowed us to move the older, more familiar information from the end of the sentence to the beginning, where it belongs. If we don't use the passive when we should, our sentences won't flow as well as they could.

In English classes, students are sometimes told that they should use only active verbs, but they hear the opposite in engineering, the natural sciences, and some social sciences. Teachers in those fields often demand the passive, thinking that it makes writing more objective. Most of that advice is equally misleading. Compare the passive (12a) with the active (12b):

12a. Eye movements **were measured** at tenth-of-second intervals.

12b. We measured eye movements at tenth-of-second intervals.

These sentences offer equally objective information, but their *stories* differ: one is about eye movements, the other about a person measuring them, who happens also to be the author. The first is supposed to be more “objective” because it ignores the person and focuses on the movements. But just avoiding *I* or *we* doesn’t make writing more “objective.” It simply changes the story.

In fact, the issue of the passive is still more complicated. When scientists use the passive to describe *processes*, they imply that those processes can be repeated by anyone. In this case, the passive is the right choice because anyone who wanted to repeat the research would have to measure eye movements.

On the other hand, consider this pair of sentences:

13a. **It can be concluded** that the differences result from the Thomason effect.

13b. **We conclude** that the differences result from the Thomason effect.

The active verb in (13b), *conclude*, and its first-person subject, *we*, are not only common in the sciences, but appropriate. The difference? It has to do with the kind of action the verb names. First-person subjects with active verbs are appropriate when authors refer to actions that only they, as writers and researchers, can perform—not only rhetorical actions, such as *suggest*, *conclude*, *argue*, or *show*, but also actions for which they get credit as scientists, such as *design* experiments, *solve* problems, or *prove* results. Everyone can *measure*, but only authors/researchers are entitled to *claim* what their research means.

Scientists typically use the first person and active verbs at the beginning of journal articles, where they describe how *they* discovered their problem and at the end where they describe how *they* solved it. In between, when

they describe processes that anyone can perform, they regularly use the passive.

## 15.5 A Final Principle: Complexity Last

We have focused on how clauses begin. Now we look at how they end. Just as readers prefer old information to come before new information, so they prefer simple information to come before complex information. This principle is particularly important in three contexts:

- when you introduce a new technical term
- when you present a unit of information that is long and complex
- when you introduce a concept that you intend to develop in what follows

Usually, when you deliver new, complex information, you want readers to focus on it. Luckily, the end of a clause is a natural position of stress, so putting your new, complex information there will emphasize it.

### 15.5.1 Introducing Technical Terms

When you introduce technical terms that are new to your readers, construct your sentences so that those terms appear in the last few words. Compare these two:

14a. The monoamine hypothesis has been the leading biological account of depression for over three decades. According to this hypothesis, deficits in monoamines including dopamine, epinephrine, norepinephrine, and serotonin are associated with depression. Monoamine concentrations in neural synapses are regulated in different ways by different types of antidepressants.

14b. For over three decades, the leading biological account of depression has been the monoamine hypothesis. According to this hypothesis, depression is associated with deficits in neurotransmitters called monoamines, including dopamine, epinephrine, norepinephrine, and serotonin. Different types of antidepressants work in different ways to regulate concentrations of monoamines in neural synapses.

In (14a) all the technical-sounding terms appear early in the sentences; in (14b) those terms appear at the end of the sentences. Most readers find (14b) easier to understand.

### 15.5.2 Introducing Complex Information

Put complex bundles of ideas that require long phrases or clauses at the end of a sentence, never at the beginning. Compare (11a) and (11b) again:

11a. The quality of our air and even the climate of the world depend on healthy rain forests in Asia, Africa, and South America. But the increasing demand for more land for agricultural use and for wood products for construction worldwide now threatens these forests with destruction.

11b. The quality of our air and even the climate of the world depend on healthy rain forests in Asia, Africa, and South America. But these rain forests are now threatened with destruction by the increasing demand for more land for agricultural use and for wood products used in construction worldwide.

In (11a) the second sentence begins with a long, complex unit of information, a subject that runs on for sixteen words. In contrast, the subject of the

second sentence in (11b), *these rain forests*, is short, simple, and easy to read, again because the passive verb (*are . . . threatened*) lets us put the short and familiar information at the beginning and the long and complex part at the end.

### 15.5.3 Introducing What Follows

When you start a paragraph, put the key terms that appear in the rest of the paragraph at the end of the first or second sentence. Which of these two sentences would best introduce the rest of the paragraph that follows?

15a. The political situation changed because after Peter the Great, disputes over succession to the throne plagued seven of the eight reigns of the Romanov line.

15b. The political situation changed because after Peter the Great, seven of the eight reigns of the Romanov line were plagued by turmoil over disputed succession to the throne.

The problems began in 1722, when a law of succession passed by Peter the Great terminated the principle of heredity and required the sovereign to appoint a successor. But because many tsars, including Peter, died before they named successors, those who aspired to rule had no authority by appointment, and so their succession was often disputed by lower-level aristocrats. There was turmoil even when successors were appointed.

Most readers feel that (15b) is more closely connected to the rest of the passage because a word near its end (“succession”) is repeated near the beginning of the next. The last few words of (15a), in contrast, seem unimportant

in relation to what follows (in another context, of course, they might be crucial).

So once you've checked the first six or seven words in every sentence, check the last five or six as well. If those words are not the most important, complex, or weighty, revise so that they are. Look especially at the ends of sentences that introduce paragraphs or even sections.

## 15.6 Editorial Polish

We have explained four principles of style that most help writers communicate complex ideas and arguments to their readers. We have left other principles—of sentence length, word choice, concision, parallel constructions, and so on—unaddressed, not because they are unimportant but because we believe they are secondary to those four. If you are interested in learning more, there are many books that cover them (see the appendix for some suggestions), and we encourage you to read on. But once you have your sentences in good shape, there is still more work to be done. You still have to check your grammar, spelling, and punctuation. Then you have to make sure that you have observed the accepted conventions for representing numbers, proper names, words in languages other than English, and so on. Though such matters of polish may seem pesky, your attention to them indicates your care and respect for your subject and your readers.

### ► Quick Tip: The Quickest Revision Strategy

Our advice about revision may seem overly detailed, but if you revise in steps, it's simple to follow. Your first job, though, is to put your ideas into words so that you have something to revise. You will never do that if you keep asking yourself as you write whether you are following this or that principle of style. Once you have a draft, you can then shape it for your readers. If you don't have time to look at every sentence, start with passages where you found it hard to explain your ideas. Those are the places where your sentences are likely to be the most difficult for your readers. Finally, read your writing out loud. If you stumble, your readers will too.

## ***For Clarity and Flow***

### **To diagnose:**

1. Highlight the first six or seven words in every sentence and clause. Ignore short introductory phrases such as *At first*, *For the most part*, and so on.
2. Check the highlighted words in each sentence. They should include at least a subject that names a character. If they don't, revise.
3. Look at your verbs. Do most of them name important actions? If not, revise.
4. Finally, check that the words at the beginnings of sentences name people or concepts that your readers will find clearly related. If they don't, revise.

### **To revise:**

1. Identify your main characters, and make them the subjects of verbs.
2. Look for nouns ending in *-tion*, *-ment*, *-ence*, and so on. Consider turning them into verbs, especially if they are subjects.
3. Make sure that each sentence begins with familiar information, preferably a character you have mentioned before.

## ***For Emphasis***

### **To diagnose:**

1. Highlight the last five or six words in every sentence.
2. You should have highlighted
  - technical-sounding words that you are using for the first time

- new or complex information
- concepts that the next several sentences will develop
- words and phrases you want to stress

**To revise:**

1. If you do not find those things, look for them elsewhere in the sentence and move them to the end.
2. If the words you highlighted express familiar information, move them forward in the sentence.
3. If the words you highlighted provide contextual or framing information (e.g., “As noted in figure 1, . . .”) move them forward in the sentence.

# 16 Research Presentations

In this chapter, we show you how to plan, draft, and then deliver a research presentation. We focus less on your presentation's supplements—your handout or slides—than on what you must do to address a live audience.

It may be too early in your career to think about publishing your research, but it's not too early to present it. Researchers at all stages communicate their work to others in live presentations delivered in person or online, often incorporating slides and handouts. Increasingly, undergraduate and even secondary-school researchers share their work in this way with audiences in and beyond the classroom, including at local research fairs and academic conferences. Your presentation may be based on a paper you are writing or it may be the culmination of your research project in its own right. Either way, the ability to present your research clearly and confidently in public is a crucial skill for any career.

## 16.1 Presenting to Auditors

When you deliver your research argument in a paper or report, you write for an audience of *readers*. When you deliver it in a live presentation, you give it to an audience of *auditors*—that is, an audience made up of people who will watch, listen to, and otherwise follow you as you share your argument in real time.

Most of what we have said in part IV about writing for readers applies also to creating presentations for auditors. But unless you know and respect the difference between these two types of audiences, your presentation will be tiring or hard to follow. When we read, we can stop to reflect and puzzle over difficult passages. To stay on track, we can look at headings and even paragraph indentations. If our minds wander, we can always reread. But

auditors can do none of these things. They must be motivated to pay attention, and they need help to follow complicated lines of thought.

That's why you can't simply read your paper with little or no eye contact or other engagement with your audience or, if you are using slides, merely project them and repeat their content. You have to give extra care to helping your auditors follow and understand you. Here is some advice to help you do that.

### **16.1.2 Design Your Presentation to Be Followed Live**

To hold your auditors' attention, you must seem to be not lecturing *at* them but conversing *with* them. This is a skill that does not come easily. Few of us can write as we would speak, and most of us need notes to stay on track.

If you do read your paper, read no faster than two minutes per page (at 300 words a page). This is faster than you speak ordinarily, so time yourself. Inexperienced presenters tend to read more quickly than their auditors can comfortably hear and digest. It's also important that your audience see you, and not just the top of your head; so build in moments when you look directly at your audience, especially when you say something important. Do so at least once or twice per page, ideally at the end of each paragraph.

Finally, be explicit about your purpose and your organization. If you're reading a paper aloud, use simpler sentences than you would in a paper to be read. Favor shorter sentences with consistent subjects (see 15.2). Use "I," "we," and "you" a lot. What may seem repetitive to readers will be welcomed by audiences who do not have a text in front of them.

### **16.1.3 Design Your Presentation to Be Accessible**

Many of your auditors will be able to listen to and watch you as you present. But some will not. Likewise, different people process information best in different ways, so in giving presentations, you should use multiple channels of communication—spoken words, visuals, handouts with text, and so on. It is your responsibility to ensure that your presentation is accessible to everyone in your audience. Here are some things you can do to meet that responsibility:

- Avoid relying solely on colors to differentiate information (see [chapter 13](#)).
- Use a large font for slide titles and headings; avoid blocks of small text.
- Include captioning in video clips.
- Orally describe any charts, tables, images, or videos.

Here are some materials you can provide:

- A script of your full presentation for those who need or prefer to process information visually or textually
- A handout of your slides
- Downloadable audio descriptions of any charts, tables, images, and videos

You can provide some of these resources on paper. You can also provide digital access, for example through a QR code that lets your auditors download what they need to a computer, phone, or device.

#### **16.1.4 Design Notes for Presenting**

The notes you use when presenting differ from those that you create when doing your research or that you would use to plan a written paper (see [4.6](#) and [10.2](#)). Their purpose is to keep you on track and to help you connect with your auditors, so that they are engaged by your presentation. Your notes should not distract you or be so elaborate that you end up focusing on them rather than on your message and your audience.

There is no single right way to design notes for presenting. In fact, part of becoming an experienced presenter is figuring out what style of notes works for you given your preferences and physical requirements. Presenters with low vision, for example, might rely on audio notes they access through an earpiece rather than written notes. But we can offer you some general tips that work for most people:

- Do not write your notes as complete sentences (much less paragraphs) that you then read aloud. Notes should help you track the structure of your presentation and cue what to say at crucial moments.
- Focus on the most important parts of your presentation. Sketch a complete introduction and conclusion. List your reasons, in order, preferably printed in large bold type; for each reason, list your two or three best bits of evidence, named but not explained.
- Use a separate page for each main point. On each page, write out your main point not as a topic but as a claim, either in shortened form or (if you must) in complete sentences. Above each point, you might add an explicit transition as the oral equivalent of a subhead: “The first issue is . . .”
- Prominently mark those main points so that you spot them instantly. Under each, list the evidence that supports it. If your evidence consists of numbers or quotations, you’ll probably have to write them out, to be sure you can deliver them accurately.
- Organize your points so that you cover the most important ones first. If you run long (most of us do), you can skip a later section or even jump to your conclusion without losing anything crucial to your argument. Never build up to a climax that you might not reach. If you must skip something, use the question-and-answer period to return to it.

Finally, resist the temptation to write out a full script. Many of us get anxious about presenting, especially if we’re expected to field questions. That’s natural. Some novice presenters think the cure for that anxiety is to rely on a script they can just read rather than to speak extemporaneously from notes. As tempting as that may be, it’s generally a bad idea. Your auditors will want you to engage with them, not just read to them (they can do that for themselves).

Of course, some experienced presenters *do* write out full scripts. But they don’t read them word for word. Instead, they speak *from* them, using them to stay on track and to remind themselves of key sentences or phrases. If you think that approach will work for you, try it.

## 16.2 Giving a Preliminary Presentation

We encourage you to seek out opportunities to present your research not just when you have finished it but as you are doing it. If you are writing a paper or developing a formal presentation, consider presenting it to your class if you are a student, to your research group if you are more advanced, or to any audience willing to pay attention. While a preliminary presentation will be more informal than your final paper or presentation, it is still a valuable exercise, because it will let you get immediate feedback that can be very helpful when testing new ideas or new data. There is nothing like a live audience, able to respond in the moment, to help you clarify your thinking.

Your presentation at this stage should have two goals: (1) to forecast the argument you will make in your final paper or presentation, so that you can discover whether it makes as much sense when you *say* it as when you *think* it; and (2) to test your ideas through the responses of others. In particular, your presentation at this stage should do three things:

- present your research question or problem and claim
- outline your reasons supporting that claim
- preview the kind of evidence you will use to support those reasons

### 16.2.1 Write Out a Complete Introduction and Conclusion

There are two parts of your presentation that you must get right: your introduction, which prepares your audience for what's coming, and your conclusion, which tells them what to remember. Because these parts are so important, you should fully prepare them in advance. You don't need to memorize them, but you should rehearse enough that you can deliver them while referring only occasionally to your notes. That way you get off to a confident start, which will improve the rest of your performance, and you end confidently, which will influence how your audience remembers it.

If you have created a storyboard, you already have a sketch of an introduction and notes on a conclusion. In your notes, use language *to be spoken*. Except for technical terms you may need, speak naturally: avoid

words that you aren't comfortable saying (or practice until you are comfortable) or that make you sound like a textbook. State your research question or problem clearly, and be sure to end with your main point. In between, do what you can to answer *So what?*

### **16.2.2 Make the Body of Your Notes an Outline**

In the body of your presentation, concentrate on your reasons. Use them to organize your notes, in bold type. These are the sentences you must be sure to say. For everything else, adapt to your audience: spend time on what seems to engage them; skip what doesn't. But do cover each reason. And just before you conclude, run through your main reasons in order—this is the best summary of your argument.

If you have time, present some of your best evidence, especially for any reasons that your audience is unlikely to accept right off. But at this stage, your presentation should be focused on your problem, your claim, and your reasons supporting it. Communicate them clearly, and you will have done a fine job.

### **16.2.3 List Some Questions for Discussion**

A preliminary presentation is as much for you as for your audience. In fact, its main purpose is often less to communicate your ideas than to help you refine and test them. A robust discussion (often called a “Q&A”) after your presentation can help you do that. To make this discussion as productive as possible, ask yourself, *What areas of my argument am I most unsure about? What do I think is my best idea? What might I be missing? Where might my reasoning be clear to me but not to others?* Then plan some questions that will focus the discussion on what you most want to find out.

## **16.3 Giving a Final Presentation**

There are at least two important differences between a preliminary presentation and a final one: *Before* you were guessing what your argument might

be; *now* you know. That should make your presentation more confident but not different in structure. Also, you now know how your evidence supports each reason. Accordingly, you should give more attention to evidence in a final presentation than in a preliminary one. But do not lead your audience through every scrap of evidence you gathered, even if it's relevant. If you do, you will run out of time. Instead, present one best bit of evidence for each reason. This will assure your audience that you can back up your claims without their having to digest your entire argument.

### 16.3.1 Narrow Your Focus

Typically, a presentation can cover only a fraction of what a paper can. An advantage of presenting is that you can interact with your audience; an advantage of writing is that you can lay out your argument at a level of detail that would be impractical in a live presentation—unless it went on for hours! That may seem obvious, but it's worth remembering, because even seasoned researchers make the mistake of trying to cram too many words into their allotted time.

Final presentations are often more formal than preliminary ones. In fact, in some fields, presenters are expected to read aloud from detailed scripts. If that's the case in your field, do it. But practice, so that you don't sound like you are reading your own words for the first time. In a twenty-minute presentation, whether you are reading aloud from a script or speaking from notes, plan on delivering eight-to-ten double-spaced pages of text. That doesn't give you many words in which to communicate your ideas, so you must boil down your work to its essence or present just a part of it. Here are two common options:

- *Claim with a sketch of your argument.* If your claim is new, focus on its originality. Start with a short introduction, then explain your reasons, summarizing your evidence for each.
- *Summary of a sub-argument.* If your argument is too big to deliver in the time you have, focus on a key sub-argument. Mention your main claim in your introduction and conclusion, but be clear that you are addressing only part of it.

### 16.3.2 Sketch Your Introduction

For a short presentation, you get only one shot at motivating your auditors before they tune out, so prepare your introduction more carefully than any other part. Base it on the three parts of an introduction described in [chapter 14](#). You might also offer a road map that previews the direction your presentation will take. (Below we suggest times for a talk lasting twenty minutes.)

Use notes only to *remind* yourself of those three parts, not as a word-for-word script. If you can't remember the content, you're not ready to give your presentation. Sketch enough in your notes to remind yourself of the following:

1. What research you extend, modify, or correct (no more than a minute).
2. What question your research addresses—the gap in knowledge or understanding (thirty seconds or less).
3. Why your research matters—an answer to *So what?* (thirty seconds).

Those three steps, as you know by now, are crucial to motivating your audience. If your question is new or controversial, give it more time. If your audience recognizes its significance, mention it quickly and go on.

4. What is the answer to your research question, that is, your claim (thirty seconds or less).

Auditors want to know your answer up front, even more than readers do. So unless you have a compelling reason to wait, state your answer up front. If you must wait, at least preview it.

5. How you will structure your presentation (ten to twenty seconds).

Most useful is an oral table of contents: “First, I will discuss . . .” That may seem clumsy in print, but an audience listening to a presentation needs

more help than one reading a paper. Repeat that structure through the body of your presentation.

Rehearse your introduction, not only to get it right but also to be able to look directly at or otherwise engage your audience as you give it. You can consult your notes later.

All told, spend no more than three minutes or so on your introduction.

### **16.3.3 Model Your Conclusion on Your Introduction**

Make your conclusion memorable, so that auditors will repeat it when asked, *What did Jones say?* Learn it well enough to present it without reading from your notes. It should have these three parts:

- your claim, in more detail than in your introduction (if your auditors are mostly interested in your reasons or data, summarize them as well);
- your answer to *So what?* (you can restate an answer from your introduction, but try to add a new one, even if it's speculative);
- suggestions for more research, what's still to be done.

Rehearse your conclusion so that you know exactly how long it takes (no more than a minute or two). Then when you have that much time remaining, conclude, even if you haven't finished your last (relatively unimportant) points. If you had to skip one or two points, work them into an answer during any question-and-answer period. If your presentation runs short, don't ad lib. You're finished.

### **16.3.4 Anticipate Questions**

If you're lucky, you will get questions after your presentation, so prepare answers for predictable ones. Expect questions about your data or sources, especially if you didn't cover them much. Also be prepared for questions about a source you never heard of. The best policy is to acknowledge that

you haven't but that you will check it out. If the question seems friendly, ask why the source is relevant.

Attend to every question carefully; then to be sure you understand the question, *pause before you respond and think about it for a moment*. If you don't understand the question, ask the questioner to rephrase it. Good questions are invaluable, even when they seem to be challenges. Use them to refine your thinking.

### 16.3.5 Create Handouts

If your evidence is suitable for it, prepare a *handout*, our term for a supplement to your presentation that you distribute to the members of your audience either on paper or digitally, perhaps through a QR code. A handout can include anything that will help your audience follow and understand your presentation: key slides, a list of quotations, important graphics or tables, illustrations, questions for discussion, and so on. Unless your handout is for accessibility (see 16.1.3), be selective: it should emphasize and reinforce your most important information and claims, but it won't do that if it includes *everything*.

#### ► Quick Tip: Treat Your Presentation as a Performance

Think about the live performances you most remember—plays, concerts, even comedy shows. If you are like us, what you remember most is the connection you felt with the performers. You don't have to be an actor, pop star, or comedian to deliver a successful research presentation (although we have known some scholars who tried), but like them, you still need to connect with your audience. What distinguishes a presentation from a paper is your *presence* to your audience, and theirs to you. A paper is a text to be read, usually in the absence of its author; a presentation, while it can be based on a paper, is an event to be experienced. In other words, it's a performance.

That's not to say that you need to sing and dance to keep your audience entertained. But you should do things that will keep them interested and engaged. Here are some tips, some of which we touched on earlier in this chapter, to help you do that:

- **Look up.** Audiences don't want you to read *at* them; they want you to talk *to* them. So look up from your notes or script and make eye contact with them. Or better, know your notes well enough that you have to glance down at them only occasionally.
- **Speak naturally.** Audiences don't want to feel that they are being addressed by a robot. So as you speak, pay attention to your pace and rhythm, your tone and volume. Vary your speech to signal turns in your argument or points of emphasis. But be aware: speaking "naturally" in a presentation can feel very unnatural, so practice.
- **Extemporize.** Occasionally, depart from your prepared notes or script to offer an aside, ask a question, or even make a joke. You can plan for these moments in your notes, even if you don't write down exactly what you will say. If the practice in your field is for presenters to read their papers verbatim, you can still punctuate your presentation with a few moments in which you talk extemporaneously to your audience.
- **Show some personality.** Again, you're not a robot, so don't be afraid to show some personality (really)! Some presenters cultivate a quiet seriousness, while others are more dynamic, even theatrical. Do what feels most comfortable for you: smile, laugh, gesture with your hands, offer the occasional quip, move away from the podium (but don't pace back and forth—that's distracting).
- **Finally, have fun.** Some people are born performers. If that's you, great. If not, still try to enjoy delivering your presentation, for at least two reasons. First, you will think and perform better because you will be able to focus on your ideas and your audience's responses, rather than being distracted by your own stress. And second, it's excruciating to watch a presenter who seems to be walking over hot coals just to get to the end. Remember, your audience is pulling for you, even if they are skeptical: they want to enjoy the intellectual give-and-take a good presentation allows, and they want you to enjoy it as well.

**Part V**

**Some Last Considerations**

# 17 The Ethics of Research

In this book, we have offered a lot of practical advice about how to do research and make and communicate research arguments. We have also shared our notion of what might be called the enterprise of research: specifically, we see research as a profoundly *social* activity in which communities of researchers participate in extended “conversations” (sometimes in person and sometimes through written or published arguments, sometimes with contemporaries and sometimes spanning generations) with each other and other interested audiences in a common pursuit of a better understanding of the world and better solutions to its problems. Now we want to share with you some ethical considerations all researchers must confront, hoping that as you grow as a researcher, you’ll give them more thought.

The term *ethical* comes from the Greek *ethos*, meaning either a community’s shared *customs* or an individual’s *character*, good or bad. All researchers, from the most novice students to the most experienced professors, face three sets of ethical obligations: to themselves, to their specific audiences and research communities, and to others who might be affected directly and indirectly by their research.

## 17.1 Your Ethical Obligation to Yourself

Your first ethical obligation is to conduct yourself with personal integrity. At its most basic, this obligation can be expressed as a series of *Thou shalt nots*, which we have discussed throughout this book:

- Do not plagiarize.
- Do not claim credit for the results of others.
- Do not misrepresent sources, invent evidence, or fake results.
- Do not present evidence whose accuracy you don’t trust, unless you say so.

- Do not conceal objections you cannot rebut.
- Do not caricature or distort opposing views.
- Do not destroy data or evidence or conceal sources important for those who follow.

We are sure you can think of others. It's easy enough to apply these principles to obvious cases: the archaeologist who faked the fossilized remains of an unknown species of early human, the medical researchers who altered images of tissue samples to show the result they wanted, the car manufacturer that installed software in some of its vehicles to enable them to evade emissions tests—and then tried to cover it up by destroying data, and of course students who buy papers online and submit them as their own.

About more complicated cases, reasonable people may differ in their ethical judgments. But the obligation of personal integrity remains, both for its own sake and because it is essential to maintaining the sense of trust that allows research communities to function. Thanks to ever-more accessible technologies such as generative AI and their ever-expanding capacities, the power to access, process, analyze, create, and fake information and even arguments has never been greater. For this reason, it is, if anything, more important than ever for researchers to maintain their personal integrity.

## 17.2 Your Ethical Obligations to Your Audience and Fellow Researchers

Your next ethical obligations are to your research community (which, if you are a student, includes your classmates and teachers), to the broader community of all scholars and researchers, and to your audience—those actual and imagined communities you address and invoke when you share your findings, ideas, and arguments. If you accept, as we do, that research is inherently collaborative, then you must consider how your choices and actions affect not just yourself but also those communities that enable and hope to benefit from your research. To fulfill your ethical obligations to these communities, you must move beyond simple *shalt nots* to consider what you should affirmatively *do*.

- When you ask others to accept your evidence in good faith, you also ask for their trust, setting a standard for your work higher than it might be if it affected you alone.
- When you explain to others why your research *should* change their understanding and beliefs, you must examine not only your own understanding and interests, but your responsibility to them if you convince them to change theirs.
- When you acknowledge your audience's alternative views, including their strongest objections and reservations, you move closer not just to more reliable knowledge, better understanding, and sounder beliefs, but to honoring their dignity and human needs.

When researchers flout these obligations, they harm not just their own reputations but also those who depend on their work. You might think that fudging a footnote or a bit of data is a minor offense, but such acts always erode the trust on which research communities depend and sometimes they have significant tangible costs. For example, a 1998 study linking the MMR (measles, mumps, rubella) vaccine to autism was based on falsified data, but the skepticism about vaccines this study engendered persists. And several major pharmaceutical companies have had to withdraw drugs from the market, and sometimes pay major financial settlements, because of fraudulent or unethical drug trials.

While all researchers have ethical obligations to their audiences and fellow researchers, these obligations are elevated for established researchers who may have the power to shape the research agendas, reputations, and even careers of others. Watson and Crick, the pair of scientists who described the double-helix structure of DNA (see 6.2.2), relied on unpublished data produced by two other scientists, Maurice Wilkins and Rosalind Franklin, which had been shared with them by Crick's supervisor without explicit permission. Watson and Crick acknowledged Wilkins's and Franklin's contributions only minimally, both in their original article and in their later writings about their discovery. Even if Watson and Crick did not actually steal Franklin's data (some evidence suggests that she may have tacitly acceded to their use of it), their treatment of her certainly deprived her of the full credit and recognition she deserved and may therefore be regarded as unethical.

It is this concern for the common work of a community that underscores why, for example, researchers condemn plagiarism so strongly. Plagiarism is theft, but of more than words. To misrepresent a source or to take credit for work that is not one's own (whether that work was done by another researcher, purchased online, or generated with AI technology) is to steal the modest recognition that honest researchers should receive, the respect that some spend a lifetime striving to earn. And that, in turn, weakens research communities not just by harming individual researchers but also by reducing the value of research and eroding the mutual trust on which research depends.

This is true for all research communities, including the undergraduate classroom. Students who plagiarize steal not only from their sources but from their fellow students by making their work seem lesser by comparison. When such intellectual thievery becomes common, the community grows suspicious, then distrustful, then cynical: *Everyone does it. I'll fall behind if I don't.* Teachers must then worry about being tricked as well as about teaching and learning. Ultimately, students who plagiarize do not just compromise their own educations; they also steal from the larger society that devotes its resources to training them to do honest, reliable work later, work that the larger society will depend on.

In short, when you conduct your research and share its results ethically—when you respect sources, preserve and acknowledge evidence that run against your results, assert claims only as strongly as they deserve, acknowledge the limits of your certainty, and meet all the other ethical obligations you have to your research community and audience—you contribute not just to society's collective knowledge and understanding but also to the fabric of trust that enables the research on which society depends to address its most pressing problems.

## 17.3 Research and Social Responsibility

Your final ethical obligations are to those outside your own research community. They extend to those who could potentially be affected by your research, not just by its results but also by the questions you ask and how you go about answering them:

- to those who directly or indirectly facilitate your research (the librarians, lab assistants, translators, transcriptionists, and information technologists who help you; the academic institutions, foundations, and taxpayers who fund you)
- to those who may be your research subjects (interviewees in an oral history project, informants in ethnographic research, participants in an experiment)
- even to those who are not involved in your research but who nevertheless may be touched by it

Your ethical obligations include the obligation to recognize the support you receive from those outside your research community and to treat those who support you with gratitude and respect. But they also extend beyond this obligation to human decency.

Some researchers, in pursuit of their goals or from simple hubris, knowingly adopt research practices that are coercive or deceptive. Such researchers are clearly unethical. But even the most personally ethical researchers can be so focused on their projects and priorities, and those of their research communities, that they discount the potentially exploitative dimensions and adverse effects of their projects on others, especially when those others belong to groups that have been minoritized or marginalized in some way.

For this reason, colleges, universities, and other bodies involved in conducting and supporting research have created committees to review proposed projects to ensure that they are ethically designed. These committees go by different names—Human Subjects Committee, Institutional Review Board, Ethics Research Board, and so on—but they all aim to ensure that researchers follow the maxim that should govern research as it does medicine: *Do no harm*. Consult with that committee if you gather data from people—whether by interviewing, surveying, or perhaps even just observing them.

Many professional organizations and academic journals have also adopted principles of ethical research to which their members and authors are expected to adhere. For example, *JAMA*, a major medical research journal, has adopted guidelines that promote transparency and equity in the reporting of data concerning race and ethnicity. And *Nature*, one of the premier journals in the natural sciences, has condemned practices such as *helicopter*

*research* (when privileged researchers pursue studies in marginalized or otherwise disempowered communities with little input from the members of those communities) and *ethics dumping* (when privileged researchers locate studies or experiments in marginalized or disempowered communities or geographical regions likely to have relaxed ethical standards or oversight). The point is, ethical research is more than a personal matter; it also requires researchers to acknowledge, consider, and even work to mitigate systemic differences of power and privilege that may shape and influence their projects and findings.

If you are still a student, you might think that these concerns are not relevant to you. You would be wrong. Even as a student, the research problems you take up, the research questions you ask, and the research methods you employ have ethical dimensions. There is no simple formula that can tell you whether or not your research project is ethical. Rather, you must critically examine your project not only in light of your research goals but also in light of your ethical principles, which is to say, you need to be able to *argue* that it is ethical.

In [chapter 8](#), we discussed *warrants*, those general principles that justify the logic or reasoning of research arguments in different fields. We noted that warrants can usually be phrased *When X, then Y*, where X is some general circumstance and Y is some general consequence. If your specific circumstance is a good instance of that general circumstance, then your specific conclusion will be an instance of its general consequence. Here are some warrants you can apply to test your research problems, questions, and projects to judge their ethics:

- When research relies on deception, it is (possibly) unethical.
- When research exploits a power differential between researchers and subjects, it is (possibly) unethical.
- When research exploits a socioeconomic or geopolitical power differential (e.g., doing dangerous experiments in developing countries), it is (possibly) unethical.
- When research has the potential to harm individuals, societies, or the environment, it is (possibly) unethical.

There are many others. Again, decisions about the ethics of research, especially from the perspective of social responsibility, can be complex, and reasonable people may differ in their judgments. Your responsibility is to weigh carefully your project's ethical considerations and decide.

## 17.4 A Final Thought

We hope that, in working your way through this book, you have developed not just a set of useful skills but also a sense of the broader stakes of authentic and ethical research for yourself and others. It's a commonplace that information has never been more abundant, ubiquitous, and accessible. But our society also suffers from an anxiety over whether all that information can lead us to something more: knowledge, understanding, sympathy, wisdom. In this context, the abilities this book was written to help you cultivate—to do careful and thorough research; to think and argue rigorously, cogently, and with a sensitivity to the ideas and perspectives of others; and to communicate clearly and understandably—are much more than keys to success in school or on the job. They are among the most important abilities a citizen of our current century can acquire.

## 18 Advice for Teachers

In this final chapter, we want to address a particular subset of our readers: the teachers who use our book in their classes with their students. In the preceding seventeen chapters, we have offered much advice about how to do research, develop arguments, and then communicate them to others in papers and presentations. Here, we want to acknowledge once again the convictions that inform all of this advice and explore some of their implications for *teaching*. Our perspectives and suggestions are born of our own study and research as well as our years of experience as teachers ourselves. If you are not a teacher, we hope that you will at least eavesdrop by skimming this chapter, since doing so may help you benefit from another's teaching, or to become a better learner yourself.

In our preface, we noted that we see research, argumentation, and communication (whether written or oral) as necessarily communal activities. We further noted our strong belief that the skills that enable these activities can be taught explicitly and that, given proper instruction and support, anyone can learn them. These convictions or principles have important implications not just for doing and communicating research but also for teaching it.

Students, we believe, best learn to do and communicate research when they are able to ground their work in rich communal and rhetorical contexts—that is, when their projects genuinely contribute to advancing the understanding of a real audience or research community (even if, for beginners, that is only the community of their immediate peers) and when they are able to write for or present to specific, identifiable audiences (again, even if for beginners, their audience consists of their immediate peers). We further believe that when learning to do and communicate research, students benefit immensely from explicit instruction not just in the methods, procedures, and techniques they will need to know to do their research but also in the formal features of research arguments and of the genres through which such arguments are communicated in their fields.

## 18.1 The Risks of Imposing Formal Rules

Emphasizing formal features, though, has its risks, especially with new researchers. It is easy to reduce formal structure to empty drill. Those who teach dancers only to execute their steps or pianists only to find the right keys deprive their charges of the deep pleasures of dance or music. Those who teach research as if it were merely learning the proper forms for footnotes and bibliographies deprive their students of the pleasures of discovery, perhaps discouraging some who might otherwise have blessed the world with their own good research.

If students are shown how to approach research in the right spirit, the formal features of argument become answers to questions that stimulate and reward hard thinking. They help students recognize what is important in researchers' relationships with their sources and disciplinary colleagues. This recognition is a prerequisite to creative and original research.

Forms empty of meaning encourage empty imitation, especially when teachers fail to create in their classrooms a rhetorical context that dramatizes for students their social role as researchers, even if at first only in simulation or role-playing. No textbook can fully create that context because it requires a class experience that only imaginative teachers can orchestrate.

Only when teachers understand their particular students can they devise assignments that create situations whose social dynamic gives point and purpose to research and whose expectations students can recognize and understand. The less experience students have, the more support teachers must provide before their students can use formal structures in productive ways.

## 18.2 On Assignment Scenarios: Creating a Ground for Curiosity

Teachers have found many ways to construct research assignments that give students this necessary support. The most successful have these features:

**1. Good assignments establish outcomes beyond a product to be evaluated.** Good teachers ask students to pose questions that *they* want to answer and to support their answers with sound reasons and solid evidence.

Good research assignments then ask students to translate that personal interest into a communal one, so that they can experience, or at least imagine, an audience that needs the understanding only they can provide.

The best assignments ask students to address audiences who genuinely need to know or understand something better. A senior design class, for example, might address a problem of a local company or civic organization; a music class might write program notes; a history class might investigate the origins of some part of their university or a local institution.

Less experienced students might write or present for their classmates or for students in another class who could use the information that a beginning researcher could provide. They might do preliminary research for those senior design students or even give presentations to students still in high school.

Next best are assignments that simulate such situations, in which students imagine an audience—for example, other students, other researchers, community partners—that has a problem the student researcher can solve. In large classes, students can work in small groups whose members serve as an audience with interests that beginning researchers can reasonably address.

**2. Good assignments help students learn about their audience or readers.** Most people, students included, have trouble imagining audiences whom they have never met and whose situations they have never experienced. Biology students with no knowledge or experience working with a government agency will be unlikely to write a plausible report that meets the concerns of a state EPA administrator. But you can still urge students to imagine that audience. Alternatively, you can turn the class into its own audience by letting students decide what problems need solving, what questions need answering. If students can define the problems they’re interested in, they will make the best possible audiences for one another’s research.

**3. Good assignments create scenarios that are rich in contextual information.** Assignments grounded in rich social contexts give students the best opportunity to produce work that has depth and meaning. But even when it is impractical to ground an assignment in a real context, you should still create a scenario that provides as much of an imagined context as possible. It is impossible to anticipate everything students might need to know about such a scenario, so it is important to integrate analysis and discussion of it into the research process. When you do that, you help students learn to

make rhetorically significant choices, that is, choices that anticipate and aim to shape an audience’s responses. When students have no real choices because an assignment is thinly contextualized or overly scripted, they can only do mechanical make-work.

**4. Good assignments provide interim responders.** Few professional researchers consider a project finished before they have solicited responses to their work from people they trust. Students need responses even more. Encourage students to solicit early responses from peers, friends, family, mentors, even from you. And build opportunities for response into your assignments themselves. Other students can play the role of “responder” reasonably well, but not if they think that their task is just “editing”—which for them often means rearranging a sentence here and fixing a misspelling there. Have student responders work through some of the steps in [part IV](#); you can even create teams of responders, each with responsibility for specific features of the text.

**5. Good assignments give students time and a schedule of interim deadlines.** Research is messy, so it does no good to march students through it lockstep: (1) select topic, (2) state thesis, (3) write outline, (4) collect bibliography, (5) read and take notes, (6) write paper. That caricatures authentic research. But students need some framework, a schedule of tasks that helps them monitor their progress. They need time for false starts and dead ends, for revision and reconsideration. They need interim deadlines and stages for sharing and assessing their progress and work. Those stages can reflect the various sequences outlined in this book.

**6. Good assignments encourage ethical research and writing practices.** They do this not simply by exhortation but by design. By leading students to do meaningful and authentic work, good assignments lessen the temptation to cheat: when students find their work genuinely meaningful, they will be inclined to do it. Thoughtful assignments and well-orchestrated classes also make cheating impractical. For example, a teacher who establishes a rich social and rhetorical context in a class also guards against the unethical use of generative AI because the large language models that enable these technologies don’t capture local contexts well or class discussions at all.

## 18.3 Accepting the Inevitable Messiness of Learning

Students also seriously—sometimes desperately—need other kinds of support, especially recognition of what can be expected of them and tolerance for the predictable missteps of even experienced researchers. Beginners behave in awkward ways, taking suggestions and principles as inflexible rules that they apply mechanically. They work through a topic to a question to their library’s online catalog to a few websites, marching on and on to a weak conclusion, not because they lack imagination or creativity, but because they are struggling to acquire a skill that to them is surpassingly strange. Such awkwardness is an inevitable stage in learning any skill. It passes, but too often only after they have moved on to other classes.

We ourselves have had to learn to be patient with students, as we wait for the delayed gratification that comes when they arrive at genuine originality—knowing it will likely arrive when we are no longer there to see it. We try to assure students that even if they do not solve their problem, they succeed if they can pose a problem in a way that convinces us that it is new—at least to them—and arguably *needs* a solution. We know that some students, when given a research assignment, will simply gather information on a topic rather than seek out a significant problem. You can help such students better understand the essence of authentic research by creating conditions that encourage them to follow their natural curiosity and to share what they discover with others.

Finally, we trust and encourage you to adapt the principles and procedures that we have presented in this book to fit your particular students. You know them best, and like all students, they will benefit enormously from a teacher who knowledgeably, capably, and compassionately responds to their needs.

## Our Debts

From JB and WF: This edition of *The Craft of Research* is the second that we have revised, and our primary debt is to the book's three original authors: Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams. Through their own research, writing, and teaching, they benefited generations of students, colleagues, and readers—including us. The opportunity to learn from them once again as we revised this book for a new generation of readers is one for which we are truly grateful.

We thank our editor, Mary Laur, for her insight, counsel, and keen rhetorical sense and also for her support, encouragement, and faith in the two of us. We thank Russell David Harper for his expert guidance on citation styles, Mollie McFee and Andrea Blatz for their careful work in preparing the text, Erin DeWitt for her expert and sensitive copyediting, and the rest of the team at the University of Chicago Press who supported this project.

We thank those who so generously responded to our work at every stage of its composition. Doug Brent, Tom Deans, Doug Downs, Mya Poe, and Annette Vee provided valuable feedback on our proposal for the revision, and Tom Deans and Mya Poe read and commented on a full draft of the manuscript. We thank as well our sensitivity reader Ebonye Gussine Wilkins for her detailed review of that draft. The book is far better than it would have been for their suggestions.

We thank those who have used *The Craft of Research* in their own teaching and have shared their experiences, opinions, and suggestions with us. We especially thank our colleagues at Boston University and Rutgers University—Camden for ideas shared in conversations over many years. Of course, the book's shortcomings remain our own.

Joe Bizup thanks his wife, Annmarie Caracansi, and daughters, Grace and Charlotte; and Bill FitzGerald likewise thanks his wife, Emilia Lievano, and daughter, Magdalena. Their love and support (and patience with our late-night writing sessions) were essential.

# **Appendix**

## **A Brief Guide to Bibliographic and Other Resources**

This appendix provides a curated collection of tools for conducting, writing, and presenting research as well as selected databases, websites, and print materials. In addition, readers might consult a local librarian or a subject-specific guide that can identify specialized resources (databases, dictionaries, encyclopedias, etc.) for advice on research and writing.

In the resources provided in the second half of the list, we distinguish between those of a general nature and those related to specific disciplines, grouped into broad categories of Arts and Humanities, Social Sciences, and STEM (Science, Technology, Engineering, and Mathematics) fields. We also distinguish between resources focused primarily on research (including research methods) and those focused on writing. But this distinction is far from exact; many resources address both research and writing.

## **General Tools, Databases, and Resources**

### **Annotation, Citation, and Presentation Tools**

In [chapter 4](#), we discuss techniques for engaging sources actively, including the use of various tools for taking notes and preparing citations electronically. Most academic libraries provide access to such tools for research to faculty, students, and other patrons. Here are a few of the most widely used as of this writing:

Annotation tools: Evernote, Hypothes.is, Perusall

Citation-management tools: EndNote, Mendeley, Zotero

## Presentation tools: PowerPoint, Prezi

## Online Databases

Most of these databases are accessible by subscription through a public or academic library. But some (e.g., the Library of Congress Online Catalog, CQ Researcher) may be accessed directly by individual researchers. We also include several of the most common online databases for images.

Academic Search Premier (EBSCO), <https://www.ebsco.com/products/research-databases/academic-search-premier>

CQ Researcher (Sage), <https://learningresources.sagepub.com/cq-press/researcher>

ERIC (Education Resources Information Center), <https://eric.ed.gov/>

Gale Academic OneFile, <https://www.gale.com/intl/databases/gale-onefile>

H. W. Wilson, <https://www.hwwilsoninprint.com/>

JSTOR, <https://www.jstor.org>

LexisNexis, <https://www.lexisnexis.com/en-us/gateway.page>

Library of Congress Online Catalog, <https://catalog.loc.gov/>

PubMed (National Library of Medicine), <https://pubmed.ncbi.nlm.nih.gov/>

WorldCat, <https://www.oclc.org/en/worldcat.html>

## Image Databases

AP Newsroom (editorial photos and videos), <https://newsroom.ap.org/editorial-photos-videos/home>

Artstor, <https://www.artstor.org/>

Digital Public Library of America (DPLA), <https://dp.la/>

Getty Images, <https://www.gettyimages.com/>

Google Images, <https://images.google.com/>

## **Visual Representation of Data**

- Evergreen, Stephanie. *Effective Data Visualization: The Right Chart for the Right Data*. 2nd ed. Sage, 2019.
- Knaflic, Cole Nusshaumer. *Storytelling with Data: A Data Visualization Guide for Business Professionals*. Wiley, 2015.
- Krum, Randy. *Cool Infographics: Effective Communication with Data Visualization and Design*. Wiley and Sons, 2013.
- Nicol, Adelheid A. M., and Penny M. Pexman. *Displaying Your Findings: A Practical Guide for Creating Figures, Posters, and Presentations*. 6th ed. American Psychological Association, 2010.

## **Delivering Presentations, Designing Posters**

- Alley, Michael. *The Craft of Scientific Presentations: Critical Steps to Succeed and Critical Errors to Avoid*. 2nd ed. Springer, 2013.
- Lacatus, Corina, and Alex Nogues. *Create Your Research Poster*. Sage, 2021.
- Rowe, Nicholas. *Academic and Scientific Poster Presentation: A Modern Comprehensive Guide*. Springer International, 2017.

## **Guides to Research**

### **General**

- Hudley, Ann H. Charity, Cheryl L. Dickter, and Hannah A. Franz. *The Indispensable Guide to Undergraduate Research: Success in and beyond College*. Teachers College Press, 2017.
- Mann, Thomas. *The Oxford Guide to Library Research*. 4th ed. Oxford University Press, 2015.
- Mullaney, Thomas S., and Christopher Rea. *Where Research Begins: Choosing a Research Project That Matters to You (and the World)*. University of Chicago Press, 2022.

Turabian, Kate L. *A Manual for Writers of Research Papers, Theses, and Dissertations*. 9th ed. Revised by Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, Joseph Bizup, William T. FitzGerald, and the University of Chicago Press Editorial Staff. University of Chicago Press, 2018.

## Research Methods

Cresswell, John W., and Cherry N. Poth. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. 4th ed. Sage, 2017.

Flick, Uwe. *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project*. Sage, 2020.

Gerard, Philip. *The Art of Creative Research: A Field Guide for Writers*. University of Chicago Press, 2017.

Lareau, Annette. *Listening to People: A Practical Guide to Interviewing, Participant Observation, Data Analysis, and Writing It All Up*. University of Chicago Press, 2021.

Merriam, Sharan B., and Elizabeth J. Tisdell. *Qualitative Research: A Guide to Design and Implementation*. 4th ed. John Wiley and Sons, 2017.

Roulston, Kathryn, and Kathleen deMarrais. *Exploring the Archives: A Beginner's Guide for Qualitative Researchers*. Myers Education Press, 2021.

Yin, Robert K. *Case Study Research and Applications: Design and Methods*. Sage, 2018.

## Arts and Humanities

Brookhank, Elizabeth, and H. Faye Christenberry. *MLA Guide to Undergraduate Research in Literature*. Modern Language Association, 2019.

Clary-Lemon, Jennifer, Derek N. Mueller, and Kate Pantelides. *Try This: Research Methods for Writers*. WAC Clearinghouse, 2022.

- Geisler, Cheryl, and Jason Swarts. *Coding Streams of Language: Techniques for the Systematic Coding of Text, Talk, and Other Verbal Data*. The WAC Clearinghouse, 2020.
- Griffin, Gabriele, ed. *Research Methods for English Studies*. 2nd ed. Edinburgh University Press, 2013.
- Hayford, Michelle. *Undergraduate Research in Theatre: A Guide for Students*. Taylor and Francis, 2021.
- Kinkead, Joyce. *Researching Writing: An Introduction to Research Methods*. Utah State University Press, 2016.
- Overby, Lynnette Young, Jenny Olin Shanahan, and Gregory Young. *Undergraduate Research in Dance: A Guide for Students*. Routledge, 2019.
- Ramsey, Alexis E., Wendy B. Sharer, Barbara L'Eplattenier, and Lisa Mastrangelo. *Working in the Archives: Practical Research Methods for Rhetoric and Composition*. Southern Illinois University Press, 2010.
- Ricciardelli Lucia, Jenny Olin Shanahan, and Gregory Young. *Undergraduate Research in Film: A Guide for Students*. Routledge, 2020.
- Todd, Molly. *Undergraduate Research in History: A Guide for Students*. Routledge, 2022.
- Young, Gregory, and Jenny Olin Shanahan. *Undergraduate Research in Music: A Guide for Students*. Routledge, 2017.

## Social Sciences (Including Business and Education)

- Howard, Christopher. *Thinking Like a Political Scientist: A Practical Guide to Research Methods*. University of Chicago Press, 2017.
- Palmer, Ruth J., and Deborah L. Thompson. *Conducting Undergraduate Research in Education: A Guide for Students in Teacher Education Programs*. Taylor and Francis, 2022.
- Saldana, Johnny. *The Coding Manual for Qualitative Researchers*. 4th ed. Sage, 2021.
- Sekaran, Uma, and Roger Bougie. *Research Methods for Business: A Skill-Building Approach*. 7th ed. Wiley, 2016.

Seligman, Ross A., and Lindsay A. Mitchell. *The Student Survival Guide for Research Methods in Psychology*. Taylor and Francis, 2021.

## STEM Disciplines

Harland, Darci J. *STEM Student Research Handbook*. National Science Teachers Association, 2011.

Harris, Pamela E., Erik Insko, and Aaron Wootton, eds. *A Project-Based Guide to Undergraduate Research in Mathematics: Starting and Sustaining Accessible Undergraduate Research*. Springer International, 2020.

Northey, Margot, Dianne Draper, and David B. Knight. *Making Sense in Geography and Environmental Sciences: A Student's Guide to Research and Writing*. 6th ed. Oxford University Press, 2015.

## Guides to Writing

### General

*The Chicago Manual of Style*. 18th ed. University of Chicago Press, 2024.

Germano, William. *On Revision: The Only Writing That Counts*. University of Chicago Press, 2021.

Lipson, Charles. *Cite Right: A Quick Guide to Citation Styles—MLA, APA, Chicago, the Sciences, Professions, and More*. 3rd ed. University of Chicago Press, 2018.

Lipson, Charles. *How to Write a BA Thesis: A Practical Guide from Your First Ideas to Your Finished Paper*. 2nd ed. University of Chicago Press, 2018.

Williams, Joseph M., and Joseph Bizup. *Style: Lessons in Clarity and Grace*. 12th ed. Pearson, 2016.

## Arts and Humanities

- Barnet, Sylvan. *A Short Guide to Writing about Art*. 11th ed. Pearson, 2015.
- MLA Handbook*. 9th ed. Modern Language Association, 2021.
- Rogers, Lynne, Karen M. Bottge, and Sara Haefeli. *Writing in Music: A Brief Guide*. Oxford University Press, 2021.
- Storey, William Kelleher. *Writing History: A Guide for Students*. 6th ed. Oxford University Press, 2020.

## Social Sciences

- Allen, Jennifer M., and Steven Hougland. *The SAGE Guide to Writing in Criminal Justice Research Methods*. Sage, 2020.
- Becker, Howard S. *Writing for Social Scientists: How to Start and Finish Your Thesis, Book, or Article*. 3rd ed. University of Chicago Press, 2020.
- Brown, Shan-Estelle. *Writing in Anthropology: A Brief Guide*. Oxford University Press, 2016.
- Emerson, Robert M., Rachel I. Fretz, and Linda L. Shaw. *Writing Ethnographic Fieldnotes*. 2nd ed. University of Chicago Press, 2018.
- Ghodsee, Kristen. *From Notes to Narrative: Writing Ethnographies That Everyone Can Read*. University of Chicago Press, 2016.
- LaVaque-Manty, Mika, and Danielle LaVaque-Manty. *Writing in Political Science: A Brief Guide*. Oxford University Press, 2016.
- McCloskey, Deirdre Nansen. *Economical Writing: Thirty-Five Rules for Clear and Persuasive Prose*. 3rd ed. University of Chicago Press, 2019.
- Northey, Margot, Lorne Tepperman, and Patrizia Albanese. *Making Sense in the Social Sciences: A Student's Guide to Research and Writing*. 8th ed. Oxford University Press, 2023.
- Publication Manual of the American Psychological Association*. 7th ed. American Psychological Association, 2019.

- Smith-Lovin, Lynn, and Cary Moskovitz. *Writing in Sociology: A Brief Guide*. Oxford University Press, 2016.
- Sternberg, Robert J., and Karin Sternberg. *The Psychologist's Companion: A Guide to Professional Success for Students, Teachers, and Researchers*. 6th ed. Cambridge University Press, 2016.
- Van Maanen, John. *Tales of the Field: On Writing Ethnography*. 2nd ed. University of Chicago Press, 2011.

## STEM Disciplines

- Alley, Michael. *The Craft of Scientific Writing*. 4th ed. Springer, 2018.
- The CSE Manual: Scientific Style and Format for Authors, Editors, and Publishers*. 9th ed. University of Chicago Press, 2024.
- Harmon, Joseph E., and Alan G. Gross. *The Craft of Scientific Communication*. University of Chicago Press, 2010.
- Irish, Robert. *Writing in Engineering: A Brief Guide*. Oxford University Press, 2016.
- Long, Thomas Lawrence, and Cheryl Tatiana Beck. *Writing in Nursing: A Brief Guide*. Oxford University Press, 2016.
- Miller, Jane E. *The Chicago Guide to Writing about Multivariate Analysis*. 2nd ed. University of Chicago Press, 2013.
- Miller, Jane E. *The Chicago Guide to Writing about Numbers*. 2nd ed. University of Chicago Press, 2015.
- Montgomery, Scott L. *The Chicago Guide to Communicating Science*. 2nd ed. University of Chicago Press, 2017.
- Roldan, Leslie Ann, and Mary-Lou Mardue. *Writing in Biology: A Brief Guide*. Oxford University Press, 2016.
- Tyowua, Andrew Terhemem. *A Practical Guide to Scientific Writing in Chemistry: Scientific Papers, Research Grants and Book Proposals*. CRC Press, 2023.

# Index

- bstractions, in writing, 258–61  
bstract nouns, 256, 259–61, 263  
bstracts, 198–200; in articles, 59; in bibliographic sources/works, 59, 65; in databases, 59; defined and term usage, 198; and introductions, 198, 245; and summaries, 199–200  
cknowledgments and responses. *See under arguments and argumentation*  
ctive verbs and voice, 264–66. *See also passive verbs and voice*  
evice, and heuristics, xiv  
I (artificial intelligence). *See generative AI*  
necdotes, 8, 132, 157, 248  
nnotations: in bibliographies, 59, 93; and claims, 92; marginal, 92–93; sources and resources for, 91–93, 301–2  
nswers, defined and term usage, 104, 173. *See also questions and answers*  
nxiety: of abundant information, 291; of authors, and new projects/topics, 48; of beginners, 48; and cognitive overload, reassurance for, 111; and inexperience, 48, 111, 189; managing, 94, 188–90; as natural and inevitable, 48; of presenters, notes for, 275; of researchers, reducing, 2, 11, 48, 111; reviewing and learning from, 48; of writers, managing, 188–90. *See also uncertainty*  
rguments and argumentation: acknowledgments and responses, xviii–xix, 12, 82, 101–2, 105–10, 112, 154–67, 182–83, 194–95, 201, 287, 295; alternatives to, 154, 158, 162–65; and answers, 98, 101; assembling, 97–98, 102–5, 124; clarity of, 191; as communal activity, xiv–xvi, 292; communicating, xv–xvi, 202, 268; conceptual framework for, xv; core of, 102–5, 124, 136, 137, 154, 156, 159; as debates, 145; delivering, xix, 169; drafting, 171, 175–87; of genres, 293; hedging, 122; as intellectual constructions, xviii; main points of, 114; making, xv, xviii–xix, 95, 101–12; multimodal, 234; organizing, 124, 175, 191–97; planning, 107–10, 124, 171–73, 175–87; practical advice for, xv; quality of, 194–95; questions and objections for, 101–2, 106–7, 154, 156–57; reading for (sources and resources), 51, 81–83; real-world, 145; and research problems, 78; revising, 191–97, 252; rewriting, 99; scholarly, 56; sharing, xiv–xv; skills, xv; and solutions, 167; soundness of, 156–57; sources and resources for, 51, 74, 158; and sub-arguments, 116, 161, 167; substance of, 194; testing, 147–49; and truths, xvii–xviii; weaknesses in, 160; writing, xiv, 171–73. *See also claims; warrants*  
rtificial intelligence (AI). *See generative AI*  
rts and humanities: and pure research, 44; research guides, 304; research questions, 241; sources cited and quoted, 88, 201, 208; sources as current, 67; writing guides, 305  
udience, 1–13; academic, 11; for advanced research, 202; and arguments, xiv, 158; connecting with, 4–5; and context, 238; cooperative relationship with, 154; defined and term usage, xvii–xviii; as entertained, 8–9; getting to know, 13, 99; interests of, 11; listening by, 8, 9; reactions and responses of, 13, 158; and researchers, 1–2, 4–5; and rhetorical significance, 295; role of, 7–11; shared understanding with, 238; and sources/resources, 158, 202; trust of, 32, 74, 112, 120, 129, 155, 201; understanding, 13, 99, 238; and understanding, helping them to, 9–11; and writers, shared understanding with, 238. *See also readers*  
uditors, presentations to, 272–75, 278, 279

authenticity: and ethics, 291, 296; of research, 2, 5, 6, 9, 40, 42, 51, 66–68, 101, 291, 295–97; of sources and resources, 9, 51. *See also credibility*

authority/authorities: assertions of, 77; of evidence, 132–33; and logic, 55; quotes and quotations from, 89, 202; of sources and resources, 67, 77, 132; warrants based on, challenging, 150

authors. *See* writers

bibliographies: annotated, 59, 93; and citations, 87, 128–29, 215–16; collecting, 295; and footnotes, 68, 215–16, 293; and generative AI, 73; proper forms for, 293; sources and resources in, 128–29, 209, 214–15; in sources and resources, 62, 65, 68

Booth, Wayne C., v, xiii–xiv, xvi–xvii, 78, 299

business and education. *See* social sciences

charts: axes in, 135, 223; bar, 128, 218, 219, 223, 225–29, 232; bubble, 233; defined and term usage, 217; designing, 220–23; as effective graphics, 218; evidence communicated in, 128, 134–35, 206, 217–20, 222–29, 231–33; and graphs, 219, 222–23; horizontal axes in, 135; labels in, 223; pie, 226–28, 232; in presentations, 274; in sources and resources, 55; specific guidelines for, 223–28

*Chicago Manual of Style, The*, 209, 216, 305

citations and citing: and bibliographies, 87, 128–29, 215–16; ethos of, 206; and footnotes, 215–16; indexes of, 63; indicating in papers, 214–16; and notes, 86, 301; parenthetical, 214–15, 216; and plagiarism, guarding against, 206, 209–13; social importance of, 206–7; and sources/resources, 68–69, 83, 201, 207, 301–20; styles of, 207–9, 214, 216. *See also sources and resources*

claims: and annotations, 92; as answers to research questions, 114; and arguments, 104, 106, 107, 114–23, 136, 137; and assertions, 104; clarity of, 155; conceptual, 115; as contestable, 123; credibility of, 120–22; defined and term usage, 104, 173; evaluating, 116–20; and facts, 1, 115, 123, 152–53; ill-conceived, 163; kinds of, 114–16; making sound cases in support of, 11–12; practical, 115–16; qualifying for credibility, 120–22; and quotations, 194; reading for (sources and resources), 84; and research questions, 48, 114; as specific and significant, 114, 116–20; and warrants, 106–7, 137. *See also arguments and argumentation*

clarity: of arguments, 191; of claims, 155; and editing, 188; of evidence, 133–35; and flow, 270; of graphics, 228; and revising, 192, 252–70; and simplicity, xvii; of writing, 111, 188, 254–62

cognitive overload and anxiety, reassurance for, 111

Colomb, Gregory G., v, xiii–xiv, xvi–xvii, 78, 299

communication: as communal activity, xiv–xvi, 292; conceptual framework and practical advice for, xv; as conversations, 4; of research, xiii, xiv–xvi, 72, 285, 292–93; skills, xv; and thinking, 176; and writing, xvi, 176

complexity, and revising, 253, 266–68

conclusions: conversations in, 250; effective, 172; and introductions, 235–50; in presentations, 12, 275–76, 278–80; in research papers, 183–84; in sources and resources, 65; writing, 248–50. *See also introductions; summaries and summarizing*

context: and audience, 238; and inexperience, 239; for introductions, 238–40; for notes, 89–91; for research papers, 177–78; for research problems, 179, 199; rhetorical, 292–93, 295–96; and summaries, 199; for topics, 26–27

conversations: arguments as, xix, 56, 98, 101–2, 104–5, 154, 191, 201, 248; claims as, 104–5, 154; communication as, 4; in conclusions, 250; and debates, xvi–xvii; research as, xvi–xvii, xix, 3–4, 10, 22, 32, 46, 66, 70, 82, 160, 194–95, 197, 285; writing as, 4

IQ Researcher (Sage), 302

credibility: of claims, 120–22; of evidence, 132–33; and honesty, 212–13; of online resources, 63; of sources and resources, 63, 93. *See also* authenticity

Trick, Francis, 118–19, 121, 241, 243, 287–88

curiosity, teachers fostering, 294–97

data: defined and term usage, 18; empirical, 126; for evidence, 83–84, 194; and ideas, 108; and information, 18; and notes, 194; objective, 113; reading for (sources and resources), 83–84; sources and resources for, 83–84; and statistical analyses/models, 113, 126; visual representations of, 217; visual representations of, sources and resources, 302–3. *See also* quantitative data

database resources, xv, 54, 57–61, 63–64, 75–76, 87, 92–93, 133, 208, 301–3. *See also* internet; online resources

deadlines, 186, 188, 295–96

debates, xvi–xvii, 145

disagreements: to arguments and argumentation, 82, 164, 166–67, 173; and counterexamples, 166; creative, 80–81; and ethos, 163; and points of view, 55; predictable, 55, 82, 166–67; questions that reflect, 28; sorting out, 173; with sources and resources, 28, 77, 80–82, 86, 91, 158, 207; and topics, 22

discourse, and knowledge production, xvi–xvii

drafts and drafting: ethos in, 171; evidence in, 182; and planning, 154, 171–73, 175–87; of presentations, 272; quick, 186; review of, 99; revising and organizing, 191–97; revisiting, 197

books, 62, 75–76

BSCO, 54, 302

citing. *See* revising and revisions

education and business. *See* social sciences

engineering. *See* STEM disciplines

ERIC (Education Resources Information Center), 302

ethics: and audience, obligations to, xix, 286–88; and authenticity, 291, 296; defined and term usage, 285; dumping, 290; and evidence, visual representations of, 228–31; of generative AI use, 72, 286, 296; and interests, 287; and obligations, to audience and researchers, xix, 12, 286–88; and obligations, to yourself, 12, 285–86; and power differentials, exploited, 290; of professional organizations and academic journals, 290; of research, xix, 285–91, 296; and social responsibility, 289–91; and transparency, 290; and warrants, 290–91; and writing, 296

ethos: and arguments, 110–12, 120, 129, 147, 163, 171, 201; and arrogant certainty, avoiding, 120; of citations and citing, 206; defined and term usage, 110–11, 285; and disagreements, 163; in drafts, 171; of evidence, 129; of sources and resources, 66, 201, 206; of warrants, 147

evidence: accuracy of, 130; anecdotal, 132; for answers, 18; for arguments and claims, 17, 82–83, 97, 104, 106, 107, 124–36, 137, 149, 152–53, 184, 194; assessing as gathered, 136; authoritative, 132–33; cherry-picking, 132; clear and understandable, 133–35; credibility of, 132–33; data for, 83–84, 194; defined and term usage, 18, 104; determining kinds needed, 126–27; in drafts, 182; ethics of representations, 228–31; ethos of, 129; evaluating, 129–35; foundational metaphors for, 126; and honesty, 132; kinds of, 126–27; misrepresentations of, visual, 231; originality in, 82; precise, 130–31; quality of, 124, 157; quantitative, 217; for questions, 18; and quotations, 126, 194, 206; and reasons/reasoning, 12, 82, 97–98, 103–7, 109–10, 124–38, 142–43, 151–58, 171, 194, 294; relevance and reliability of, 84, 206; reports of, 127–29, 134; responses to, 182–83; and sources/resources, 207; sufficient and representative, 131–32; and support, 104; trusting current and past, 128; verbal, 217–18; visual communication and representations of, 134–35, 217–34, 302–3; and warrants, 92, 152–54

gures: defined and term usage, 217; evidence communicated in, 217, 220–21

ootnotes: and bibliographies, 68, 215–16, 293; and citations, 215–16; proper forms for, 293

ranklin, Rosalind, 119, 287–88

ale Academic OneFile, 302

enerative AI: and bibliographies, 73; and communicating, 72; ethical use of, 72, 286, 296; and exploring, 72; and healthy skepticism, 63, 73; and honesty, 72–73, 209–10; leveraging, 189; as powerful and fallible, 73; for suggestions, 3, 33; and transparency, 73; using, 72–73; verification of, 3

oogle: and books online, 64; and healthy skepticism, 63; and secondary sources, 54

raphics: clarity of, 228; common forms and uses of, 232–33; defined and term usage, 217; effective, choosing, 218–20; evidence communicated in, 217, 218–20, 222–23, 232–33; framing, 220–23; in handouts for presentations, 280; labels in, 220–21, 223; legends in, 220; rhetorical, 217, 219, 232–33; simple, 222–23; specific guidelines for, 223–28; and three-dimension plotting, 223; titles in, 220

raphs: axes in, 223; and charts, 219, 222–23; continuous lines in, 217; defined and term usage, 217; designing, 220–23; as effective graphics, 218; evidence communicated in, 217, 219, 222–23, 228, 233; false correlations in, 230; labels in, 223; line, 218, 223, 228, 233; specific guidelines for, 223–28

andouts, for presentations, 272, 273, 280

eadings and subheadings: and points, 275; for sections and subsections, 187, 195–96; in slides, 274

euristics, and advice, xiv

istograms, 232

onesty: and credibility, 212–13; and evidence, 132; and generative AI use, 72–73, 209–10; and sources/resources, 212–13; and weaknesses in arguments, 160

umanities. *See arts and humanities*

L. W. Wilson online database, 302

ypotheses, 45, 53, 160, 199, 266–67

lustrations and images. *See charts; figures; graphics; graphs; posters; tables*

nage databases, 302

experience: and anxiety, 48, 111, 189; and context, 239; and familiarity as mistake, 113; and live presentations, pace of, 273; as opportunity, 48; and pure research, 43; and research problems, 38–39

nterests: of audience, 11; and ethics, 287; and topics, 21, 22–25

nternet: and healthy skepticism, 63; and online resources, locating, 63–64; and topics, finding, 33. *See also database resources; online resources; search engines; social media*

ntroductions: and abstracts, 198, 245; anecdotes in, 248; clichés, avoiding in, 247–48; common structure of, 235–37; and conclusions, 235–50; context for, 238–40; effective, 172; first words and sentences in, 247–48; pace, setting, 246–47; in presentations, 12, 276, 278–80; quotations in, 248; and research problem statements, 240–44; and response statements, 244–46; sketching, 177–78; in sources and resources, 65; topics in, 236. *See also conclusions*

AMA, medical research journal, 290

urnal articles, 28, 62, 65, 67, 75–76, 266

STOR, 59, 302

eywords and key terms: in abstracts, 200; and audience, 180; and claims, 92; in conclusions, 195; in drafts, 180, 182, 187; in introductions, 195, 248; in notes, 85, 93; in paragraphs, 195; and quotations,

248; in research papers, 180, 187, 195; and revising, 192–93, 195, 196, 267; in sources and resources, 60–62, 64–66, 92, 205–6; in titles, 200, 251

nowledge production, discourse-based model of, xvi–xvii

earning: and teaching, 288, 296–97; and writing, 175

exisNexis, 302

braries, for sources and resources, 53, 57–63, 76, 87–88, 190, 301

ibrary of Congress Online Catalog, 60–61, 302

ogic: and authority, 55; and reasoning, 155

athematics. *See STEM disciplines*

McClintock, Barbara, 26

mistake to avoid: falling back on familiarity and what you know, 113

ILA Handbook, 209, 305

natural sciences. *See STEM disciplines*

ature (journal), 290

Igom, Fallou, 119

ominalizations, of verbs and nouns, 256–58

otes and note taking: and citations, 86, 301; for claims, 90–91; and complete documentation, 76; context for, 89–91; and data, 194; electronic, 86–88; index cards for, 85–86; for presentations, 274–75, 277; and quotations, 76, 86, 194; and references, 86; and sources/resources, 74, 76, 84–91, 136, 301; systematic, 84–91; and thinking on paper, 85–86

ouns, abstract. *See abstract nouns*

bjectivity, xvii, 132

online resources: citing, 76; and copyright, 64–65; credibility of, 63; currency of, 68; finding and locating, 33, 53, 63–65; and healthy skepticism, 63. *See also database resources; internet; search engines*

rganizational patterns, 184–85

riginality, 69, 82, 211, 278, 296

utlines, 19–20, 108, 171, 180–81, 185, 187, 193, 277, 295. *See also storyboards*

ace: in introductions, 246–47; in presentations, 273, 281

apers and reports. *See research papers and reports*

aragraphs: indenting, 272–73; revising, 192, 196–97, 268; in sources and resources, 55, 65, 210

raphrases and paraphrasing: defined and term usage, 201; fair, creating, 203–4; and natural sciences, 88, 201; and social sciences, 88, 201; of sources and resources, 88–90, 199, 201–6, 210–12

assive verbs and voice, 163, 256, 264–67. *See also active verbs and voice*

eer review, 54, 64, 67, 132–33

lagiarism: and citations, 206, 209–13; and ethics, 286, 288; guarding against inadvertent, 206, 209–13; and note taking, 84; as not victimless offense, 213; and patch writing, 184–85; rationalizing, 188; and sources/resources, 82, 84, 210–13

lanning: and audience, 13; and drafting, 154, 171–73, 175–87; and organizing, 175; for predictable detours, 18; of projects, 17–20; and thinking, 171–73; and writing, 171–73

oints, defined and term usage, 173

oints of view, 35, 37, 55, 81, 102, 105, 111–12, 118, 128, 154  
osters, 2, 303  
resentations, *xix*, 2, 272–82; as accessible, 273–74; and audience, addressing in, 272; to auditors, 272–75, 278, 279; charts in, 274; conclusions in, 12, 275–76, 278–80; delivering, 272; drafting, 272; final, 277–80; formal, 12; handouts for, 272, 273, 280; introductions in, 12, 276, 278–80; for live audience, 272–82; main points of, stating up front, 245; multimodal, 234; notes for, 274–75, 277; pace in, 273, 281; as performances, 281–82; planning, 272; preliminary, 275–77; slides for, 272–74, 280; sources and resources for, 301–3; steps in producing, 12  
roblems. *See research problems*  
rocrastination, 136  
roject Gutenberg, and books online, 64  
ubMed (National Library of Medicine), 59, 302  
uantitative data, 18, 128, 133–34, 172, 217, 227–28  
uestions and answers, *xviii*, 7, 15; actual, 2; for arguments, 101–2, 106–7, 154, 156–57; and claims, 48, 114; and disagreements, 28; evaluating, 28–29; evidence for, 18; formulating, 48; indirect, 30–31; interpretive, 17–18; motivating, 31–32; predictable, answers for, 280; and research problems, 21–22, 35–47, 155–56, 178, 241; rhetorical, 199; and solutions, 235; from sources and resources, 27–28; speculative, 27; topics for, 21–34. *See also answers; claims; research problems*  
uotes, quotations, quoting: from authorities, 89, 202; citing sources of, 210–11; and claims, 194; defined and term usage, 201; direct, 204–5; and evidence, 126, 194, 206; in introductions, 248; mixing, 205–6; and notes, 76, 86, 194; of sources and resources, 88–90, 199, 201–2, 204–6, 210–11; using, 204–5  
eaders, *xiv*, *xviii*, 192. *See also audience*  
asons and reasoning: and analysis, 81–83; for arguments and claims, 55, 81–84, 98, 102–7, 109, 124–39, 141–43, 145–48, 152–53, 155, 171, 182–84, 194; challenged, 10, 137; defined and term usage, 104; and evidence, 12, 82, 97–98, 103–7, 109–10, 124–38, 142–43, 151–58, 171, 194, 294; and logic, 155; and points, 184; for research, *xvi*, 8; and warrants, 92, 105–7, 137–39, 145–46, 152–54, 171; for writing, 172–73  
eports and papers. *See research papers and reports*  
esearch: academic, 7, 9, 19, 22, 36, 38, 47, 114, 129, 207–8; advanced, 202; and answers to questions, 7; applied, 7, 42–45, 160, 242; as challenging, 12; as communal activity, *xiv*–*xvi*, 292–93; conceptual framework for, *xv*; as contracts, implicit, 1; defined and term usage, 3–4; doing, *xv*; framing and developing, 11; and group support, 19–20; guides (sources and resources), 303–5; helicopter, 290; and information, new and interesting, 6; isolation of, 19–20; methods, 128, 132, 290; methods, sources and resources, 301, 303–4; models for, 55; online, principles for, *xv*; planning, 17–18; practical advice for doing, *xv*; practical consequences of, 43–45; professional, 129; pure, 7, 42–45, 242; and questions, answers to, 7; reasons for, *xvi*, 8; rhetorical, 199, 295–96; role of, 5–7; satisfaction and success of, 12; as shared, 2, 8, 19–20, 292; skills, *xv*; as social activity, 285; sources and resources, 303–5; success and satisfaction of, 12; uses of, *xvi*  
esearch arguments. *See arguments and argumentation*  
esearchers, role of, 5–7  
esearch papers and reports, *xvii*, 2, 12; body of, 180–82; context for, 177–78; drafting, 177–87; formal, 175–77; format, 175; multimodal, 234; organizational patterns, 184–85; planning, 177–84; and points, 46; and research problems, 178–79; revising and organizing, 191–97. *See also writing*  
esearch presentations. *See presentations*

research problems: and arguments, 78; articulation of, 47; and audience, 243; common structure of, 36–37; conceptual, 7, 38–42; and conclusions, 47; context for, 179, 199; finding, 45–47; and inexperience, 38–39; and introductions, 240–46; originality in, 82; practical, 9, 37–45; and questions, 21–22, 35–47, 155–56, 178, 241; reading for (sources and resources), 78–81; real-world scenarios for, 6–7, 9; recognition of, 47; and research papers/reports, 178–79; solutions and solving, xiv, 6–7, 9, 47, 104, 244–46; from sources and resources, 46; and topics, 21; understanding, 36–45. *See also* **questions and answers**

research questions. *See* **questions and answers**

resources. *See* **sources and resources**

revising and revisions: of arguments, 191–97, 252; for clarity, directness, flow, 192, 252–70; and complexity, 253, 266–68; and editing, 268–69; for emphasis, 271; and old before new, 262–64; and organizing, 191–97; quickest strategy for, 270–71; with readers in mind, xiv; style, 252–71

scatterplots, 233

science, technology, engineering, and mathematics (STEM). *See* **STEM disciplines**

search engines, 23, 33, 58, 63–64, 67, 200. *See also* **Google**

sections and subsections: headings and subheadings for, 187, 195–96; planning, 182–83; and warrants, 194

slides, for presentations, 272–74, 280

social media, 28, 33–34, 147–48, 166–67

social responsibility, and ethics, 289–91

social sciences: and paraphrasing, 88, 201; and pure research, 44; research guides, 304; research questions, 241; and solutions, 246; sources and resources, currency of, 67, 208; sources and resources, primary, 54; sources cited and quoted, 88, 201, 208; writing guides, 305–6

solutions and answers, defined and term usage, 104, 173

sources and resources, xviii, 49, 301–6; authentic, 9, 51; authority of, 67, 77, 132; authors of, 64; bias in, 62; and bibliographic information, recording, 75–76; and bibliographic trails, 62; currency of, 67–68, 208; differentiating, 56–57; electronic, 62; engaging, 74–93; engaging actively, 76–78, 136; ethos of, 66, 201, 206; evaluating, 51, 53–71; finding and locating, 51, 53–71; general, 301–3; and honesty, 212–13; humanities, 201; incorporating, 201–13; and people, 69–71; predictable and beyond, 69; primary, 18, 53–54, 56–57, 76; and proximity, 70; relevance and reliability of, 51, 65–69, 92; research guides, 303–5; secondary, 18, 54–59, 64, 70–71, 74, 76, 82–84, 125, 128, 158, 175, 201; social importance of citing, 206–7; tertiary, 55–56, 56–57; types of, 53–57; working with, 11; writing guides, 305–6. *See also* **bibliographies; citations and citing; database resources; libraries; online resources**

“So what?,” xiv, 29–32, 37–38, 41–42, 179, 183, 240–45, 249, 276, 279–80

spreadsheets, 77, 84

STEM disciplines: and paraphrasing, 88, 201; and pure research, 44; research guides, 305; research problems and questions, 119, 241; and solutions, 246; sources cited and quoted, 88, 201, 208; sources and resources, currency of, 208; writing guides, 306

storyboards, 108, 124, 130, 171, 177, 180–83, 185–88, 193, 276. *See also* **outlines**

summaries and summarizing, 201–2; and abstracts, 199–200; citing sources of, 210–11; and context, 199; defined and term usage, 199, 201; fair, creating, 202; and main points, 201; mixing, 205–6; and planning, 171; of sources and resources, 88–90, 199, 201–2, 205–6, 210. *See also* **conclusions**

tables: defined and term usage, 217; designing, 220–23; as effective graphics, 218; evidence communicating in, 206, 217–18, 221–24; in handouts for presentations, 280; labels in, 223; specific guidelines

for, 223–28

teachers: advice for, xv, xix, 12, 292–97; and assignment scenarios, 294–96; and curiosity, creating ground for, 294–96; and learning, 288, 296–97; and real-world scenarios for problems, 6–7, 9; and rules, risk of imposing, 293–94

technologies. *See also* generative AI; STEM disciplines

tesis, xiv, 104, 173, 295

linking; and arguing, 48, 171–73; and audience, 173; and communication, 176; and knowledge, 120; like readers, 192; on paper, 86; and planning, 171–73; and reading, 92; of researchers, xvii; and writing, 88, 171–73, 175–76

tles: in graphics, 220; key terms and keywords in, 200, 251; in slides, 274; subtitles, 75, 251

topics: as categorized, 27; in context, 26–27; defined and term usage, 21; and disagreements, 22; finding, 33–34, 57; focusing on, 23–25; history of, 26; and instincts, 26; and interests, 21, 22–25; in introductions, 236; naming, 30; and research problems, 21; for research questions, 21–34; from sources and resources, 23, 27; as starting points for inquiries, 21

transparency: and ethics, 290; and generative AI, 73

uest, of audience, 32, 74, 112, 120, 129, 155, 201

uths, xvii–xviii

ncertainty: managing moments of, 94; as natural and inevitable, 48. *See also* anxiety

erbs and voice. *See* active verbs and voice; passive verbs and voice

arrant: and arguments, 105–7, 137–53; and articles of faith, 151; and authority, challenging, 150; and biology, 150; challenging others', 149–51; and claims, 106–7, 137; conditions to be met, 142–46; cultural, 150–51; defined and term usage, 137; and ethics, 290–91; ethos of, 147; and evidence, 92, 152–54; explicit, 141; and law, 150; and mathematics, 150; methodological, 151; reasonable, 142–43; and reasons/reasoning, 92, 105–7, 137–39, 145–46, 152–54, 171; and sections/subsections, 194; stating, 137, 146–47, 183; testing, 142–49; unstated, 137. *See also* arguments

Vatson, James, 118–19, 121, 241, 243, 287–88

What If?,” 27, 30, 41, 179

Vilkins, Maurice, 119, 287–88

Villiams, Joseph M., v, xiii–xiv, xvi–xvii, 76, 77, 78, 299

Vilson (H. W.) online database, 302

WorldCat, 302

writing: abstractions, 258–61; of arguments, xiv, 171–73; and audience, shared understanding with, 238; centers and consultants, 190; clarity of, 111, 188, 252–62; as communal activity, xv; and communication, xvi, 176; complexity in, 266–68; as conversation, 4; ethical, 296; formal, 175–76; growth of, 88; guides (sources and resources), 301, 305–6; and learning, 175; models for, 55; nominalizations in, 256–58; patch, 184–85; and planning, 171–73, 177–84; quality of, 188; and readers, xviii; reasons for, 172–73; to remember, 172; research-based, 172–73, 176; skills, xv; sources and resources, 301, 305–6; support for, 19–20; and thinking, 88, 171–73, 175–76; and truths, xvii–xviii; to understand, 172–73, 175; while researching, 172–73, 176. *See also* research papers and reports



*Your gateway to knowledge and culture. Accessible for everyone.*



[z-library.sk](http://z-library.sk)

[z-lib.gs](http://z-lib.gs)

[z-lib.fm](http://z-lib.fm)

[go-to-library.sk](http://go-to-library.sk)



[Official Telegram channel](#)



[Z-Access](#)



<https://wikipedia.org/wiki/Z-Library>