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Learning Objectives

After reading this chapter, you should be able to:

1. Use the standard argument form to construct an argumentative essay.
2. Describe how to strengthen an argumentative essay.
3. Identify elements of the Toulmin model of argumentation and compare and contrast them with the elements employed in the standard argument form.
4. Apply the principles of accuracy and charity when confronting disagreement.
5. Identify and employ qualifiers, hypotheticals, and counterexamples.
6. Identify the differences in meaning between logical terminology and everyday uses of the same terms.
7. Explain the various applications of logic in other fields.

In this chapter we will step back and take a broader view of our subject. So far we have been focused on the nuts and bolts of arguments. We have learned about the elements that constitute them, different kinds of inference, and the many ways that arguments can go wrong. However, the real importance in learning the tools needed to construct arguments lies in our ability to apply them to arguments we encounter in real life. Logic and critical thinking are powerful tools for improving our reasoning, but to apply them successfully requires practice and attention. In this chapter we shall start by going over the necessary steps for constructing your own arguments. Next we will examine how to examine other arguments critically, as well as how to confront disagreement. Finally, we will look at some ways in which arguments and logic are used in various professions for very practical ends.

9.1 The Argumentative Essay

In addition to serving as the framework for identifying claims, evaluating arguments, and defending your positions methodically, the standard argument form has another very practical use as the framework for writing argumentative essays. Simply put, an **argumentative essay** is a genre of writing that presents a logical and methodical defense of a thesis based on supporting research. It includes the recognition of the opposing position to the thesis and the presentation of a successful rebuttal. The argumentative essay format is introduced in some university courses (for example, it is the standard writing style in philosophy), but the format has broad applications when it comes to building arguments generally.

Arguments are the fundamental tool in several occupations. They are the frame for legal briefs, law review articles, opinions by Supreme Court justices, as well as public policy analyses and predictions by economists. They are the machinery employed for methodical commentaries by reporters and political pundits presented in the news media. Politicians may use arguments when they make a pitch for our votes.



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Whether or not you realize it, everyday reports of your work to peers or higher-ups may require you to formulate an argument. Starting from the standard argument form, you can write an essay that helps you defend things such as a larger allocation of funds for your department.

However, the use of the argumentative essay is not restricted to these occupations alone. Many of us are called on to present arguments in this way, even if not explicitly. Your boss may ask you to present an argument, although she is not likely to put it that way. She is more likely to ask you to “encourage everyone” to do something (for example, get a flu shot, come to work on time, or not access social media while working), rather than to “present an argument” that will persuade others. However, the request is still essentially a request to develop an argument. If you needed to request a raise, this, too, would essentially require an argumentative essay, whether in spoken or written form. Outside of the workplace, argumentative essays might take shape in conversations with a friend or loved

one, letters to the editor, job applications, project proposals, bank loan dossiers, and even in love letters and marriage proposals. A convincing, structured argument comes in handy for many occasions.

It is important to note that argumentative writing is different from persuasive writing. An argumentative essay about the importance of getting a flu vaccine would not only examine the reasons for doing so, but would likely weigh the pros and cons, examining why getting a vaccine is a good idea. On the other hand, a persuasive essay on the same topic would explicitly focus on trying to get the reader to get a vaccine. Persuasive writing includes elements that are intended to motivate and persuade an audience in ways that may go beyond the boundaries of logic, such as passion or emotion. For example, an argumentative essay can convince us that a habit is bad, but it often is not enough to motivate us to change the habit. Persuasive writing tries to bridge the gap between recognizing that we should do something and actually doing it. Arguments are still central to persuasive writing; you cannot get someone to change a habit they do not think they should change. You can think of persuasive writing as argumentative writing with extra elements added.

In order to turn an argument into an argumentative essay, we will first need to examine both the structure of the standard argument form and the framework of an argumentative essay.

As shown in Table 9.1, the argumentative essay inverts the standard argument form so the writer can inform the reader of the objective at the outset of the essay. Note that we call the main claim the “conclusion” in the standard argument form, but in an argumentative essay it is called the “thesis.”

Table 9.1: Standard argument form versus argumentative essay framework

Standard argument form	Form applied to argumentative essay
Premise	Thesis (the equivalent of the conclusion in standard argument form)
Premise	Premise
Conclusion	Premise

With this initial structure in place, the argumentative essay needs a few additional elements. First, it needs a starting section that introduces the problem for which the thesis is a response. Second, each premise needs to be elaborated on and supported. Third and finally, the essay must address objections in order to show that the argument can withstand scrutiny. The basic structure of an argumentative essay is determined by the introduction of the problem, the thesis, and the premises supporting the thesis. We will examine these three elements in the rest of this section and the remaining elements (clarification and support, objections, rebuttals, and closings) will be discussed in the next section.

The Problem

The problem section of an argumentative essay is its introductory section. The main objectives of the problem section are to present the specific subject matter and the problem that

motivates the thesis defended in the paper. Introducing the subject matter allows the reader to understand the context for the paper. The focus of the section should be the presentation of one clearly defined problem within this subject matter. Therefore, the bulk of this section must provide a clear picture of the particular position, event, or state of affairs that you, as the author, find problematic. If your subject matter is global warming, for example, and you want to support efforts to control it, then addressing global warming as a whole would be too broad. It would be better, for example, to identify whether you want to take a position with regard to what individuals can do, what businesses can do, or what whole governments can do to control global warming. Another way to narrow the problem would be to address a particular source of global warming that you find most problematic (for example, car emissions, specific commercial pollution such as waste dumping from factory farms, or deforestation). Narrower problems are likely to be more clearly defined, and your research is therefore more likely to strongly support your position. Additionally, the more specific you are regarding the problem you are addressing, the easier it will be for you to formulate your thesis.

The Thesis

The problem section of the argumentative essay should end in the formulation of the thesis. The thesis is the claim being defended in the argumentative essay and is equivalent to the conclusion in the standard argument form.

Precision is of the utmost importance in the thesis because even very similar theses will require different premises. Being clear about exactly what you are defending will help you keep your argument streamlined and focused on demonstrating your thesis. Consider, for example, these three similar theses:

- Getting a flu shot will help you not get the flu.
- You should get a flu shot.
- Get a flu shot.

When developing a thesis, you must be precise in your wording and clear about the exact nature of your argument. Precision and clarity will allow you to focus on premises that truly support your position.

In a sense, each of these theses is aimed at the same result. But even though they are very similar, they require different premises. Let us take a closer look at each.

“Getting a flu shot will help you to not get the flu” is the narrowest candidate for a thesis of the three. If this is your thesis, all you need to do is appeal to studies regarding the effectiveness of flu shots. For this thesis, you do not need to talk about the flu shot’s cost, potential side effects, or even availability. Your claim is just that flu shots reduce the chance of getting the flu. You do not need to, and should not, address any issues that go beyond that. The reason for this



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is twofold. First, writing should always be focused. This is essential for clarity and to avoid confusing the reader about what is being addressed. In the case of argumentative essays, the thesis sets the parameters for what will be discussed in the body of the essay. Second, the premises offer reasons for the thesis. If we start adding reasons that are not directly relevant to the thesis, then the essay will lack clarity and will fail to convince the reader.

“You should get a flu shot” is a broader candidate for a thesis. The fact that flu shots reduce the chance of getting the flu is part of what you will want to argue, but it is not enough. To show that your reader should get a flu shot, you need to consider the pros and cons of doing so and show that the pros substantially outweigh the cons. Here it is critical to address the issues of side effects, cost, availability, and any other factors that directly bear on whether getting a flu shot is a good idea. You may even want to bring up the idea that by reducing the overall prevalence of the flu, flu shots protect more people than just the person getting the shot.

“Get a flu shot” crosses the line from an argumentative thesis to a persuasive one. A successful essay with this thesis will motivate the reader to get a flu shot, rather than simply demonstrating the benefits of doing so. Thus, the thesis must not only address why getting the shot is a good idea, but also try to tackle issues that keep people from getting the shots—issues such as fear, lack of time, misinformation, or just apathy. Notice that “get a flu shot” is not a claim, so it cannot function as the conclusion of an argument. In a persuasive essay your thesis is not the same as the conclusion of your argument; the argument you develop is just part of how you develop your thesis. If you find yourself tempted to use a thesis that calls for action in an argumentative essay, try to reformulate the thesis as one that could be the conclusion of an argument in the standard form. You can then construct an argumentative essay for this new thesis and then add motivational elements to it.

As you can see, forming your thesis clearly is a key part of writing a successful essay. The argument you build in your essay must be tightly aimed at supporting its conclusion.

The Premises

Just like in the standard argument form, in argumentative essays the premises are the reasons that support the thesis. You should start developing your premises by listing a few of your main reasons for your conclusion. The best way to do this is to put your thesis in the form of a question. For our flu shot thesis, that question could be: Why should your reader get a flu shot?

Suppose that you come up with three reasons: It will help prevent your reader from getting the flu, it will help keep others from getting the flu, and flu shots are cheap. We can now assemble the argument by putting these three reasons as premises in the inverted standard argument form, along with the thesis:

Thesis: You should get a flu shot.

Premise 1: Getting a flu shot will help keep you from getting the flu.

Premise 2: Getting a flu shot will also help protect others from the flu.

Premise 3: Flu shots are cheap.

In sketching the basic premises of your argument, you have automatically developed the basic structure or skeleton of your argumentative essay. This is better than starting with one vague idea and then letting your thoughts flow freely and aimlessly.

The premises of your argument now indicate major sections of your essay. Accordingly, they should appear as the leading sentences for their respective sections. If your essay is short, each premise will be the topic sentence for a paragraph. If your essay is long, each premise will function as a thesis statement for its section.

When you are writing an essay longer than just a few paragraphs, you can repeat the process, asking what reasons there are for accepting each of the premises. Once you give the reasons why a premise is true, you will have the makings of a new argument for the premise in question. That is, you create an argument whose conclusion is one of the premises of your original argument. Such arguments are called *subarguments* or **secondary arguments**. The conclusion of a secondary argument, being a premise of the original argument, is called a *subconclusion* or **secondary thesis**. A secondary thesis is not the main thesis of your paper, but it is the thesis of a secondary argument supporting a premise of your main argument. With the inclusion of secondary arguments, a fuller defense of your thesis about flu shots might look like this:

You should get a flu shot. (Main thesis)

Getting a flu shot will help keep you from getting the flu. (Premise/secondary thesis)

- Flu vaccines create an immune response that develops antibodies against the flu.
- People with the right antibodies are less likely to suffer from a disease.
- Studies show that people who have had the flu shot are less likely to get the flu.

Getting a flu shot also helps protect others from getting the flu. (Premise/secondary thesis)

- Flu is transmitted from person to person.
- The fewer infected people someone is exposed to, the lower his or her chance of getting infected.

Flu shots are cheap. (Premise/secondary thesis)

- Flu shots normally cost about \$10.
- Some places offer free flu shots.
- Medicine for the flu is more expensive than the shot.

This complex argumentative essay structure now provides a skeleton for a much longer essay. There is more to do, of course, but by starting with a structure for your argumentative essay, you ensure that your essay is well organized and focused on its thesis.

Practice Problems 9.1

1. Which of the following is a difference between the standard argument form and that of the argumentative essay?
 - a. In argumentative essay form the conclusion is presented last, whereas standard argument form does not present a conclusion.
 - b. Standard argument form includes premises, whereas argumentative essay form does not.
 - c. In standard argument form the conclusion is at the end of the argument, whereas in essay form the conclusion is presented at the beginning.
 - d. The conclusion in standard argument form is generally stronger than the conclusion in argumentative essay form.
2. You are writing a paper about the effectiveness of for-profit education. You claim in your paper that “for-profit education provides an equally rigorous academic experience as that of nonprofit education.” This statement would be which part of the argumentative essay?
 - a. thesis
 - b. support
 - c. secondary argument
 - d. standard form argument
 - e. problem
3. You are writing a paper in which you claim minor drug offenses should not result in prison sentences but in jail time and rehabilitation. In the paper, you make the claim that “an article in contemporary criminology demonstrates that placing petty criminals into prison for small crimes leads those people to become hardened criminals due to the conditions in those prisons.” This statement would be which part of the argumentative essay?
 - a. thesis
 - b. support
 - c. secondary argument
 - d. standard form argument
 - e. problem
4. You are creating an argument that people in affluent countries have a duty to aid those who are starving or dying from treatable illness in other countries. Which of the following best represents the problem that is being addressed here?
 - a. Helping others is important, especially when some have more than others.
 - b. Those who do not help others are morally inept.
 - c. The problem is whether or not people live in the United States or a place where people are poor.
 - d. The problem is whether or not people must help others when they have more resources.

(continued)

Practice Problems 9.1 (continued)

5. You are creating an argument about whether or not pornography is healthy or harmful for people to view. Which of the following would be the best thesis for a formal paper (though you might not agree with it)?
 - a. Pornography is evil and will lead to the degradation of society.
 - b. People who watch pornography are pedophiles.
 - c. Pornography is enjoyable for those who view it.
 - d. Pornography is harmful because it distorts images of female sexuality.
 - e. Pornography is harmful because people's children can view it.
6. Which is a secondary thesis that relates to the primary thesis that "citizens need to become less reliant on oil"?
 - a. Installing large-scale solar farms can help fuel the energy needs of large cities.
 - b. Finding more oil reserves will provide energy for the future.
 - c. Farming techniques continue to improve.
 - d. Planting trees can contribute to more oxygen production.
7. Which is a primary thesis that relates to the secondary thesis that "there must be more exploration of oil reserves in the oceans"?
 - a. Finding more oil reserves in mountainous regions will provide energy for future generations.
 - b. The Indian Ocean is largely unexplored.
 - c. In order to maintain current energy usage, there need to be funds invested in finding new reserves of oil.
 - d. Using electric and hybrid vehicles will allow society to move away from using oil as an energy source.
8. Which is a secondary thesis that relates to the primary thesis that "it should be illegal for cell phone companies to track the locations of their users without consent"?
 - a. The government should not be allowed to monitor its citizens.
 - b. There are new technological capabilities of large-scale Internet and phone providers.
 - c. There are many providers, and one should shop around to find the right provider.
 - d. The information gathered from tracking consumers could fall into the wrong hands.
9. Which is a primary thesis that relates to the secondary thesis that "human trafficking turns the human into a piece of property"?
 - a. Turning a person into a piece of property negates their personhood.
 - b. Human trafficking between Mexico and the United States is morally wrong.
 - c. Property rights exist in most countries.
 - d. Usually women are the victims of human trafficking.
10. Which is a secondary thesis that relates to the primary thesis that "sex education in public schools should take a more prominent role in adolescent education"?
 - a. With the increased availability of sexually explicit materials and media that provide avenues for sexual activity, it is important that kids understand more about sexual activity.
 - b. Teaching children about forms of safer sex will encourage them to engage in such activities.

(continued)

Practice Problems 9.1 (*continued*)

- c. Funding for the arts, music, and other forms of study is being lost, and legislators need to increase the availability of funds for these activities.
 - d. There are some areas of public education that need to be revisited and enhanced for the current generation of high school students.
11. Which is a primary thesis that relates to the secondary thesis that “women should be allowed to engage in combat in war environments”?
- a. The rights of women need to extend beyond what have been the traditionally defined roles.
 - b. Many women are capable of fighting in war.
 - c. Many women desire to serve their countries by participating in active military engagement.
 - d. Not to allow women to take part in battle effectively means that one is cutting out strong soldiers from over 50% of the population.

9.2 Strengthening the Argumentative Essay

With the basic outline of your argumentative essay in place, you can now turn to strengthening your argument using support and addressing objections to your argument.



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As you review your argument, you should evaluate the clarity of your premises. Can they be easily misunderstood? Are the definitions of terms that are used widely accepted? Further elaboration in support of your premises may be required.

to it: What grounds could they have for doing so? What grounds can you offer for accepting it? These are things you will want to address in the paragraph.

Clarification and Support

If you have followed the process outlined thus far, you should have an introductory paragraph with a thesis and a series of topic sentences for the paragraphs of the body of your essay. The next step is to write the paragraph that goes with the topic sentence. You may need to explain what the premise means, and you will definitely need to provide some reason for thinking it is true. When you wrote your argument in standard form, you knew what you meant by each claim. However, your meaning may not be as obvious to your reader as it is to you. It is your job, therefore, to clarify your premise, spelling out its meaning and implications. As you read each premise, try to think of ways that it might be misunderstood. Imagine someone objecting

Consider the third premise from our argument about flu vaccines: “Flu shots are cheap.” That seems simple enough, right? But what do we mean by “cheap”? Sometimes cheap means inexpensive, but sometimes it means poorly made. We mean inexpensive, but it is not clear how inexpensive something has to be to be counted as cheap. If you think that there is a possibility that your reader may not understand precisely what you mean, use a sentence or two to elaborate. For example, you might say, “Although flu vaccines are carefully constructed, they are not expensive” in order to let your reader know what you mean by “cheap.”

You can also clarify the premise by the way in which you provide support. As you develop your reasons for accepting each premise, your reader gains a clearer idea of what you take the premise to mean. Often, support appears in the form of a study or some type of empirical data. However, when offering empirical data as support in your essay, it is important to remember that even empirical data must be interpreted and supported, especially if they are likely to be unfamiliar to the reader or are only correlational. As we learned in Chapter 5, correlations do not offer proof for causal claims. In the case of empirical data, care must be taken to draw only from reliable sources. (See Chapter 8 for a discussion on how to identify a reliable source.) Of course, you already know that you need to seek reliable sources at all times, but unjustified or not, statistically significant empirical data can easily be made to falsely appear as scientifically sound, so be especially cautious.

A common mistake is to think that studies and empirical data are the only accepted forms of support for a premise. While these are important types of support, there are many others. For example, commonly held beliefs can be used as support if you have good reason to think that your reader will accept them as true. Because the goal is to show your reader that your premise is true or plausible, if you can use a belief that your reader already holds, then you are off to a good start. You must be careful here, however. A belief that seems obviously true to you may seem obviously false to your reader. If you are not completely sure that your reader will agree, it is best to also cite a reliable source in support of the belief.

Many times the support you offer will appeal to theories or even broad views about the world. For example, abortion debates often center on the question of whether abortions amount to murder—the unjustified killing of an innocent person. Although it is easy to show that abortions involve killing and that the fetus who is killed is innocent, it is much more difficult to show that the killing is unjustified or that the fetus is a full person in the legal and moral senses of the term. One cannot just do a scientific study on these matters, because the claims are not scientific in nature. To provide support for the premise that abortions involve unjustified killing, you will need to appeal to some theory or view on what makes some killings justified while others are not. The best thing to do is to research what has been already advanced in the relevant area of knowledge. As we have seen, moral problems demand an examination of ethical theories. The same applies to research in other subjects. If we want to support a premise pertaining to the global warming debate, then we should use information from the research surrounding climate change.

Definitions can also provide support for and clarification of the premises of your argument. Claims such as “everyone deserves to die with dignity” or “abortion is a woman’s right” depend on just what is meant by the terms *dignity* and *right*, respectively. Some terms may not have an accepted definition even if we know what they mean. Most people, for example, find the word *music* difficult to define, despite the fact that it is a word we all understand and may, in fact, use every day. Therefore, providing a clear definition of *music* might be an important step in supporting a premise about music.

Keep in mind that just being familiar with a term is not identical with being able to define it. Neither is a dictionary the best source for more technical definitions in an argument. Dictionaries report on common usage but do not necessarily describe how terms might be used in specific fields or debates. Even when a term is not being used in a technical sense, a dictionary is less likely to settle a dispute involving the term. Imagine two people arguing about whether a certain piece of graffiti is art. In order to support their claims, they will need to define what each means by the term *art*. However, just looking it up in a dictionary is unlikely to settle the dispute. Instead, they would be better off consulting a relevant technical encyclopedia—such as the *Stanford Encyclopedia of Philosophy*, which defines abstract terms such as *reality*, *justice*, *morality*, *music*, and so on—or refereed articles in scholarly journals that present developed definitions.

This is not an exhaustive account of the forms that support may take. Anything that can be a good reason for accepting a claim can be used to support the claim. The kind of support you choose will be determined by the claim you are supporting and by what you know of your reader. For each premise, ask yourself what good reason you can offer your reader for agreeing with the premise. Do you need to provide empirical data, address your reader's beliefs, include background theories, offer definitions, or something else? As you might guess, this often involves forming a sort of mini argument in support of the topic sentence. Applying what we have learned about arguments can help you choose strong support for your claims.

The Objection

The objection is the most damaging criticism that can be advanced against your own thesis. In longer argumentative essays, it might be necessary to address more than one objection. But in any argumentative essay, you will need to propose at least one objection. Why is this necessary, given that it sounds contradictory to your purpose? Actually, being able to present a damaging objection and a successful rebuttal is a powerful way to demonstrate the unassailability of your thesis.

Presenting an objection shows your reader that you are aware of both sides of the issue, and this adds credibility to your presentation. For this reason, it is important to select a strong objection and to present it in a way that takes the objection seriously. If you present a weak objection, or if you present an objection in a way that seems not to take it seriously, then you give the impression that your own conclusion is not based on an even evaluation of all the relevant factors. You also may end up committing the straw man fallacy. (See Chapter 7 for a review of the straw man fallacy.) In order to avoid this impression, you must become very familiar with your topic



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Often there is more to the truth than what we can see, what we know, or what is familiar to us. It is thus important to consider the views of others, especially if these present objections to ours, because we always have something new to learn. If such objections do not destroy our argument, then we can proceed with a well-researched rebuttal.

by means of your research on the subject. This includes not only literature that supports your view, but also literature that challenges it.

Moral of the Story: The Objection

Always present at least one strong objection to your thesis. Doing so shows that you are knowledgeable about your subject and care more for finding the truth about it than merely promoting your own view.

The Rebuttal

The rebuttal is the section in your essay in which you respond to the objection(s) presented. To fail to address the contrary claim (that is, the objection) amounts to committing the red herring fallacy. (See Chapter 7 for a review of the red herring fallacy.) Your goal should be to advance a strong rebuttal, and it must attempt to overcome the objection. You cannot be timid in rebutting an objection that could destroy your argument. In addition, you have to provide support for your rebuttal.

However, suppose you find that, try as you might, you are not capable of coming up with a defensible rebuttal. Should this happen, you might have to start anew. The first step will be to rethink your thesis and your position in the argument in general. After additional thorough research on the subject, you will be in an even better position to reexamine your position because you will be better informed than when you first started. Do not be afraid, though. True beliefs will stand scrutiny. Yet as a critical thinker, you may find that one or more of your beliefs are not defensible. Or you may find that the opposition is too daunting to match. There is no shame in this. We are all mistaken about one thing or another at some point in our lives. Acknowledging when an objection cannot be overcome is indeed an expression of an examined life and, as Socrates stated, only an examined life is worth living.

If you find yourself in a situation in which you cannot overcome an objection, one response is to accept defeat and change your argument in response to the good objection. In this case you then repeat the process of considering objections to the new version of your argument until you have a version that can withstand its strongest objections. This revised argument then serves as the basis for rewriting your essay. Another possibility is to hold to your reasoning while acknowledging the strength of the objection. In this case you can acknowledge good objections within your essay while making a case for your own interpretation of the evidence for your conclusion. This kind of intellectual humility can actually demonstrate that your goal is not just to be right, but to find the truth. Either way, you win in terms of wisdom and not losing sight of the fundamental importance of seeking truth.

Closing Your Essay

Once you have demonstrated your thesis, how should you close your essay? It is a common mistake by many writers to assume that the closing of any essay, argumentative or otherwise, is a summation of what was presented in the essay from beginning to end. The strategy of closing an essay with such a summation is not only a little boring for the reader; it also misses the point of the argumentative essay. In an argumentative essay once the thesis has been demonstrated by means of premises and support, the job is done. There is no need to repeat how the thesis was demonstrated.

Consider the following example:

In conclusion, I have mentioned the following facts about my life. Ten years ago, I would have never believed that I would be living in the United States and communicating in English on a daily basis. I could not have imagined that I would be in university, much less doing scholarly research and writing in English. But here I am, writing this paper for my first class. As I have also mentioned, I am declaring an English major, and time will tell how far my studies will take me.

The ending, no doubt, has a charming sentiment. It is not, however, a proper ending for an argumentative essay or perhaps for most essays. Some exceptions might include a university lecture, in which it would be important to repeat the points covered or otherwise review instructional material. Notice, however, that if we replace the word *conclusion* in the quote with the word *summary*, the meaning does not change. This reveals that the word *conclusion* is employed to mean *summary* in this case. Beware of confusing the word *conclusion* in this context with the word *conclusion* as employed in a logical argument. Here the word *conclusion* refers to the closing of the essay. In the standard argument form, the word *conclusion* is the equivalent of the thesis in the argumentative essay. The thing to keep in mind is that argumentative essays do not need summaries to close.

Argumentative essays do not need lengthy closings, either. A handful of sentences that present your reflections of what the essay has attempted to accomplish will do the job. You can explain, for example, how the thesis would make a change in the problem that you laid out in the introduction, propose the direction in which the thesis could be taken, or consider the additional research or work that would be necessary to come closer to solving the problem. Above all, never add new information that may throw additional light on the problem or the thesis that you are defending, for this will weaken a good argument by begging the question. (See Chapter 7 for a review of the begging-the-question fallacy.) You must state all that you have to say in defense of your thesis in the body of your essay. The ending should attempt only to cast a positive light on your contribution in very broad strokes.

Practice Problems 9.2

1. If you are writing a paper about the legality of immigration and you are arguing that immigration laws should be relaxed in this country such that illegal immigrants should not be deported, the portion of the paper where you cite a well-known economist who outlines the costs in health care and aid of increased immigration would be which part of the argumentative essay?
 - a. thesis
 - b. support
 - c. premises
 - d. objection
 - e. rebuttal
2. You are writing a paper in which you claim minor drug offenses should not result in prison sentences but in jail time and rehabilitation. You further explain the claim by stating, "Surveys of criminals with minor drug charges indicated that 70% of them had to commit even greater crimes in prison to maintain their safety." This statement would be which part of the argumentative essay?
 - a. thesis
 - b. premise
 - c. support
 - d. rebuttal
 - e. problem
3. Which would be the best support for the claim that "police officers in St. Louis systematically target African Americans when policing the city"?
 - a. a peer-reviewed journal article that indicates that false arrests of African Americans are 80% higher than for Latinos and Whites in the city
 - b. a story on the news with interviews of two African Americans who live in St. Louis
 - c. a Twitter feed that shows police pepper-spraying a crowd of protestors
 - d. a newspaper article that outlines a case in which an officer pulled over an African American woman and assaulted her
4. The portion of the essay in which the writer attempts to refute the counterargument is called the _____.
 - a. thesis
 - b. support
 - c. objection
 - d. rebuttal
 - e. problem
5. When ending an argumentative essay, it is best to _____.
 - a. restate exactly what you have said earlier in the paper in a shorter format
 - b. explain a final problem that relates to the thesis that you created
 - c. add additional information that relates to the problem
 - d. make short comments about how your solution could lead to further research
6. What is the best support for the premise that "cover crop farming enhances productivity of plants"?
 - a. a conversation you had with a farmer who uses cover crop methods of farming
 - b. a news report from the local news channel on farmers in the region using cover crop techniques

(continued)

Practice Problems 9.2 (*continued*)

- c. a chapter in an academically published book that claims that productivity of cotton plants on a cover crop farm was 18% higher than one that did not use this method
 - d. an article in a peer-reviewed journal article that claims that cover crop farms do not statistically produce significantly larger crops than noncover crop farms
7. When presenting the rebuttal in an argumentative paper, it is important to do which of the following?
- a. Make your opponent's argument look ridiculous.
 - b. Make negative comments about the opposing view.
 - c. Attack the opponent's strongest argument.
 - d. Turn the attention off the counterargument and toward something else.

9.3 Practical Arguments: Building Arguments for Everyday Use

The standard argument form is not the only framework we can use to build arguments. Stephen Toulmin (1958/2003), a philosopher and author of *The Uses of Argument*, developed a model of argumentation that he considered more practical: Rather than attempt to present premises that lead to an absolute, uncontested conclusion—a difficult, perhaps impossible challenge—an argument should simply seek to show the strengths and limitations of a point of view to get closer to the truth. Although the **Toulmin model** has not attracted much attention within philosophy or logic, it is widely used in fields focused on rhetoric. If you have not seen this model already, it is likely that you will come across it in an English or communications course. Because the model is so prevalent in other fields, we will take a bit of time to examine how it relates to the approach taken in this text.

In our analysis thus far, arguments have been described as consisting of premises, conclusions, and inferences. Toulmin's analysis uses different basic parts. For Toulmin, the core of an argument consists of a claim, data, and a warrant. (The Toulmin model actually has three additional minor parts, but for our purposes, it is enough to understand the basic framework so we can compare it with the standard form and the argumentative essay framework.) As with other terms we have explored in this text, be aware that within the Toulmin model *claim*, *data*, and *warrant* have specific meanings that may be different than their meanings in other contexts.

The Claim

The *claim* in the Toulmin model of argumentation has the same role as the conclusion in the standard argument form or the thesis in the argumentative essay. It is the proposition that is being argued for, the main point of the argument.

The Data

In the Toulmin model the term *data* refers to the basic support for the claim. Arguments very often appeal to certain evidence, facts, or statistics in support of their claims. If you want to argue that gun laws should be made more (or less) strict, you are likely to cite studies that draw a relationship between gun laws and crime rates. If you are prosecuting (or defending) someone accused of a crime, you will appeal to circumstances of the crime scene or facts about the defendant. For the most part, evidence, facts, and statistics are the starting point of an argument. They are themselves reasonably uncontroversial; the dispute typically involves what follows from them.

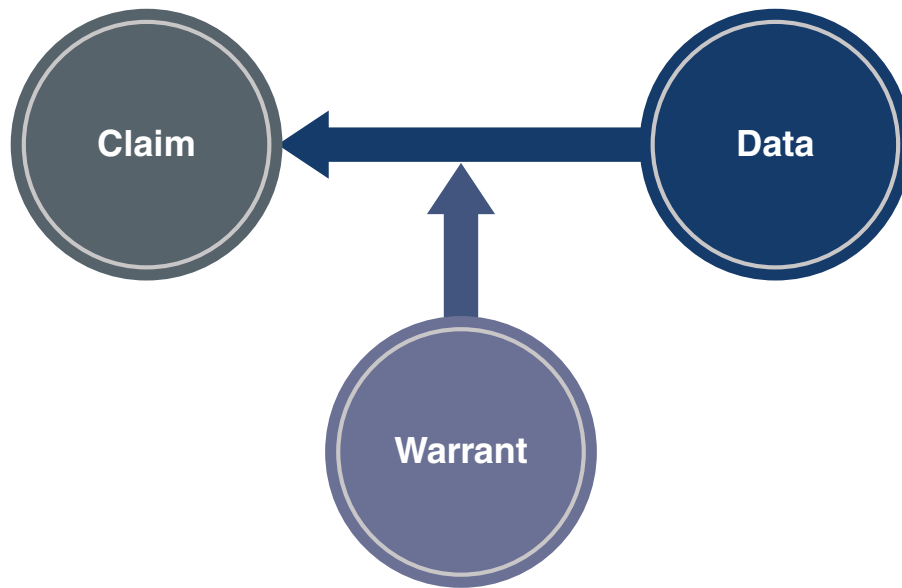
The Warrant

The *warrant* is the reasoning that links the data to the claim in the Toulmin model. The warrant is needed because there is always a gap between the evidence and the conclusion. Suppose that you have a study that shows that some countries with higher rates of gun ownership have lower gun-related crime rates than the United States. By itself, this study does not automatically show that stricter gun laws would be ineffective at reducing violent crime in the United States. After all, the United States may differ from the countries in the study in many ways. So you need some principle that links your basic evidence to your conclusion. In this case you might assert that a law's effect is likely to be similar even when countries differ. Thus, you could argue, the study can be taken to imply that stricter gun laws are unlikely to reduce gun crimes in the United States. The point of the warrant is to support the *inference* from the data to the claim, not the claim itself. Notice in Figure 9.1 that the arrow from the warrant points to the arrow between the claim and the data, and not to the claim itself.

You should also note that warrants in the Toulmin model are sometimes left unstated. Warrants are often assumed background knowledge and need to be made explicit only when challenged or when there is reason to believe that the audience may not be familiar with them. If you already accept or know that a law will have a similar effect in a different country, then that warrant would not need to be stated. If your audience does not accept your warrant, though, you may need to provide further *backing*, as Toulmin called it, to support your claim. Data, on the other hand, are given explicitly when presenting an argument.

Figure 9.1: The Toulmin model

In the Toulmin model, warrants provide support for the connection from the data to the claim. The warrant does not directly support the claim.



Comparing the Models

How, then, does the Toulmin model compare to the standard argument form and the argumentative essay? (See Table 9.2.) We have already noted that Toulmin's claim is what we have been calling a conclusion in the standard argument form and the thesis in the argumentative essay. Thus, his data will similarly be equivalent to premises. However, it is more difficult to say how Toulmin's warrant translates to our argumentative essay model. Most of the time, it will be a premise, but occasionally, it will be better classified as an inference.

Remember that the warrant is often unstated in Toulmin's model. When the warrant is explicitly stated, logic would treat it as a premise. Logic does not make a general distinction between types of premises, as Toulmin does between data and warrants. When the warrant is not stated but reasonably could be stated, then it is still a premise, just an unstated one. For example, consider the argument "John studies logic; he must be very intelligent." In the Toulmin model the claim is that John is very intelligent, and the data is that John studies logic. The warrant is not stated but seems to be something like "Only intelligent people study logic." From the standpoint of logic, "Only intelligent people study logic" is just another premise. It is very common for real-life arguments to have unstated premises.

On the other hand, suppose a friend claims that all logicians are boring. You disagree and argue, "Lewis Carroll was a logician and he wasn't boring. So not all logicians are boring." Here your data is that Lewis Carroll was a logician who was not boring. Your claim is that not all logicians are boring. What is your warrant? If you try to state it, you will end up with

something like “Whenever there is at least one thing that is a non-boring logician, then not all logicians are boring.” Or perhaps you will end up with the more general “Whenever something is both A and not B, then not all A are B.” In either case you do not really have a premise, you just have a statement that the inference from the premises to the conclusion is logically acceptable. For complicated reasons, we cannot fully reduce these types of rules to premises. So in the rare case that the data by themselves actually fully imply the claim, then the warrant is not a premise but just a rule of logic.

Table 9.2: Comparing the models

Toulmin model	Standard argument form	Argumentative essay
Claim	Conclusion	Thesis
Data	Premises	Topic sentences
Warrant	Premise or inference	Topic sentence or support

Obviously, in a classroom situation, you should use the model of argument that your teacher prefers. Outside the classroom, you are free to use the one that you find most helpful. We have focused primarily on the premise–conclusion model in this text since it is the model overwhelmingly used in logic and philosophy, but there is merit in other models, too. (The “Web Resources” section at the end of this chapter links to more information about the Toulmin model, as well as others.) The Toulmin model does a good job of capturing something like our everyday notion of evidence for a claim. However, differentiating between data and warrant can sometimes obscure the very similar role that each can play in supporting a conclusion. Sometimes it works better just to list the premises that lead to a conclusion without making further distinctions.

Moral of the Story: Comparing Models of Argumentation

The study of argumentation is very broad with many different approaches. Learn what you can of each approach as you encounter it and use it to improve your own arguments.

Practice Problems 9.3

1. In the Toulmin model of argumentation, the warrant is _____.
 - a. the evidence that one can use to support a claim
 - b. the data points that support the thesis
 - c. the thesis for which one is trying to argue
 - d. the portion that supports the relationship between data and claim

(continued)

Practice Problems 9.3 (continued)

2. If one presents data that indicates that same-sex marriage contributes \$50 million to the economies of states in which it is legal, which of the following would be the most accurate corresponding claim that would be supported?
 - a. Marriage between same-sex partners should be legal.
 - b. Marriage between same-sex partners should be illegal.
 - c. Marriage is a sacred union between two people.
 - d. Same-sex marriage has positive economic impact on communities.
3. If one were arguing for military action against a dictatorship and provided evidence that this regime had killed 40,000 of its own citizens because they dissented to the ruling party, what would be the warrant operating under this connection of data and claim?
 - a. We should take action against countries that control large amounts of oil.
 - b. Governments that kill their own citizens in this manner are acting in a manner that must be stopped.
 - c. We have the right to stop this country from killing its own citizens.
 - d. The people of that country should continue to stand up against the regime and attempt to overthrow it.
4. If you make the claim that national public campaigns on obesity should be used in the United States based on evidence from Germany that its national public campaigns resulted in an 8% decline in obesity, what would be the warrant between the claim and the data?
 - a. Germany and the United States have the same public campaigns.
 - b. Germany and the United States ought to have the same public campaigns.
 - c. Germany and the United States both have high levels of obesity.
 - d. Germany and the United States are similar enough that similar results will occur.
5. If I present data that indicates that Ebola is spreading rapidly and has a 70% death rate, and my warrant is that deadly diseases should be top priority in world health action, what would be the most accurate claim being defended?
 - a. Ebola is a deadly disease that kills many people it infects.
 - b. Deadly diseases should be top priority in world health action.
 - c. The World Health Organization needs to immediately respond to the Ebola outbreak.
 - d. Other diseases like AIDS require immediate attention.
6. If I claim that *Seinfeld* was the greatest television show ever, and then I present data that indicates that it has sold the highest number of DVD copies of any other show ever produced, what would be the warrant operating under this connection?
 - a. Television shows that have no plot are the best shows.
 - b. Greatness in a television show can be linked to profitability.
 - c. *Seinfeld* had excellent characters and actors.
 - d. Greatness in a television show can be measured by the level of performance.

(continued)

Practice Problems 9.3 (*continued*)

7. If my claim is that genetically modified plants should be restricted until more research about their safety has taken place, and my warrant is that academically published articles are examples of the highest form of support, which of the following would be the most applicable data?
 - a. an academically published book that argues that genetically modified plants have the potential to eradicate world hunger
 - b. a newspaper article that explains the plight of farmers who cannot save seeds due to genetically modified soybean plants
 - c. an academically published article that provides evidence that genetically modified tomatoes have been linked to infertility in women in a specific region of the United States
 - d. an academically published article that provides evidence that there was no higher incidence of diseases like cancer in people who ate genetically modified plants over time versus those who did not

9.4 Confronting Disagreement

Mastering the skills of identifying and constructing arguments is not easy, but at this stage you should feel fairly confident in your command of such skills. The big test now is how you will react when someone disagrees with your argument or when you disagree with someone else's argument. Although advancing an argument does not require an interaction, as mentioned in Chapter 2, disagreements are bound to occur. Many of us likely prefer to avoid disagreements. Indeed, many people are terrified of debating a point because they fear offending others or worry that a debate will only bring out the worst in everyone, quickly escalating into an emotional display of verbal aggression and "I'll show you!" attitudes on both parts. Few truly gain from or enjoy such an exchange. This is why most people avoid addressing touchy subjects during holiday dinners: No one wants a delicious meal to end with unpleasantness. However, few gain from allowing contested issues to go unchallenged, either, whether you are simply stewing in resentment over your uncle's unenlightened remark about a group of people or whether society fails to question a wrongheaded direction in public policy. Not knowing how to disagree in a calm, productive manner can be quite problematic. We should recognize, however, that some do like the tension of the battle and find the raising of voices and the test of quick retorts very exciting. Even so, all they gain is the confirmation that they can win by being the loudest, most articulate, or most aggressive. Unfortunately, this is an illusion, since quieting the opposition does not amount to having convinced them.

The solution to this common problem is threefold. The first part involves clearly articulating premises, examining the coherence of the argument, and identifying the support for each claim. This part is the most technically difficult but is already within your reach, thanks to the standard argument form. As we have discussed throughout this book, being able to draw an argument buried underneath filler sentences, rhetorical devices, and such allows us to



"If this meeting becomes too heated, we'll create a distraction... like running out the door."

Chris Wildt/Cartoonstock

By employing the principles of accuracy and charity, and by effectively criticizing arguments, there can be constructive disagreement that avoids heated emotions and verbal aggression.

grasp the meaning and coherence of what is being communicated. In this section, we will closely examine another factor in identifying arguments: the correct interpretation of an argument. We will call this the **principle of accuracy**.

The second part is not technically difficult, because it is an attitude or state of mind. In ordinary idiomatic language, it is referred to as giving a person the benefit of the doubt, letting someone have his or her say, or putting suspicion aside. In other words, we should judge others and their ideas fairly, even if we may be less than inclined to do so. Philosophers call this attitude the **principle of charity**.

Finally, the third part involved in handling disagreement is developing good habits of criticism. Evaluating an argument effectively requires understanding the types of objections that might be raised and how to raise them effectively. This understanding can be equally helpful in recognizing criticisms that our own arguments may receive and criticizing opposing arguments effectively.

Applying the Principle of Accuracy

The principle of accuracy requires that you interpret the argument as close to how the author or speaker presents it as possible. Being accurate in your interpretation is not as easy as it may sound.

As we examined in Chapter 2, arguments are typically not presented in standard form, with premises and conclusion precisely stated. Instead, they may be drawn out over several pages or chapters or occasionally even distributed across different portions of an author's work. In these sorts of cases, accurately interpreting an argument can require careful review of the work in which it occurs. Accurate interpretation may require familiarity with the author's other works and the works of other authors with similar views. Knowing an author's broader views can give us a better idea of what he or she means in a specific case. Some academics spend their entire careers trying to clearly and accurately understand the work of important authors who were themselves trying to be as clear as possible.

At the other end of the spectrum, arguments can be presented in ways that give us very little to go on. A letter to the editor is short and self-contained but is often not stated clearly enough for us to really be certain about the details of the argument. If you are lucky enough to hear an argument presented verbally, you may be able to ask for clarification, but if the argument is

written, then you are out of luck and have to go through the effort of attempting to figure out what the author meant to say in its best light.

As discussed in Chapter 2, it is often not only tempting but also necessary to reword or paraphrase a claim. The principle of accuracy requires that you exercise a lot of care in doing this. Sometimes one can unintentionally change the meaning of a claim in subtle ways that affect its plausibility and what can be inferred from it.

In short, the principle of accuracy requires that you interpret any argument as closely as possible to the actual statement of the argument while paying attention to features of context. One test for assessing whether you have correctly presented another person's argument is whether that person is likely to agree with your wording. This often involves making sure that you have interpreted the person favorably.

Applying the Principle of Charity

The principle of charity is likewise easy to understand but harder to apply. In being charitable philosophically, we seek to give our opponent (and his or her corresponding argument) our utmost care and attention, always seeking to understand the position presented in its strongest and most defensible light before subjecting the argument to scrutiny.

We tend to see the good in arguments that include conclusions we agree with and the bad in arguments that include conclusions we disagree with. When someone on our side of an issue presents an argument, we are prone to read their argument favorably, taking the most charitable interpretation as a matter of course. Think of how you respond when considering your choice for a candidate in an election. Do you tend to interpret more favorably the words of candidates who are members of your own political party, those who support positions that benefit you personally, or even those whom you might find most visually appealing? Do you see positions different from yours as silly or unfounded, perhaps even immoral? If so, you may need to be more charitable in your interpretations. Remember that many intelligent, sincere, and thoughtful people hold positions that are very different from yours. If you see such positions as not having any basis, then it is likely you are being uncharitable. These tendencies are the manifestation of our biases (see Chapter 8), and ignoring them may lead to the entrenchment of our biases into dogmatic positions or fallacious positions. For example, if you criticize an argument based on an uncharitable interpretation, this can be considered a case of the straw man fallacy (see Chapter 7).



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Applying the principle of charity means to set aside our confidence in our expertise and to be open to entertaining the positions presented by others by doing a fair reading of the argument provided.

Our tendency to be overly critical of arguments for positions we disagree with is deep-rooted, and it requires a lot of effort and psychological strength to overcome. But the mechanics are simple: Suspend your own beliefs and seek a sympathetic understanding of the new idea or ideas. The principle of charity can become a habit if we approach it methodically, as follows:

1. Approach new or opposing ideas under the assumption that they could be true, even though our initial reaction may be to disagree.
2. Make it a goal to understand the opponent's argument, instead of nitpicking and looking for contradictions or weaknesses.
3. Consider the strongest argument for the opposition instead of the weakest argument for it.

Given how difficult it can be to charitably interpret arguments, you might wonder whether it is worth the effort. However, there are good reasons for being charitable.

First and foremost, it is important to remember that the goal of logic is not to win disputes but, rather, to arrive at the truth. We have reason to believe that the conclusions of stronger arguments are more likely to be true than the conclusions of weaker arguments. If we wish to know the truth of an issue, we should examine the best arguments that we can find on both sides. If we do this and notice that one side's arguments are stronger than the other's, then we have good reason for adopting that side of the issue. On the other hand, if we do not look at the strongest argument available, then we will have little reason to be confident in our final decision. Being uncharitable in interpreting others may help you score points in a dispute, but there is no reason to think that it will lead you to the truth of the matter. (For more discussion of this important point, see Chapter 7.)

Second, by making a habit of applying the principle of charity, you develop the skills and character that will help you make good decisions. As people come to recognize you as someone who is fair and charitable in discussions, you will find that they are more willing to share their views with you. In turn, your own views will be the product of a balanced look at all sides, rather than being largely controlled by your own biases.

Balancing the Principles of Accuracy and Charity

If arguers always presented the strongest arguments available and did so in a clear and organized fashion, there would be little problem applying the principles of accuracy and charity. Unfortunately, we all sometimes present arguments that are not as strong as they could or should be. In these cases the two principles work can against each other—that is, the most charitable interpretation may not be the most accurate.

In general, the principle of charity should be given more weight than that of accuracy. This is especially true when the arguments are presented in less formal settings. By giving people the benefit of the doubt and treating their views as charitably as possible, you will earn a reputation as someone who is more interested in productive discussions than in scoring points. You will have a lot more discussions this way, and both you and the other people involved are likely to learn a lot more. In informal settings, it is best to assume that people are making a stronger argument, rather than trying to hold them to precisely what they say.



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When it is difficult to balance the principles of accuracy and charity, try to be more charitable in your interpretation, especially in more informal settings and discussions.

The situation is somewhat different when interpreting arguments in academic writing such as journal articles. Journal articles are written carefully and revised many times. The authors are committing themselves to what they say and should understand the implications of it. Nonetheless, it is still good to be charitable when possible, but following the author's exact presentation is more important than it is in less formal settings. In cases in which you are primarily examining an argument made by a single author in a published article and in which you are trying to judge how well the argument works, accuracy is paramount. Still, be as charitable as the circumstances allow.

Practicing Effective Criticism

The principles of charity and accuracy govern the interpretation of arguments—they help you decide what the argument actually is. But once you have figured out what the argument is, you will want to evaluate it. In general, evaluating the strengths and weaknesses of arguments or other works is known as criticism. In everyday language, criticism is often assumed to be negative—to criticize something is to say what is wrong with it. In the case of argumentation, however, criticism means to provide a more general analysis and evaluation of both the strengths and weaknesses of an argument. This section will focus on what constitutes good criticism and how you can criticize in a productive manner. Understanding how to properly critique an argument will also help you make your own arguments more effective.

When criticizing arguments, it is important to note both the strengths and weaknesses of an argument. Very few arguments are so bad that they have nothing at all to recommend them. Likewise, very few arguments are so perfect that they cannot be improved. Focusing only on an argument's weaknesses or only on its strengths can make you seem biased. By noting both, you will not only be seen as less biased, you will also gain a better appreciation of the true state of the argument.

As we have seen, logical arguments are composed of premises and conclusions and the relation of inference between these. If an argument fails to establish its conclusion, then the problem might lie with one of the premises or with the inference drawn. So objections to arguments are mostly objections to premises or to inferences. A handy way of remembering this comes by way of the philosophical lore that all objections reduce to either "Oh yeah?" or "So what?" (Sturgeon, 1986).

Oh Yeah? Criticizing Premises

The “Oh yeah?” objection is made against a premise. A response of “Oh yeah?” means that the responder disagrees with what has been said, so it is an objection that a premise is either false or insufficiently supported.

Of course, if you are going to object to a premise, you really need to do more than just say, “Oh yeah?” At the very least, you should be prepared to say *why* you disagree with the premise. Whoever presented the argument has put the premise forward as true, and if all you can do is simply gainsay the person, then the discussion is not going to progress much. You need to support your objection with reasons for doubting the premise. The following is a list of questions that will help you not only methodically criticize arguments but also appreciate why your arguments receive negative criticism.



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The process of criticizing an argument is similar to a chess game. Both require an analysis of the strengths and weakness of your opponent's position and a determination of whether the premise, or chess piece, is central to your opponent's argument or strategy.

1. *Is it central to the argument?* The first thing to consider in questioning a premise is whether it is central to the argument. In other words, you should ask, “What would happen to the argument if the premise were wrong?” As noted in Chapter 5, inductive arguments can often remain fairly strong even if some of their premises turn out to be incorrect. Sometimes a premise is incorrect, but in a way that does not really make a difference.

For example, consider someone who advises you to be careful of boiling water, claiming that it boils at 200°F and 200°F water can cause severe burns. Technically, the person's premises are false: Water boils at 212°F, not at 200°F. This difference does not really impact the person's argument, however. The arguer could easily correct the premise and reach the same conclusion. As a result, this is not a good place to focus an objection. Yes, it is worth mentioning that the premise is incorrect, but as problems go, this one is not very big. The amount of effort you should put into an objection should correlate to the significance of the problem. Before putting a lot of emphasis on a particular objection, make sure that it will really impact the strength of the argument.

2. *Is it believable?* Another issue to consider is whether a premise is sufficiently believable. In the context in which the premise is given, is it likely to be accepted by its intended audience? If not, then the premise might deserve higher levels of scrutiny. In such cases we might check to make sure we have understood it correctly and check if the author has provided further evidence for the strong claim in question. This can be a bit tricky, since it depends on several contextual issues. A premise

may be acceptable to one audience but not to another. However, realize that it is just not possible to fully justify every premise in an argument. Premises are the starting points for arguments; they are statements that are presented as sufficiently believable to base an argument on. Trying to justify every premise would introduce even more premises that would then have to be justified, and so on. If you are going to challenge a premise, you should typically have specific reasons for doing so. Merely challenging every premise is not productive.

If you identify a specific premise that is central to the argument yet insufficiently supported, you should make a mental note and move forward. If you are able to converse with the proponent of the argument, then you can ask for further justification of the premise. If the proponent is not available to question—perhaps because the argument occurs in an article, book, or televised speech—then you should formulate some reasons for thinking the premise is weak. In essence, the burden is on you, the objector, to say why the premise is not sufficiently believable, and not on the proponent of the argument to present premises that you find believable or sufficiently supported. Never escalate your beliefs into accusations of lying or fraud. If you believe that the premise is false, the most productive next step is to come up with reasons why the premise is not sufficiently plausible for the context of the argument.

3. *Are there any qualifiers?* A **qualifier** is a word or phrase that affects the strength of a claim that a premise makes. Consider the difference between the statements “Humans are the cause of the current climate change” and “It is at least possible that humans are the cause of the current climate change.” While addressing the same point, these two statements have very different levels of believability. The qualifier phrase “it is at least possible” makes the second statement more acceptable than the first. Whatever your view on the causes of climate change, you should see the second statement as having more going for it than the former, because the second statement only makes a claim about what is possible. Accordingly, it claims much less than the first one. If the first claim is true, the second one is also, but the second claim could be true even if the first turned out to be false.

In focusing an objection on a premise, you need to be sure that your objection takes into account the qualifiers. If the premise is the second claim—“It is at least possible that humans are the cause of the current climate change”—then it would make little sense to object that it has not been fully proved that humans are the cause. Qualifiers can affect the strength of premises in many ways. The lesson here is that you need to be very clear about exactly what is being claimed before objecting to it.

Sometimes premises take the form of **hypotheticals**—that is, sentences stating assumed situations merely for the sake of argument. Suppose that someone is arguing that the United States should aggressively pursue investment in alternative energy. Such a person might present the following argument as part of a larger argument: “Suppose climate change really is caused by humans. If so, then investing in alternative energy would help reduce or slow climate change.” If you happen to think climate change is not caused by humans, you might be tempted to object to the first premise here. That would be a mistake, since the premise is framed as a hypothetical. The author of the argument is only making a point about what would follow if the claim were true. It must be clear that in this context the author of the argument is not claiming that the first premise is true.

The line of reasoning might continue as follows: “On the other hand, suppose that humans are not changing the climate. The increase in carbon in the atmosphere still shows that our energy production can only continue so long as we have carbon to burn on the ground. We would be well advised to find other alternatives.” Here, one might be tempted to object that humans are part of the cause of climate change. Again, this would be a mistake. The claim that humans are not changing the climate is also used here only as a hypothetical.

So What? Criticizing Inferences

Even an argument with unobjectionable premises can fail to establish its conclusion. The problem in such cases lies with the inferences. Objecting to an inference is like saying, “So what if your premises are true? Your conclusion doesn’t follow from them!” Of course, “So what!” is neither the best feedback to receive nor the best response to offer to an opponent. A better method of showing that an argument is invalid is to offer a counterexample. Recall from Chapter 3 that a counterexample is a strategy that aims to show that even if the premises of an argument are true, the conclusion may very well be false. Counterexamples do not have to be real cases, they just have to be possible cases; they have to show that it is *possible* for the premises to be true while the conclusion is false—that the premises do not absolutely guarantee the conclusion.

Beware, however, that counterexamples work best for deductive arguments and do not work as decisively when the argument is inductive. This is because true premises in inductive arguments at best show that the conclusion is probably true, but this is not guaranteed as it is with deductive arguments. Thus, showing that it is merely possible that the premises of an inductive argument are true while its conclusion is false does not undermine the inference. The best that can be done in the case of inductive arguments is to show that the conclusion is not sufficiently probable given the premises. There is no single best way to do this. Because each inductive argument has a different strength and may be based on a different kind of reasoning, objections must be crafted carefully based on the specifics of the argument. There are, fortunately, some broad guidelines to be offered about how to proceed.

First, be clear about just how strong the argument is supposed to be. Remember the contrast between claiming that “Humans are the cause of the current climate change” versus “It is at least possible that humans are the cause of the current climate change.” Many objections fail because they assume the argument is intended to be stronger than it is. Any objection to an inductive inference basically claims that the premises do not make the conclusion as likely as the arguer proposes. If the arguer is misinterpreted on this point, the objection will miss its mark.

Next, try to identify the style of reasoning used in the inductive argument. Chapter 5 presents several different forms of inductive reasoning. If the argument uses one of those forms, make sure that the argument follows the pattern shown. Look for any way in which the argument deviates from the pattern; these are points for possible objections.

Finally, consider whether the argument contains reasoning that is fallacious. A number of fallacies are discussed in Chapter 7. Remember that just pointing out a fallacy does not show that the conclusion of the argument is false. It can only show that the conclusion is not sufficiently supported by that specific argument.

Practice Problems 9.4

Determine whether the following situations involve the principle of charity or accuracy.

1. Even though you agree that abortion should be illegal, you confront your cousin when he says that women who have had abortions are murderers. You claim that they might have other reasons or circumstances in their lives that have contributed to their decisions.
2. You are engaging in a debate about just war with a friend. Your friend claims that one of the premises of just war theory is that “a nation can act against another nation in whatever manner available so long as the other nation acted aggressively first.” You correct your friend and claim that just war theory really only says that a nation cannot act in any manner available but only in a manner that is proportional to the injury suffered from the other side.
3. Your friend is upset because he received a fine from a record company that was suing people who downloaded music for free. He claims that “record companies just care about making money, and they are willing to go after regular people who aren’t hurting anyone.” You claim that record companies employ many people whose jobs would be in danger if their music were given away for free, and you suggest that perhaps record companies are simply trying to protect their employees.
4. You are arguing with a friend about the existence of God. Your friend proposes an argument for God’s existence that has been improved in a recent philosophical publication. Rather than attack the old argument, you strengthen your friend’s position by explaining the new development in relation to the argument.
5. You are arguing with a coworker about animal rights, animal suffering, and whether humans should harvest animals and eat them. You have taken the position that eating animals is acceptable. In supporting her position, your coworker claims that more than 2 billion animals are slaughtered for consumption in the Western world each year. You correct her and say that actually, more than 3 billion animals are slaughtered per year.

9.5 Case Study: Interpretation and Criticism in Practice

Since most scientific arguments are inductive, it can be instructive to look at how some common objections to scientific theories fail from logic’s point of view. Consider, for example, an argument against the theory of evolution based on the idea that there are gaps in the fossil record. A simple version of the objection is given by John Morris (2011), president of the Institute for Creation Research: “The fossil record gives no clue that any basic type of animal has ever changed into another basic type of animal, for no undisputed chain of in-between forms has ever been discovered” (para. 3).

Examining the Initial Argument

Setting aside the question of whether Morris's claim about the fossil record is correct, how does it fare as an objection to evolution in terms of logic? The first thing to note is that, like most scientific claims, the theory of evolution is based on inductive reasoning. Although scientists do claim that evolution is true, they do not afford it the same status as mathematical theorems. It is fairly easy to see that it is at least theoretically possible that all the evidence could be as it is and yet evolution be false. Since the reasoning is inductive, the question is whether Morris's objection shows that evolution is not sufficiently likely, given the evidence for it.

A question that arises immediately is, how much evidence is required to overcome Morris's objection? There is no precise answer to this question, since the arguments for evolution are typically not of the sort to establish a definite numerical likelihood. We cannot give a precise calculation of just how likely evolution is, given the evidence for it. Instead, we rely on qualifiers such as *very likely* and *overwhelmingly likely* and on comparisons to the likelihood of other scientific theories. This is not at all unusual. Precise numerical statements of probability are typically available only in arguments based on statistics.

The argument for evolution based on the fossil record is not that sort of argument. Instead, we can view the argument as an inference to the best explanation (discussed in Chapter 6). We see differences and similarities among living animals and fossils. The similarities are close enough that we can group animals into families and arrange fossils chronologically to show change within a group. A good account of such an arrangement in the case of horses is available at the website for the Florida Museum of Natural History at <http://www.flmnh.ufl.edu/natsci/vertpaleo/fhc/Stratmap1.htm> and associated pages. The fact that the fossils can be neatly arranged in this way seems to cry out for an explanation. Evolution is the best explanation we have for this fact, so we conclude that evolution is likely to be correct. Just how likely it is to be correct depends on just how much better an explanation it is than the alternatives and just how much we see the fossil record as requiring an explanation.



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As in the example of evolution, objections that claim an inductive argument is not sufficiently strong require that you thoroughly examine the initial argument, objection, and wording, so that you can draw a conclusion about the strength of the criticism.

Examining the Objection

Morris claims that there is “no undisputed chain of in-between forms” from one kind of animal to another. It is not clear whether he would take the extinct genus *Eohippus* to be the same basic type of animal as a modern horse. For the sake of argument and analysis, let us suppose that he takes them to be different types of animals and also grant that the fossil sequence shown in the Florida Museum of Natural History's graphic has gaps. What effect would this have on the argument for evolution?

Morris's objection is aimed at the degree to which the facts require an explanation and not at whether evolution is the best explanation of the facts. However, whether or not the fossil record contains gaps, it is still remarkable that animals that do not come from one another should show such a plausible set of transformations. We would not normally expect unrelated animals to be able to be arranged in such a way. So even with gaps, the fossil record needs an explanation. Pointing out gaps does not change that. Nor does pointing out gaps show that another theory better fits the evidence than does evolution. Even if we grant Morris's main point, evolution remains the best available explanation of a rather remarkable fact. Of course, if the number of intermediate fossils were greatly decreased, then other explanations might be more successful in explaining the record. A complete, gapless record of transitional fossils would provide even more support for evolution because it would make it more difficult for any competing explanations to be correct. However, the fossil record supporting horse evolution has enough in it to provide a strong argument for evolution even if there are some gaps. So, as an objection to an inference to the best explanation, Morris's claim is really not very good.

Examining the Wording

Morris says that the fossil record "gives no clue" that one basic type of animal has changed into another. So, as he states it, he takes his objection to not simply weaken the argument for evolution but to undermine it entirely. Morris is overstating his case here. It really does not take a lot of imagination to see the record as providing at least some support for evolution. Morris's contention that an incomplete fossil record is no support at all for evolution is clearly a drastic overstatement. Why would Morris make such an obviously false claim?

One possibility is that he really believes the claim. But if he does, then one quick response may be to say that it is puzzling why he does not address the obvious counters to it. But a more charitable interpretation is that Morris may have addressed damaging counterexamples in other writings. The principle of accuracy demands that we seek to interpret an author's position as completely as possible, based on all available information. In addition, the principle of accuracy demands that we attempt to grasp the intent of the author. On the other hand, it may be possible that Morris is engaging in hyperbole in this piece for rhetorical effect. People may overstate claims to draw attention to their point. We are more apt to pay attention to strong claims than weak ones. Think about the number of advertisements you have seen that claim that a product is the best of its kind, rather than merely as good as others. Are you more likely to buy detergent that claims "nothing cleans better" or one that claims it "cleans about as well" as other leading brands? By overstating his claim, Morris makes it stand out, which makes it seem interesting. Of course, he also makes the claim false as stated.

The interpretive issue here is whether we should hold him to this part of his claim or simply note it and go on to more important issues in his argument. Which way we decide to go will depend on how much he makes of the claim in the rest of his writing. If he really continues to drive home the point that evolution has absolutely no support from the fossil record, then the principle of accuracy suggests that it is appropriate to hold him to the claim. On the other hand, if it does not seem to be central to his position, then the principle of charity suggests that we give him the benefit of the doubt and assume his statement is just a rhetorical flourish.

The primary premise of Morris's objection is that "no undisputed chain of in-between forms has ever been discovered." Notice the use of *undisputed* in the premise. Morris carefully does not claim that no chain has been found, only that no undisputed chain has been found. This is a classic weasel word (see Chapter 8). Since Morris himself is likely to dispute any proposed chain, he can safely assert his premise.

In a similar vein, no undisputed video exists of humans walking on the moon. Of course, there is video of humans walking on the moon; it is just that a few people dispute it. So how seriously should we take Morris's use of the *undisputed* qualifier in his premise? If we take it at face value, then his premise is undoubtedly true, but so weak that it cannot really support his conclusion. If we ignore the qualifier, then his premise gives better support to his conclusion, but his premise is likely to be false. Many chains of transitional fossils have been found; the example of horse evolution is one such chain. Morris may claim that this chain has gaps, but we have already seen that the mere existence of gaps does not seriously undermine the argument for evolution. The gaps would have to be much wider and more numerous than those we see in the horse lineage to present a real problem. Whether something counts as a gap in the fossil record is not quite settled. Whenever one fossil is different than another, there is room to place an intermediate fossil between them. There could be no such thing as a perfectly gap-less record. The question is not whether there are gaps, but whether the gaps are large and frequent enough to undermine the evidence for evolution.

Drawing a Conclusion

Morris's objection does not present a serious threat to evolution. His presentation contains weasel words and overstatements that should make us suspicious. His position with the Institute for Creation Research presents a possible indication of bias. These are reasons to be concerned with his objection from the outset. More importantly, even if we grant his objection, it turns out not to have much force against the specific kind of argument that the fossil record provides for evolution. The gaps Morris alludes to would have to be far greater and more common than they are to seriously undermine the evidence for evolution. However, even at this stage, we should be careful. We have rejected Morris's objection, but that is not by itself a reason to accept evolution. The theory of evolution should be judged on the merits of the evidence for it, not on the fact that it is possible to give a bad argument against it.

Similarly, we should acknowledge that our analysis here is just a beginning. We have only looked at the argument implied by one sentence of Morris's writing—we have just touched the surface. If you were responding to Morris's argument in an essay, you would need to go on and consider the rest of what he has to say and how the things you have learned about logic relate to it.

9.6 Other Applications of Logic

As an introductory book in informal logic, we have only touched on the fundamental concepts of the field of logic, and even then we have only scratched the surface of those. We have not yet addressed, for instance, all the specializations and applications in logic. The following survey should give you a general idea of some of these specializations and how widespread the use of logic is in society.

Symbolic Logic

If you like deductive arguments and enjoyed the chapter on propositional logic, then you might consider looking into *symbolic logic*. Symbolic logic is very abstract; it is the area of investigations in which logic meets math. Symbolic logic is concerned solely with the form of arguments. In fact, arguments are generally represented with symbols and variables much like an equation in algebra. A beginning course typically starts with propositional logic.

Computer Science

As noted in Chapter 4, Alan Turing proposed a class of devices that became known as Turing machines and were intended to measure the extent of what can be computed (Barker-Plummer, 2012). Turing's work contributed to the development of what is now known as computer science. His name has entered popular culture recently with the 2014 film *The Imitation Game*, which takes a look at Turing's role in breaking the Nazi Enigma code. Logic is at the center of Turing's accomplishments, and it has since continued to play a prominent role in computer science. The design of computer circuits, for example, is based on propositional logic. Predicate logic is used in various computing languages. Many logic specification languages use some form of predicate logic and set theory (logic's mathematical cousin). Knowledge representation has formalisms based on logic. Probabilistic logic is increasingly becoming the foundation for machine learning systems. A growing field in computer science is verification technology, which aims at verifying whether a program actually does what it is supposed to do; this field employs proof theory, model theory, and decision procedures.

Artificial Intelligence

Artificial intelligence (AI) is a field in computer science whose focus is to develop programs that allow computers to function in ways that display what we can very broadly call intelligence. Today we have impressive supercomputers, such as IBM's Watson, that can beat humans at games such as *Jeopardy!* Nonetheless, even advanced supercomputers do not have the capacity to process information as the human brain does. In light of this, one of the most recent and controversial projects in AI is the attempt to formalize commonsense reasoning (Thomason, 2013). Yet the view that we can recreate human intelligence, cognition, and self-awareness (strong AI) is a matter of debate. In 1980 John Searle published a very famous article titled "Minds, Brains, and Programs," in which he introduced the Chinese room argument. This argument claims that computers are incapable of reaching the level of human intelligence primarily because human minds are a result of biological processes. Although computers can become very sophisticated and fast at following syntactic rules, they do not understand the meaning of the information that they are processing. Searle's views are, of



Seth Wening/Associated Press

Watson, IBM's supercomputer, is an artificially intelligent machine that runs off a logic-based program.

course, disputed by those participants in the strong AI movement. But defenders of strong AI believe that it is only a matter of time before we design a computer able to perform at the level and complexity of the human brain.

Engineering

The logic used in some engineering fields is often known as *fuzzy logic*. Fuzzy logic owes its name to the focus of its examination: phenomena about which our knowledge is approximate, uncertain, vague, or partially true, instead of exact and precise. Some examples of such phenomena that display such fuzzy data are the weather, the effect of age in faces, business cycles, currency valuation, and any other phenomena that challenge pattern recognition due to its unpredictability. Engineers thus need to characterize and quantify uncertainty arising from such unpredictability due to vagueness, imprecision, and lack of knowledge. As a result, the development of a set of methods to address such a state of affairs emerged. In engineering, some of the most interesting practical applications are in robotics, biomedical engineering, target tracking, and pattern recognition (including facial recognition), to name a few.

Politics (Speech Writing)

In our most cynical days, we may question whether logic and politics can mix. However, arguments are the vehicle by which we often receive the most information from political candidates and even presidents (through their State of the Union addresses) regarding matters that will affect us directly. So we need to pay close attention. Arguments in political speeches tend to be of a rhetorical nature because the focus is typically persuasive. Some of the most successful and informative political speeches, however, use logical arguments. Politicians, speechwriters, aides, and political analysts and researchers who are skilled at logical argumentation will be the most successful at their tasks. As voters, we all have an advantage by also being knowledgeable of the logical argument structure because we will be able to distinguish good reasoning from mere persuasion and emotional appeal.

Summary and Resources

Chapter Summary

Can logic be applied to practical purposes in our everyday lives? This is the question that we examined in this chapter. First we learned how to apply the standard argument form in the construction of an argumentative essay. We then briefly noted the Toulmin model as an example of how arguments are seen differently in other fields. We also looked at applications of the principles of accuracy and charity that show how to productively and harmoniously confront disagreement. Finally, we concluded with a discussion of how logic is used in various other areas and professions.

Now take a moment to think back on the journey you started at the beginning of the book. Indeed, you now have the basic tools of logic that will empower you as a critical thinker throughout your life. But notice that there is a very meaningful way in which logic can transform you as a person, too. When we think about the many areas to which logic can be applied, we can say that it can change our lives by giving us the power to choose what we accept and what we do not accept based on the best available reasoning. This is the kind of power that will help us discover truth. You now have the basic tools to make this possible for yourself.

Critical Thinking Questions

1. What are some improper techniques of argumentation that you have employed in the past? Now that you have read this chapter, how might you have corrected your approach?
2. How does applying the standard argument form to writing argumentative essays help you in your studies, work, or any other practical application?
3. Consider your strongest belief in either the political or religious realms. List the reasons you have for such a belief. Create the strongest argument you can against your own position.
4. What informal fallacies do you find most prevalent in the way others present criticism? What is the best way to handle a situation in which someone else uses a fallacy? How can one maintain the principle of charity and/or accuracy in these situations?
5. Which applications of logic in real life have surprised you the most? Explain why. Now that you have learned about the practical applications of logic, what has changed the most about your understanding of logic?
6. After having read this chapter, what would you say is the end goal of engaging in argumentative dialogue?

Web Resources

<https://archive.org/stream/mindpsycho04edinuoft#page/278/mode>

Read the original Lewis Carroll essay in *Mind* titled "What the Tortoise Said to Achilles."

https://www.youtube.com/watch?v=oPB0JOpgv_E

Watch a 90-second review of the principle of charity.

https://www.youtube.com/watch?v=II-M7O_bRNq

Watch a video on the participation of the supercomputer Watson in the game show *Jeopardy!*

<http://www.criticalthinkeracademy.com>

The Critical Thinker Academy teaches many valuable concepts about logic, including how best to identify arguments in daily life.

<http://austhink.com/critical>

For a number of other resources, visit Austhink's Critical Thinking on the Web.

<http://www.iep.utm.edu>

The *Internet Encyclopedia of Philosophy* is a peer-reviewed academic resource for scholarly information on philosophers and key topics in philosophy.

Key Terms

argumentative essay An essay that presents an argument. The basic structure for such an essay is the standard argument form.

hypotheticals Sentences stating an assumed situation merely for the sake of argument.

principle of accuracy A principle that requires one to interpret the argument under examination as closely as possible to the author's intent.

principle of charity A principle that requires one to interpret others' reasoning in as favorable a manner as possible.

qualifier A word or phrase that affects the strength of a claim by weakening it thereby and making it more likely to be true.

secondary argument An argument whose conclusion is one of the premises of the original argument. Also called *subargument*.

secondary thesis The conclusion of a secondary argument; it is one of the premises of the original argument. Also called *subconclusion*.

Toulmin model A model for practical argumentation advanced by Stephen Toulmin that stems from the view that the arguments we read or hear in everyday life do not follow the standard argument form. According to this model, the core of an argument consists of a claim, data, and a warrant.

Answers to Practice Problems

Practice Problems 9.1

- | | |
|------|-------|
| 1. c | 7. c |
| 2. a | 8. d |
| 3. b | 9. a |
| 4. d | 10. a |
| 5. d | 11. a |
| 6. a | |

Practice Problems 9.2

- | | |
|------|------|
| 1. d | 5. d |
| 2. c | 6. c |
| 3. a | 7. c |
| 4. d | |

Practice Problems 9.3

- | | |
|------|------|
| 1. d | 5. c |
| 2. d | 6. b |
| 3. b | 7. c |
| 4. d | |

Practice Problems 9.4

1. charity
2. accuracy
3. charity
4. charity
5. accuracy and charity