

A WORKBOOK FOR ARGUMENTS

A Complete Course in Critical Thinking

Second Edition

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Chapter I

Short Arguments: Some General Rules

Arguments begin by marshaling reasons and organizing them in a clear and fair way. Chapter I offers general rules for composing short arguments. Chapters II–VI discuss specific *kinds* of short arguments.

Identify premises and conclusion

The very first step in making an argument is to ask yourself what you are trying to prove. What is your conclusion? Remember that the conclusion is the statement for which you are giving reasons. The statements that give your reasons are your *premises*.

Consider these lines from Winston Churchill:

I am an optimist. It does not seem to be much use being anything else.

This is an argument—as well as an amusing quip—because Churchill is giving a *reason* to be an optimist: his premise is that “It does not seem to be much use being anything else.”

Premises and conclusion are not always so obvious. Sherlock Holmes has to explain one of his deductions in “The Adventure of Silver Blaze”:

A dog was kept in the stalls, and yet, though someone had been in and fetched out a horse, [the dog] had not barked. . . . Obviously the . . . visitor was someone whom the dog knew well.¹

Holmes has two premises. One is explicit: the dog did not bark at the visitor. The other is a general fact that Holmes assumes we know about dogs: dogs bark at strangers. Together these premises imply that the visitor was not a stranger. It turns out that this is the key to solving the mystery.

When you are using arguments as a means of inquiry, you sometimes may start with no more than the conclusion you wish to defend. State it clearly, first of all. Maybe you want to take Churchill a step farther and

Rule 1

1. Sir Arthur Conan Doyle, “The Adventure of Silver Blaze,” in *The Complete Sherlock Holmes* (Garden City, NY: Garden City Books, 1930), p. 199.

Rule 1: Identify premises and conclusion

argue that you and I should be optimists too. If so, say so explicitly. Then ask yourself what reasons you have for drawing that conclusion. What reasons can you give to prove that we should be optimists?

You could appeal to Churchill's authority. If Churchill recommends optimism, who are we to quibble? This appeal will not get you very far, however, since equally famous people have recommended pessimism. You need to think about the question on your own. Again, what is *your* reason for thinking that we should be optimists?

One reason could be that optimism boosts your energy to work for success, whereas if you feel defeated in advance you may never even try. Optimists are more likely to succeed, to achieve their goals. (Maybe this is what Churchill meant as well.) If this is your premise, say so explicitly.

This book offers you a ready list of different forms that arguments can take. Use this list to develop your premises. To defend a generalization, for instance, check Chapter II. It will remind you that you need to give a series of examples as premises, and it will tell you what sorts of examples to look for. If your conclusion requires a deductive argument like those explained in Chapter VI, the rules outlined in that chapter will tell you what types of premises you need. You may have to try several different arguments before you find one that works well.

Exercise Set 1.1: Distinguishing premises from conclusions

Objective: To give you practice distinguishing premises from conclusions in other people's arguments.

Instructions: Rewrite each argument below, underlining the conclusion of each argument and putting brackets around each premise.

Tips for success: Distinguishing premises from conclusions is sometimes more of an art than a science. We wish people were always clear about the premises and conclusions of their argument, but that's just not the case. Therefore, learning to distinguish premises from conclusions takes practice. As you practice, there are two strategies that you should keep in mind.

The first strategy is simply to ask yourself what the author of this argument is trying to convince you to believe. The claim that the author is trying to get you to believe is the argument's conclusion. Then you can ask what *reasons* the author gives to try to convince you. These will be the argument's premises.

Rule 1: Identify premises and conclusion

The second strategy for distinguishing premises from conclusions is to look for *indicator words*. Some words or phrases are *conclusion indicators*. These are words or phrases that tell you that you're about to read or hear the conclusion of an argument. Other words or phrases are *premise indicators*. These tell you that you're about to read or hear a premise. Here's a sample of the most common conclusion and premise indicators:

Conclusion Indicators

therefore
thus
hence
so
consequently
this shows that

Premise Indicators

because
since
given that
for
on the grounds that
this follows from

You'll start to notice more indicator words as you get better at analyzing arguments.

Two more pieces of advice: First, don't rely solely on indicator words. Some arguments will not use any indicator words. Others will use indicator words in other ways. Some words, like *because*, *since*, and *so*, have many other uses; not every use of *because* indicates that you're about to hear a premise. When in doubt, fall back on our first strategy: ask yourself whether the author is giving you a reason for the conclusion. If your answer is no, you haven't found a premise, even if the sentence includes *because* or *since*.

Second, don't assume that everything in a passage is either a premise or a conclusion. Not all passages contain arguments. Some passages are telling stories, describing things, giving explanations, issuing commands, making jokes, or doing other things besides giving reasons for a conclusion. Even in passages that do contain arguments, some sentences or clauses will provide background information, make side comments, and so on. Again, the key is to ask yourself, "Is this sentence stating a conclusion or giving me a reason to believe that conclusion?" If it is doing either, it's part of an argument; if not, it's not.

Sample

[In order to prosper, a democracy needs its citizens to be able to carry out their responsibilities competently.] [Being a competent citizen requires familiarity with the basics of math, natural science, social science, history, and literature, as well as the ability to read and write well and the ability to think critically.] [A liberal education is essential to developing these skills.] Therefore, in order for a democracy to prosper, its citizens must get a liberal education.

*Adapted from: Steven M. Cahn, letter to the editor, New York Times,
May 21, 2004*

The markings in this sample problem indicate that the last sentence is the conclusion and that each of the first three sentences is a separate premise. Although each sentence in this letter to the editor expresses either a premise or a conclusion, remember that many passages contain sentences (or parts of sentences) that are neither premises nor conclusions. You don't need to bracket or underline those (parts of) sentences.

1. Racial segregation reduces some persons to the status of things. Hence, segregation is morally wrong.

*Adapted from: Martin Luther King, Jr., "Letter from a Birmingham Jail,"
Liberation: An Independent Monthly, Jun 1963*

2. While performing an autopsy on a dead sea turtle, Dr. Stacy found shrimp in the turtle's throat. Sea turtles can only catch shrimp if the turtles are stuck in nets with the shrimp. Therefore, the dead sea turtle was probably caught in a net.

*Adapted from: Shaila Dewan, "Animal Autopsies in GulfYield Mystery,"
New York Times, Jul 14, 2010, <http://www.nytimes.com/2010/07/15/science/earth/15necropsy.html>*

3. Most people experience no side effects from the yellow fever vaccine. People with egg allergies shouldn't get the yellow fever vaccine, though, because some part of the vaccine is grown inside eggs.

*Adapted from: Division of Vector Borne Infectious Diseases, "Vaccine | CDC Yellow Fever," Centers for Disease Control and Prevention,
<http://www.cdc.gov/ncidod/dvbid/YellowFever/vaccine/>*

Rule 1: Identify premises and conclusion

4. There are two ways of settling a dispute: by discussion and by physical force. Since the first way is appropriate for human beings and the second way appropriate for animals, we must resort to force only when we cannot settle matters by discussion.

Adapted from: Cicero, De Officiis 11

5. Positron-emission tomography, better known as PET, is a method for examining a person's brain. Before undergoing PET, the patient inhales a gas containing radioactive molecules. The molecules are not dangerous for the patient because they break down within a few minutes, before they can do any damage.

Adapted from: Bryan Kolb and Ian Q. Wishaw, Fundamentals of Human Neuropsychology, 5th ed. (New York: Worth Publishers, 2003), 161

6. The head of the spy ring is very dangerous. He is also exceptionally clever and a master of disguise. He has a dozen names and a hundred different appearances. But there is one thing he cannot disguise: he is missing the tip of his little finger. So, if you ever meet a man who is missing the top joint of his little finger, you should be very careful!

Adapted from: The 39 Steps, directed by Alfred Hitchcock (London: Gaumont British, 1935)

7. Some people buy college degrees on the Internet because they're trying to pretend that they went to college. That's a waste of money, since it's easy to make a college degree on your computer, and a degree that you make yourself is just as good as a degree that you bought on the Internet.

Adapted from: "Fake Degrees in Government," The Onion, Oct 18, 2006, <http://www.theonion.com/articles/fake-degrees-in-government,15092/>

8. People are created equal and endowed with unalienable rights. Governments exist to protect those rights. When a government violates those rights, people have a right to rebel against that government and create a new one. The king of Great Britain has repeatedly violated the rights of the American colonists. Thus, the American colonists have a right to rebel against the king of Great Britain.

Adapted from: U.S. Declaration of Independence

9. In the film *Interstellar*, the main characters travel through a “wormhole,” which is a tunnel through space-time that would enable space travelers to zip from one part of the universe to another. In theory, wormholes are possible, but it’s probably impossible to use wormholes to travel around the universe. Keeping wormholes open long enough to travel through them would require enormous amounts of “negative energy,” and it’s probably impossible to generate that much negative energy.

Adapted from: Mike Wall, “Interstellar’s Science: Is Wormhole Travel Possible?” LiveScience, Nov 24, 2014, <http://www.livescience.com/48890-interstellar-movie-wormhole-travel-feasibility.html>

10. The only remaining question was why the man had been murdered. Was it a politically motivated crime or a private one? I thought right away that it must be a privately motivated crime. Political assassins move quickly and flee. But in this case, the murderer’s footprints are all over the room, showing that he had spent quite a while in this room.

Adapted from: Arthur Conan Doyle, A Study in Scarlet (London: Ward Lock & Co., 1888; repr., London: Penguin, 2001), 138

Model responses for odd-numbered exercises can be found on page 287.

Need more practice? Take a look at the editorials, op-eds, and letters to the editor on the Web site for your favorite newspaper. Most of these will contain arguments. Working by yourself or with a classmate, identify the premises and conclusions in those arguments.

Rule 2

Develop your ideas in a natural order

Short arguments are usually developed in one or two paragraphs. Put the conclusion first, followed by your reasons, or set out your premises first and draw the conclusion at the end. In any case, set out your ideas in an order that unfolds your line of thought most clearly for the reader.

Consider this short argument by Bertrand Russell:

The evils of the world are due to moral defects quite as much as to lack of intelligence. But the human race has not hitherto discovered any method of eradicating moral defects. . . .

Intelligence, on the contrary, is easily improved by methods known to every competent educator. Therefore, until some method of teaching virtue has been discovered, progress will have to be sought by improvement of intelligence rather than of morals.²

Each sentence in this passage prepares the way for the next one, and then the next one steps smoothly up to bat. Russell begins by pointing out the two sources of evil in the world: “moral defects,” as he puts it, and lack of intelligence. He then claims that we do not know how to correct “moral defects,” but that we do know how to correct lack of intelligence. Therefore—notice that the word “therefore” clearly marks his conclusion—progress will have to come by improving intelligence.

Getting an argument to unfold in this smooth sort of way is a real accomplishment. It’s not easy to find just the right place for each part—and plenty of wrong places are available. Suppose Russell instead argued like this:

The evils of the world are due to moral defects quite as much as to lack of intelligence. Until some method of teaching virtue has been discovered, progress will have to be sought by improvement of intelligence rather than of morals. Intelligence is easily improved by methods known to every competent educator. The human race has not hitherto discovered any means of eradicating moral defects.

These are the same premises and conclusion, but they are in a different order, and the word “therefore” has been omitted before the conclusion. Now the argument is much harder to understand, and therefore also much less persuasive. The premises do not fit together naturally, and you have to read the passage twice just to figure out what the conclusion is. Don’t count on your readers to be so patient.

Expect to rearrange your argument several times to find the most natural order. The rules discussed in this book should help. You can use them to figure out not only what kinds of premises you need but also how to arrange them in the best order.

2. Bertrand Russell, *Skeptical Essays* (1935; repr., London: Allen & Unwin, 1977), p. 127.

Exercise Set 1.2: Outlining arguments in premise-and-conclusion form

Objective: To give you practice rewriting arguments in a clear, logical structure.

Instructions: Each of the following passages contains an argument. Put the premises in a natural, meaningful order, and write them out in a numbered list. Then, write the conclusion at the end of the list.

Tips for success: It's often helpful to outline arguments in premise-and-conclusion form. This involves several steps.

First, identify the premises and the conclusions, just as you did in Exercise Set 1.1.

Then, put the premises in a meaningful order—that is, an order that helps you understand how the premises connect with one another and with the conclusion. In many cases, there won't be a single best ordering. Try a few different orderings and pick the one that makes the most sense to you.

When you have settled on a meaningful order for the premises, write the premises down in a numbered list. It's helpful to make each premise a complete sentence, replacing pronouns like *him* or *it* with the names of the people or things they stand for.

Finally, write the conclusion at the end of the list. Some logicians draw a line between the premises and the conclusion, much like the line that mathematicians draw between an arithmetic problem and its answer. This line shows that the premises “add up” to the conclusion. Other logicians write *therefore* or include the symbol \therefore (which means *therefore*) before the conclusion.

Sample

Some companies are creating genetically modified animals, such as salmon, that provide more meat for consumers. If genetically modified salmon escaped into the wild, they would compete with "natural" salmon for food. Natural salmon, though, have been honed by natural selection to flourish in the wild. Genetically modified salmon are not designed to flourish in the wild. Thus, non-genetically modified salmon would outcompete genetically modified salmon if genetically modified salmon escaped into the wild.

Adapted from: "Dawn of the Frankenfish," The Economist, Jun 10, 2010

(1) If genetically modified animals escaped into the wild, they would compete with "natural" salmon for food.

(2) Natural salmon have been honed by natural selection to flourish in the wild.

(3) Genetically modified salmon are not designed to flourish in the wild.

Therefore, (4) Non-genetically modified salmon would outcompete genetically modified salmon if genetically modified salmon escaped into the wild.

This argument already presents its ideas in a natural order. The only thing needed to put it into premise-and-conclusion form is to identify the premises, put them in a numbered list, and add "therefore" before the conclusion.

The first sentence in the passage is not a premise in the argument. Its purpose is to provide context for the argument, not to give a reason to accept the conclusion. We do not need to include it in our outline of the argument.

1. Although he's only halfway through his basketball career, LeBron James will eventually surpass Michael Jordan in MVP awards, All-Star appearances, total points scored, and many other records. It is quite possible that he'll win as many championships as Jordan did. So far, Jordan is the greatest basketball player of all time. So, LeBron will eventually become the greatest player of all time.

Adapted from: David Lariviere, "LeBron James Will Eventually Top Michael Jordan as Basketball's Greatest Player," Forbes.com, May 24, 2013, <http://www.forbes.com/sites/davidlariviere/2013/05/24/lebron-james-will-eventually-top-michael-jordan-as-basketballs-greatest-player/>

2. Someone who can't get enough to eat clearly lives in poverty. But someone who can't afford the things that his or her society regards as necessities also lives in poverty. Wealthier societies will regard more things as necessities than poorer societies. Thus, the "poverty line," which is the amount of money someone must have to count as "non-poor," will be higher in a wealthier society than in a poorer society.

Adapted from: David Phillips, Quality of Life: Concept, Policy, and Practice (Abingdon, UK: Routledge, 2006), 110

3. A team of researchers led by Brendan Nyhan at Dartmouth wanted to study the effects of giving parents information on the safety of vaccines. They gave some parents information from the Centers for Disease Control and Prevention stating that there is no evidence that vaccines cause autism. Other parents received no information about vaccine safety. When compared to parents who received no information, parents who received information were no more likely to vaccinate their children. Nyhan and his colleagues concluded that simply providing information about vaccine safety does not increase the proportion of parents who get their children vaccinated.

Adapted from: Maria Konnikova, "I Don't Want to Be Right," New Yorker, May 16, 2014, <http://www.newyorker.com/science/maria-konnikova/i-dont-want-to-be-right>

4. Smaller high schools are better than larger high schools since smaller high schools have been shown to have higher graduation rates and a higher proportion of students going on to college. New York City has broken a number of large high schools up into several smaller schools.

Adapted from: David M. Herszenhorn, "Gates Charity Gives \$51 Million to City to Start 67 Schools," New York Times, Sep 18, 2003, <http://www.nytimes.com/2003/09/18/nyregion/gates-charity-gives-51-million-to-city-to-start-67-schools.html>

5. In 1908, something flattened eight hundred square miles of forest in a part of Siberia called Tunguska. Theories abound about "the Tunguska event." Some people say it was a UFO. Some even say it was a tiny black hole. Recently, however, scientists discovered

that a lake in the area has the shape of an impact crater that would have been created by an asteroid or comet. So, the Tunguska event was caused by an asteroid or comet.

Adapted from: Paul Rincon, "Fire in the Sky: Tunguska at 100," BBC News, Jun 30, 2008, <http://news.bbc.co.uk/2/hi/science/nature/7470283.stm>

6. There is a "generation gap" in Americans' knowledge of politics. That is to say, older people know more about politics than younger people. This is not the result of older people generally being more interested in politics than younger people. Opinion polls from the 1940s through the mid-1970s show that younger people used to be at least as well informed about politics as the older people of their time were.

Adapted from: Robert D. Putnam, Bowling Alone (New York: Simon & Schuster, 2000), 36

7. All cars should have a spear mounted on the steering wheel, aimed directly at the driver's chest. After all, we should do everything we can to encourage cautious driving. Since people behave much more cautiously when they know that their life is on the line, steering wheel-mounted spears would make people drive much more cautiously.

Adapted from: Steven E. Landsburg, The Armchair Economist (New York: Simon & Schuster, 1994), 5

8. Human nature is not inherently good. Human nature consists of those human traits that are spontaneous; these things cannot be learned. Thus, if something can be learned, then it is not part of human nature. Yet, goodness is not spontaneous; people must learn how to be good.

Adapted from: Xunzi, Xunzi, in Readings in Classical Chinese Philosophy, 2nd ed., edited by Philip J. Ivanhoe and Bryan W. van Norden (Indianapolis: Hackett Publishing Company, 2005), 298–99

9. It is possible for someone to wonder whether her life is meaningful even if she knows that she has enjoyed her life. This shows that a meaningful life is not the same as an enjoyable life. At the same

Rule 2: Develop your ideas in a natural order

time, someone who is alienated from her life or feels like her life is pointless, even if she is doing things that might seem worthwhile from an objective perspective, is not leading a meaningful life. This shows that a meaningful life is not the same as a life spent on objectively worthwhile projects. All of this shows that neither enjoyment nor objectively worthwhile projects, considered separately from the other, are sufficient for a meaningful life.

Adapted from: Susan Wolf, "Happiness and Meaning: Two Aspects of the Good Life," Social Philosophy & Policy 14 (1997), 211

10. Suppose that Tim learns that his grandfather had done something terrible in the 1920s, several years before the birth of Tim's mother. Suppose also that Tim has invented a time machine. While it may seem that Tim could go back in time and kill his grandfather to prevent him from doing this terrible thing, in fact, it is impossible for Tim to kill his grandfather. The past has already happened. It cannot be changed. Since Tim's grandparents had Tim's mother, who went on to have Tim, it must be the case that Tim did not kill his grandfather.

Adapted from: David Lewis, "The Paradoxes of Time Travel," American Philosophical Quarterly 13 (1976), 149-50

Exercise Set 1.3: Analyzing visual arguments

Objective: To help you recognize short arguments in visual materials.

Instructions: Go to the companion Web site for this book. Click on the link for “Chapter I” and then on the link for “Exercise Set 1.3.” You will get a list of links to images and videos. Write a premise-and-conclusion outline of the argument that you think the image or video is trying to communicate.

Tips for success: We are constantly bombarded by visual material—from billboards to artwork to online videos—that aims to persuade us of something. Sometimes the material tries to persuade us to do something or to want something. Sometimes it tries to persuade us to believe something. You can think of many of these materials as *visual arguments*. They don’t necessarily present their premises and conclusions in words, but many of them still can be read as offering reasons in support of conclusions—that is, as arguments.

When you’re thinking about a visual argument, it’s entirely up to you to present the argument’s ideas in a natural order. The first thing you’ll need to do is determine the conclusion of the visual argument. What is the argument trying to get you to do or believe? Then you’ll need to ask yourself whether the picture or video offers you reasons to believe that conclusion. If so, these will be the premises of the argument.

To identify these premises, think about what the connection is between the images that you are seeing and the conclusion that those images are meant to support. To take an extremely simple case, suppose an advertisement shows an athlete enjoying a Sprite. The conclusion of this visual argument is that you ought to drink Sprite too. What is the connection between the image of the athlete drinking Sprite and the claim that you ought to drink it? If the athlete takes a sip after a hard game or workout, perhaps the message is that Sprite is especially refreshing. In that case, the argument might be something like this: “Sprite is especially refreshing. You like refreshing drinks. Therefore, you ought to drink Sprite.” Or maybe the athlete is sitting around with her friends, and they are all having a good time and drinking Sprite. In that case, the message might be that hip young adults—especially people who like this particular athlete’s sport—drink Sprite and that if you want to be like these people, you should drink Sprite too.

Different people are likely to come up with different interpretations of each visual argument. In fact, you can probably come up with different

interpretations of each one yourself. Don't worry about finding the one and only correct interpretation. Just focus on finding a plausible interpretation—one that the creator of the visual argument might recognize as the message he or she was trying to send.

The exercises for this exercise set, including a sample exercise, can be found on the companion Web site for this book.

Need more practice? Look through a recent magazine or a Web site that includes advertisements. Analyze the visual arguments offered in each of the advertisements that you encounter.

Critical thinking activity: Found arguments

For an out-of-class activity that gives you practice in applying Rules 1 and 2, see the “Found arguments” assignment sheet (p. 441) in Part 3.

Critical thinking activity: Creating a visual argument

For an out-of-class activity that gives you practice in dealing with visual arguments, see the “Creating a visual argument” assignment sheet (p. 442) in Part 3.

Rule 3

Start from reliable premises

No matter how well you argue from premises to conclusion, your conclusion will be weak if your premises are weak.

Nobody in the world today is really happy. Therefore, it seems that human beings are just not made for happiness. Why should we expect what we can never find?

The premise of this argument is the statement that nobody in the world today is really happy. Sometimes, on certain rainy afternoons or in certain moods, this may almost seem true. But ask yourself if this premise really is plausible. Is *nobody* in the world today really happy? Ever? At the very least, this premise needs some serious defense, and very likely it is just not true. This argument cannot show, then, that human beings are not made for happiness or that you or I should not expect to be happy.