

You can build on your knowledge of the basics of argument, examined in Chapter 3, by understanding some traditional forms of argument: induction, deduction, and analogy. It is also important to recognize arguments that do not meet the standards of good logic.

INDUCTION

Induction is the process by which we reach inferences—opinions based on facts, or on a combination of facts and less debatable inferences. The inductive process moves from particular to general, from support to assertion. We base our inferences on the facts we have gathered and studied. In general, the more evidence, the more convincing the argument. No one wants to debate tomorrow's sunrise; the evidence for counting on it is too convincing. Most inferences, though, are drawn from less evidence, so we need to examine these arguments closely to judge their reasonableness.

The pattern of induction looks like this:

EVIDENCE: There is the dead body of Smith. Smith was shot in his bedroom between the hours of 11:00 a.m. and 2:00 a.m., according to the coroner. Smith was shot by a .32-caliber pistol. The pistol left in the bedroom contains Jones's fingerprints. Jones was seen, by a neighbor, entering the Smith home at around 11:00 the night of Smith's death. A coworker heard Smith and Jones arguing in Smith's office the morning of the day Smith died.

CLAIM: Jones killed Smith.

The facts are presented. The jury infers that Jones is a murderer. Unless there is a confession or a trustworthy eyewitness, the conclusion is an inference, not a fact. This is the most logical explanation. The conclusion meets the standards of simplicity and frequency while accounting for all of the known evidence.

The following paragraph illustrates the process of induction. In their book *Discovering Dinosaurs*, authors Mark Norell, Eugene Gaffney, and Lowell Dingus answer the question "Did dinosaurs really rule the world?"

For almost 170 million years, from the Late Triassic to the end of the Cretaceous, there existed dinosaurs of almost every body form imaginable: small carnivores, such as *Compsognathus* and *Ornitholestes*, ecologically equivalent to today's foxes and coyotes; medium-sized carnivores, such as *Velociraptor* and the troodontids, analogous to lions and tigers; and the monstrous carnivores with no living analogs, such as *Tyrannosaurus* and *Allosaurus*. Included among the ornithischians and the elephantine sauropods are terrestrial herbivores of diverse body form. By the end of the Jurassic, dinosaurs had even taken to the skies. The only habitats that dinosaurs did not dominate during the Mesozoic were aquatic. Yet, there were marine representatives, such as the primitive toothed bird *Hesperornis*. Like penguins, these birds were flightless, specialized for diving, and probably had to return to land to reproduce. In light of this broad morphologic diversity [number of body forms], dinosaurs did "rule the planet" as the dominant life form on Earth during most of the

Mesozoic [era that includes the Triassic, Jurassic, and Cretaceous periods, 248 to 65 million years ago].¹

Observe that the writers organize evidence by type of dinosaur to demonstrate the range and diversity of these animals. A good inductive argument is based on a sufficient volume of *relevant* evidence. The basic shape of this inductive argument is illustrated in Figure 6.1.

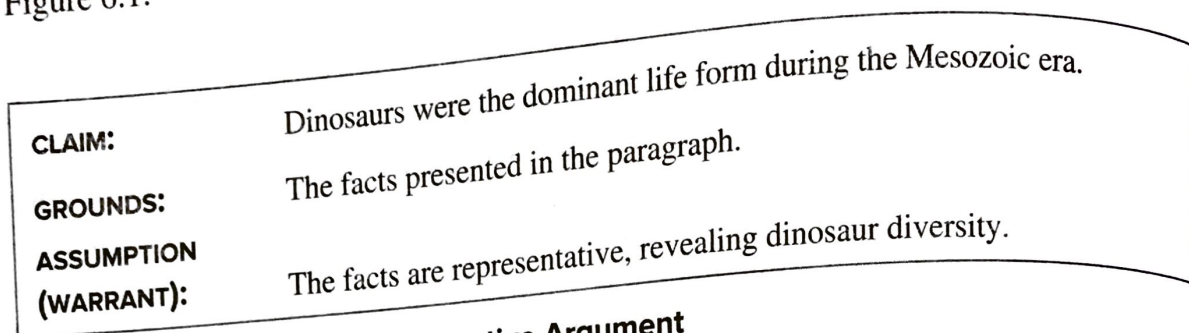


FIGURE 6.1 The Shape of an Inductive Argument

COLLABORATIVE EXERCISE: Induction

With your class partner or in small groups, make a list of facts that could be used to support each of the following inferences:

1. Fido must have escaped under the fence during the night.
2. Sue must be planning to go away for the weekend.
3. Students who do not hand in all essay assignments fail Dr. Bradshaw's English class.
4. The price of Florida oranges will go up in grocery stores next year.
5. Yogurt is a better breakfast food than bread.

DEDUCTION

Although induction can be described as an argument that moves from particular to general, from facts to inference, deduction cannot accurately be described as the reverse. Deductive arguments are more complex. *Deduction is the reasoning process that draws a conclusion from the logical relationship of two assertions, usually one broad judgment or definition and one more specific assertion, often an inference.* Suppose, on the way out of American history class, you say, "Abraham Lincoln certainly was a great leader." Someone responds with the expected question: "Why do you think so?" You explain: "He was great because he performed with courage and a clear purpose in a time of crisis." Your explanation contains a conclusion and an assertion about Lincoln (an inference) in support. But behind your explanation rests an idea about leadership, in the terms of deduction, a *premise*. The argument's basic shape is illustrated in Figure 6.2.

CLAIM:	Lincoln was a great leader.
GROUND:	1. People who perform with courage and clear purpose in a crisis are great leaders.
	2. Lincoln was a person who performed with courage and a clear purpose in a crisis.
ASSUMPTION (WARRANT):	The relationship of the two reasons leads, logically, to the conclusion.

FIGURE 6.2 The Shape of a Deductive Argument

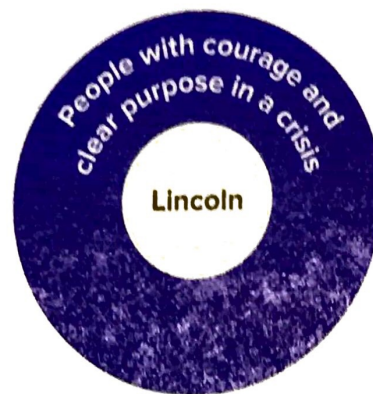
Traditionally, the deductive argument is arranged somewhat differently from these sentences about Lincoln. The two reasons are called *premises*; the broader one, called the *major premise*, is written first and the more specific one, the *minor premise*, comes next. The premises and conclusion are expressed to make clear that assertions are being made about categories or classes. When all three steps are used, the structure is called a *syllogism*. *Syllogisms* may also include more than one *minor premise*, but for now, we will just focus on the three-step deductive process. To illustrate:

MAJOR PREMISE:	All people who perform with courage and a clear purpose in a crisis are great leaders.
MINOR PREMISE:	Lincoln was a person who performed with courage and a clear purpose in a crisis.
CONCLUSION:	Lincoln was a great leader.

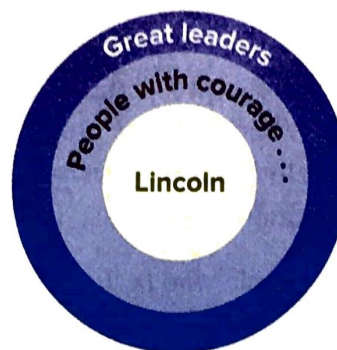
If these two premises are correctly, that is, logically, constructed, then the conclusion follows logically, and the deductive argument is *valid*. This does not mean that the conclusion is necessarily *true*. It does mean that if you accept the truth of the premises, then you must accept the truth of the conclusion, because in a valid argument the conclusion follows logically, necessarily. How do we know that the conclusion must follow if the argument is logically constructed? Let's think about what each premise is saying and then diagram each one to represent each assertion visually. The first premise says that all people who act a particular way are people who fit into the category called "great leaders":



The second premise says that Lincoln, a category of one, belongs in the category of people who act in the same particular way that the first premise describes:



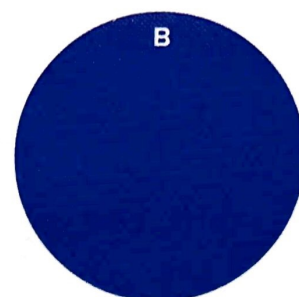
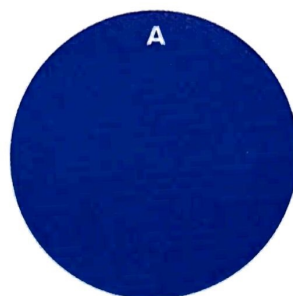
If we put the two diagrams together, we have the following set of circles, demonstrating that the conclusion follows from the premises:



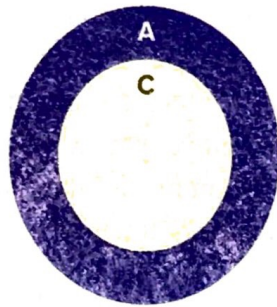
We can also make negative and qualified assertions in a deductive argument. For example:

PREMISE:	No cowards can be great leaders.
PREMISE:	Falstaff was a coward.
CONCLUSION:	Falstaff was not a great leader.

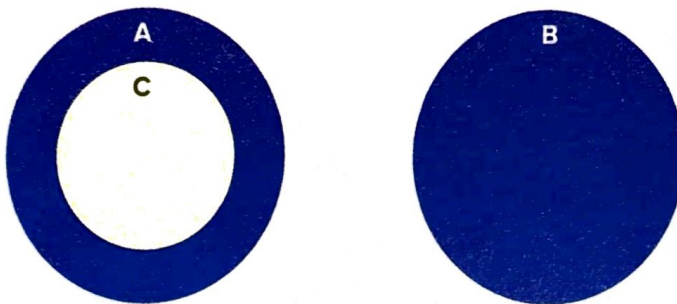
Or, to reword the conclusion to make the deductive pattern clearer: No Falstaff (no member of this class) is a great leader. Diagramming to test for validity, we find that the first premise says no A's are B's:



The second premise asserts all C's are A's:



Put together, we see that the conclusion follows necessarily from the premises: No C's can possibly be members of class B.



Some deductive arguments merely look right, but the two premises do not lead logically to the conclusion that is asserted. We must read each argument carefully or diagram each one to make certain that the conclusion follows from the premises. Consider the following argument: *Unions must be communistic because they want to control wages.* The sentence contains a conclusion and one reason, or premise. From these two parts of a deductive argument we can also determine the unstated premise, just as we could with the Lincoln argument: *Communists want to control wages.* If we use circles to represent the three categories of people in the argument and diagram the argument, we see a different result from the previous diagrams:



Diagramming the argument reveals that it is invalid; that is, it is not logically constructed because the statements do not require that the union circle be placed inside the communist circle. We cannot draw the conclusion we want from any two premises, only from those that provide a logical basis from which a conclusion can be reached.

We must first make certain that deductive arguments are properly constructed or valid. But suppose the logic works and yet you do not agree with the claim? Your complaint, then, must be with one of the premises, a judgment or inference that you do not accept as true. Consider the following argument:

MAJOR PREMISE:	(All) dogs make good pets.
MINOR PREMISE:	Fido is a dog.
CONCLUSION:	<hr/> Fido will make a good pet.

This argument is valid. (Diagram it; your circles will fit into one another just as with the Lincoln argument.) However, you are not prepared to agree, necessarily, that Fido will make a good pet. The problem is with the major premise. For the argument to work, the assertion must be about *all* dogs, but we know that not all dogs will be good pets.

When composing a deductive argument, your task will be to defend the truth of your premises. Then, if your argument is valid (logically constructed), readers will have no alternative but to agree with your conclusion. If you disagree with someone else's logically constructed argument, then you must show why one of the premises is not true. Your counterargument will seek to discredit one (or both) of the premises. The Fido argument can be discredited by your producing examples of dogs that have not made good pets.

Sometimes, a deductive argument, or *syllogism*, does not include a premise. When a premise is missing from the deductive process, the syllogism becomes an *enthymeme*. Enthymemes are syllogisms that are missing a premise. A missing premise does not necessarily make a syllogism invalid or incorrect. In fact, omitting or skipping a *premise* is fairly common in everyday discourse. For instance, the syllogism above involving dogs makes sense—if you agree with the existing premises—even if one of the premises is omitted:

MINOR PREMISE:	Fido is a dog.
CONCLUSION:	Fido will make a good pet.
MISSING PREMISE (MAJOR PREMISE):	<hr/> (All) dogs make good pets.

Or

MAJOR PREMISE:	(All) dogs make good pets.
CONCLUSION:	Fido will make a good pet.
MISSING PREMISE (MINOR PREMISE):	<hr/> Fido is a dog.

As we have seen, this argument, with or without all three parts, fails on its logic. But upon first reading or hearing the enthymeme above, someone who is not paying attention might be misled.

Enthymemes are one of the most common ways people argue in conversations, and especially online, so it is important that you pay attention to information that may be missing. This process is known as critical thinking. If you do not use critical thinking, you may be manipulated into agreeing with an argument that you do not really support.

A deductive argument can serve as the core of an essay, an essay that supports the argument's claim by developing support for each of the premises. Since the major premise is either a broad judgment or a definition, it will need to be defended on the basis of an appeal to values or beliefs that the writer expects readers to share. The minor premise, usually an inference about a particular situation (or person), would be supported by relevant evidence, as with any inductive argument. You can see this process at work in the Declaration of Independence. Questions follow the Declaration to guide your analysis of this famous example of the deductive process.