Section 1 – Types of Arguments

Outline:
1.1 Vocabulary
1.2 Deductive vs. Non-Deductive Arguments
1.3 Forms of Valid and Invalid Deductive Arguments
1.4 A Priori vs. A Posteriori Deductive Arguments
1.5 Types of Non-Deductive Arguments: Induction, Argument by Analogy & Abduction
1.6 Exercises

Learning objectives
At the end of this section you will be able to define the following terms:

- Statement
- Validity
- Cogency
- Deductive argument
- Linked argument
- Argument
- Soundness
- Strength
- Non-deductive argument
- Convergent argument
- Sub-argument
- \textit{A priori}
- \textit{A posteriori}
- Chain Argument

At the end of this section you will be able to identify several types of arguments.
One of the essential components of doing philosophy is considering well-known views on the subject at hand. The first step in considering someone else’s view consists of reconstructing his or her argument with fairness and charity. In this chapter we will first explain various different types of arguments.

1.1 Vocabulary

Before we can learn about different types of arguments, we need to become familiar with some very important definitions.

**Statement**: A *statement* is a sentence that can either be true or false.

**Example**

“*I received an A on the final paper in my introductory philosophy course.*”

This statement is either true or false depending on my actual grade on the paper. We say that this sentence has a truth-value (either true or false), and perhaps we can even know what the truth-value is. Not all sentences in English are statements—questions, commands, and propositions, for example, are not statements. Some non-statement sentences can, however, be transformed into statements with some re-wording.

**Example**

“*Go to class!*”

This imperative can be usefully transformed into the statement, “*You should go to class,*” if the context permits.

**Conditional Statement**: Conditional statements are special because they occur so often in arguments. A conditional statement has two parts: the *antecedent* and the *consequent*. A conditional statement generally has the form of an “if, then” statement, in which we have “If [the antecedent], then [the consequent].” Consider the following:

If you receive an A on the final paper, then you receive an A in the class.

The *entire statement* is the conditional, “you earned an A on the final paper” is the antecedent, and “you earn an A in the class” is the consequent. It is important to remember that a conditional statement, just like a regular statement, is a sentence that has a truth-value. This conditional statement is either true or false depending on the instructor’s policies in the course.

**Argument**: For our purposes an *argument* is a technical term that has a precise meaning: an argument is a set of statements, one of which is the *conclusion*, and the others are *premises*, which are supposed to provide support for the conclusion. In other words, the conclusion asserted to be true on the basis of the premises.

For example, you might make the following argument to your philosophy instructor:

“It says in the syllabus that if a student receives an A on the final paper, then he or she will receive an A in the class. I did, in fact, receive an A on my final paper, so I should get an A in the class.”

**Definitions**

**Statement**: declarative sentence; a sentence that could be true or false.

**Argument**: a set of statements in which one or more statements (the premises) are given as reasons to believe another statement (the conclusion)

**Validity**: A *valid* argument is one in which it is not possible for the conclusion to be false if the premises are true. This is a very bold statement, not about what is actually the case, but about what could possibly be the case. It is helpful, when considering validity, to consider the notion of possible worlds. I can imagine a possible world in which grass is blue, and I can imagine a possible world in which trees are blue.
But consider the following argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If grass is blue, then trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grass is blue.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Trees are blue.</td>
</tr>
</tbody>
</table>

There is no possible world in which the premises are true, but the conclusion false. Thus, this is a valid argument.

Conversely, an invalid argument is one in which it is possible for the premises to be true and the conclusion false. Consider the following argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If grass is blue, then trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trees are blue.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Grass is blue.</td>
</tr>
</tbody>
</table>

It is possible for the premises to be true, but the conclusion false; there may be conditions other than grass being blue that lead to trees being blue. In other words, if it were also true that if bushes are blue, then trees are blue, just knowing that trees are blue doesn’t tell us whether grass or bushes are blue.

It is important to note that, given our definitions, a statement cannot be valid or invalid, and an argument can neither be true nor false.

**Soundness:** A sound argument is a valid argument in which all the premises are actually true in our world. This means that any argument that is either invalid, or valid with at least one false premise, is unsound. Consider this example again:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If grass is blue, then trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grass is blue.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Trees are blue.</td>
</tr>
</tbody>
</table>

This is a valid but unsound argument because at least one of the premises is not actually true.

Consider again the invalid argument from above:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If grass is blue, then trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trees are blue.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Grass is blue.</td>
</tr>
</tbody>
</table>

This argument is unsound because it is invalid, regardless of whether the premises are actually true.

**Strength:** Not all unsound arguments are bad; an invalid argument may be a good argument. Consider the following argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>90% of Americans are afraid of snakes.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jane is an American.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Jane is afraid of snakes.</td>
</tr>
</tbody>
</table>

This argument is invalid because it is certainly possible that Jane is part of the 10% of Americans who are not afraid of snakes. Thus, it is possible for the premises to be true and the conclusion to be false. However, it is unlikely that Jane is a part of the 10% rather than the 90%, so it is unlikely that the conclusion would be false if the premises are true.

A strong argument, then, is an invalid argument in which it is likely that the conclusion is true, given that the premises are true. Unlike validity, strength can come in degrees.
Consider a similar argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>99% of Americans are afraid of snakes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion:</td>
<td>Jane is afraid of snakes.</td>
</tr>
</tbody>
</table>

Here, it is even more likely that the conclusion is true given that the premises are true. And since it is more likely, we say that this argument is stronger than the first, although they are both considered strong.

Conversely, a weak argument is an invalid argument in which it is not likely that the conclusion is true, given the truth of the premises.

Consider the following argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>30% of Americans speak French.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion:</td>
<td>Jane is afraid of snakes.</td>
</tr>
</tbody>
</table>

While it is possible that Jane is part of the 30% of Americans who speak French, it is more likely that she is part of the 70% who do not. Thus, this is a weak argument.

**Cogency:** Just as we can evaluate valid arguments in terms of the actual truth or falsity of their premises, we can evaluate invalid arguments. A cogent argument is a strong argument in which all the premises are actually true in our world. This means that any argument that is either weak, or strong with at least one false premise, is uncogent.

Consider the following argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>All swans observed so far are white.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion:</td>
<td>All swans are white.</td>
</tr>
</tbody>
</table>

This is quite a strong argument, but, unfortunately, black swans have now been observed in Australia. Thus the premise is false, and the argument is uncogent.

**Definitions**

**Valid:** in a valid argument, if all the premises are true, then the conclusion must be true.

**Sound:** a sound argument is valid and has all true premises.

**Strong:** in a strong argument, if the premises are all true, then the conclusion is likely to be true.

**Cogent:** a cogent argument is strong and has all true premises.

### 1.2 Deductive vs. Non-deductive Arguments

Most of the arguments we will see in this book aspire to a very high standard in attempting to establish their conclusions. Philosophers usually want to claim that their conclusions come with a 100% guarantee of being true, provided that they show that their premises are also true. In other words, philosophers generally aim to give sound arguments.

Sometimes, however, arguments do not live up to this standard. Still, we would like to be able to classify arguments not just according to their actual logical form, but also according to what the author intended the logical form to be. The reason is that we do not want to criticize an argument for being invalid if the author didn’t intend for it to be valid, but instead intended for the argument to be strong. Thus, we will make the distinction between deductive arguments and non-deductive arguments. A deductive argument is one that makes the claim that if the premises are true, then the conclusion is guaranteed to be true. A non-deductive argument is one that makes the claim that if the premises are true, then the conclusion is likely to be true. We call a “successful” deductive argument valid, and a “successful” non-deductive argument strong.
1.3 Forms of Valid and Invalid Deductive Arguments

There are some valid and invalid argument forms that are so common that they have been given names.

Valid Argument Forms:
The first example above has the form of *modus ponens*. In that example, A stands for “grass is blue,” and B stands for “trees are blue.”

A similar argument is the following:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If grass is blue, then trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trees are not blue.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Grass is not blue.</td>
</tr>
</tbody>
</table>

This argument has the form of *modus tollens*.

Four additional common valid argument forms are illustrated by the following arguments.

This argument has the form of *hypothetical syllogism*:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If grass is blue, then trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If trees are blue, then the sky is green.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>If grass is blue, then the sky is green.</td>
</tr>
</tbody>
</table>

This argument has the form of *disjunctive syllogism*:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>Either grass is blue or trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grass is not blue.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Trees are blue.</td>
</tr>
</tbody>
</table>

This argument has the form of *constructive dilemma*:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>Either grass is blue or trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If grass is blue, then roses are purple.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Either roses are purple or the sky is green.</td>
</tr>
</tbody>
</table>

This argument has the form of *categorical syllogism*:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>All trees are blue.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This plant is a tree.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>This plant is blue.</td>
</tr>
</tbody>
</table>

There is one more deductive argument form we should consider before proceeding—*reductio ad absurdum*. In this sort of argument, we first assume that the negation of the conclusion is true. Then we use that assumption to draw a contradiction. Finally, since the assumption lead to a contradiction, we conclude that the negation of the assumption (in this case, the conclusion) is true. This is basically the form of Zeno’s argument from the previous chapter—he assumed that “An infinite number of finite distances add to an infinite distance.” Using this assumption, he was able to show that you can never cross the whole room. But of course he could demonstrate, by doing it, that you can cross the whole room—hence the paradox. Since we have a contradiction, then the assumption must be false. And we saw
that if we use the premise “An infinite number of finite distances add to a finite distance” instead, we do not reach a contradiction, and we can resolve the paradox.

As a simpler example consider the following argument:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>All birds can fly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premises:</td>
<td>Penguins are birds.</td>
</tr>
<tr>
<td>Conclusion</td>
<td>Penguins can fly.</td>
</tr>
</tbody>
</table>

This conclusion, of course, contradicts our experience that penguins, in fact, cannot fly. We can use this contradiction to show that the assumption “All birds can fly” is false (if, of course, the claim that penguins are birds is true):

<table>
<thead>
<tr>
<th>Assumption:</th>
<th>All birds can fly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premise:</td>
<td>Penguins are birds.</td>
</tr>
<tr>
<td>Sub-conclusion:</td>
<td>Penguins can fly.</td>
</tr>
<tr>
<td>Statement of fact:</td>
<td>Penguins can't fly.</td>
</tr>
<tr>
<td>Sub-conclusion:</td>
<td>Penguins can fly and penguins can't fly</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>Not all birds can fly.</td>
</tr>
</tbody>
</table>

Invalid Argument Forms:

An invalid argument may be a bad argument, but not because it is weak or uncogent; rather it may be bad because the premises do not support the conclusion. A formal fallacy is an argument that has a similar form to one of the valid forms we have named, but is not valid.

One example we used above has the form of **affirming the consequent**:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If you earned an A on the final paper, then you earn an A in the class.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premises:</td>
<td>You earn an A in the class.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>You earned an A on the final paper.</td>
</tr>
</tbody>
</table>

Although this argument seems to resemble the form *modus ponens*, it is actually invalid. The rule (the first premise) doesn’t say that earning an A on the final paper is the only way to get an A in the class; perhaps it is also the case that if you earn an A on the final exam, then you earn an A in the class. Thus, the truth of the premises does not guarantee the truth of the conclusion.

1.4 **A Priori vs. A Posteriori Deductive Arguments**

In a philosophical context, *a priori* means “prior to experience.” An *a priori* proposition is one whose verification does not require experience; it is something that can be verified purely by reason. In particular, the assertion is that once you understand the concepts and definitions involved in the proposition, you don’t need any particular experience on top of that understanding to know that the proposition is true. Rather, you can reason directly from the concepts and definitions to the truth of the proposition.

An example of an *a priori* proposition is: \(2 + 3 = 5\). Once you understand the concepts of addition and equality, and the definitions of 2, 3 and 5, you can understand through reason alone that this proposition is true. There’s no experience that you need to have, no “checking with the real world” that you need to do to verify that it is true.

*A priori* reasoning, or an *a priori* argument, is reasoning that uses *a priori* propositions as premises; i.e., it is reasoning from concepts and definitions.

In contrast, *a posteriori* means “after experience.” An *a posteriori* proposition is one whose verification does require experience; it is something that can only be verified by experience. In particular the assertion is that even if you understand the concepts and definitions involved in the proposition, you still need to “check with the real world” to verify that it is true.
An example of an *a posteriori* proposition is: There are two cows in that field. Even after you understand the concepts of cow, field and being in a certain place, and the definition of 2, you would still have to verify, by some experiential means, whether the statement is actually true.

*A posteriori* reasoning, or and an *a posteriori* argument, is reasoning that uses *a posteriori* propositions as premises; i.e., it is reasoning from facts about the world.

### 1.5 Types of Non-deductive Arguments: Induction, Argument by Analogy & Abduction

Strong arguments are not always those with premises that assert percentages. Many (if not all) scientific laws are actually the conclusions of strong arguments, the premises of which are assertions about what we have experienced so far, and the conclusions of which are assertions about what we will continue to experience in the future. These are often referred to as *arguments by induction*.

#### Example

|Premises: All of the massive objects observed so far fall to the ground at a rate of 9.8m/s^2. |
|Conclusion: All massive objects fall to the ground at a rate of 9.8m/s^2. |

In addition, many *arguments by analogy* are strong arguments. This type of argument is one we come across quite frequently in philosophy. The premises generally are (1) that two situations are analogous (or alike in some important respects), and (2) that certain things are true of one situation. The conclusion is then that those same things will be true of the second situation. The strength of arguments by analogy depend on how good the analogy is for the purposes of the argument.

#### Example

|Premises: My bowl fell off the counter and broke. |
|Your bowl is very similar to my bowl. |
|Conclusion: If your bowl falls off the counter it will break. |

Finally, many *abductive arguments* are strong. An abductive argument is often called an *inference to the best explanation*, and it is structured as follows. Some fact about the world is presented as needing explanation. A claim is made about what the best explanation is for that fact, and then the inference is that this explanation must be true.

#### Example

|Premises: There is not enough visible matter in the universe to account for all of the gravitational effects we observe in space. |
|The best explanation for the extra gravitational effects we observe is the presence of matter we cannot see (dark matter). |
|Conclusion: The universe contains dark matter. |

### 1.6 Exercises

1. For each kind of argument, construct an example of your own.
   a. Valid
   b. Invalid
   c. Sound
   d. Unsound
   e. Strong
   f. Weak
   g. Cogent
   h. Uncogent
   i. Deductive
   j. Inductive
   k. Argument by Analogy
   l. Abductive
   m. Modus Ponens
   n. Modus Tollens
   o. Hypothetical Syllogism
   p. Disjunctive Syllogism
   q. Constructive Dilemma
   r. Denying the Antecedent
   s. Affirming the Consequent

Maralee Harrell  
Creating Argument Diagrams  
7
Section 2 – Argument Analysis and Diagramming

Outline:

2.1 Visual Representations of Reasoning
2.2 Understanding and Representing Argument Structure
   2.2.1 Structural Indicators: Premises and Conclusions
   2.2.2 Multiple Statements Within Sentences
   2.2.3 Linked Arguments
   2.2.4 Convergent Arguments
   2.2.5 Chain Arguments
   2.2.6 Complex Arguments
2.3 Interpreting Arguments to Create Diagrams
   2.3.1 Fairness and Charity
   2.3.2 Implied Premises and Conclusions
   2.3.3 Implied Premises and Conclusions: A Complex example
2.4 Diagramming Objections and Replies
2.5 Summary
2.6 Exercises

Learning objectives
At the end of this section you will be able to define the following terms:
  • Linked argument
  • Convergent argument
  • Chain Argument
  • Complex Argument
  • Sub-argument

At the end of this section you will be able to analyze and diagram arguments.
2.1 Visual Representations of Reasoning

Consider the following story:

"Ten o’clock? I’m not sure if I’ll be able to make it. Let me call you back, okay?" Alexis closed her phone and turned to Brandy, "That was Char. She wants go out to see the Wanderers later. I really want to go…"

"Are you kidding? No, you shouldn’t go! You know we’re going to have a quiz in math tomorrow. You’re not doing so great in the class, and you really should study. Look, I’ll study with you, okay?"

Alexis sighed, "My mom said the same thing. Not about the studying; about the not going. She thinks I haven’t been getting enough sleep lately. She wants me to go to bed early. And not just tonight—for the next few."

She sighed again and sat down.

"Well, she has a point." Brandy sat down too, "Even if we weren’t almost definitely going to have a quiz tomorrow, that’s a good reason why you shouldn’t go."

"Yeah, maybe," Alexis trailed off. She flopped back on the bed, "Ugh! You know my dad’s in on it too."

"What do you mean?"

"He says I’ve been spending too much money. He says the tickets are too expensive. If I want to buy them,"

Alexis raised both her hands up to do air-quotes, "I’ll have to ‘crack open someone else’s piggy-bank.’ Ugh," Alexis sighed again, "But I really want to go!"

Brandy stood up again, and looked at Alexis, "So let me get this straight. You have three separate reasons, and good reasons at that, and you still don’t believe it? That you shouldn’t go out?" Brandy laughed and threw a pillow at her friend, "You’re unbelievable!" She laughed again, as Alexis threw the pillow back.

"You’re right, you’re right. I’m convinced; I won’t go," Alexis lowered her voice conspiratorially, "but please don’t tell my parents that anything they said made a difference."

Brandy is certainly right about one thing; Alexis was presented with three different reasons for her to believe that she should not go to the concert. Or, to put in another way, Alexis was presented with three separate arguments that all had the same conclusion. Let’s look at these arguments one at a time.

We can write the first argument like this:

*Alexis should not go to the concert because she should study for her math quiz.*

We can break this argument up into two parts: (1) Brandy wants Alexis to believe that she should not go to the concert, so (2) Brandy gives Alexis a reason to believe it. Alternately, we can say that Brandy is telling Alexis that her belief that they are going to have a quiz the next day supports her belief that Alexis should stay home.

We can actually represent that way of looking at the conversation visually, with this diagram:

![Argument Diagram 1](image)

Here, the sentences in the boxes are each of Brandy’s beliefs, and the arrow indicates that the bottom belief supports the top belief.

We can do the same thing with the arguments that each of Alexis’s parents give. From what Alexis says, it seems that her mother believes that she’s not getting enough sleep, and so she should go to be early. Alexis’s mother also thinks that this supports her belief that Alexis should not go to the concert. And again we can represent this with a diagram,

![Argument Diagram 2](image)

where, again the sentences in the boxes are Alexis’s mother’s beliefs, and the arrow represents the fact that Alexis’s mother thinks that the bottom belief provides support for the top belief.
Similarly, it seems that Alexis’s father thinks she’s spending too much money, and so should not spend money on a ticket to the concert. Alexis’s father also thinks that this supports his belief that she should not go to the concert. This reading of Alexis’s description can be represented with this diagram:

![Diagram](image)

In fact, since all three arguments have the same conclusion, we can represent them in one single diagram:

![Diagram](image)

Let’s consider another exchange:

Dr. Jordan reached her hand into the paper bag and pulled out a lemon. She placed it on the table, and looked out at the class. “Do lemons conduct electricity?” she asked, looking into her students’ faces. Jaime raised his hand, and Dr. Jordan nodded toward him. “I don’t know—let’s plug it in and find out,” Jaime smiled.

“Yes, we could do that,” Dr. Jordan smiled back, “and we will….tomorrow. But right now, I want you to use what you know about chemistry to make a conjecture.”

“Okay,” Jaime said, “how do we start?”

“Well, what do you know about lemons?”

“They’re sour,” said Jaime, dryly.

“Yes! And why is that?” probed Dr. Jordan.

“Um….citric acid?” Jaime asked.

“Right,” said Dr. Jordan as she walked to the chalkboard. “So let’s write this down. We know that lemons contain citric acid,” she said, as she wrote this on the board. “What else?”

“Water and fructose.”

“Good. So we have citric acid and water—we don’t care about the fructose right now. What do we call a combination like that?” Dr. Jordan inquired.

“Electrolyte!”

“Yes, good. Lemons contain an electrolyte. OK, now for ‘plugging it in.’ We want to hook up an ammeter or some other device, like a light bulb, to see if we can get a current. In order to do this, we would have to stick metal into the lemon in two places. So now,” she asked as she turned back to the class, “what do we know about electrolytes and metal?”

“Let’s see,” began Jaime, “The electrolyte will oxidize certain metals, like zinc. So, if you stick something like a zinc plated nail in the lemon, the Zn atoms will oxidize to Zn⁺⁺ ions.”

“OK, good,” continued Dr. Jordan, “now what if we put in another piece of metal, like copper?”

“Well, copper won’t oxidize; it’s just a conductor.”

“Right. What will happen, though, is that the Zn⁺⁺ ions and the H⁺ ions will be attracted to the copper, and if we connect the piece of zinc to the piece of copper outside of the lemon, they will draw the free electrons from the zinc around the circuit to the copper.”

“Oh, yeah! And then the H⁺ ions will reduce to hydrogen gas around the copper, right?” Jaime asked.

“Right. And the negatively charged citrate will be attracted to the zinc. So the electrons will flow from the zinc to the copper outside the lemon, and positive charge will flow from the zinc to the copper inside the lemon. And this will continue as long as there is zinc left to oxidize. So electrolytes can conduct electricity.”

“Cool,” said Jaime, “a lemon could be a battery.”

“Okay,” replied Dr. Jordan, “so we seem to have what seem like good reasons to believe that lemons conduct electricity. How confident are you?”

“Pretty confident,” replied Jaime, “I definitely believe it now.”

“Good,” Dr. Jordan smiled, “tomorrow we’ll see how well we’ve argued.”
Dr. Jordan has made a good point; after this exchange Jaime does have good reasons to believe that a lemon would conduct electricity. Let’s look at these reasons. The first thing Dr. Jordan notes is that lemons contain citric acid and water. Jaime says that this combination is an electrolyte, and Dr. Jordan concludes that lemons contain an electrolyte. We can represent this reasoning like this:

\[
\text{Lemons contain a combination of citric acid and water.}
\]
\[
\text{All combinations of citric acid and water are electrolytes.}
\]
\[
\text{So, lemons contain an electrolyte.}
\]

The first two facts are given by Dr. Jordan as reasons to believe the third. And, as we did above, we can represent this reasoning visually, with this diagram:

This diagram is noticeably different from the diagrams above. Why? Recall that we noted above that Alexis was given 3 different reasons to believe her conclusion. That is, if one of the reasons were taken away—if, for instance, Char had bought Alexis’ ticket for her—she would still have good reasons to believe that she shouldn’t go out.

Here, however, the two reasons that Dr. Jordan gave for her conclusion must work together to support the conclusion. In other words, if we took away the fact that “\textit{All combinations of citric acid and water are electrolytes,}” then the fact that lemons contain this combination would not be a reason to believe that lemons contain electrolytes.

To create accurate argument diagrams we need to understand the \textit{syntax} and \textit{semantics} of the diagrams. There are two basic elements (and we have seen this above): boxes and arrows. We write statements inside of boxes, and connect the boxes with arrows.

**Syntax:** In general, \textit{syntax} is what we call the rules for the formation of grammatical sentences in a language. In the English language, for example, one rule of syntax is that verbs follow the subject in a grammatically correct sentence.

\begin{example}
“Jumps the frog.” is syntactically incorrect (breaks the rule), but “The frog jumps.” is syntactically correct (follows the rule).
\end{example}

**Semantics:** Once we have grammatical sentences, we need to understand them. \textit{Semantics} is the meaning, or an interpretation of the meaning, of a word, sign, sentence, etc.

In the English language, for example, only the first word of a sentence and proper names are capitalized. So, if there is a word that is capitalized in the middle of a sentence, we take that word to be referring to a person or a place.

\begin{example}
In the sentence “The frog is Sally,” we know that Sally is the name of a person or a place, since this word is capitalized. If I were at a costume party, for instance, and someone passed me a note with this sentence written on it, I would probably interpret it to mean that the person in the frog costume’s name is Sally.
\end{example}

Just as syntactical rules help us formulate a grammatically correct sentence in English, the syntactical rules of argument diagrams help us create a proper argument diagram. And, just as the semantics of English helps us determine what a sentence means, the semantics of argument diagrams helps us determine what a diagram means.
Syntax: the rules for the formation of grammatical sentences in a language
Semantics: the meaning, or an interpretation of the meaning, of a word, sign, sentence, etc.

For an argument diagram, the syntax is the rules for creating boxes as well as connecting boxes and arrows correctly, and the semantics is the meaning of the boxes and the arrows.

The syntactical rules are:
1. each box contains only one statement
2. the arrows begin at the premise(s) and end at the conclusion

The semantic rules are:
1. the box at the end of the arrow is the conclusion of the argument
2. the box(es) at the beginning of the arrow is(are) the premise(s)
3. the arrow is the inference from premise(s) to conclusion
4. separate arrows indicate separate lines of reasoning (the inferences)
5. attached boxes indicate that these premises are supposed to work together to support the conclusion

Example
“If a student receives an A on the final paper, then he or she will receive an A in the class. I did, in fact, receive an A on my final paper, so I should get an A in the class.”

The statements of the above argument have been placed into boxes:

We need to arrange the claims so that we can link the premises to the conclusion with an arrow. In this argument, the conclusion is “I should receive an A in the class,” and it is supported by the two assertions “I received an A on the final paper,” and “If a student receives an A on the final paper, then he or she will receive an A in the class.” The diagram looks like this:

2.2 Understanding and Representing Argument Structure

It is important to remember that any representation of an argument is an interpretation, and any interpretation must be supported by the text. In long, complex texts the task of interpretation is more difficult, and the same text may be subject to many different interpretations. What follows in this and subsequent sections are various methods we can use to probe the text in order to develop the best representation possible.

2.2.1 Structural Indicators: Premises and Conclusions
We can often identify the premises and conclusions of arguments by the signals the author uses.
Example: Premise Indicator
“We should abolish the death penalty. This is because it does not deter crime.”

Here, the author uses a common premise indicator: “because.” This alerts us that what follows “because” is supposed to support (act as a premise for) some other statement.

This argument is diagrammed as:

```
We should abolish the death penalty.

The death penalty does not deter crime.
```

Some common premise indicators:

- because
- for
- given that
- the reason is that
- since
- as
- recall that
- assuming that
- consider that
- after all
- it is evident that
- based on the fact that

Example: Premise Indicator
“Consider that it’s already 8:00. We are going to be late for the movie.”

The premise indicator is “consider that,” and the premise is “it’s already 8:00.”

Example: Premise Indicator
“People should be allowed to own guns. The reason is that people have the right to protect themselves.”

The premise indicator is “the reason is that,” and the premise is “people have the right to protect themselves.”

There are also words that signal a conclusion. Common conclusion indicators:

- so
- therefore
- we may infer that
- wherefore
- thus
- accordingly
- implies that
- proves that
- hence
- consequently
- shows that
- it follows that

Example: Conclusion Indicator
“The death penalty does not deter crime. So we should abolish it.”

Here, the word “so” indicates that “we should abolish the death penalty” is the conclusion.

Example: Conclusion Indicator
“It’s already 8:00. Hence, we are going to be late for the movie.”

The conclusion indicator is “hence,” and the conclusion is “we are going to be late for the movie.”

Example: Conclusion Indicator
“People have the right to protect themselves. This implies that people should be allowed to own guns.”

The conclusion indicator is “this implies that,” and the conclusion is “people should be allowed to own guns.”
Note that these “Conclusion Indicator” arguments are the same as the “Premise Indicator” arguments above, rewritten to use conclusion indicators instead of premise indicators. As such, since the arguments are the same, so are the diagrams:

2.2.2 Multiple Statements Within Sentences
Premises and conclusions are not always stated in complete independent sentences.

Previously we learned that premises and conclusions are statements, which are types of sentences. However, we have also seen that sometimes these statements are not actually given as complete, independent sentences in the text.

In both arguments, “because” serves as a premise indicator. This is an argument because the author is asserting the truth of one statement
(the conclusion: We should abolish the death penalty)
on the basis of another
(the premise: The death penalty does not deter crime).

Each of these are statements because they are expressions of propositions that are either true or false (though we may not know the truth or falsity), even though they were both contained in the same sentence. And once we separate the premise from conclusion, we can diagram the argument:

Notice that we put “The death penalty does not deter crime” in the premise box, even though the text says “it does not deter crime.” The problem is that “it does not deter crime” is not an independent sentence—it cannot be understood unless we have the information about what “it” is. Thus, we rewrite the text as “The death penalty does not deter crime” so that this premise can be understood on its own.

This is a general rule about argument diagrams. Each sentence in a box should be a complete and independent statement that can be understood on its own.
We can similarly re-write the arguments from the examples above.

<table>
<thead>
<tr>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Consider that it’s already 8:00. We are going to be late for the movie.”</td>
</tr>
<tr>
<td>can be re-written as:</td>
</tr>
<tr>
<td>“Considering that it’s already 8:00, we are going to be late for the movie.”</td>
</tr>
<tr>
<td>“People should be allowed to own guns. The reason is that people have the right to protect themselves.”</td>
</tr>
<tr>
<td>can be re-written as:</td>
</tr>
<tr>
<td>“The reason that people should be allowed to own guns is that people have the right to protect themselves.”</td>
</tr>
</tbody>
</table>

It is also the case that parts of an argument can be in a single sentence, even if the entire argument is given in more than one sentence.

<table>
<thead>
<tr>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Brain states only have instrumental value, therefore they do not have intrinsic value. So, since states of consciousness have intrinsic value, brain states are not states of consciousness.”</td>
</tr>
</tbody>
</table>

Here, the entire argument is given in two sentences, but two of the statements are contained in the first sentence, and two are contained in the second. Let’s take them one at a time. Consider the first sentence:

“Brain states only have instrumental value, therefore they do not have intrinsic value.

“Therefore” indicates that the second part of the sentence is supported by the first part.

Then, consider the second sentence:

“So, since states of consciousness have intrinsic value, brain states are not states of consciousness.”

“So,” indicates that something in the second sentence follows from the conclusion in the first sentence. Having “so, since” indicates that before we find out what follows from the first sentence, we are going to get another statement that supports the same conclusion.

This means that both Brain states do not have intrinsic value” and “States of consciousness have intrinsic value” support the claim “Brain states are not states of consciousness.” The entire argument can be rewritten like this:

And it can be diagrammed like this:
2.2.3 Linked Arguments

As we saw with the two conversations at the beginning of this chapter, arguments—even the ones we encounter in everyday life—have all kinds of structures. One of the great things about argument diagramming is that it forces us to understand the structure of the argument.

As in the conversation with Dr. Jordan and Jaime, as well as other arguments above, some premises need to be combined in order to support a conclusion. You may have learned (in a logic class, for example) about certain argument forms, like *modus ponens*.

This is the form of the following argument:

| Premises:   | If a student receives an A on the final paper, then he or she will receive an A in the class. |
| Conclusion: | I received an A on the final paper. |

This particular argument exhibits the form of *modus ponens*:

| Premises:   | If A, then B. |
| Conclusion: | A. |

In this case, neither premise alone could support the conclusion; rather, the premises act together to create a deductively valid argument. An argument in which two or more premises must be combined in order to support a conclusion is called a *linked argument*. This would be clearer if we had some sort of visual way of representing the argument. This is what argument diagramming does.

**Linked argument**: an argument in which two or more premises must be combined in order to support a conclusion.

The above argument can be diagrammed as follows:

The oval around the top of the two premise boxes means that the premises are linked—that the intention of the author is that these to premises work together—and the arrow means that they support the conclusion. It is most common to use this kind of representation when the author’s argument is an example of a known valid argument form. Sometimes, though, premises are meant to be combined, even if the argument does not exemplify one of these forms, so be aware.

How do we know when the premises are supposed to be combined, and when they are supposed to be separate lines of reasoning? The answer is that there are a variety of words and phrases that indicate the difference. In this section, we will concentrate on premises that are supposed to be combined.

**Common combination indicators:**

- **and**
- **thus, since**
- **besides**
- **in addition to the fact that**
- **but**
- **so, because**
- **as well as**
- **plus the fact that**

Indicator phrases such as “thus, since” and “so, because” are special because they indicate both 1) statements that are to be combined, and 2) the conclusion that those statements are supposed to support.
"In the syllabus it says that if you earned an A on the final paper, then you’ll earn an A in the course. Thus, since you did earn an A on the final paper, you will earn an A in the course."

Here, as above, we have three statements:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>If you earned an A on the final paper, then you’ll earn an A in the course.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion:</td>
<td>You will earn an A in the course.</td>
</tr>
</tbody>
</table>

The word “thus” generally indicates a conclusion, so what follows “thus” is supposed to follow from what comes before it. In this case, this means that statement 1 is a premise that supports either statement 2 or 3. The word “since” generally indicates a premise, so statement 2 is also a premise. The combination, “thus, since,” then indicates that what comes before combines with what comes after to support the conclusion.

In other words, we could easily rewrite the second sentence above:

"Thus, since you did earn an A on the final paper, you will earn an A in the course."

like this:

"This, combined with the fact that you did earn an A on the final paper, supports the claim that you will earn an A in the course."

There are two indicator words here. First, the word “thus” in the second sentence indicates that “doctors should be eligible for government grants to support their work” is the conclusion of the argument. Second, the word “and” in the first sentence indicates that there are two premises here that need to be combined to support the conclusion, since neither claim can do the job by itself.

So we have:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>Medical researchers are constantly discovering new ways to treat and cure diseases.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion:</td>
<td>The health of our citizens should be a top national priority.</td>
</tr>
</tbody>
</table>

| Conclusion: | Doctors should be eligible for government grants to support their work. |

We can represent the argument like this:

2.2.4 Convergent Arguments

Often the premises given by the author are not supposed to be combined, but rather are supposed to provide independent reasons for believing the conclusion; that is, each premise by itself would support the conclusion, and using all of them merely makes the conclusion more likely.

**Convergent argument**: an argument in which two or more premises are given, but each is a separate, independent reason supporting the conclusion.
is for the author to list the reasons explicitly, using numbers (first, second, third,…), letters (a, b, c,…) or something similar.

Example: Listing as a structural identifier

“Eating animals is wrong for a variety of reasons. First, many animals are sentient creatures that have thoughts and emotions. Second, we should not cause animals to suffer if we don’t need to. Finally, raising animals for food uses resources, like grain, that could be used to feed hungry people around the world.”

Here, the author actually gives a list of different reasons that support the conclusion. The implication of such a list is that each reason can stand on its own to support the conclusion, and each reason added just makes the argument stronger.

We can rewrite this argument as:

<table>
<thead>
<tr>
<th>Premises</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many animals are sentient creatures that have thoughts and emotions.</td>
<td>Eating animals is wrong.</td>
</tr>
<tr>
<td>We should not cause animals to suffer if we don’t need to.</td>
<td></td>
</tr>
<tr>
<td>Raising animals for food uses resources, like grain, that could be used to feed hungry people around the world.</td>
<td></td>
</tr>
</tbody>
</table>

In this case, however, the important structure is not represented in this way of rewriting the argument. In particular, it does not show us that each of these premises provide independent support for the conclusion. That is, each premise by itself can support the conclusion; none of the premises need to work together with another to provide this support.

We could, for example, reasonably view the overall argument as a combination of the following arguments:

The idea is that if a premise can support a conclusion by itself, then we say that it is a separate line of reasoning.

If we diagram this argument, these details about the structure are apparent:

How do we know when premises are involved in independent, separate lines of reasoning, when there is no explicit list? The idea is that if the premises are independent, they could each be taken alone to support the conclusion (though each of these arguments by themselves may be weaker than the whole argument).

Unfortunately, some of the same words, like “and,” that indicate convergent arguments are often used to indicate linked arguments. There are, however, words that are often used to indicate separate lines of reasoning in an argument:
besides  also  moreover  furthermore  another reason  furthermore

Example

“Dogs are good pets because they give unconditional love. Moreover, dogs can provide protection at home.”

Here “because” indicates that “dogs give unconditional love” is a premise that supports the claim that dogs make good pets. Additionally, the word “moreover” indicates that there is another reason to believe that dogs make good pets.

To determine whether this is a convergent argument, we need to decide if a premise can support a conclusion by itself, then we say that it is a separate line of reasoning. So, let’s take a look.

The first part of the argument is contained in the first sentence:

| Premise 1: | Dogs give unconditional love. |
| Conclusion: | Dogs are good pets. |

The second sentence gives another reason to believe the conclusion:

| Premise 1: | Dogs give unconditional love. |
| Premise 2: | Dogs can provide protection at home. |
| Conclusion: | Dogs are good pets. |

Now, the question is: If we left out premise 2, would premise 1 still support the conclusion? And similarly, if we left out premise 1, would premise 2 still support the conclusion? That is, do the two arguments below make sense as separate arguments?

The answer here seems to be yes, so the complete diagram would be:

2.2.5 Chain Arguments

Finally, an author may be making a chain of inferences in the argument. In a chain argument, there will always be at least one sub-argument, meaning that one statement will be both a premise and a conclusion within the argument.

Example

“Since cats like milk, they will try to tip over a glass of milk. So, you shouldn’t leave yours on the table when cats are around.”

How do we diagram the argument? There are two indicator words here: “since” and “so,” but they don’t occur together, so they are not indicating a linked argument. Let’s take the sentences one at a time.
The premise indicator occurs in the sentence, “Since cats like milk, they will try to tip over a glass of milk.” This tells us that “cats like milk” is supposed to support “cats will try to tip over a glass of milk.”

The conclusion indicator occurs in the sentence, “So, don’t leave yours on the table.” This tells us that “cats will try to tip over a glass of milk” is supposed to support “you shouldn’t leave your glass of milk on the table when cats are around.”

Notice that each part looks like it is already an argument in its own right. When the conclusion of one argument is used as a premise in another argument, we call that the first argument is a sub-argument, and that the conclusion of that argument is a sub-conclusion.

<table>
<thead>
<tr>
<th><strong>Sub-argument</strong></th>
<th>an argument in which the conclusion is used as a premise in another argument</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chain argument</strong></td>
<td>an argument that contains one or more sub-arguments</td>
</tr>
</tbody>
</table>

Accordingly, the entire argument can be diagrammed as follows:

---

2.2.6 Complex Arguments
Most real arguments—those you would find in an article, an editorial, or a speech, for example—are more complicated than the ones we have studied so far. Real arguments usually have some combination of linked, convergent and chained premises supporting either the main conclusion, the sub-conclusion, or both. We call this kind of argument “complex.”

<table>
<thead>
<tr>
<th><strong>Complex argument</strong></th>
<th>an argument in which more than one of the above types of argument (linked, convergent, sub-, and chain) appear.</th>
</tr>
</thead>
</table>

Example

 FOUR-wheel drive cars cost more than two-wheel drive cars, so we shouldn’t buy a four-wheel drive.  
 Furthermore, we don’t really need a four-wheel drive, and we shouldn’t buy things we don’t need.”

There are three indicator words in this argument: “so,” “furthermore” & “and.”
The first indicator word tells us that “we should not buy a four-wheel drive car” is the conclusion supported by the claim “four-wheel drive cars cost more than two-wheel drive cars.” So, this first part of the argument has a basic structure:

The second indicator word tells us that the author is giving us a separate line of reasoning to support the same conclusion. But, unlike the first line of reasoning, there are two statements here: “we do not need a four-wheel drive car” and “we should not buy things we do not need.” The third indicator tells us that these two are supposed to work together.
So, the second part of the argument has a linked structure:

Overall, then, the argument has a convergent structure:

Example

“Pool maintenance can cost hundreds of dollars a year and we really don’t have that kind of money. So, I don’t think we should put a pool in this summer. Besides, pools pose a real drowning danger to small children.”

The indicator word “so” tells us that “we should not put in a pool this summer” is the conclusion supported by the two statements in the first sentence. It is clear that these two statements are not intended to be two separate reasons to believe the conclusion, but rather are supposed to work together. So, this first part of the argument has a linked structure.
The final sentence gives us an additional reason to believe the conclusion, one that doesn’t have anything to do with money. Thus, we add this to the map with its own arrow, indicating that, overall, the argument has a convergent structure.

2.3 Interpreting Arguments to Create Diagrams

2.3.1 Fairness and Charity
Diagramming arguments is a visual way of representing an argument. But representing an argument always involves interpretation. What we have been doing so far is learning ways to interpret arguments as accurately as possible. When we evaluate arguments, we don’t want to misrepresent what the author of the argument is saying, for then our evaluation would be worthless.

The principles we have seen so far—e.g., using premise and conclusion indicators and identifying the structure of the argument—offer relatively concrete steps to take when reconstructing an argument.

The principles of fairness and charity, however, are somewhat more abstract.

**Fairness**: we should always interpret the argument in a way that is consistent with the author’s intentions. For example, we should always use language that is as close as possible to the language the author uses. We should not put words in the author’s mouth, or take words out of the author’s mouth.

**Charity**: if there is some uncertainty, we should always put the argument in the best possible light. If there is ambiguity, always choose the interpretation that makes the argument stronger rather than weaker.

These principles are essentially saying that if we are unsure of our understanding of an argument, we should give the author the benefit of the doubt.

**Example**

“Even though logging is a big industry that employs a ton of people, the government should ban it in national forests. Logging disturbs local ecosystems; and we can’t survive without our ecosystems.”

The premises of this argument are:

- Premise 1: Logging disturbs local ecosystems.
- Premise 2: We can’t survive without our ecosystems.

But how should we rewrite the conclusion? Here are three options:
- The government should ban logging.
- The government should ban logging in national forests.
- The government should ban all logging everywhere.

The first option is not the best interpretation. The author does not say that logging should be banned, period. The author says that logging should be banned in national forests. Similarly, the third option is not either, because the author does not say that logging should be banned everywhere. Again, the author says that logging should be banned in national forests.
Example
Consider a twist on the argument above: “Even though logging is a big industry that employs a ton of people, the government should ban logging in national forests. Logging disturbs local ecosystems; how are we going to survive without our ecosystems?”

The first premise and the conclusion are:

| Premise 1: Logging disturbs local ecosystems. |
| Conclusion: The government should ban logging in national forests. |

But how should we rewrite the rhetorical question into a statement? Here are some options to consider:

1. We might not be able to survive without our ecosystems.
2. We could probably survive without our ecosystems.
3. We can’t survive without our ecosystems.

The author seems to be saying something much stronger than the first option, so interpreting the rhetorical question this way makes the argument weaker than the author probably meant it. And the author doesn’t seem to believe the second option. The author seems to be implying that we can’t survive without our ecosystems, and interpreting the rhetorical question this way would make this premise not support the conclusion. The third option seems to be the most accurate, and makes the author’s argument as strong as possible.

Fairness:
When arguments are complex, many people tend to interpret them in a way that supports the positions they already hold. Often, people may re-word important claims in a way that the author didn’t intend, or restate them with emotionally loaded words. Also, people may omit important premises, or add premises not provided in the original. (There is indeed a place for adding implicit premises and conclusions. We’ll get to this in the next section in the chapter.)

The principle of fairness says that we should not let our biases and/or preconceived ideas influence the reconstruction of an argument. For example, if an author has a conclusion that is qualified in some way, we shouldn’t represent the conclusion without the qualification.

Example
Consider an argument advocating the use of medical marijuana. It would not be accurate or fair to represent the author as being in favor of legalizing all drugs.

Charity:
When authors use rhetorical questions, ambiguous language, or hedges in their arguments, it can be very difficult to interpret the argument fairly or accurately. We always re-write rhetorical questions as statements if they seem to be intended as premises. But stating the claim masquerading as a rhetorical question can be tricky.

Example
“It should be illegal for Occupy Wall Street protesters to camp in parks. They make the parks dirty and it is unsafe for both the campers and the rest of the public. How important is freedom of expression, anyway?”

There are a few different ways to re-write the rhetorical question at the end of the argument:

1. Freedom of expression is not important.
2. Freedom of expression is not the most important thing.
3. Freedom of expression is very low on the list of important things.

The most charitable interpretation here is probably (2). The author seems to be arguing that cleanliness and safety, for example, may be more important than the perceived need of the protesters to be able to sleep where they protest. It seems to be an uncharitable interpretation to say that they author thinks that freedom of expression is unimportant or has very little importance.
In the absence of other information in the text, the principle of charity says that when parts of the argument are ambiguous, we should interpret them in the best light possible. This means interpreting a claim in a way that makes it true, rather than false; or interpreting a claim in a way that makes the premises support the conclusion, rather than not supporting it.

Sometimes, though, the principles of fairness and charity conflict. This happens when, for example, we have the choice to re-write a premise either (1) in a way that makes it true, but not support the conclusion, or (2) in a way that makes it false, but does support the conclusion.

Example

“All CMU sophomores are students, but aren’t all Pitt sophomores, too? So, no Pitt sophomore is a CMU sophomore.”

How would we re-write the rhetorical question in this argument using the principle of fairness? Here are two options:

1. All Pitt sophomores are students.
2. No Pitt sophomores are students.

The principle of fairness dictates that we interpret the argument as closely to the original intent of the author. The second option violates the principle fairness because the way the question is phrased implies that the author thinks Pitt sophomores are also students. Thus, the first option is in accordance with the principle of fairness.

How would we re-write this argument using the principle of charity? Consider the same two options. The principle of charity says that if you have the choice, you should interpret the argument in such a way that the premises do support the conclusion. The first option violates the principle of charity because, even though the premises and the conclusion are all true, the premises don’t support the conclusion. Thus, the second option is in accordance with the principle of charity because, even though the second premise is false, these premises do logically lead to the conclusion.

The conflict here is that it seems that the rhetorical question should be rewritten as “All Pitt sophomores are students,” because this seems to be what the author intended. However, if we re-write the question this way, the premises do not support the conclusion—if we substitute “college student” for “Pitt sophomore” for example, this argument would make no sense. On the other hand, the principle of charity requires that we re-write the rhetorical question as “No Pitt sophomores are students,” because that makes the conclusion follow directly from the premises. However, this way of re-writing the premise is clearly false and not what the author intended.

So what do we do? Well, it depends. The convention in logic is to represent the argument in such a way that the premises directly support the conclusion, and leave the question of whether the premises are true to the evaluation stage. In practice, though, it may not always be so clear cut. The intuition here, for example, may be to do something different than the two options above: add an extra premise or two that allows the re-written premise to be true, and the premises to support the conclusion.

For example:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>All CMU sophomores are students.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Pitt sophomores are students.</td>
</tr>
<tr>
<td>Conclusion:</td>
<td>No Pitt student is a CMU student.</td>
</tr>
<tr>
<td></td>
<td>No Pitt sophomore is a CMU sophomore.</td>
</tr>
</tbody>
</table>

Adding premises (and/or conclusions!) that seem to be implied by the author is the subject of the next section.

2.3.2 Implied Premises and Conclusions

Recall from the previous section that authors don’t always include all claims that are necessary for the argument they are making. Arguments of this sort are called enthymemes.
**Enthymeme:** an argument in which a premise and/or the conclusion is implied but not stated.

In particular, some authors seem to assume that the conclusions of their arguments are so obvious, that the conclusions don’t need to be stated explicitly. Just as when we are trying to restate something the author explicitly says, though, we should always apply the principles of fairness and charity when trying to state a claim that the author is implicitly using.

**Example**

“It seems obvious to me that people in the future will never develop time travel. Really, if they do, wouldn’t we have heard from them by now?”

According to the principles of fairness and charity, which is the best way to re-write the rhetorical question in this argument? Here are some options:

1. If people in the future develop time travel, then we may or may not have heard from them by now.
2. If people in the future develop time travel, then we would have heard from them by now.
3. If people in the future develop time travel, then we definitely would have heard from them by now.

The second option seems to accord best with the principles of fairness and charity. The way the question is phrased implies that the author is more confident than “may or may not,” so option one is out. In addition, we shouldn’t put words into the author’s mouth, and the author did not say “definitely,” so option three is out as well.

Now we can ask a further question. What other premise does the author not state, but seem to believe? Here are some options:

1. People in the future develop time travel.
2. We have heard from people from the future.
3. We have not heard from people from the future.

The first option would make the argument circular (assuming the thing you are trying to prove); and so would not be a charitable reading. And the second option would definitely make the argument bad, and does not seem to be what the author is implying.

We can diagram the original argument as follows:

Here, the argument looks like part of a *modus tollens* argument. Recall that this valid argument form can be expressed as:

**Premises:** If A, then B.  
Not B.  
**Conclusion:** Not A.

Let “People in the future develop time travel” be “A,” and “we have heard from people in the future by now.” Then, what we have in this example is:

**Premise:** If [people in the future develop time travel], then [we would have heard from them by now].  
**Conclusion:** Not [People in the future will develop time travel].

But, it seems clear, as we saw above, that in giving this argument, the author believes that we have not heard from scientists in the future. In fact, the conclusion doesn’t really follow from the premise if we don’t assume that this is
true. This is equivalent to filling out the entire *modus tollens* argument.

| Premises: | If [people in the future develop time travel], then [we would have heard from them by now]. |
| Conclusion: | Not [We have heard from people in the future]. |

| Premises: | Not [We have heard from people in the future]. |
| Conclusion: | Not [People in the future will develop time travel]. |

There are of course, better ways to represent this second premise and the conclusion: “We have not heard from people in the future” and “People in the future will never develop time travel,” respectively.

So, the complete diagram would be:

![Diagram of argument diagram](image)

Here, by convention, we have italicized the implied premise to indicate that it is not something the author actually said, but rather something we believe the author implied.

Notice in this diagram that the implied premise is linked with the explicit premise to support the conclusion. This is a result of the way that we decided what is implied in the argument: we determined that the implied statement is a premise by figuring out what the explicit premise needed to help it support the conclusion. If the implied premise helps the explicit premise by connecting it to the conclusion, then it is a linked argument.

Sometimes, though, what is implied or missing is not a premise, but rather the conclusion. In this case we have to insert the implied conclusion when we reconstruct the argument, or it wouldn’t be an argument at all!

**Example**

“I know you want to do well on your test, and if you want to do well on it, then you should turn off all your electronic gadgets and study.”

The two statements here are:

| Statement 1: | You want to do well on your test. |
| Statement 2: | If you want to do well, then you should turn off all your electronic gadgets and study. |

What is the conclusion of this argument? First, the “and” indicates that this is a linked argument. Second, this argument has the form:

| Premises: | ?? |
| Conclusion: | ?? |

The conclusion that would make this a valid argument is: “You should turn off all your electronic gadgets and study.”
The original argument has two premises and an implied conclusion, and so can be diagrammed as follows:

But, of course, this is a little silly. What we are meant to conclude seems clearly implied. So, the complete argument would be:

Now, let’s look at an argument that has both a missing premise and a missing conclusion.

Example

“Harry Potter is just like Star Wars, which has remained immensely popular because it reiterates the classic tale of a good individual’s triumph over evil.”

The statements in this argument are:

Statement 1: Harry Potter is just like Star Wars.
Statement 2: Star Wars is immensely popular.
Statement 3: Star Wars reiterates the classic tale of a good individual’s triumph over evil.

First, it seems as though the author is not just saying that Harry Potter is like Star Wars, but also that it is like Star Wars in a particular way—immensely popular—because it is like Star Wars in another way—reiterating this classic tale.

Thus, it seems plausible to assume that the conclusion of this argument is that Harry Potter is immensely popular.

If we include this implied conclusion, we can represent this argument as:

And we can diagram this argument as:
This is good, but there also seems to be a missing premise here—one that helps support the claim that Harry Potter is just like Star Wars. Such a statement is “Harry Potter reiterates the classic tale of a good individual’s triumph over evil.”

So we can change the representation to:

<table>
<thead>
<tr>
<th>Premises:</th>
<th>Conclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harry Potter is just like Star Wars.</td>
<td>Harry Potter will remain immensely popular.</td>
</tr>
<tr>
<td>Star Wars is immensely popular.</td>
<td></td>
</tr>
<tr>
<td>Star Wars reiterates the classic tale of a good individual’s triumph over evil.</td>
<td></td>
</tr>
</tbody>
</table>

And we can diagram it as:

![Diagram](image_url)

2.3.3 Implied Premises and Conclusions: A Complex example

Consider this more complicated argument made by Seth Waxman in Dickerson v. United States.

Example

“If the Miranda decision is reversed, police will no longer be compelled to give those warnings; and if they aren’t compelled to give them, they won’t give them. But because police interrogations take place out of public view, the integrity of such interrogations can be safeguarded only if those Miranda warnings are invariably given.”

This argument is rewritten as:

<table>
<thead>
<tr>
<th>Premises:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) If the Miranda decision is reversed, police will no longer be compelled to give Miranda warnings.</td>
</tr>
<tr>
<td>(2) If police aren’t compelled to give Miranda warnings, then police won’t give Miranda warnings.</td>
</tr>
<tr>
<td>(3) Police interrogations take place out of public view.</td>
</tr>
<tr>
<td>Sub-conclusion:</td>
</tr>
<tr>
<td>(4) The integrity of police interrogations can be safeguarded only if Miranda warnings are invariably given.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Conclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>???</td>
</tr>
</tbody>
</table>

It seems clear that the author is arguing against reversing the Miranda decision. So we can represent the conclusion as something like: “The Miranda decision should not be reversed.”

Now, let’s look at the implied premises. Of course, keep in mind that whether you provide the implied premises depends on what kind of reconstruction of the argument you are giving. If, for example, you are trying to represent just what the author actually says, then you should not add any extra premises; doing so would be “putting words into the author’s mouth.” If, on the other hand, you are trying to represent the most charitable interpretation of the author’s words, then you may want to add any premises that seem to be either implied or assumed by the author.

To see how to add implied premises—if that is what we want to do—look again at the argument against reversing the Miranda decision. First, let’s fill in the conclusion we think the author had in mind (For the rest of this example, the explicitly stated statements will be numbered, and the implied statements will be lettered):
<table>
<thead>
<tr>
<th>Premises:</th>
<th>(1) If the <em>Miranda</em> decision is reversed, police will no longer be compelled to give <em>Miranda</em> warnings.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(2) If police aren't compelled to give <em>Miranda</em> warnings, then police won't give <em>Miranda</em> warnings.</td>
</tr>
<tr>
<td></td>
<td>(3) Police interrogations take place out of public view.</td>
</tr>
<tr>
<td>Sub-conclusion:</td>
<td>(4) The integrity of police interrogations can be safeguarded only if <em>Miranda</em> warnings are invariably given.</td>
</tr>
<tr>
<td>Main Conclusion:</td>
<td>(A) <em>The Miranda decision should not be reversed.</em></td>
</tr>
</tbody>
</table>

Next, let’s look at the inferences the author makes. The premise indicator “because” indicates that statement (3) is meant to support statement (4).

The missing premise here is that if (3) is true, then (4) is true, i.e. “If police interrogations take place out of public view, then the integrity of such interrogations can be safeguarded only if Miranda warnings are invariably given by police.”

Let’s put this implied premise into this sub-argument:

<table>
<thead>
<tr>
<th>Premise:</th>
<th>(3) Police interrogations take place out of public view.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implied Premise:</td>
<td>(B) If police interrogations take place out of public view, then the integrity of such interrogations can be safeguarded only if Miranda warnings are invariably given by police.</td>
</tr>
<tr>
<td>Sub-conclusion:</td>
<td>(4) The integrity of police interrogations can be safeguarded only if <em>Miranda</em> warnings are invariably given.</td>
</tr>
</tbody>
</table>

And, we can diagram this sub-argument like this:

It also seems clear that the author wants to draw a conclusion from (1) and (2). The conditionals in these statements can be represented as: (1) If A happens, then B will happen, and (2) if B happens, then C will happen. The natural conclusion from this is: If A happens, then C will happen. So, we can write the implied sub-conclusion as: “If the Miranda decision is reversed, then police won’t give Miranda warnings.”

Let’s put in this implied sub-conclusion:

<table>
<thead>
<tr>
<th>Premise:</th>
<th>(1) If the <em>Miranda</em> decision is reversed, police will no longer be compelled to give <em>Miranda</em> warnings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premise:</td>
<td>(2) If police aren’t compelled to give <em>Miranda</em> warnings, then police won’t give <em>Miranda</em> warnings.</td>
</tr>
<tr>
<td>Implied Sub-conclusion:</td>
<td>(C) If the <em>Miranda</em> decision is reversed, then police won’t give <em>Miranda</em> warnings.</td>
</tr>
</tbody>
</table>
And, we can diagram this sub-argument like this:

And we can diagram it like this:

So, the whole thing looks like this:

Premise: (1) If the *Miranda* decision is reversed, police will no longer be compelled to give *Miranda* warnings.

Premise: (2) If police aren’t compelled to give *Miranda* warnings, then police won’t give *Miranda* warnings.

Implied Sub-conclusion: (C) If the *Miranda* decision is reversed, then police won’t give *Miranda* warnings.

Implied Premise: (B) If police interrogations take place out of public view, then the integrity of such interrogations can be safeguarded only if *Miranda* warnings are invariably given by police.

Sub-conclusion: (4) The integrity of police interrogations can be safeguarded only if *Miranda* warnings are invariably given by police.

Implied Premise: (D) The integrity of police interrogations should be safeguarded.

Implied Sub-conclusion: (E) *Miranda* warnings should invariably be given by police.

Main Conclusion: (A) The *Miranda* decision should not be reversed.
And can be diagrammed like this:

2.4 Diagramming Objections and Replies

Often, authors will include possible objections to their arguments, along with replies to those objections. Authors do this because it makes their arguments less susceptible to attacks, because the positions of opponents are considered and refuted beforehand.

Example

“We should all be vegetarians for several reasons. First, it is wrong to kill sentient animals unless it is in self-defense. Second, the grain that we use to feed the animals we eat could be used to alleviate hunger throughout the world, since the ratio of grain used to meat we get is 10-to-1. Lastly, being a vegetarian is much more healthy than being a meat-eater.

Of course, some people would argue that we should eat the animals that we hunt, and that there are some animals that need to be hunted. After all, if it is immoral to kill animals for food, it is also immoral to allow animals to starve to death from overpopulation. Well, my reply would be two-fold. First, deer are overpopulated because we killed their predators, so that we could raise animals for food. Thus, deer don’t need to be hunted in order to save them from starvation. We could curb overpopulation more humanely by instituting a sterilization program until predators are re-introduced and the population is under control. Second, hunting doesn’t lead to less suffering. Bullets and arrows that end up wounding, rather than killing, deer lead to slow, painful deaths.”

First, let’s diagram the main argument that occurs in the first paragraph. The listing of reasons indicates that these premises converge to support the conclusion in the first sentence.
Then, what should we do about the second paragraph? How do we represent objections and replies to those objections? Just as we use black arrows to indicate that one statement supports the truth of another, we use red arrows to indicate that one statement contests the truth of another.

**Objection:** a statement that contests the truth of a statement, set of statements, or an inference in an argument. The objection may be included with the text of the argument, or may be introduced by another argument.

**Reply:** a statement that answers an objection. The reply may be included in the text of the argument, or may be introduced by another argument.

In this section we are going to be concerned only with objections and replies that occur in the same text as the argument.

The author offers the statement “we should hunt animals like deer, to control overpopulation” as a possible objection to the conclusion in the previous paragraph. We can tell this is the author’s intention by the author prefacing the objection with “of course, some people would argue that…” This kind of phrase is an indicator that the author is laying out an objection.

The author is considering the objection that we need to hunt deer to control overpopulation. And the reason that we need to do this is that if, as the author concedes, it’s immoral to kill animals for food, then it’s equally immoral to allow animals to die of starvation. We can represent this objection as:

The list here indicates that the author is considering two replies to this objection. The first is that deer don’t need to be hunted to control overpopulation. And the reason for this is that we could sterilize deer to control the population instead:
The second is that hunting deer can also lead to unnecessary suffering. And the reason given for this, is that hunters that don’t actually kill the deer make them suffer agonizing deaths:

![Diagram of the original argument]

Then, if we combine the diagram of the original argument with the diagram of the objections and replies we get this:

![Combined diagram of the original argument and objections]

It is important to emphasize here that we are still only diagramming the argument that is actually presented in the text. That is, we are only diagramming the objections that the author presents; we are not diagramming our own objections to the argument. We will consider our own objections to arguments in the next chapter. But, now, let’s look at another example.
Example:
“I told you that you had to earn an A on the exam, or you would fail the class. But, you did not earn an A on the exam, therefore, you will fail the class. You claim that you shouldn’t fail the class because you worked really hard all semester. My reply is that grades reflect performance, not effort, and you did not perform well enough to pass the class.”

The word “therefore” indicates that “you will fail the class” is the conclusion of the argument, and the word “but” indicates that the two premises should be combined to support this conclusion.

We can diagram this part like this:

```
| You will fail the class. |
```

```
| Either you earn an A on the exam or you will fail the class. |
| You did not earn an A on the exam. |
```

Then, the phrase “you claim that” indicates that the author is considering an objection: “you shouldn’t fail the class because you worked really hard all semester. This is also a sub-argument, and we can represent it like this:

```
| You shouldn't fail the class. |
```

```
| You worked really hard all semester. |
```

As this is an objection to the conclusion, we can diagram these two parts by having a red arrow (indicating objection) going from the sub-conclusion of the objection to the main conclusion of the argument.

```
| You will fail the class. |
```

```
| Either you earn an A on the exam or you will fail the class. |
| You did not earn an A on the exam. |
| You shouldn't fail the class. |
```

```
| You worked really hard all semester. |
| Grades reflect performance, not effort. |
| You did not perform well enough to pass the class. |
```

Lastly, as indicated by “my reply is that,” the author offers a reply to the objection. In essence, a reply is an objection to the objection, so we represent a reply with a red arrow as well.
2.5 Summary

Thus far we have been practicing argument diagramming on short, relatively simple arguments. The arguments presented in the chapters in the following parts of this book are much longer and more complex. It is important to remember that any representation of an argument is an interpretation, and any interpretation must be supported by the text. In long, complex texts the task of interpretation is more difficult, the same text may be subject to many different interpretations.

Not all interpretations are equal, however. An interpretation can be better or worse depending on how much support the text offers for it. What we have seen in this chapter is a variety of methods for ensuring that we develop the best representation possible. Even so, different people using the same methods may still come to different conclusions about what the best representation is. In what follows, I will take you through my own reasoning in developing the representations I present. These are by no means the only reasonable representations possible. Alternatives may be equally well supported by the text. As you read through my explanations, I encourage you to develop alternatives of your own.

Before we move on, though, let’s review the steps for constructing an argument diagram:

1. Identify all the claims being made by the author, and rewrite them as complete, independent sentences, according to the principles of fairness and charity.
2. Using structural indicators, identify which statements are premises, sub-conclusions, and the main conclusion.
3. Identify the main conclusion if it is implied.
4. If your objective permits, identify the implied premises as well.
5. Put the statements in boxes, and use arrows to connect them, indicating support from premise(s) to (sub)conclusion with an arrow. And keep in mind:
   a. Multiple statements (or groups of statements) that each provide independent support for a (sub)conclusion should have their own arrows.
   b. Multiple statements that must be combined to support a (sub)conclusion should be linked and have only one arrow.
6. Identify any objections and replies to those objections, and rewrite them as complete, independent sentences.
7. Enclose the objections and replies in boxes and draw red arrows from objections to the statements they contest, and from the replies to the objections.

2.6 Exercises
(An * indicates more challenging questions)

Section 2.2.1

1. Diagram the following argument:
   - Premise: Some brutally violent criminals should be put to death.
   - Conclusion: We should not abolish the death penalty.

2. Diagram the following argument:
   - Premise: Pizza is my favorite food.
   - Conclusion: We should order pizza tonight.

3. Identify all the premise or conclusion indicator(s) in each of the following arguments.
   a. “Soda is bad for you. This is because it rots your teeth.”
   b. “We should start. For she has given us the signal.”
   c. “The identity theory inappropriately requires that any creature with mental states must have a central nervous system like ours. Thus, the identity theory can’t be right.”
d. “States of consciousness have intrinsic value. So, since brain states only have instrumental value, they do not have intrinsic value. Therefore, brain states are not states of consciousness.”

4. Using premise and conclusion indicators, identify the diagram that best represents the following argument: “I earned an A on the final exam. So, I should get an A in the class.”

A.

B.

*5. Using premise and conclusion indicators, identify the diagram that best represents the following argument: “To every existing thing God wills some good. Hence, since to love any thing is nothing else than to will good to that thing, it is manifest that God loves everything that exists.” – Thomas Aquinas, *Summa Theologica*

A.

B.

C.
Using premise and conclusion indicators, identify the diagram that best represents the following argument:

“Taxation of earnings from labor is on a par with forced labor… it is like forcing the person to work \( n \) hours for another’s purpose. Therefore, since it is wrong to force one person to work for another’s purpose, it is wrong for the government to tax our earnings.” – Robert Nozick, 1974, *Anarchy, State, and Utopia*

**Section 2.2.2**

7. Identify the diagram that best represents the following argument: “Soda is bad for you, because it rots your teeth.”
8. Identify the diagram that best represents the following argument: “We should start, for she has given us the signal.”

A. 

B. 

9. Identify the diagram that best represents the following argument: “Farm-raised fish are bad for the environment, so you shouldn’t eat them.”

A. 

B. 

10. Diagram the following argument: “You shouldn’t believe that Kiera was home studying, since I saw her at the movies.”

11. Diagram the following argument: “I should be the one to drive the car; after all, it’s mine.”

12. Using premise and conclusion indicators, identify the diagram that best represents the following argument. “All of your poetry is bad. So, since no one wants to sit through a reading of bad poetry, you should not be surprised that I am leaving.”

A. 

B.
Sections 2.2.3 – 2.2.5

13. Chose the diagram that best represents the following argument: “David is a good student. One, he studies hard, two, he always participates in class discussions, and also he comes in for help on all of his papers.”

14. Chose the diagram that best represents the following argument: “Labrador retrievers make good pets because they are very friendly and also easy to train.”
15. Chose the diagram that best represents the following argument: “Labrador retrievers make good pets since they are very friendly. I know because every one I’ve ever met has wanted to lick my face and be petted.”
16. Chose the diagram that best represents the following argument: “Labrador retrievers are very easy to train. So, since easily trained dogs make the best pets, these dogs are great pets.”

A.

B.

C.

17. Chose the diagram that best represents the following argument: “Either Boris drowned in the lake or he drowned in the ocean. But Boris has saltwater in his lungs, and if he has saltwater in his lungs, then he did not drown in the lake. So, Boris did not drown in the lake, and thus he drowned in the ocean.”

A.
18. Diagram the following arguments:
   a. “Playing sports like soccer or basketball is fun. Playing sports also teaches children about discipline and teamwork. Thus, children should be encouraged to play sports.”
   *b. “There should be a standard format for all university websites. A standard format would make it easier for students to navigate web sites of schools to which they are interested in applying. Also, a standard format would make it easier for small schools to develop and maintain their own websites.”
   *c. “High tech corporations can’t make their products in the United States for many reasons. For one thing, American schools aren’t producing citizens with the skills that these companies need. Also, suppliers for their products won’t relocate to the US. Furthermore, American workers are just too expensive.”

19. Diagram the following arguments:
   a. “Politicians should not be trusted, because they lie all the time. I know this because every time I see them on TV, they say something that just isn’t true.”
   b. “The defendant is guilty. After all, he was undoubtedly present at the scene of the crime since his fingerprints are on the safe.”
   c. “If China attacks Taiwan, Taiwan will fight, for the Taiwanese are ready to defend themselves because their navy is well trained and well equipped.”

20. Diagram the following arguments:
   a. “We need to take this animal somewhere to treat its injuries, but we can’t take it home. So, I think we should take it to the vet.”
   b. “Taxing our earnings is the same as the government forcing us to work without pay. Thus, since it is morally wrong to force someone to be a slave, taxing our earnings is wrong.”
   c. “A government is responsible for the safety and security of its citizens. That, plus the fact that you can’t protect anyone without any resources, supports the claim that the government is right to tax our earnings.”

21. Diagram the following arguments:
   a. “The existence of an all-good, all-powerful, and all-knowing God, it is said, is logically inconsistent with the existence of evil in the world. Hence, since we cannot deny that there is such evil, we should conclude instead that God does not exist.”

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Creating Argument Diagrams
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b. “The semantic properties of mental states (i.e. what they are about) are not intrinsic, because they depend on facts about the individual’s history and environment. Therefore, mental events do not cause other events by virtue of their semantic properties.”

c. “The defendant is guilty. After all, he confessed to stealing the jewels. In addition, he was undoubtedly present at the scene of the crime since his fingerprints are on the safe.”

*d. “Using contraceptives is immoral. For whatever is unnatural is immoral since God created and controls nature. And contraception is unnatural because it interferes with nature.”

Section 2.3.1

22. Choose the best representation, according to the principles of fairness and charity, of the following argument: Cigarette smoking causes lung cancer. Therefore, if you continue to smoke, you are endangering your health.

A. 
Premise: Cigarette smoking guarantees that you will get lung cancer.
Conclusion: If you continue to smoke, you are endangering your health.

B. 
Premise: Cigarette smoking is a positive causal factor that increases the risk of lung cancer.
Conclusion: If you continue to smoke, you are endangering your health.

23. Choose the best representation, according to the principles of fairness and charity, of the following argument: Americans of this generation read less than those of the previous generation. Isn’t the explanation obvious? We should get rid of all of our televisions.

A. 
Premises: Americans of this generation read less than those of the previous generation.
Watching television causes kids to not want to read.
Conclusion: We should get rid of all of our televisions.

B. 
Premises: Americans of this generation read less than those of the previous generation.
Watching television contributes to children reading less.
Conclusion: We should get rid of all of our televisions.

C. 
Premises: Americans of this generation read less than those of the previous generation.
Watching television causes kids to hate reading.
Conclusion: We should get rid of all of our televisions.

24. Choose the best representation, according to the principles of fairness and charity, of the following argument: Contrary to the opinions of some, welfare recipients do not like being on welfare. I mean, does anyone like being poor? Does anyone like being unemployed?

A. 
Premises: Some people don’t like being poor.
Some people don’t like being unemployed.
Conclusion: Welfare recipients do not like being on welfare.

B. 
Premises: Most people don’t like being poor.
Most people don’t like being unemployed.
Conclusion: Welfare recipients do not like being on welfare.
25. Choose the best representation, according to the principles of fairness and charity, of the following argument: We need to have the death penalty. You can’t deny that people fear death more than they fear life in prison. So wouldn’t the death penalty be a greater deterrent than life imprisonment?

A.

Premises: All people fear death more than they fear life in prison.

The death penalty is just as much a deterrent than life imprisonment.

Conclusion: We need to have the death penalty.

B.

Premises: Most people fear death more than they fear life in prison.

The death penalty is just as much a deterrent than life imprisonment.

Conclusion: We need to have the death penalty.

C.

Premises: All people fear death more than they fear life in prison.

The death penalty is a greater deterrent than life imprisonment.

Conclusion: We need to have the death penalty.

D.

Premises: Most people fear death more than they fear life in prison.

The death penalty is a greater deterrent than life imprisonment.

Conclusion: We need to have the death penalty.

Sections 2.3.3 – 2.3.4

26. The following argument is an enthymeme. Choose the diagram that best represents it: “Farm-raised fish are bad for the environment, so you shouldn’t buy them.”

A.

You shouldn’t buy farm-raised fish.

You shouldn’t buy things that are bad for the environment.

Farm-raised fish are bad for the environment.

B.
27. Diagram the following argument, adding in any missing premise or conclusion: “Everyone knows that people have the right to defend their property. So, the government shouldn’t pass laws restricting how we treat trespassers.”

28. Diagram the following argument, adding in any missing premise or conclusion: “I think you want to go to law school. If so, you should study hard for the LSAT.”

29. Diagram the following argument, adding in any missing premise or conclusion: “Self-absorbed people don’t help charities and I know Clara is not self-absorbed. We should expect a check from her soon.”

30. Diagram the following argument, adding in any missing premise or conclusion: “There is no law against composing music when one has no ideas whatsoever. The music of Wagner, therefore, … [is, alas,… you know].”
   —Mark Twain.

Section 2.4

31. Diagram the following argument, including the objections and replies: “A government is responsible for the safety and security of its citizens. That, plus the fact that you can’t protect anyone without any resources, supports the claim that the government is right to tax our earnings. Of course, some people would say that taxing our earnings is the same as the government forcing us to work without pay, and so taxing our earnings is wrong. But, that’s wrong because we are getting paid, and then using that money to buy protection.”

32. Diagram the following argument, including the objections and replies: “I think all citizens should be allowed to vote, even if they can’t read English. Someone who disagrees with me might argue that people who can’t read English shouldn’t be allowed to vote, because they can’t be well-informed about politics. And if you can’t be well-informed, then you shouldn’t be allowed to make decisions about the community. So, people who can’t read English shouldn’t be allowed to make decisions about the community, and so they shouldn’t be allowed to vote. But first, the right to vote doesn’t depend at all on your ability to gather information, and second, people can get information from sources other than print media.”