

## Chapter Four - Arguments

*Arguments are to be avoided:  
They are always vulgar and often convincing.*  
--Oscar Wilde

*Truth springs from argument amongst friends.*  
--David Hume

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### 1. Introduction

At the heart of critical thinking is the ability to recognize, construct, and evaluate **arguments**. By **argument** we mean *the presentation of a reason or reasons in support of some claim or action*. A single statement of a belief or position is not an argument. There must be at least two statements in an argument. One of those statements must represent a claim or action being defended, and one of the statements must represent a reason given in support of that claim or action. The reasons given in an argument are called the **premises** of the argument. The claim they try to support is called the **conclusion** of the argument.

Arguments can be on any topic. One can argue for legalized abortion; one can argue against legalized abortion. Some argued for intervention in Iraq; others argued against intervention. Some argue that dogs and cats and other non-human animals have moral rights; others argue that non-human animals have no moral rights. Some argue that pornography should be banned; others argue that it should not be banned. Some argue that there is life on other planets. Some argue that vitamin C can prevent colds. Some argue for three-strikes laws that send people to prison for life for a third felony; others argue that sometimes such punishment is cruel and unusual and therefore violates the eighth amendment to the Constitution.

What makes an argument a good one will be discussed in the next chapter. Here our concern is with learning how to identify arguments and their components. The first thing to consider is the **language of argument**.

### 2. The Language of Argument

Above we defined an argument as *the presentation of a reason or reasons in support of some claim or action*. We said that the claim for which support is given is called the **conclusion** and the reasons given in support of the claim are called the **premises**. These are the technical terms of logic: ‘premise’, ‘conclusion’, and ‘argument’. However, there are many non-technical terms that describe premises or conclusions. In a court of law, *evidence* (premises) is presented to support a *verdict* (conclusion). In a scientific paper, results of experiments or *data* (premises) are used to support conclusions. In the legislature, *reasons* (premises) are given to support voting for or against a bill (conclusion). On the automobile sales lot, the salesperson presents *facts* and *opinions* (premises) to convince a customer to buy a car (conclusion). In a scholarly mathematical paper, *proofs* (premises) are given to justify certain propositions (conclusions) and certain propositions (conclusions) are said to follow from other propositions (premises). In formal logic, a set of statements (premises) is said *to imply or to entail* another statement (conclusion). A security guard asks for *verification* (premise) that a person is who she says she is (conclusion). An English teacher demands that students give *support* (premises) for claims (conclusions).

In the courtroom, a defense lawyer is not likely to say that “the premises do not prove that the conclusion that should be drawn is *guilty*.” A lawyer is more likely to say “the *evidence* does not warrant finding the defendant

*guilty*. A scientist is not likely to write that her *premises* prove her conclusion. She is more likely to say that her *data* support her conclusion. The facts and opinions heaped on the poor car buyer are the premises of the salesperson's argument. The conclusion is that you ought to buy the car.

In ordinary English, many different words are used for the technical terms 'premise' and 'conclusion'. Depending on the situation, *evidence*, *support*, *data*, *fact*, and *opinion* mean the same as *premise*. A *verdict* or an *inference* is a *conclusion*. *Proofs* or *verification* are *arguments*. Conclusions are not only said to be *supported by* premises; conclusions are said to *follow from* premises, to *be implied by* or to *be entailed by* premises. Finally, premises are said to *support* or *imply* conclusions.

Thus, even though in most ordinary-language arguments we do not use the technical language of argument (i.e., the terms 'premise' and 'conclusion') we may still be arguing in the logical sense of that word: *presenting reasons in support of some claim or action*.

Clearly, before one can begin to evaluate an argument, one must be able to recognize when an argument is being made. One must be able to separate premises and conclusions from other material. Only then can one begin to evaluate the *reasons* and the *reasoning* of the argument. Knowing the language of argument can help in the process of identifying premises and conclusions.

## 2.1 Sentences and statements

Premises and conclusions are expressed in sentences. Sentences that are used as premises or conclusions must be *complete* sentences, not fragments of sentences. For example, the sentence 'No drug should be illegal' could be a premise or a conclusion. The expression 'illegal drugs' could not be a premise or a conclusion, since it is not a complete sentence.

In addition to being complete, the sentences used as premises or conclusions must assert something about which it makes sense to say such things as 'Yes, that's true' or 'No, that's false' or 'That's reasonable to believe' or 'That doesn't seem reasonable to accept.' A command, such as 'Shut the door', could not be a premise. The imperative sentence is used to issue a command, not to make a claim. Hence, imperatives are not statements. Neither are exclamations. Nor could a question such as 'What time is it?' be a premise or a conclusion. Interrogative sentences generally ask questions. Hence, they do not make statements. The exception is the *rhetorical question*. "Is he greedy or what?" is not asked to get an answer but to make a statement. It may have the grammar of a question but its function is to make a statement. It is the *function* of the sentence, not its grammatical form, that determines whether it is a statement. Any sentence used to state or assert that something is the case *could* be used as a premise or a conclusion. It is generally the declarative sentence, however, that is used to make a statement.

A sentence makes a statement or an assertion when it is used to state some fact (*There were three hundred and twenty robberies in Chicago last week*), assert some opinion (*Capital punishment is immoral*), or make some claim (*There could be life on other planets in other solar systems in other galaxies*). Statements can be simple (*The crime rate is declining*) or complex (*The crime rate is declining but press coverage of crime is increasing*; or *Either the crime rate is rising or the drug rate is increasing*; or *If the drug rate is increasing, then the crime rate is rising*).

*Statements become premises or conclusions when they are related to one another as **reason to claim** or **action supported***. Not every group of statements makes an argument, because not every group of statements consists of premises or conclusions. For example, some groups of statements are purely descriptive, such as a listing of what fines a city will levy for various kinds of parking violations. What makes a group of statements an argument is that at least one of the statements is put forth as a reason for accepting at least one other statement. In other words, no statement is a premise or conclusion in and of itself. A statement becomes a premise only if it is used to support another statement. A statement becomes a conclusion only if another statement or set of statements is offered in support of it. For example, the assertions 'Jack is a politician' and 'Don't vote for Jack' might be used in an argument by using the first statement to support the second:

*Don't vote for Jack because he's a politician.*

'Don't vote for Jack' is the action supported (**the conclusion**). 'He's a politician' is the reason given (**the premise**) in support of that action. The word 'because' relates the two assertions as premise to conclusion.

Here is another example of an argument.

*Jack's conservative; so, he's probably a Republican.*

'Jack's conservative' is the reason (premise). 'He's probably a Republican' is the claim supported (the conclusion). The word *so* relates the two assertions as premise to conclusion.

Finally, notice that in the two examples of arguments just given, each *sentence* contains more than one *statement*. Though an argument must have at least two *statements*, a single sentence may contain one or more statements.

## 2.2 Argument indicators

In the examples of arguments given at the end of the previous section, the words 'because' and 'so' were used to relate two claims as premise to conclusion. Such words are called *argument indicators*. 'Because' is called a *premise indicator* and 'so' is called a *conclusion indicator*. Many words and expressions may be used to indicate that a premise or a conclusion follows.

### SOME PREMISE INDICATORS

*since; because; for; for the reason that;  
as indicated by*

### SOME CONCLUSION INDICATORS

*therefore; thus; so; hence; it follows that;  
consequently*

Note that conclusions *never* immediately follow premise indicators and premises *never* immediately follow conclusion indicators. Remember, too, that many arguments have no indicators. The *context* alone must be used to distinguish the argument. How can one tell when a word is being used as an argument indicator or not? The only way to tell is to *examine how the word is used in context*. Although it is useful to look for premise and conclusion indicators, it would be a mistake to think that the words in the above lists are *always* used to indicate premises and conclusions. Most words have several possible uses or functions. Premise and conclusion indicators are no exceptions. 'Since' can be used as an adverb; e.g., "I've known her *since* she was a baby." 'For' is often a preposition; e.g., "She was here *for* an hour." 'Thus' can be used as an adverb; e.g., "*Thus* goes the wheel of fortune."

Even though these words aren't *always* used to indicate premises or conclusions, they are used in this way frequently enough to make it worth your while to become familiar with them.

### Exercise 4-1

**Indicate whether or not each of the following *could* be used as a premise or a conclusion.** [Exercises with an \* are answered in Answers to Selected Exercises.]

- \*1. No one was at the scene of the crime.
- 2. An ugly incident.

82

3. Only a tall person could have gotten through that window.
4. Since.
- \*5. Nevertheless, if that is what.
6. Why drugs shouldn't be legal.
7. Drugs should be legalized.
- \*8. Opium should be cheap and it should be legal.
9. Either drunk drivers should be imprisoned or they should have their licenses taken away.
10. If drugs were legalized there would be fewer crimes.
11. If the test results are positive.
- \*12. Either the wind was blowing.
13. Wow!
14. The zombie only wakes at night.
- \*15. No person is an island.

### Exercise 4-2

**For the following arguments, underline the premises, circle the conclusions and box any premise or conclusion indicators.**

- \*1. Justice can't exist for the poor because justice is nothing but the way the rich protect their interests.
2. God exists; for, the world needs a Creator.
3. A politician can't get elected unless she lies. Therefore, all elected officials are liars.
4. Since women are smaller than men, it follows that men are stronger than women.
- \*5. Because size is irrelevant to intelligence, it is necessarily the case that you are wrong in stating that women must be less intelligent than men.
6. We're out of gasoline. Therefore, you had better start walking to the nearest gas station.
7. Children should not enter child beauty contests because photographers will make them pose for sleazy pictures and judges will give them drugs.
8. You don't have a suntan. So, you're not from California.
9. Since that noise you listen to has no rhythm, harmony or melody, it is not music.
- \*10. King Tutankhamen was not a great king because he died before his twentieth birthday.
11. All women are mortal. Xanthippe is a woman. So, Xanthippe is mortal.
12. Everybody does it. So, I ought to be allowed to do it, too.
13. The President's action was a mistake because he has put his own children in extreme danger. And, it will not reduce, but escalate terrorism. It will lead to further retaliation on our part. It will strengthen the resolve of our Arab enemies. Finally, it will push friendly Arab states into the arms of the Soviet Union.
- \*14. "Astronomy was born of superstition; eloquence of ambition, hatred, falsehood and flattery; geometry of avarice; physics of an idle curiosity and even moral philosophy of human pride. Thus, the arts and sciences owe their birth to our vices."  
--Jean Jacques Rousseau, *Discourse on the Arts and Sciences*.

### Exercise 4-3

**Create your own arguments for each of the following groups of statements. Use either a premise or a conclusion indicator in each argument you make.**

- \*1. a. Nude bathing should not be allowed.  
b. Immorality has to stop somewhere.  
c. Decent people have to start standing up for their rights.
2. a. The speaker's defense of Mill is not worth considering.  
b. The speaker is a friend of Mill's.  
c. The speaker is a notorious drunk.

3.
  - a. A free press is necessary to a free society.
  - b. Without a free press, the people won't know who to vote for.
  - c. Communist countries don't have a free press.
4.
  - a. The Greeks had a low opinion of life.
  - b. They killed each other with reckless abandon.
  - c. They went to war for ten years over a woman.
5.
  - a. I am not guilty.
  - b. I never went near the scene of the crime at any time.
  - c. I was in another city at the time of the crime.
- \*6.
  - a. Slavery was ordained by God.
  - b. The Bible is the word of God.
  - c. There is nothing in the Bible which forbids slavery.

### 2.3 Arguments without indicators

Not all arguments have premise or conclusion indicators. Often, one must tell from the context alone whether an assertion is intended as a premise, a conclusion, or neither. Since the function of statements is not always made clear by the context, there may be times when it is not possible to tell whether an argument is being made. Don't let this worry you. Most of the time it will be clear enough whether someone is arguing.

The most important contextual indicator is *background knowledge*. For example, if you are going into a meeting to discuss whether you should fire Jones, statements without argument indicators (such as 'since' and 'therefore') will be made that you would undoubtedly recognize as being intended to support either firing or not firing Jones. For example, "Jones is always sick on Mondays" (premise); "He took the company car without asking and used it for his vacation" (premise); "We should fire him" (conclusion).

If an article is titled "Why Drugs Should Be Legal," statements without argument indicators will probably be used, but the context will indicate that certain statements are put forth as reasons in support of the view that drugs should be legal. For example: "It would cut down on street crime" or "We'd save a lot of money."

Other contextual indicators are the *tenses* of sentences, and *cause/effect* relationships asserted by the claims. Statements in the present tense are often used to support statements in the future tense. A statement that claims something is a cause of something else is often used as a premise in support of the claim asserting the effect.

### Exercises 4-4

**For each of the following arguments, underline the premises and circle the conclusions.**

- \*1. "There should be no law which regulates when and where an individual may smoke. Such a law would allow government to substitute its laws for our freedom to make individual decisions. It didn't work with liquor prohibition; it won't work with smoking prohibitions."
2. "You're eating too fast. You're going to get sick."
3. "You can't prove that I cheated on the test. I must be innocent."
4. "Free speech will be abused. Every liberty is abused."
5. "You should vote 'yes' on proposition 45; it could save your job."
- \*6. "Men are all insecure babies. My first four husbands were."
7. "Ann Landers is divorced; any advice she gives on marriage is worthless."
8. "Our diet plan is healthy; no one has been able to prove it isn't."

- \*9. “As Superintendent of Schools, you have a vested interest in the funding bill before this legislative committee. Your arguments for increased funding of the public school system may be justifiably ignored.”
10. “Philosophy requires a lot of hard thinking. If you take a philosophy class, you will have to exercise your brain extensively.”
11. We never should have listened to Wilberforce. The man’s a moron and he lies like a rug.
- \*12. No one ever did anything he or she did not want to do. If Smith robbed that bank, then he wanted to do it.
13. Either Gordonski is lying or she’s telling the truth. She isn’t lying. She must be telling the truth.
14. It’s a good idea to believe in free will. If there is no free will, then no one is responsible for their actions. If no one is responsible for their actions, then no one can justifiably be held accountable for their actions. If no one is held accountable for their actions, there would be chaos. No one wants chaos.
- \*15. If fatalism is true, then everything that happens has to happen. If no one can change what must happen, then there is no sense in worrying about what happens, whether it is good or bad. Fatalism should take away our worries.
16. Alcoholic drinks should be avoided at meals. Liquor taken before or during meals encourages overeating.
17. “Milk is the only perfect, complete or standard food combination in Nature. This is evident from the fact that it contains all the elements of nutrition which the new born infant body needs, not only for its vital activities but also for the building of its rapidly multiplying cells and tissues.” --Henry Lindlahr, M.D., *The Practice of Nature Cure*
18. All cows are bovine. Either Max is a cow and bovine or Max is not bovine.
19. If Nobody is on first, then Who is on second. Nobody is on first. Who must be on second.
20. You should give the man a raise. After all, he’s worked for you for fifty years and he’s never once taken a day off.

## 2.4 Simple and complex statements

**A simple statement is one that cannot be broken down into simpler statements.** For example: *There should be no letter grades given for college level courses.*

**A complex statement is one that consists of two or more simple statements.** For example: *Letter grades make the clever feel superior and they destroy the confidence of those who fail.*

Since premises and conclusions must be statements, and statements can be simple or complex; it follows that premises and conclusions must be either simple statements or complex statements.

Three of the more common types of complex statements are: **the conjunction, the disjunction, and the conditional statement.**

A *conjunction* joins statements together in a string or list, usually using the word ‘and’ or ‘but’ to join the statements. For example,

**Sheila cheated but she failed the exam.**

A *disjunction* also joins statements together, usually using the word ‘or’, or using the expression ‘either...or’. For example,

**Either Sheila cheated or she failed the exam.**

*or*

**Sheila cheated or she failed the exam**

The conjunction asserts both that *Sheila cheated* and that *she failed the exam*. The disjunction, on the other hand, does not assert that Sheila cheated. Nor does it assert that she failed the exam. The disjunction asserts that one of those statements is true, but not both. Furthermore, it does not give any clue as to which of the statements is thought to be the true one.<sup>1</sup>

A **conditional statement** joins statements together with the connective ‘if’ or the connectives ‘if...then’. The *if* statement is called the **antecedent**; the *then* statement is called the **consequent**.

**If Sheila cheated, then she passed the exam.**

*or*

**If Sheila cheated, she passed the exam.**

The conditional is like the disjunction in that it does not assert that its component statements are true. The disjunction asserts that one of the disjuncts is true. The conditional asserts that if the antecedent is true, the consequent is true.

*Unless* statements are also conditionals.

**Unless Sheila cheated, she failed the exam.**

*or*

**Shelia failed the exam unless she cheated.**

These statements mean the same as the *if...then* statement

**If Sheila did not cheat, then she failed the exam.**

My favorite kind of conditional statement is the **contrary-to-fact conditional**. For example, *I would have passed the exam if I had studied.* (We’ll never know because I didn’t study.) *I would have made the field goal to win the game if I hadn’t had donuts for lunch.* (We’ll never know because I did have donuts for lunch.) *I could have made this chapter less boring if I had tried harder.* (We’ll never know because I didn’t try harder!)

## 2.5 Distinguishing arguments from conditional statements

Conditional statements are sometimes mistakenly thought to be arguments. However, it is quite easy to recognize the essential differences between the two. An argument’s function is to state a claim and to state reasons sufficient to support that claim. A conditional statement’s function is to claim that one statement is a sufficient reason for accepting some other statement; that is, that the antecedent *implies* the consequent. There are some similarities between arguments and conditionals. In an argument one gives reasons. In a conditional statement, one says one claim is a reason for accepting another claim.

A conditional statement asserts a *single, complex* claim. Arguments make at least two claims. To be an argument, at least once claim must be *given* as a reason for accepting another claim.

The following is an example of a conditional statement. It is not an argument.

**“If Sheila passed the exam, then she cheated.”**

This statement asserts a single, complex claim. It does not claim that Sheila passed the exam; it does not claim that she cheated. It claims that *if* Sheila passed the exam, *then* she cheated. That is, it claims that the statement ‘she

cheated' is *implied* by the statement 'she passed the exam.' (Put another way, it says that 'she cheated' may be *inferred from* 'she passed.')

In an argument, one makes a claim and asserts that that claim supports the truth or reasonableness of another claim. In a conditional statement, one statement (the **antecedent**) is put forth as being a condition which, if true, is sufficient to warrant accepting another statement (the **consequent**). The antecedent of a conditional is *not* a premise for the consequent, and the consequent is *not* a conclusion based on the antecedent.

It would be possible, of course, to make an argument out of the statements "Sheila cheated" and "Sheila passed the exam." All that needs to be done is to put one of these statements in relation to the other as premise to conclusion. One must *give* one of the claims as a reason for accepting the other claim. For example,

**"Since Sheila passed the exam, one must conclude that she cheated."**

Here there are two separate claims made: *Sheila passed the exam* and *she cheated*. One of the claims is given as a reason for accepting the other claim. Thus, here we have an argument.

In an argument, a premise is asserted *unconditionally*. In the conditional, the antecedent is asserted *conditionally*. That is, 'if' functions quite differently than 'since.' 'If' is a *connective*, not a premise indicator. 'If' connects an antecedent with its consequent. Putting 'if' in front of the statement "Sheila passed the exam" is a way of saying that you are not claiming that she passed the exam. By using the *conditional* you are only saying that *her passing the exam would be a sufficient reason for believing some other claim* (namely, that she cheated). Putting 'since' before "Sheila passed the exam" in the argument not only indicates that her passing the exam is a sufficient reason to believe that she cheated, but also asserts that she did pass the exam and she did cheat.

Conditional statements, then, are not arguments but *single, complex statements*. Of course, being statements, conditionals could be used as premises or conclusions in arguments just as any other kind of statement may. (If this is not clear, refer to section 2.4 above, which discusses using complex statements in arguments.)

Finally, there is another important difference between arguments and conditional statements. The antecedent and consequent of a conditional must always be in the same sentence. The premises and conclusions of arguments, however, may be either in the same or in separate sentences.

## Exercise 4-5

**Underline the premises, circle the conclusions, and box any premise or conclusion indicators in the following arguments. Note any cases where 'and', 'but', 'either' or 'or' are NOT used to join statements together.**

- \*1. Holding in one's feelings is not healthy, since it might lead to psychosomatic illness or it might result in anti-social behavior.
2. Computers cannot think; for, if something is a machine, then it cannot think.
3. Since 7 is greater than 5, it follows that 12 is greater than either 7 or 5.
4. Civilization has caused more harm than good to mankind because it not only has given human beings the chance to be moral, but it has also made possible immorality. And, the pernicious and cruel effects of immorality seem to far outweigh the benefits of what little moral behavior there is.
5. If 'A' is greater than 'B' and 'B' is greater than 'C' then 'A' is greater than 'C'. 'A' is greater than 'B' and 'B' is greater than 'C'. So, 'A' is greater than 'C'.
6. If the Dodgers come in first, then the Reds will come in second. The Dodgers will come in first. Therefore, the Reds will come in second.
- \*7. Either it will rain or it will snow. It will not snow. Therefore, it will rain.
8. It has never snowed in June or July here, so it shouldn't snow this summer either.
9. Agriculture must be the least lucrative of all arts because its products are indispensable and their price must be proportionate to the abilities of the poorest. --J.J. Rousseau, *Discourse on the Origin of Inequality*
10. Since human history is the story of one war after another, either there will be more wars in the future or human nature will change.



- \*11. If the President is telling the truth then the Russians will not invade Poland. The Russians will invade Poland. So, the President is lying.
- \*12. Either the Germans will not quit the United Nations or the moon will turn to green cheese. Since the moon will not turn to green cheese, it follows that the Germans will not quit the United Nations.
- 13. "Remembering, which occurs now, cannot...possibly prove that what is remembered occurred at some other time, because the world might have sprung into being five minutes ago, exactly as it then was, full of acts of remembering which were entirely misleading." --Bertrand Russell, *An Outline of Philosophy*
- 14. All unhappiness is due to unsatisfied desires. All satisfaction is due to satisfied desires. And, no one can satisfy all his or her desires. Therefore, either one must give up desires and be happy or one must resign oneself to a life of unhappiness. (This is a paraphrase of one of the teachings of the Buddha, Siddhartha Gautama.)

### Exercise 4-6

**For each of the following, first determine if the passage contains an argument. If it does, underline premises, circle conclusions, and box off any premise or conclusion indicators. If the passage does not contain an argument, put a check in the margin and indicate whether or not it contains a conditional statement.**

- \*1. There must be simple substances because there are composites; for a composite is nothing else than a collection or aggregate of simple substances. --Leibniz, *Monadology*
- \*2. "It is a test of true theories not only to account for but to predict phenomena." --William Whewell, *Philosophy of the Inductive Sciences*, aphorism 39.
- \*3. If the water is black, then the well is polluted.
- \*4. The water is black and the well is polluted.
- 5. "It is not enough to have a good mind. The main thing is to use it well." --René Descartes, *Discourse on Method*
- 6. Since the water is black, the well is probably polluted.
- 7. The water is black; therefore, the well is polluted.
- \*8. Memory should not be trusted as the sole judge of the truth of any claim, since memory is fallible and memory sometimes is constituted by later acts.
- 9. Computers are extremely useful. I bought one last year and am glad I did.
- 10. A man's conscience and his judgment is the same thing. The judgment may be erroneous. So, the conscience may be erroneous, too. --Thomas Hobbes
- 11. You ought to buy a computer because they're extremely useful.
- 12. I bought a computer; so, I must be smarter than you are.
- \*13. She did well on the exam; so, she'll probably graduate.
- 14. "If women do not put forth, finally, that effort to become all that they have it in them to become they will forfeit their own humanity." Betty Friedan, *The Feminine Mystique*
- 15. Women should put forth their best effort. Actually, men should, too.
- \*16. If the world were to end today, could you say that your life had been worth living?
- 17. "There must have been a burglary at my house because the place was a shambles: drawers were open and papers were strewn all over the floor. And my silver collection was gone."
- 18. If you are a defense attorney for someone you know is guilty, you must nevertheless make the best defense possible for your client.
- \*19. "...[W]e ought mutually to tolerate one another, because we are all weak, irrational, and subject to change and error." --Voltaire, "Toleration"
- 20. "The first man who, having fenced in a piece of land, said, 'This is mine,' and found people naïve enough to believe him, that man was the true founder of civil society." --Jean Jacques Rousseau
- \*21. If cows could talk, their gods would be bovine.
- 22. "Religion is the opium of the people." Who said that?
- 23. Since dogs have no free will, they should not be held morally responsible for attacking or killing humans.
- 24. Dogs have no free will. They don't even know what 'moral' or 'immoral' means.
- \*25. The drug problem is out of control. I don't know who is in charge of solving this problem. If it gets much worse we'll be in too much trouble to do anything about it.

26. Electrons do not exist because they cannot be seen or tasted or touched. And, anything which cannot be seen, tasted or touched does not exist.

\*27. There must be life on Mars since nobody has been able to prove there isn't life there.

28. If the key works, I'll open the door.

29. The key didn't work. The door was locked. We left at 5:00 p.m.

30. Around here 'free speech' means 'free to say whatever you want as long as you don't offend anyone.'

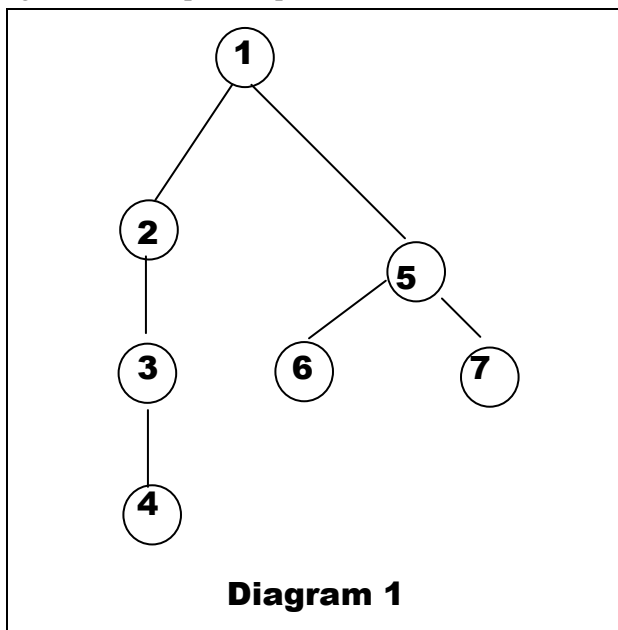
### 3. Complex arguments

The simplest argument has a single premise and a single conclusion. Complex arguments may have several premises and one or more conclusions. Some complex arguments are constructed by linking together several simpler arguments. The linkage may be made by having the conclusion of one argument serve as a premise in another argument. A very common form of complex argument is to present several sub-arguments in support of a single main conclusion. A *sub-argument* is one whose conclusion is **not** the main conclusion of the argument.

For example:

**Drugs should be legalized because it would cut down on street crime. Criminals wouldn't have to commit crimes to get their drugs because their drugs would be cheap. And it would save the taxpayer a lot of money. We wouldn't have to build so many jails and we wouldn't have to hire so many cops to enforce drug laws.**

This argument has sub-arguments. A tree diagram might be helpful to illustrate this point. First, let's rewrite the argument, numbering each statement. Then, we'll diagram the argument using the numbers of the statements to represent the statements in the diagram. To give a visual representation of the role of premises as *supports* in an argument, we represent premises *below* their conclusions, as in diagram 1.



[1] Drugs should be legalized because [2] it would cut down on street crime. [3] Criminals wouldn't have to commit crimes to get their drugs because [4] their drugs would be cheap. And [5] it would save the taxpayers a lot of money. [6] We wouldn't have to build so many jails and [7] we wouldn't have to hire so many cops to enforce drug laws.

“Drugs should be legalized” [statement 1] is the main conclusion of the argument, which is represented at the top in the diagram. “It would cut down on street crime and it would save the taxpayers a lot of money” [statements 2 and 5] are the main reasons given in support of the main conclusion. Those statements are put *below* the statement they support. But statements 2 and 5 are also conclusions of sub-arguments. “It would cut down on street crime [statement 2] is supported by the claim that “criminals wouldn't have to commit crimes to get their drugs”

[statement 3]. So, 3 is placed below 2 in the diagram. Furthermore, statement 3 is itself also a conclusion of a sub-argument with “their drugs would be cheap” [statement 4] given as a reason for accepting it. “It would save the taxpayers lots of money” [statement 5] is supported by the claims that “we wouldn't have to build so many jails” [statement 6] and “we wouldn't have to hire so many cops to enforce drug laws” [statement 7].

The diagram shows the sub-arguments. Statements 2, 3, and 4 make up a *chain argument*: Statement 4 supports statement 3 and statement 3 supports statement 2. Statements 5, 6, and 7 make up another sub-argument. (Each of these groups of statements has a conclusion that is not the main conclusion of the argument.) And each of the sub-arguments has a statement that serves as both a premise and a conclusion in the overall argument. (Remember: the terms ‘premise’ and ‘conclusion’ are *relational* terms. Just as the same man can be both a son and a father, the same statement can be both a premise and a conclusion in an argument.)

### 3.1 Diagramming complex arguments

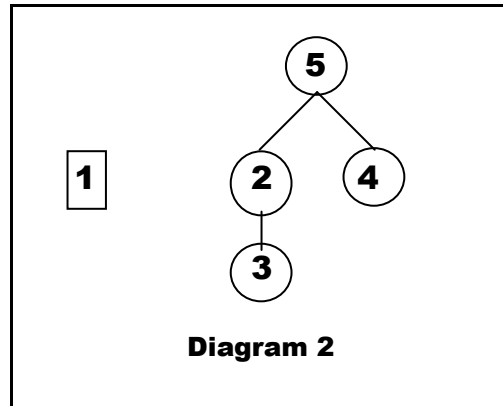
Diagramming an argument may help you see the logical structure of the argument. To diagram an argument, first number each statement in the argument. Then use circled numbers to represent the statement in your diagram. Connect the circled numbers in such a way that premises are displayed beneath (as supports of) conclusions. Indicate that a statement is both a premise and a conclusion by putting the circled number of the statement beneath the statement it is a premise for and above the statement it is a conclusion of.

For example, the following argument would be numbered and diagrammed as indicated in the box below.

**[1] I don’t know why people are always arguing about the existence of God.[2] You cannot disprove that God exists, for [3] it is impossible to prove the negative existence of anything. [4] If you can’t disprove something, then it seems reasonable to believe whatever you feel like believing about it. So, [5] if you feel like believing in God, then you should.**

In **Diagram 2**, statement 5 is the *main conclusion*. Statement 1 is drawn off to the side because it simply introduces the topic and is not part of the argument; that is, it is neither a premise nor a conclusion. Statement 2 is diagrammed as being both a premise (with respect to statement 5) and a conclusion (with respect to statement 3). Statements 2 and 3 together make up a *sub-argument*.

In diagram 2, the premises that are not also conclusions (statements 3 and 4) are the *assumptions* the main conclusion is based on. **Assumptions** are those statements for which no reasons are given. *An assumption is something that is taken for granted.* Every argument is based on one or more assumptions. In the argument above, only statement 2 is a premise that is not an assumption. It is not an assumption because statement 3 is offered as a reason for statement 2.



**A tautology is a statement composed of simpler statements in a fashion that makes it true whether the simpler statements are true or false; for example: “Either you will live forever or you will not live forever.” Such statements are said to be empty or vacuous. On the bright side, a tautology can’t possibly be false.**

Another thing to remember before doing the next set of exercises is that certain kinds of statements are not likely to be anything but premises in most arguments. *Definitions*, for example, are likely to be used as a basis from which to reason, along with other premises, to a conclusion. *Self-evident claims* and *tautologies*—claims which cannot be false—are also likely to be used as premises, along with other premises, to argue to a conclusion. It would be rare to find an arguer trying to prove a self-evident claim!

**Exercise 4-7**

**For each of the following, first determine if the passage contains an argument. If it does, underline premises, circle conclusions, and box off any premise or conclusion indicators; or number the statements and diagram the argument. If the passage does not contain an argument, put a check in the margin and indicate whether or not it contains a conditional statement.**

- \*1. "Since [beauty] is no creature of our reason...[and] since it strikes us without reference to use...we must conclude that beauty is, for the greater part, some quality in bodies acting mechanically upon the human mind by the intervention of the senses."
2. Nothing can have value without being an object of utility. Therefore, only labor which is useful has any value.
3. "For over two thousand years mathematicians have been making correct inferences of a systematic and intricate sort, and logicians and philosophers have been analyzing the character of valid arguments."  
--Patrick Suppes, *Introduction to Logic*
4. The unleashed power of the atom has changed everything except our modes of thinking. Therefore, we will drift toward unparalleled catastrophes. --Albert Einstein
5. "No testimony is sufficient to establish a miracle, unless the testimony be of such a kind that its falsehood would be more miraculous than the fact which it endeavors to establish." --David Hume, *An Enquiry Concerning Human Understanding*
- \*6. "We are an intelligent species and the use of our intelligence quite properly gives us pleasure. In this respect the brain is like a muscle. When it is in use we feel very good. Understanding is joyous." --Carl Sagan
- \*7. "Women are directly fitted for acting as the nurses and teachers of our early childhood by the fact that they are themselves childish, frivolous and short-sighted; in a word, they are big children all their life long...." --Arthur Schopenhauer, *Studies in Pessimism*, "Of Women"
8. "Surely human affairs would be far happier if the power in men to be silent were the same as that to speak. But experience more than sufficiently teaches that men govern nothing with more difficulty than their tongues." --Spinoza, *Ethics*, pt. III, proposition 2, note.
9. "If happiness is activity in accordance with excellence, it is reasonable that it should be in accordance with the highest excellence." --Aristotle, *Nicomachean Ethics*, bk. X, ch. 17.
10. "He whose honor depends on the opinion of the mob must day by day strive with the greatest anxiety, act and scheme in order to retain his reputation. For the mob is varied and inconstant." --Spinoza, *Ethics*, pt. IV, proposition 58, note.
11. "No violation of justice among citizens may be justified...by appeal to the ideal of equality, for that ideal is logically dependent upon the notion of justice. Reverse discrimination, then, which attempts no other justification than an appeal to equality, is wrong." --Lisa H. Newton, *Reverse Discrimination as Unjustified*
- \*12. "No educated man stating plainly the elementary notions that every educated man holds about the matters that principally concern government could be elected to office in a democratic state, save perhaps by a miracle. His frankness would arouse fear, and those fears would run against him; it is his business to arouse fears that will run in favor of him." --H.L. Mencken, *Notes on Democracy*
13. "The figure of the tyrant-monster is known to the mythologies, folk traditions, legends, and even nightmares, of the world; and his characteristics are everywhere essentially the same. He is the hoarder of the general benefit. He is the monster avid for the greedy rights of 'my and mine.'" --*The Hero with a Thousand Faces*, Joseph Campbell
14. "Affirmation of life is the spiritual act by which man ceases to live unreflectively and begins to devote himself to his life with reverence in order to raise it to its true value. To affirm life is to deepen, to make more inward, and to exalt the will to live." --Albert Schweitzer, *Out of My Life and Thought*
15. "If all mankind minus one were of one opinion, and only one person were of the contrary opinion, mankind would be no more justified in silencing that one person than he, if he had the power, would be justified in silencing mankind." --John Stuart Mill, *On Liberty*
16. Psychiatry is a fraud because it decides what is or is not a mental illness by democratic vote of its members: that's what it did with homosexuality. Before the vote was taken, homosexuality was a treatable mental illness; after the vote, homosexuality was no longer a mental illness.
17. "Two things fill the mind with ever-increasing wonder and awe, the more often and the more intensely the mind of thought is drawn to them: the starry heavens above me and the moral law within me." --Immanuel Kant, *Critique of Practical Reason*
18. "I refer those actions which work out the good of the agent to courage, and those which work out the good of others to nobility. Therefore temperance, sobriety, and presence of mind in danger, etc., are species of courage; but modesty, clemency, etc., are species of nobility." --Spinoza, *Ethics*, pt. III, proposition 59, note.

- \*19. I just don't see why multi-cultural education is so popular or why people think it is value-free. Multi-cultural education is not value-free, despite what its proponents say. It teaches children to respect and accept the evil values and practices of other cultures such as genital mutilation of young girls in Africa and handing out death sentences for blasphemy in Iran.
20. "The majority of men, I maintain, are dominated by a high opinion of their own skill and accomplishments, especially the perfection of their intellects for distinguishing true from false and sure guidance from misleading suggestion. It is therefore necessary, I maintain, to shut the gate so as to keep the general public from reading the books of the misguided as far as possible." --Algazali, *The Deliverance from Error*
21. "...[H]owever much health may contribute to that flow of good spirits which is so essential to our happiness, good spirits do not entirely depend upon health; for a man may be perfectly sound in his physique and still possess a melancholy temperament and be generally given up to sad thoughts." --Arthur Schopenhauer, *The Wisdom of Life*, "Personality, or What a Man Is"
22. "In our time, political speech and writing are largely the defense of the indefensible. Things like the continuance of British rule in India, the Russian purges and deportations, the dropping of the atom bombs on Japan, can indeed be defended, but only by arguments which are too brutal for most people to face, and which do not square with the professed aims of political parties. Thus political language has to consist largely of euphemism, question-begging, and sheer cloudy vagueness." --George Orwell, *Politics and the English Language*
- \*23. Restitution, rather than imprisonment should be required in those cases where property damage is the issue; for, sending a person to prison ought to be avoided whenever possible and the victim of a property crime is likely to be much more satisfied with our criminal justice system if he or she is repaid. If a criminal goes to prison, he is not going to be able to make restitution.
24. "Man can will nothing unless he has first understood that he must count on no one but himself; that he is alone, abandoned on earth in the midst of his infinite responsibilities, without help, with no other aim than the one he sets himself, with no other destiny than the one he forges for himself on this earth." --Jean Paul Sartre, *Being and Nothingness*
25. "A celebrated author and divine has written to me that 'he has gradually learnt to see that it is just as noble a conception of the Deity to believe that He created a few original forms capable of self-development into other and needful forms, as to believe that He required a fresh act of creation to supply the voids caused by the action of His laws.'" --*The Origin of Species*, Charles Darwin
26. "Homosexual pornography features an inordinate amount of sadomasochism....It is a striking fact that homosexuals seldom (to my knowledge, never) object to homosexual pornography on similar grounds; from which it would seem that the homosexual subculture makes no value distinctions among kinds of sexual relations but is, in principle, promiscuous." --Joseph Sobran, *Bogus Sex: Reflections on Homosexual Claims*
27. "Until philosophers are kings, or the kings and princes of this world have the spirit and power of philosophy, and political greatness and wisdom meet in one, and those commoner natures who pursue either to the exclusion of the other are compelled to stand aside, cities will never have rest from their evils--no, nor the human race, as I believe--and then only will this our State have a possibility of life and behold the light of day." --Plato *The Republic*, V, 473-C.
- \*28. "To protect the workers in their inalienable rights to a higher and better life; to protect them, not only as equals before the law, but also in their health, their homes, their firesides, their liberties as men, as workers, and as citizens; to overcome and conquer prejudices and antagonism; to secure to them the right to life, and the opportunity to maintain that life; the right to be full sharers in the abundance which is the result of their brain and brawn, and the civilization of which they are the founders and the mainstay...The attainment of these is the glorious mission of the trade unions." --Samuel Gompers
29. "Since I do not foresee that atomic energy is to be a great boon for a long time, I have to say that for the present it is a menace. Perhaps it is well that it should be. It may intimidate the human race into bringing order into its international affairs, which, without the pressure of fear, it would not do." --Albert Einstein, *Atlantic Monthly*, Nov. 1945.
30. "Philosophy is written in this grand book—I mean the universe—which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it; without these, one is wandering about in a dark labyrinth." --Galileo Galilei, *Il Saggiatore*
31. "Equal and exact justice to all men, of whatever state or persuasion, religious or political; peace, commerce, and honest friendship with all nations, entangling alliances with none...Freedom of religion; freedom of the press, and freedom of person under the protection of the habeas corpus, and trial by juries impartially selected. These principles form the bright constellation which has gone before us, and guided our steps through an age of revolution and reformation. The wisdom of our sages and the blood of our heroes have been devoted to their attainment." --Thomas Jefferson, *First Inaugural Address*.

**Exercise 4-8**

**The statements in each of the following passages are numbered. Diagram each argument and answer the questions that follow each passage. Do the asterisked problems first and check your answers in Answers to Selected Exercises.**

\*1. [1] *If Mary deliberately harmed Jane, then she ought to be punished.* [2] *Mary deliberately hurt Jane. Therefore,* [3] *Mary ought to be punished. And, since* [4] *Mary ought to be punished,* [5] *we should not invite her to dinner tonight.*

1.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

1.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

1.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

1.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

1.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

1.6 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

\*2. [1] *You might think pornography is harmless, but let me tell you something.* [2] *If your mind is always in the gutter, you'll develop into a dirty old man. For,* [3] *the kinds of things you occupy your mind with will affect your character for the rest of your life.*

2.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

2.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

2.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

2.4 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

3. [1] *A miracle is a violation of the laws of nature.* [2] *Unalterable experience has established these laws. Therefore,* [3] *to believe in a miracle is to reject unalterable experience as a basis for belief in the laws of nature. Since* [4] *science is based upon a firm belief in the laws of nature,* [5] *to believe in miracles is to reject science.*

3.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

3.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

3.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

3.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

3.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

3.6 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

\*4. [1] *If God is All-Powerful, then nothing a human being does could affect Him. For,* [2] *if a human act could please or displease God, then human beings would have power over God. So,* [3] *either God is not All-Powerful or God doesn't give a hoot what you or I do. But,* [4] *if God isn't All-Powerful, then He isn't really God and He couldn't send us to Hell even if He wanted to. So,* [5] *sin at will; for,* [6] *either God doesn't care what we do or he cares but can't do anything about it.*

4.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

4.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

4.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

4.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

4.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

4.6 Statement [6] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

4.7 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

\*5. [1] *To me the whole thing is simple. [2] If the white man's Holy book has the Truth, then there should be no disagreement about the Truth in the Holy Book. Therefore, [3] the white man's Holy Book does not have the Truth.*

5.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

5.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

5.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

5.4 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

6. [1] *Let me tell you my theory of crime and punishment. [2] If the behavior of criminals is determined by their heredity and environment, then they're not responsible for their crimes. [3] If they're not responsible for their crimes, then they shouldn't be punished. So, [4] if the behavior of criminals is determined by their heredity and environment, then they shouldn't be punished. For [5] a person should be punished only if he deserves it and a person can only deserve to be punished if they're responsible for their actions. [6] That's my opinion, anyway.*

6.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

6.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

6.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

6.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

6.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

6.6 Statement [6] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

6.7 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

7. [1] *A person should strive above all to achieve his or her own personal happiness. Therefore, [2] if an ethical system has the consequence of making people unhappy, it cannot be a good ethical system. So, [3] The ethics of self-sacrifice, of always choosing what will make other people happy, without regard for your own well-being, cannot be a good ethical system.*

7.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

7.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

7.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

7.4 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

8. [1] *To not hold a person responsible for their behavior is to treat them as if they were just a 'thing', an object following laws of nature, not a human being with a moral sense and the freedom to choose to do or not do evil actions. Therefore, [2] to blame the environment or a person's heredity for their criminal behavior is to deny the criminal's humanity. [3] You might not agree, but that's how I feel.*

8.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

8.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

8.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

8.4 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

9. "[1] *If men and women try to create a society in which there is no fundamental agreement about good and evil they will fail; if, having based it on common agreement, the agreement goes, the society will disintegrate. For [2] society is not something that is kept together physically; it is held by the invisible bonds of common thought.*" --Patrick Devlin, *The Enforcement of Morals*

9.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

9.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

9.3 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

10. "[1]...[S]tereotyping involves not merely the attitudes of rigid people discriminating against racial and ethnic outgroups. [2] It is an inherent and inevitable aspect of every human appraisal of every person encountered. [3] It is therefore misleading to inquire about the presence or absence of stereotypes and prejudgments." --G. McCall and J. Simmons, "Social Perception and Appraisal"

10.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

10.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

10.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

10.4 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

\*11. [1] *If, throughout life, a person continues to define his or her life in terms of the concepts absorbed from his or her society as a child, then one will only be as rational and critical as one's society. [2] If a person is only as rational and critical as his or her own society, then in an irrational society, one will grow up to be irrational. Thus, [3] a person who does not reflect on the concepts absorbed as a child in an irrational society will grow up to be irrational. [4] Being unreflective, even in an irrational society, can be dangerous since [5] to be unreflective is to ignore life as one is actually finding it by experience to be. And [6] it is always more dangerous to live in a delusional world.*

11.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion



11.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

11.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

11.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

11.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

11.6 Statement [6] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

11.7 This passage has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

\*12. [1] *There are only three alternatives possible for the origin of the world: it is self-existent, or self-caused, or caused by some external agency. And [2] each of these alternatives is really without meaning to our minds. [3] We cannot conceive that a thing exists in its own right without any source beyond itself; [4] we cannot conceive self-creation, for [5] that implies that the thing exists before it exists; and [6] to refer it to an external creator merely defers the question. For [7] we have to ask, Whence the creator?*” --William Ernest Hocking, *Types of Philosophy*

12.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.6 Statement [6] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.7 Statement [7] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

12.8 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

13. [1] *It is unreasonable to believe in punishment in the afterlife. For, [2] either there is no afterlife or there is one. [3] If there is none, then it is absurd to believe in punishment after death. [4] If there is an afterlife, then an all-just and all-merciful God would not punish a creature for being too weak to resist desires instilled by the Creator.*

13.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

13.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

13.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

13.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

13.5 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

14. [1] *The death penalty does not deter potential murderers. Therefore, [2] it ought to be abolished. And, [3] even if it does deter others, it still ought to be abolished; for, [4] the only reason which could justify intentionally killing anyone would be that the person deserved to be killed.*

14.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

14.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

14.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

14.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

14.5 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

\*15. “[1] *Belief must have an object. For, [2] he that believes must believe something; and [3] that which he believes is called the object of his belief. [4] Of this object of his belief, he must have some conception, clear or obscure; for [5] although there may be the most clear and distinct conception of an object without any belief of its existence, there can be no belief without conception.*” --Thomas Reid, *Essays on the Intellectual Powers of Man*

15.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

15.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

15.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

15.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

15.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

15.6 This passage has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

16. *Since [1] beauty “is no creature of our reason, since [2] it strikes us without any reference to use, and...since [3] the order and method of nature is generally very different from our measures and proportions, we must conclude that [4] beauty is, for the greater part, some quality in bodies acting mechanically upon the human mind by the intervention of the senses.”* --Edmund Burke, *On the Sublime and Beautiful*, III.xii

16.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

16.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

16.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

16.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

16.5 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

17. [1] *All is One. [2] If all is One, then individuals do not exist. Therefore, [3] individuals do not exist. And since [4] murder is the unjustified killing of one individual by another, it follows that [5] murder does not exist. [6] If murder does not exist, then my client cannot be guilty of murder. Therefore, [7] my client cannot be guilty of murder.*

17.1 Statement [1] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.2 Statement [2] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.3 Statement [3] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.4 Statement [4] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.5 Statement [5] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.6 Statement [6] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.7 Statement [7] is (a) a premise (b) a conclusion (c) both a premise and a conclusion (d) neither a premise nor a conclusion

17.8 This argument has (a) a premise indicator (b) a conclusion indicator (c) both a premise and a conclusion indicator (d) neither a premise indicator nor a conclusion indicator

## 4. Inductive and deductive arguments

Traditional logic divides arguments into two types: *deductive* and *inductive*. We will conclude this chapter with a brief description of the nature of both types of argument, as well as of their major differences. The two types of arguments may be evaluated by quite different methods, as we will see in the following chapter.

### 4.1. Deduction

Aristotle (384-322 B.C.E.) is considered the father of Logic because he was the first philosopher to develop a systematic way of analyzing and evaluating reasoning. He developed techniques for distinguish good reasoning from bad reasoning. His Logic is based upon a theory of the relationship of reality to thought and of thought to language. His goal seems to have been to develop a systematic way to *demonstrate* the truth of every true statement. Aristotle knew, as every logician since has known, that *language* itself is the main stumbling block to developing a systematic way to prove the truth of all true statements. Everyday language is not clear and precise enough to do the job.<sup>2</sup> Even if the mind grasps the truth, stating that truth in clear, unambiguous terms proves to be a very difficult task. Worse, though, is the fact that using ordinary language with its sloppy and undisciplined ways of expression tends to make us sloppy and undisciplined thinkers. The solution: translate those thoughts that truly reflect reality into an artificial language in which every term is clear, precise, and unambiguous. Language can then be used not only to communicate the truth but to deduce further truths. The problem, however, is that something is lost in the translation. One thing that is lost is the truth about language itself. Language has many equally legitimate functions. Communicating the truth is just one of them.

Furthermore, not only language, but *reality* is more elusive and less fixed than Aristotle thought. The attempt to connect reality, thought, and language through a system of logic gets very complicated. Nevertheless, one very important element of Aristotle's Logic will always remain significant and essential. This element is perhaps best seen by examining his definition of a *syllogism*.

Aristotle defined a *syllogism* as "discourse in which, certain things being stated, something other than what is stated follows of necessity from their being so" (*Prior Analytics*, I.1). The concept of *following of necessity* is now considered the essential defining characteristic of *deduction*. The kind of reasoning Aristotle evaluated was a direct outcome of his beliefs about reality, truth, and language, especially his notion that language can reflect thought which in turn can reflect reality. Today, only one part of deductive logic is devoted to evaluating Aristotelian syllogisms. Still, the concern of modern deductive logic focuses, as does Aristotelian logic, on the concepts of *logical inferences* and *logical implications*. What matters in the analysis of reasoning according to the standards of modern deductive logic is whether one sentence or set of sentences *implies* the truth of another sentence. Modern logic is concerned with what Aristotle was concerned with: "discourse in which, certain things being stated,

something other than what is stated follows of necessity from their being so.”

What does it mean for one sentence to *follow of necessity* from another sentence or set of sentences? For example, what does it mean to say that from the statements “All men are mortal” and “Socrates is a man”, *it follows of necessity* that “Socrates is mortal”? It means that if it is true that all men are mortal and that Socrates is a man, then *it must also be true* that Socrates is mortal. In Logic, when a statement (call it “q”) is said to follow of necessity from another (call it “p”), we say that **p implies q**. Or, we say that **q may be logically inferred from p**. For example, the statement “All bachelors are unmarried and Sergio is a bachelor” *logically implies* “Sergio is unmarried.” And the statement “Sergio is unmarried” may be *logically inferred* from the statement “All bachelors are unmarried and Sergio is a bachelor.”

## 4.2 Induction

We have seen that the concept of *necessary connection* between statements is the defining characteristic of deductive arguments. A deductive argument claims that its premises provide sufficient proof of the truth of its conclusion. There are many arguments, however, that do not claim that their premises are sufficient to *prove with necessity* that a conclusion is true. Many, if not most, arguments one is likely to hear in daily life will make the claim that their premises provide *reasonable grounds* (rather than necessity) for their conclusions. Such arguments are called *inductive* arguments. The premises of inductive arguments, even if true, do not provide sufficient grounds for establishing the truth of their conclusions. No matter how strong the evidence is in an inductive argument, it will never prove its conclusion with necessity. At best, an inductive argument can provide proof to a high degree of *probability*.

Since the conclusions of inductive arguments do not follow with necessity from their premises, it is possible for a good inductive argument to have true premises but a false conclusion. How a *good* argument could have a *false* conclusion needs some explaining. It is attributable to the nature of induction. Our notion of *inductive* reasoning is based on our belief that *induction* is usually *empirical*. Empirical induction is based on observation or experience or the testimony of others. Nothing based on experience, observation, or testimony can be known with *infallible certainty*. The best that can be hoped for with regard to empirical truth is a *high degree of probability*. Empirical inferences are interpretations or explanations of sense experience; they are by nature fallible. Nevertheless, most human affairs can be conducted quite reasonably based on less-than-perfect evidence and reasoning. For example, no criminal court requires proof stronger than proof *beyond a reasonable doubt*. No conclusion of guilt will ever follow necessarily from evidence presented in a court of law, nor could the evidence itself ever be proved to be necessarily true. Even if a defendant confesses, guilt cannot be logically inferred from the confession. He could be lying to protect someone else. He could be deluded and think he did something he did not actually do. Even a dozen reliable witnesses could be wrong in identifying an individual as the perpetrator of a crime. No matter how incriminating the evidence might be, there is always some possible doubt that could be presented.

In a court of law, a prosecutor does not have to present evidence sufficient to prove that the defendant is *necessarily* guilty. Such proof would be unreasonable. On the other hand, the defense cannot refute the prosecutor’s argument by introducing a *possible* doubt as to guilt. That, too, would be unreasonable. Before a jury decides that a defendant is guilty, the evidence should be strong. It should prove guilt beyond a *reasonable* doubt. It may be *possible* that twelve reliable witnesses are wrong about who they saw commit a crime, but is it *reasonable* to believe they are all in error? Those are two different questions. Only the latter one is relevant in a court of law.

A jury may conclude that an innocent person is guilty as charged beyond a reasonable doubt. Nevertheless, the jury’s decision is not necessarily unreasonable. They may have made a very reasonable decision based on the evidence and arguments presented to them. Still, they could be wrong. Scientists may conclude something that later turns out to be false. Nevertheless, the scientists’ decision is not necessarily unreasonable. They may have made a very reasonable decision based on the evidence before them. Journalists may report something that turns out to be

false. Again, their report may have been very reasonable, given the information available to them.

On the other hand, inductive arguments may be based on values. Such arguments are notoriously difficult to reduce to deductive proofs with unquestionable premises. Here is a list of such topics. Each of these topics is likely to have contradictory arguers who believe they have reasonable grounds for accepting their position.

Is morality relative? Should drugs (abortion, euthanasia) be legalized? Should prostitution (gambling, pornography) be illegal? Should capital punishment be abolished? Is affirmative action morally right? Is killing human beings ever justified? Do rich nations have a duty to help poorer nations? Does a government have a duty to look out for the health, education and general welfare of its citizens? Is it ever justified to disobey the law? Does the ownership of a socially valued object or talent obligate one not to destroy it? Does a person have a natural right to commit suicide? Is it immoral to eat meat? Is it justifiable to kill animals for sport? or clothing? or food? Is it justifiable to capture and train animals to entertain humans? Should racist or sexist language be illegal?

The list of endlessly debatable items is endless. Nevertheless, on many of these issues we make decisions and feel comfortable with the reasonableness of our decisions. If we change our minds on a controversial issue, it need not be because we arrived at our first belief unreasonably. We may have; but we may also have arrived at our first belief reasonably. Our new belief, although contradicting our old belief, may indicate the discovery of new information. It may indicate a deeper delving into an issue. It may indicate recognition of an inconsistency with other beliefs.

Thus, when we say that a good inductive argument might have true or reasonable premises but a false conclusion, we do not mean that inductive arguments are unreasonable or flawed. We do not consider fallibility a flaw. It is a fact of the human condition. It is little more than mysticism to assert that being infallible would make us perfect. As critical thinkers we must not fret over the fact of our fallibility and lack of absolute certainty about many, if not most, of the important issues that face us. We must accept our situation and make the best of it. That is, we must determine our beliefs and actions on the most reasonable grounds we can muster.

#### **Exercise 4-9 Self-test: true or false?** (Check you answers in Answers to Selected Exercises.)

1. The statements which comprise a conditional statement are neither affirmed nor denied.
2. A sub-argument is one whose conclusion is the main conclusion of a complex argument.
3. Both the premises and the conclusion of an argument are asserted (i.e. stated or claimed)..
4. An argument requires that at least one assertion be given in support of the truth of at least one other assertion.
5. Conditional statements and arguments have in common the fact that antecedents and premises are asserted to be true.
6. All arguments have premise or conclusion indicators.
7. A conditional statement is one which joins simple statements together with the connector 'if' or the connectors 'if...then'.
8. The assumptions of an argument are the basic premises upon which the argument stands or falls.
9. Some passages are vague or ambiguous and there is no clear-cut correct interpretation of them as containing an argument.
10. A conjunction joins simple statements together, usually using the word 'or', or using the expression 'either...or'.
11. A complex statement is one which consists of two or more simple statements.
12. An assumption in an argument is a premise for which no support is given.
13. An argument is a simple statement of one's opinions, without providing any support for them.
14. All arguments involve giving reasons in support of a claim or position.
15. An argument may have ten premises and four conclusions.
16. A premise is a statement given as a reason for accepting some claim.
17. Words such as 'since', 'because' and 'for' often indicate that the next assertion is a premise.
18. Words such as 'evidence' and 'support' often mean the same thing as 'premise.'
19. Conditional statements may appear as premises or conclusions in arguments.
20. A conclusion is a statement given as a reason for accepting some claim.
21. Words which may be used as premise or conclusion indicators may also be used for other purposes.
22. A conclusion of one argument may not be used as a premise in another argument.
23. An argument is any group of statements related as premise to conclusion.

24. An argument is the presentation of at least one claim to support the truth or reasonableness of at least one other claim.
25. The conclusion of an argument is the statement made last in the argument.
26. Conditional statements are types of arguments.
27. Words such as 'therefore', 'hence', and 'thus' often indicate that the next assertion is a conclusion.
28. A premise is always preceded by an indicator such as 'because'.
29. The conclusion of an argument is sometimes the first statement in the argument.
30. For a statement to be part of an argument, it must be either a premise or a conclusion.
31. A deductive argument is one whose premises try to prove its conclusion with necessity.
32. An inductive argument is one whose premises try to prove its conclusion to some degree of probability.
33. To say that a sentence 'q' "follows necessarily from" another sentence 'p' is to say that *p implies q*.
34. To say that a sentence 'q' may be inferred from a sentence 'p' is to say that *p implies q*.
35. Many inductive arguments are about values.

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## Further Reading

Copi, Irving M. and Cohen, Carl. (2001) *Introduction to Logic*. 11th edition. Dark Alley.

Hurley, Patrick J. (2002) *A Concise Introduction to Logic*. 8<sup>th</sup> edition. Wadsworth.

## Notes – Chapter Four

<sup>1</sup>Logicians distinguish disjunctions such as "Either Sheila cheated or she failed the exam" from those such as "Either Sheila cheated or she did not cheat." The latter is an *exclusive* disjunction. It asserts that one of the disjuncts is true but not both. "Either Bob Dylan is the greatest poet who ever lived or Yeats is the greatest poet who ever lived" is also an *exclusive* disjunction. This asserts that one of the disjuncts is true but not both. An *inclusive* disjunction is one where at least one disjunct is true, but both may be true. There are many disjunctions that are ambiguous; it is not clear whether they are intended to be exclusive or inclusive. If it is not absolutely necessary to treat a disjunction as exclusive, we will assume it is inclusive. Since it is possible that "Sheila cheated" and "she failed the exam" are both true, the disjunction "Either Sheila cheated or she failed the exam" will be considered as inclusive, even though a person uttering this disjunction probably believes that if she passed the exam, then she cheated and if she failed then she did not cheat.

<sup>2</sup>A most skeptical formulation of the problem was asserted by Gorgias, made famous by Plato's dialogue of the same name. Gorgias allegedly said that there is nothing but that even if there were something we couldn't know anything about it and even if we could know something we couldn't communicate what we knew to anyone else. Plato dismissed Gorgias's claim as self-contradictory on the grounds that Gorgias was communicating something he thought he knew.