

Chapter 2 - Recognizing and Analyzing Arguments

2.1 Introduction

Now that we have gotten our "mental muscles" warmed up, let's see how well we can put our newly acquired concepts into practice. Having stretched our thinking about thinking, we have come to the point of realizing that thinking well is the acquired skill of reasoning well and that reasoning well is in turn the acquired skill of arguing well. As such, it would be correct to say that good arguments constitute the heart and soul of good reasoning. Accordingly, in our training to become good thinkers, it is of great importance that we stretch our knowledge of arguments just a little further. Ultimately, we need to learn how to distinguish a good argument from a bad one, but we must take first things first. We need to acquire the ability to recognize an argument, good or bad, when we see or hear one.

This ability to recognize an argument when you read or hear one is the most basic skill you will need to acquire in order to become a good, or a better, thinker. Your first impression might be that this is not a very refined skill, for arguments are usually very easy to spot. But, as you will see, this is not always the case. To get us warmed up for the hard cases, we will start off with some easy ones. We will begin by pointing out a few things that will help you get better at spotting arguments.

As always, we are going to take it slow, for as every good coach knows, running before you are ready can be hazardous to your health. We begin with this acknowledgment: however important it is to be able to recognize an argument when you read or hear one—and it is Very Important—acquiring this ability is still just the beginning step in developing our reasoning skills. After we have identified an argument, we must go further and analyze it by identifying sentences that function as premises and as conclusions. And after we analyze the argument, we must go even further and evaluate it as a good argument or a bad one. When we get to this stage we will be up and running. Well, even the longest race begins with one step. So let's get started.

It is often assumed that the primary use of sentences is to inform us about something that does or does not exist, or to inform us as to what it is or is not sensible to say. For example, the sentence "The cat is on the mat" was thought to inform us **that** the cat is actually on the mat. "Bachelors are not married" was thought to inform us of **what** a bachelor is. Both sentences have a truth value because they either truly or falsely describe existence or meaning. This standard view is guilty of what the philosopher J. L. Austin called the descriptive fallacy.

Left out of this standard account of language was the fact that speaking and writing are used to do much more than inform us about what is true or false. To notice this is not to deny that sentences are often used to inform us of things that are true or false. Austin, however, called out attention to the obvious fact that the use of sentences to inform us about existence or meaning is but one among the many and diverse functions that language serves. For our purposes, the moral of Austin's revolutionary insight is simple: sentences have many uses!

While logicians may acknowledge the multiplicity and diversity of sentence use, their primary interest remains rather limited. Insofar as logicians are interested in evaluating arguments as either valid or invalid, it follows that they are exclusively interested in sentences with truth values, that is, sentences that have an informative use. In order to recognize when sentences are being used in this way, that is, when they are being used to claim that something exists or has a certain meaning, we must learn to distinguish the informative use of language from its many other uses.

Most commonly, the informative function of sentences is at work in forming what we call synthetic claims. These sentences are taken to represent or describe some state of affairs in the natural world. They are sometimes true and sometimes false, but never both. Such sentences are the chief interest of science, since it is assumed that the job of science is to represent and describe the natural world, or if you will, to capture the way the natural world truly is,

objectively speaking. As well, some think we can extend this empirical model to make claims (true or false) regarding non-natural features of reality (for example sentences about values, or beauty) and even to make claims about the existence of about supernatural features of reality. In all of these cases, the litmus test as to what does or does not count as an informative use of a sentence is the question of whether or not this use is intended to inform us of something. If this test is passed, we have an informative sentence that qualifies it as a basic building block of an argument.

Note again that sometimes sentences are used to inform us about meaning. Following Ludwig Wittgenstein, we can call these sentences grammatical or logical remarks. Such remarks do not inform us of any worldly facts, but tell us instead something about what it does and does not make sense to say. That is, these remarks do not represent some state of affairs (natural, non-natural, or supernatural) in an external reality but inform us of how language works. If I said "it is raining" this is clearly designed to inform us of some factual state of affairs. But if I say that it is either raining or not raining, I do not inform you about the weather. To say something like this is to utter what we will learn to call a **tautology**. It has the form of saying "either P or not P." This sentence cannot be false and logicians call it **the law of excluded middle**. The cousin of the tautology is the **contradiction**, such as, P and not-P. This sentence can never be true.

Strictly speaking, grammatical remarks are not true **or** false like sentences about existence; they are true or they are false by definition. As I noted in the last chapter, philosophers call them analytic to distinguish them from synthetic sentences that can be **either** true or false.

Wittgenstein compares grammatical remarks such tautologies to equations in mathematics. Tautologies, like contradictions, do not inform us of the existence of something. But they are not nonsense and indeed are useful since they tell us how logic works, about what does and does not make sense. So even though these logical remarks tell us nothing about the world, they do inform us of something important about how language works. As always true, or as always false, they partially satisfy the requirement informative sentences must meet, since they are true, or they are false.

Therefore, even though these logical remarks do not inform us about anything in the world, they do inform us of sense and non-sense. As such, we can class these remarks as "logically" informative and include them (along with existence claims) as the informative building blocks necessary for the construction of arguments.

In this chapter, you will learn to identify some of the more common kinds of sentences that are not primarily informative. Moreover, what makes them not primarily informative uses of language is that they are not open to being evaluated as either true or false. These broad categories of non-informative uses language will include the following:

<p style="text-align: center;">Expressive Directive Performative Ritual</p>

Identifying these different uses is often not an easy matter. Skill in doing so will come only with attentive practice. We must develop an ear, as it were, for picking out which use is most prominently involved in the passages we are interpreting. Recognizing **the primary** use that a particular sentence is intended to have requires close attention to context and content. And again, developing this skill in recognizing differences in languages uses will take practice.

2.2 Non-Informative Language Uses

- **The Expressive Use**

I have tried to make it clear that not every sentence has an informative use. Indeed, we quite often use sentences for purposes other than providing information. A very common example of such a use of language is what we will call its **expressive** function.

Consider this example: Someone says, "I am so sorry your cat is ill. Please accept my sympathy." It should be clear to you that the primary function of these sentences is not to inform someone of something. There is little, if any, intention to inform, despite the fact that some information is conveyed (information about the health of the cat, the psychological state of the speaker, and so forth). Rather, in this case, the speaker's primary interest is not to inform, but to express his or her emotions or feelings. Because such sentences are not used primarily to inform and as such have no content that can be evaluated as true or false, such sentences would not ordinarily figure in the construction of arguments.

One caution: Don't be misled by the use of "express" here, for while all uses of language may be considered "expressions", we are using the term "expressive" in this context as roughly equivalent to the ideas of venting, revealing, manifesting, evoking, or provoking feelings. We use language in this expressive function when we are trying to vent our own emotions or when we are trying to evoke emotions in our audience, or both.

As an example of the use of language both to vent and to evoke feelings, consider this: "OMG!" "How vicious can a person be?"

- **The Directive Use**

Here we have yet another task that sentences are used to accomplish. In this case, the task is to get someone to do, or not to do some action. Suppose someone says: "Take your cat to the veterinarian!" It would be a mistake to think that this person was trying merely to convey information or to express his or her feelings. Rather, in this case the speaker's primary intention is to provoke action in his or her audience; as we might put it, the speaker here is issuing a command or an imperative. We call this the **directive** language use. The speaker is not providing information but has issued a directive that is neither true nor false.

Accordingly, directives do not ordinarily form a part of arguments. However, even though such directives are neither true nor false, it does make sense to appraise them as, for example, appropriate or inappropriate, warranted or unwarranted, loving or hateful.

Another caution: There is a difference between the sentence "Take your cat to the veterinarian!" and "You ought to take your cat to the veterinarian." The latter sentence may express some claim that is either true or false. Consider this example: Someone notices that your cat has a runny nose and watery eyes. He says to you, "These are symptoms of feline upper respiratory infection. This is a serious feline illness. A veterinarian may be able to help your cat recover. You ought to take the cat to the veterinarian." Now we have an argument. The conclusion of this argument is intended to cause some action, but also to inform the cat owner of some course of action that the facts call for. Such arguments have often been called practical syllogisms or practical arguments, since their conclusions do serve the practical function of informing us of what course of action we ought to take.

What this example also makes clear is that one and the same sentence can involve more than one language use. Indeed, more than two functions can be present. With a certain urgency of voice, I may well add the expressive function to my claim and directive: "Take your cat to the veterinarian right now!" Because language uses can be combined in this way, I have made a point to refer to the "the primary intention" of a speaker or writer in determining the primary language use at play in the particular passage under investigation. Accordingly, we will identify the language use of a sentence as informative, expressive, or directive if that function is the primary one. Making this identification does not preclude acknowledging that other functions may also be at play in the passage that is being interpreted.

- **The Performative Use**

It was J. L. Austin who helped to bring our attention to the **performative** language use. As he pointed out, in successful performative utterances we accomplish an action in and through the saying of certain words. Here we must not be confused by the fact that all language uses involve doing things with words, for example, informing, directing, venting. The performative language use is a special case of doing things with words. In the case of the performative language use, some particular action is accomplished in and by saying certain things in certain circumstances.

Consider the act of making a bet or a promise. The way that we engage in these actions is by saying certain things in certain circumstances with the appropriate sincerity, etc. The way that I engage in the act of betting you something is by saying to you, "I bet you..." If you agree, and you are competent, sincere, and so forth, the bet is on. Similarly, the way that I promise you something is by saying certain words to you with the appropriate earnestness and with your willingness to trust me. Usually, I say, "I promise..."

While such performative utterances are neither true nor false, and accordingly cannot be used to construct arguments, they certainly can be assessed as being successful or not. For example, just saying the words, "I bet you," is not sufficient for engaging in the act of betting, for among other things, you must agree to enter the wager. Lots of things can go wrong. If you do not agree, my attempt to bet you something fails: I said the words, "I bet" but I did not bet you.

- **The Ritual Use**

The **ritual** language use is very closely related to the performative function. As in the case of the performative, the ritual function may involve the accomplishment of some deed by the use of words. For example, in saying the words of the pledge of allegiance to the flag, we may well be doing something, namely, pledging our allegiance to our country. But we need not be doing this. Indeed we might just be going through the motions of a ritual. This use of language marks it off from the performative in an important way. We put this difference as follows: unlike its performative cousin, in its ritual function, words are not used to bring something about.

There are countless such ritual uses of language, for example, saying a prayer, saying "Good-bye," saying "Happy Birthday," toasting newlyweds, and so forth. Normally, when we say to someone "How ya doing?" this is not an inquiry into his or her well-being, but a ritual greeting. We engage in the act of greeting someone by saying these words. The words, we might say, constitute a kind of handy formula for greetings. Of course we can greet each other differently, with different words, but when we adopt commonly accepted formulas, we are using language in its ritual function. Perhaps you can think of some further examples of this ritual use of language.

2.3 Informative Truth values

Recall that logic is concerned exclusively with sentences that have a truth value. A sentence has a truth value only if it is used to express some true or false information. It is these sentences that are the building blocks of arguments. Arguments are groups of informative sentences, that is, sentences with truth values. We must note, however, that not every group of sentences that have a truth value constitutes an argument. So we are going to have to do some digging to determine whether a given group of true/false sentences does or does not add up to an argument.

Obviously then, it is important to a logician to be able to recognize when a sentence is intended to provide **information** and when it is not. So then, to judge that a sentence is intended to say something that is either true or false, regardless whether it is in fact true or false, is just to judge that this sentence is a viable candidate to serve as a premise or conclusion in an argument.

We must note, however, that sometimes two sentences composed of different words can be used to express the same true or false content. For example, "I have a headache" and "Ron has a headache" convey exactly the same true/false information. When it comes to counting true/false sentences, we say that these two "different" sentences are equivalent expressions and add up to expressing only one true/false sentence. We must also note that two sentences composed of exactly the same words may be used to express two different true/false sentences. For example, "I have a headache" said by me, and the very same words said by you, express two different true/false informative sentences.

And finally, some sentences express a relation between sub-sentences. In this case, the sentence is used to inform us of the relation between these two sub-sentences. This relation may be true or false. Here I am thinking of such sentences as if/then sentences and either/or sentences. Such sentences contain two sub-sentences with

independent truth values, (the “if” part and the “then” part; the “either” part and the “or” part) but add to only one true/false sentence.

Some examples of these possibilities will prepare you for the exercises in the *Exercise Workbook*.

I. The following passage contains a group of non-informative sentences that have no truth values.

John, do you think that Picasso was a painter or a writer? Please answer this question. Why don't you answer me? John, were you listening? Will someone please give John some help here?

II. The following two examples form only two sentences, even though they both **contain** two sub-sentences.

1. If we go to the movies tonight, then we will not be able to go to the fair.
2. 2. If we go to the fair, then we will not go to the movies.

III. The following passage contains a group of sentences some of which express true/false sentences and some of which do not.

Can you help me? If I get married then I will regret it. If I do not get married I will regret that. However, I must do one or the other. Tell me what to do?!

IV. The following passage contains two different sentences with the same truth value.

The Atlanta Braves won the World Series in 1995. The Braves won the Fall Classic in 95.

In the *Workbook*, you will be asked to count the number of true/false sentences in a given passage. The correct answers range from A. Zero; B. Only one; C. More than one. Remember that we count if/then and either/or sentences as one sentence even though they contain two sub-sentences.

2.4 Recognizing Arguments

After we have determined that passage we are analyzing contains a group of true/false sentences, we must then press on to see whether one of them is claimed to follow from the others. Recall that our criterion for determining whether a group of sentences expresses an argument is as follows:

Argument:

A group of sentences forms an argument if and only if some of the sentences (the premises) are offered as supporting the truth of another of the sentences (the conclusion).

In our daily conversations, groups of sentences are seldom explicitly labeled as arguments. Moreover, some groups of true/false sentences are often used for purposes other than expressing arguments. Some passages contain a series of true/false sentences that function as **descriptions** or as **explanations**.

The skill of recognizing differences among the various uses of sentences is more of an art than a science. But there are clues for which we can look. Sometimes authors or speakers are very kind to us and make it quite clear that they are presenting an argument. The most common such clues are found in words such as “therefore” and “hence.” When these words are used, there can be little doubt that the author or speaker intends to express an argument. Such word-hints are called “conclusion indicators.” As a rule, the assertion following a conclusion indicator is supported by the other sentences; that is, what follows a conclusion indicator is the conclusion of the argument itself. The following list includes some of these terms. Can you think of others?

Some Conclusion Indicators:

**So
Hence
Therefore
It follows that
Consequently
Thus
For these reasons**

With these clues in hand, it would be hard not to recognize the following as an argument.

Since all men are mortal and Socrates is a man, it follows that Socrates is mortal.

Other word-hints also help in recognizing arguments. These terms we call “premise indicators.” They tell us that a particular assertion is being offered as support for the conclusion. Again, we will begin a list for you, but we encourage you to add to it:

Some Premise Indicators:

**Since
Because
For
As
If
Insofar as**

Please note that these premise and conclusion indicators are merely indicators; they are not guarantees that an argument is being expressed. Consider the following example in which “since” is not used as a premise indicator: “*Since* John has been home from college he has been deeply depressed.” Now it should be obvious that this sentence does express a true/false sentence, but that it does not express an argument. Indeed the term “since” is used in this case to express a temporal duration and not a reason that John is depressed.

However, the following would be an argument: “John must love college, *since* he gets so depressed whenever he leaves.” In this case, the fact that John gets depressed when he leaves college is offered as some evidence for thinking that it is true that John loves college.

Similar things can be said about most of the premise indicators. In general, premise indicators are less reliable than conclusion indicators; and some premise indicators are less reliable than others. This is especially true of the term “because.” We see this clearly when we discuss the difference between an **argument** and an **explanation**.

And there are other qualifications that we should notice. Some passages that we are investigating may express arguments even though there are no premise indicators and no conclusion indicators. In these cases, we will have to depend on other clues. In other cases, there are parts of the argument (premises or conclusions) that are left unstated.

Once we have determined that the group of sentences we are investigating does constitute an argument, then we must go on to ask if it is an inductive or a deductive argument. Remember that an argument is a deduction if the speaker or writer claims that the evidence offered, if true, is sufficient to guarantee the truth of the conclusion; and an argument is an induction if the evidence is claimed to offer some support for the conclusion, but not to compel its truth.

Some groups of sentences, of course, are neither deductive nor inductive arguments, that is, are not arguments at all. Sometimes a group of sentences is intended simply to convey information and sometimes to describe persons, places, or things. For convenience, we shall call all such uses of sentences **descriptions**, using “description” in a very

broad sense. Accordingly, we define description as follows:

Description:

A group of true/false sentences whose primary purpose is not to establish some conclusion but simply to convey information about some state of affairs.

For example, the following is a group of sentences that does not contain an argument: "The cat is on the mat and the dog is in the yard. Or to cite a more poetic description: "As the rain swept softly but steadily across the garden, the flowers drooped as if they were weeping."

Sometimes a group of sentences masquerades as an argument. The most common of these masqueraders is the **explanation**. The reason the explanation is so often taken to be an argument is that arguments and explanations have almost exactly the same form. The general form of both is simply this: "**C because P**" where C is a true/false sentence and P is as well. One thing that is confusing here is that both arguments and explanations use the premise indicator word, "because." However, there is an easy way to tell argument and explanations apart. Simply ask yourself this question: "Is the "C" in the "C because P" presumed to be well established? If the "C" is well established, then we most likely have an explanation. If the "C" is in need of being established, then we most likely have an argument. Consider the difference between the following two examples:

- A. John must have dropped out of school, *because* his girlfriend jilted him.
- B. John must have dropped out of school *because* he is no longer included on the list of enrolled students.

In the first case, it seems likely that it is known that John dropped out of school and the fact that his girlfriend jilted him is offered as an explanation of **why** he dropped out. In the second example whether John has dropped out of school seems uncertain and the fact that his name no longer appears on the list of currently enrolled students is used to show **that** he has indeed dropped out. Hence, the first example is an explanation and the second is an argument. The difference, again, between an explanation and an argument is as follows:

Explanation: C because P is an explanation if the P offers reasons WHY C

Argument: C because P is an argument if the P offers reasons establishing THAT C

To repeat, the key here is the difference between establishing **why (explanation)** and establishing **that (argument)**. Again, explanation and argument differ in that explanations presume that C is true and hence does not need to be established as true; and arguments presume that the truth of C is in doubt and hence offer evidence to support C. If there is doubt that an explanation is designed to settle, it is not a doubt that "C" is true, but a doubt as to why it is.

In the first case above, it is implausible to think that the fact that John's girlfriend jilted him would be offered as evidence **that** John dropped out of school. There are many break-ups between matriculation and graduation. If, however, we know that he has dropped out of school, we may wonder **why** he dropped out. In this case, the fact that his girlfriend jilted him may be the correct explanation as to **why** he dropped out. By the same token, it is implausible to think that the fact that John's name is no longer on the list of currently enrolled students would be offered as an explanation as to why John dropped out of school. Most likely, the fact that his name is not on the list would be offered as evidence **that** John has dropped out of school. This is what makes the second example an argument.

Perhaps these distinctions will become clearer as we plunge into some examples in our *Workbook*. Indeed, sometimes the best way to learn is simply just to dive in. Before you take the plunge, however, just be aware that the purpose of the author (whether to explain, describe or to argue) in the passages in the exercises in your *Workbook* is sometimes difficult to interpret. Indeed, a single passage may fall under more than one of the categories we have delineated above. In fact, the more imaginative you are, the more possibilities you will see. My best advice is simply to identify the passage in terms of the most obvious intention of the writer/speaker.

2.5 Recognizing Good Arguments

As you develop your skill in recognizing arguments, you will be preparing yourself for the important task of distinguishing good arguments from bad ones. But, if you recall the arguments we discussed in the "Foreword," it should be clear that I have been introducing the distinction between good and bad arguments from the very beginning of the course. Now that we have some basic concepts in logic under our belt, let's take a second look at the arguments we introduced in the "Foreword," and add a couple of more. The four arguments introduced in the "Foreword" are as follows:

1. *If she loves me, she will call. She loves me. Therefore, she will call.*
2. *If she loves me, she will call. She will call. Therefore, she loves me.*
3. *If she loves me, she will call. She does not love me. Therefore, she will not call*
4. *If she loves me, she will call. She will not call. Therefore, she does not love me.*

Recall that we said that #1 and #4 are good arguments and that #2 and #3 are not good ones. Earlier we gave these arguments names. (#1 is called **Modus Ponens**; #4 is called **Modus Tollens**; #2 is called **The Fallacy of Affirming the Consequent**; and #3 is called **The Fallacy of Denying the Antecedent**). We are now ready to say that 1 and 4 are valid and that 2 and 3 are invalid.

We can learn something very important and useful from this. We can say in general that any argument with the same form as either 1 or 4 (regardless of its particular content) is valid and any argument with the same form as either 2 or 3 is invalid. Or to put this differently, we can say that any time an argument has an "if/then" sentence as a premise and a premise that affirms the "if" part of that sentence, we can validly deduce the "then" part (Modus Ponens). Just as well, any time an argument has an "if/then" sentence as a premise and a premise that denies, or negates the "then" part of that sentence, we can validly deduce the negation of the "if" part (Modus Tollens).

Similarly, any time an argument has an "if/then" sentence as a premise and a premise that affirms the "then" part, the argument is invalid (affirming the consequent). And any time an argument has an "if/then" sentence as a premise and a premise that denies the "if" part, the argument is invalid (denying the antecedent).

We can add to these two valid argument forms another very common one that also involves "if/then" sentences. It is called **Hypothetical Syllogism**. Consider the following argument:

*If he loves me, then he will call me
If he calls me, then I will be happy
Therefore, if he loves me, I will be happy*

This is a valid argument. Indeed any argument of this form is also valid. You must be careful however to make sure that the argument you are analyzing has this *precise* form. Make sure that the "if" part of one of the premises of the argument is the "if" part of the conclusion and that the "then" part of the other premise is the "then" part of the conclusion.

One other common valid argument form involves an "either/or" sentence rather than an "if/then" sentence. It is called **Disjunctive Syllogism**. Consider the following two valid arguments:

1. *Either she loves me or she will not call. She does not love me. Therefore she will not call me*
2. *Either he loves me or he will not call. He calls me. Therefore he loves me*

Both of these arguments are valid. To put this more generally, we can say that any argument that has an “either/or” sentence as a premise and a premise that denies the “either” part, validly implies the “or” part. And just as well, an argument that has an “either/or” sentence as a premise and a premise that denies the “or” part, validly implies the “either” part.

Good Arguments

Hypothetical Syllogism: If A implies B and if B implies C, then A must imply C.

Modus Ponens: If A implies B and A is true, then B must be true.

Modus Tollens: If A implies B and B is false, then A must be false.

Disjunctive Syllogism: If “either A or B” is true and A is false, then B must be true; or if “either A or B” is true and B is false, then A must be true.

Bad Arguments

The Fallacy of Affirming the Consequent: If A implies B, and B is true, it does not follow that A must be true.

The Fallacy of Denying the Antecedent: If A implies B and A is false, it does not follow that B must be false.

2.6 Analyzing Arguments

After recognizing that a passage does in fact express an argument, we are ready to proceed with an analysis of it. “To analyze” something is of course to take it apart, or to break it down into its component elements. As you know by now, the parts of an argument are its sentences. So, once you have recognized that there is an argument expressed in a passage, that is, once you have determined that the passage contains a group of true/false sentences, we must determine what function each sentence has.

The first step is to identify which sentence is functioning as the conclusion of the argument. This is very important, for to miss the conclusion is to miss the whole point of the argument!

After you are satisfied that you have located the conclusion of the argument, you can then proceed to the next step in the analysis. Now you should locate and identify each premise of the argument, that is, the sentences that are offered in support of the conclusion. Next, you should make the structure of their support explicit. Within the structure of an argument premises can work **independently** to support the conclusion, or they can work **jointly**. In making the structure of support explicit, we are helped in understanding the force of the argument.

Finally, we reach the last step. Here we must determine the kind of support the premises are claimed to offer for the conclusion. If the premises are taken to offer only some support, then the argument is an induction; if the premises are taken to offer conclusive support, then the argument is a deduction.

Let’s put this step-by-step analysis into practice. First we will take a very simple example and then move on to a more complex one. Consider first, the following group of sentences:

The threat of terrorism has gotten much worse in America in the wake of the 911 attacks and other domestic terrorist attacks. Since we want to lessen the threat of terrorism, America ought to take stronger measures to protect itself.

This passage contains several true/false sentences, three to be exact. It seems like it may be a candidate for an argument. But, is it? Does this group of sentences constitute an argument? It does if the author of the passage is trying to establish that one of the sentences in the group is true on the basis of one or more of the

others. I hope you see that the author of this passage is indeed trying to establish a particular claim and is trying to do so on the basis of other sentences in the passage.

With this recognition, we are ready for further analysis. Having broken down our argument into its bare bones, we are now ready to decide which one of these sentences is being supported by the others. That is, we are ready to locate and identify the conclusion of the argument. We are helped in this regard by our conclusion indicator, “therefore.” As such, it should be obvious that the author is putting forth an argument for strengthening America’s defenses against terrorism. As well, the first two sentences assert the sentences that support this conclusion. Moreover, there is little doubt that the author thinks that these premises support the conclusion with necessity. Accordingly, we can be sure that this argument is intended to be a deductive one. You may recognize that this is a valid modus ponens argument. It has the following form: If terrorism has gotten worse, we ought to strengthen our measures against it: it has gotten worse; therefore, we should strengthen our measures against it.

Now let’s move on to a more complex group of sentences.

Money is better spent on heart disease prevention by promoting exercise and good eating habits than in developing new medicines. In the first place, new medicines are usually expensive. In the second place, most medicines are used after one has already developed some form of the disease. By contrast, we don’t have to wait until we get heart disease to exercise and eat right. Finally, we are less likely to get heart disease if we exercise and eat smart.

In this passage, there are several true/false sentences. Consider the last sentence, for example. It is easy to see that it expresses a true/false sentence. Moreover, it is also easy to see that most readers would think that people would be less likely to get heart disease if they exercised and ate right. And we could say similar things about the claim that heart medicines are expensive, or about the claim that exercising and eating smart are habits open to everyone.

Now, does this group of sentences constitute an argument? It does if the author of the passage is trying to establish that one of the sentences in the group is true on the basis of one or more of the others. I hope that you see that the author of this passage is indeed trying to establish a particular claim and that he or she is trying to do this on the basis of other sentences offered as reasons. That is, I hope that you recognize that this passage does express an argument.

With this recognition, we are ready for further analysis. Our next task is to break the argument down into its component sentences. So how many sentences do you count? There is room for disagreement on this point, depending on how you break up some of the sentences.

Let’s see how this might look by constructing a list of the sentences in the order of their appearance in the passage under investigation.

- 1. Money is better spent on heart disease prevention by promoting exercise and good eating habits than in developing new medicines.***
- 2. Medicines are usually expensive.***
- 3. Medicines are used after one has already developed some form of the disease.***
- 4. We don’t have to wait until we get heart disease to exercise and eat right.***
- 5. Finally, we are less likely to get heart disease if we exercise and eat smart.***

Your list may be differently stated from this one, but this would not necessarily make your analysis incorrect. What is important here is to capture the basic content of the claims made in the argument. Having broken down our argument into

its bare sentential bones, we are now ready for further analysis. We must decide which one of these sentences is being supported by the others. That is, we must locate and identify the conclusion of the argument. Notice that we do not have a conclusion indicator in this passage. So we must rely on other clues as to the author's intention. Mostly we must rely on clues that are found in the context of the passage and in the end we must rely on our own common sense.

Let's see how this step can be applied to the passage we are analyzing. In reading the passage, which one of the sentences that is expressed in it do you think is a plausible candidate for its conclusion? Locating the conclusion may not be easy to do right away. You may have to do some experimenting. Consider, for example, whether the author might be trying to establish that new medicines are likely to be expensive or that they would be administered after the onset of disease. In considering this, you have to ask: "Are there any reasons offered that go toward establishing that either of these sentences is true? There do not seem to be any. Rather, these claims are offered in such a way as to be taken for granted. This fact, moreover, is a clue that these sentences are being offered as evidence for something else, something that is not taken for granted.

Hopefully such reflections will lead you to see that the claims that seem to be taken for granted are offered as establishing what is not taken for granted, namely, the conclusion. And what is the conclusion? It has got to be the claim that in addressing the issue of heart disease, it is a good idea to increase grants used to promote smart eating and exercise rather than to develop new medicines. (Assertion 1) Did you see that this is the conclusion? If you did, or do now, hurrah for you! Hopefully, you also see that all of the other sentences in the passage (2-5) are premises, that is, are used to give support to (1).

Finally, it seems plausible that this argument is intended to establish its conclusion with necessity. Hence, it is most likely intended to be a deduction. However, there is room for disagreement, and the author might intend only to offer an induction.

2.7 Further Analysis

Once we have located the conclusion and the premises of an argument, there is still more work to be done to complete our analysis. We must ask how the premises function in their support role. Premises can work **independently** in support of the conclusion, or they can work **jointly**. In deciding these issues there is room for differences in interpretation.

Let's consider two arguments that neatly illustrate how premises can function independently or jointly. The first argument:

If she loves me, she will call me
She will not call me
She does not love me

It should be obvious that this is a good argument, even though it does not explicitly contain wither a premise or conclusion indicator. It should also be obvious that the last sentence asserts the conclusion and that the first two sentences assert premises. It is implausible to suppose that either the first or the second premise alone could count as evidence for the conclusion. In other words, in this argument, the premises are offered as **jointly** supporting the conclusion. Neither in isolation could reasonably be taken as supporting the conclusion.

Now consider a second argument:

I should not ask her for a date, since she is married and she hates me.

Again, it should be obvious that the conclusion of this argument is asserted by the phrase, "I should not ask her for a date." And the premises are "she is married" and "she hates me." However, either of these premises alone would support the conclusion. In this argument therefore, we say that the premises support the conclusion **independently**.

Now let's go back to our argument about heart disease, exercise, and diet.

- 1. Money is better spent on heart disease prevention by promoting exercise and good eating habits than in developing new medicines.**
- 2. Medicines are usually expensive.**
- 3. Medicines are used after one has already developed some form of the disease.**
- 4. We don't have to wait until we get heart disease to exercise and eat right.**
- 5. Finally, we are less likely to get heart disease if we exercise and eat smart.**

An analysis of this argument suggests that the structure of support that the premises are offering is as follows: premises (2) and (3) independently support the conclusion (1), premises (4) and (5) jointly support it. The support that (2) and (3) offer to (1), however, is independent of the support that (4) and (5) offer it. Do you agree, or do you have a different analysis?

If you have been following this discussion, you have already realized that conclusions and premises do not have to be asserted in any particular order. Conclusions can be stated first and the premises can come afterwards or vice versa. And just as easily, the conclusion can be wedged between the premises.

Not only do premises and conclusions not have to be in any certain order, it is also true that they don't have to be explicitly stated at all. The analysis of an argument must take account of any implicit or unstated premise or conclusion, where these implicit sentences are obviously figuring in the argument. Consider the following examples:

John must be very smart, he is a physics major

This argument has an unstated premise. The conclusion is that John is very smart. One reason offered in establishing this claim is that John is a physics major. However, being a physics major, taken in isolation, would offer no support for the conclusion. Obviously, the author of the argument is assuming another premise, namely, that all physics majors are very smart. With this premise now made explicit, clearly we have an argument in which the conclusion must be true if the premises are granted.

In the same argument, we also could have left the conclusion unstated. If someone asked: "Is John smart?" it would certainly make sense to reply as follows: "John is a physics major and we all know that all physics majors are very smart." And we can even imagine it making sense to respond to the question with another question that implicitly expresses the same argument:

He is a physics major, isn't he?

Arguments of this type, that is, arguments with unstated parts, either premises or conclusion, are called **Enthymemes**. When we encounter such an argument, a good analysis will require that we make all of its implicit parts explicit.

Sometimes arguments are connected to each other to form a chain. Arguments get connected in this way by having the conclusion of one argument serve as a premise for a subsequent argument, whose conclusion then serves as a premise for the next one, and so on. Such an argument is called a **Sorites**. Consider this example:

If Jane had done her homework in logic, she would have made better grades on her logic exams. Unfortunately, Jane did not do better on her logic exams, so she did not do her logic homework. Jane's parents get angry when she does not do her logic homework. Therefore, Jane's parents are angry.

You will notice that in this passage there is one conclusion indicator, in the last sentence, but this need not determine that we have only one argument in the passage. In fact, there are two arguments here and they are tied

together to form a sorites. This means that the conclusion of the first argument serves as a premise in the second one. Moreover, you must not assume that because the conclusion indicator is in the last sentence of the passage that the assertion expressed in that sentence is the final conclusion of the two arguments.

Remember, the order of appearance of the sentences in the passage does not necessarily reflect the order of the premises and conclusions in the argument these sentences express. Can you find the arguments? Or more precisely, can you find that particular assertion that is functioning both as a conclusion and as a premise? To make it easier to spot, let's break the passage down into the basic sentences it expresses. The list would look something like this:

- 1. *If Jane had done her homework in logic, she would have made better grades on her logic exams.***
- 2. *Jane did not do better on her logic exams.***
- 3. *Jane did not do her logic homework.***
- 4. *Jane's parents get angry when she does not do her logic homework.***
- 5. *Therefore, Jane's parents are angry.***

Clearly assertion (5) "*Therefore, Jane's parents are angry*" is the conclusion to one of the arguments in the passage, since it contains the conclusion indicator "therefore." So we must ask, what sentences are offered in support of it? If you said sentences (3) "*Jane did not do her logic homework.*" and (4) "*Jane's parents get angry when she does not do her logic homework.*" you would be correct. In fact, when taken jointly, they offer conclusive evidence for the truth of assertion (5).

Now let's consider sentences (1) and (2). These two sentences taken jointly are sufficient for establishing assertion (3). So (1) and (2) are premises and (3) "*Jane did not do her logic homework.*" is the conclusion of the first argument in this sorites. Then, sentence 3 shifts its function. After having been supported by (1) and (2) and serving as its conclusion, it shifts to offering support for (5) and serves as a premise.

Our analysis of this sorites is complete. It is composed of two arguments, and hence has two conclusions. One of the conclusions (3) is supported by sentences (1) and (2). Sentence (3) then serves as a premise, and with sentence (4) is used to support the second and final conclusion of the argument, namely, sentence (5).

Perhaps a few *Exercises* will strengthen our understanding of enthymemes and sorites, as well as strengthen our grasp of the difference between premises that jointly support the conclusion of an argument and premises that support the conclusion independently.

STUDY GUIDE

Chapter 2 – Recognizing and Analyzing Arguments

Language Uses

Expressive: An expressive use of language is one in which the speaker reveals feeling, attitudes, and such, but does not assert any matter of fact.

Directive: A directive use of language is one in which the speaker commands or encourages listeners to perform some action.

Informative: An informative use of language is one in which the speaker states a matter of fact.

Ritual: A ritual use of language is one in which words are spoken as part of a formal or informal ceremony.

Performative: A performative use of language is one in which the speaker accomplishes something by the speaking.

Kinds of Arguments

Deduction: A deduction is an argument in which the premises are intended to guarantee the truth of the conclusion.

Induction: An induction is an argument whose premises are intended to establish that the conclusion is likely true.

Sorites: A chain of arguments in which the conclusions of earlier arguments serve as the premises of later arguments.

Enthymeme: An argument with a missing premise or conclusion.

Groups of Sentences Often Mistaken for Arguments

Descriptions: A description consists of one or more sentences that is (are) intended merely to convey information about something.

Explanations: An explanation is intended to account for *why* something is true that is already known to be true. An explanation is distinguished from an argument in this respect since an argument is intended to establish that something that is not known to be true is in fact true.

Good Arguments

1. **Hypothetical Syllogism:** If A implies B and if B implies C, then A must imply C.
2. **Modus Ponens:** If A implies B and A is true, then B must be true.
3. **Modus Tollens:** If A implies B and B is false, then A must be false.
4. **Disjunctive Syllogism:** If “either A or B” is true and A is false, then B must be true; or if “either A or B” is true and B is false, then A must be true.

Bad Arguments

1. **The Fallacy of Affirming the Consequent:** If A implies B, and B is true, it does not follow that A must be true.
2. **The Fallacy of Denying the Antecedent:** If A implies B and A is false, it does not follow that B must be false.