Chapter 27

Three Kinds of Arguments

Arguments in general

We've been focusing on Moleculan-analyzable arguments for several chapters, but now we want to take a step back and look at the big picture, at arguments in general. If you think back to Chapters 21 and 22, where we last dealt with arguments *per se*—as opposed to Moleculan-analyzable arguments—then you'll recall the definition of 'argument' (as the term is used in logic) that we gave there:

> *An argument is a group of two or more statements, all but one of which (the premises) are meant to persuade someone that the remaining one (the conclusion) is rationally acceptable.*

And you will recall the methods we developed in Chapter 22 for recognizing and standardizing arguments. If you don't remember this material, then you should review it right now, as it will be useful for understanding this chapter and those that follow.

All arguments can be translated into Moleculan, and so in that sense all arguments are potentially Moleculan arguments. But there are lots of them that aren't Moleculan-analyzable. In fact, I would venture to predict that the vast majority of the arguments you will meet in everyday life will not be Moleculan-analyzable. That's why we're going to turn from our exclusive focus on Moleculan-analyzable arguments to consider some other kinds of arguments.

Here's an example of a non-Moleculan-analyzable argument:

All pigs are mammals. (1)
All mammals are vertebrates.
∴All pigs are vertebrates.

This argument appears to be a perfectly good one. (It is sound, in fact.) But if we were to translate it into Moleculan, we would get this:

Interpretation:
A: All pigs are mammals.
B: All mammals are vertebrates.
C: All pigs are vertebrates.

A
B
∴C

That's not very useful, is it? Our Moleculan argument isn't valid, since '(A & B) → C' isn't a tautology. But argument (1) is valid. (You'll have to take my word for it.) So it is an example of an argument whose validity cannot be analyzed successfully in Moleculan. It's in that sense that we call it a non-Moleculan-analyzable argument.

So back we go to arguments in general. In this chapter we will study three kinds of arguments. Understanding them will help you understand a great many of the arguments you meet—the vast majority, in all likelihood.

Before turning to the three kinds of arguments, however, there is a term which must be defined. We say that an argument is ***cogent*** if ***its premises are good and its reasoning is good***. Note that the standards for goodness in premises and conclusions differ among the three kinds of arguments—as we'll see.

Clearly, a sound Moleculan argument is always a cogent argument, since soundness requires true premises (good premises) and valid reasoning (good reasoning). As we shall see, there are cogent arguments that aren't sound—not because there's anything wrong with them, but because they have patterns of reasoning which are good but not valid.

If this seems confusing, then press on through the chapter and all should become clearer. For now, just remember that a cogent argument is one with good premises and good reasoning, and that the term *cogent* can be applied to good arguments of any of the three kinds that we're about to study, whereas the terms *sound* and *valid* don't apply to all types of arguments.

Deductive arguments

The first kind of argument we'll consider is the deductive argument. Moleculan-analyzable arguments are deductive arguments, so this is the type of argument with which you are most familiar at this stage. A ***deductive argument is an argument which, if it is cogent, shows that its conclusion* must *be true***.

What does it mean for a deductive argument to be ***cogent***? To have good premises, a deductive argument must simply have **premises that are all true**. To have good reasoning, a deductive argument must be **valid**. That is, it must not be possible for an argument of its form to have true premises and a false conclusion. In other words, the requirements for cogency in a deductive argument are the same as the requirements for soundness. All cogent deductive arguments are sound and all sound arguments are cogent deductive arguments. However, we use the terms *sound* and *valid* only of deductive arguments, while *cogent* is used of all three kinds of arguments.

Not all deductive arguments are Moleculan-analyzable arguments. Recall argument (1) from earlier in this chapter. It is a valid and sound deductive argument, but, as we noted, it is not Moleculan-analyzable. It happens to be what's called a *categorical syllogism*. There are many other logical systems besides Moleculan which help us to assess other varieties of deductive arguments. One such system provides a set of rules for testing categorical syllogisms for validity.

Inductive arguments

The second kind of argument is the inductive argument. An ***inductive argument is one***

that, if it is cogent, shows that its conclusion is* probably *true. That is, a cogent inductive argument lends weight to its conclusion, but does not show that its conclusion absolutely has to be true. It doesn't manage to give its conclusion certainty, the way a deductive argument does if it is sound.

Here's an example of a cogent inductive argument:

Most human beings are right-handed. (2)
Mr. Brown is a human being.
∴Mr. Brown is right-handed.

Is argument (2) valid? No. It is possible for the premises to be true and the conclusion to be false. But is this argument worthless, then? Not at all. It shows that its conclusion is probably true, based on the premises. Most human beings *are* right-handed. So Mr. Brown's being a human being makes it likely that he is right-handed.

For an inductive argument to be **cogent**, two things must be true of it: **Its premises have to be true** (just as in the case of deductive arguments), and its pattern of reasoning must guarantee that if the premises are true, the conclusion will be probable. We refer to such a pattern of reasoning in an inductive argument as **strong reasoning**. Notice that this requirement of reasoning that demonstrates probability is a weaker requirement than the requirement for validity, the standard of reasoning applicable to deductive arguments.

There are a great many varieties of inductive arguments. Most of the arguments we use on a daily basis are inductive. In fact, most of what we know about the world is based on inductive arguments. What these arguments all have in common is that they provide some evidence that the conclusion is true, but cannot prove the conclusion to be true beyond all doubt.

Conductive arguments

The third kind of argument is the ***conductive argument***. This is ***an argument that involves looking at evidence on both sides of a question, and 'weighing it in the balance'.*** Such arguments, like inductive arguments, are very common in everyday life. Here's an example:

I could use a haircut pretty soon. (3)
I'm so busy right now that I'd rather not get my hair cut this week.
However, I absolutely must get gas for my car this week, and that will take me close to the barbershop, which is otherwise out of my way.
∴I should get a haircut this week.

In this case, someone is probably reasoning with himself, trying to figure out whether to go to the barbershop this week to get a haircut. His primary concern is with the time that a haircut will take, but he is also trying to balance such factors as his need for a haircut and his need to get gas for his car. His conclusion, after weighing all the arguments for and against, is that he should go for a haircut this week.

If deductive arguments, at best, show that their conclusions are *certain*, and if inductive

arguments, at best, show that their conclusions are *probable*, then what do conductive arguments show about their conclusions? When a conductive argument is cogent, it shows ***that its conclusion is to be*** **preferred** ***over one or more alternative conclusions***. So while deductive arguments have the potential to show that their conclusions are certain, and inductive arguments have the potential to show that their conclusions are probable, conductive arguments can only show their conclusions to be *preferable*, or to be better than some other conclusions.

What is required for a conductive argument to be **cogent**? First, **its premises must be true**. Second, **they must be complete**. That is, to be cogent, a conductive argument must **take into account all the relevant information**. Third, it must **correctly weigh all the premises in the balance**, so that the correct conclusion is drawn from them.

There is some special terminology used with conductive arguments which you should know. You've probably already noticed something that's a bit odd about conductive arguments. They include premises that do not favor their conclusions! That is, they take into account premises which weigh both for and against their conclusions; these are known as, respectively, ***considerations*** and ***counter-considerations***.

In informal speech, we often refer to these two kinds of premises as ***pros*** and ***cons***, but beware: Pros aren't necessarily considerations, and cons aren't necessarily counter-considerations. Pros are premises that support an answer of 'yes' to some yes-no question, while cons are premises that support a 'no' answer. If the 'yes' answer is the conclusion of a conductive argument, then the pros will be considerations and the cons counter-considerations, but if the conclusion that is reached is 'no', pros and cons will be the other way 'round.

Let's apply this terminology to argument (3). Which premises are considerations and which are counter-considerations? The first and third premises support the conclusion that is eventually drawn in the argument, so they are considerations. The second premise opposes the conclusion, so it is a counter-consideration. Which premises are pros and which are cons? The yes-no question being answered by the argument is, 'Should I get a haircut this week?' The premises that support an aswer of 'yes' to this question are the first and third; support for a 'no' answer comes from the second premise. So premises 1 and 3 are pros, and premise 2 is a con.

In this case, the pros are the considerations, and the cons are the counter-considerations. That's because the conclusion of the argument, which is supported by the considerations, is an affirmative answer to the question. If, on the other hand, the conclusion of the argument had been that I should not get a haircut this week, then the considerations would be cons and the counter-considerations would be pros.

Conductive arguments arise in many contexts, but they are most common in two specific situations. First, they arise very frequently when someone is trying to make a decision as to what to do (that is, a practical decision). That's because decisions are frequently hard to make, with factors favoring two or more courses of action. Such factors must be weighed in the balance, in a process of conductive reasoning.

The second situation in which conductive reasoning is especially common is that in which someone is trying to interpret something, usually something that someone has said or written. You see this, for example, in Bible interpretation. There are some things which the Bible clearly does or does not teach. It clearly *does not* teach, for example, that all men go to heaven when they die, and it clearly *does* teach that stealing things is wrong. But there are other questions where it is less clear what the Bible teaches, and in these, conductive reasoning is often needed to help us decide which of several interpretations is to be preferred.

Distinguishing the three kinds of arguments

How, then, can we distinguish among the three kinds of arguments? The easiest of the three kinds to identify is the conductive argument, since it includes both considerations and counter-considerations. Any time you have factors on both sides of a question being weighed against each other, you can be sure you're looking at a conductive argument.

When you know that an argument isn't conductive, because it doesn't contain any counter-considerations, how can you tell whether it is deductive or inductive? The key is to ask whether the premises can be true and the reasoning be good, and yet the conclusion be false. That's always possible with an inductive argument—since an inductive argument can only establish that its conclusion is *probably* true—but it can't happen with a deductive argument.

The other thing that will help you when distinguishing the argument types is that your further studies in logic will acquaint you with some of the more common patterns of inductive reasoning, so that you can often recognize an argument as being inductive—just as you have learned to recognize certain deductive arguments, such as MT. But that will only help you later in your logic career. For now, just follow the general suggestions I've just given you.

It is important to learn to identify an argument's kind for two reasons. First, you can't very well assess whether an argument is a good one if you don't know which kind it is. The standards of 'goodness' that apply to one kind are different from those that apply to another, so you need to identify the kind of argument if you're to know what standard to apply.

Second, once you determine that an argument is a good one, knowing which kind it is will tell you what significance to attach to its conclusion. Many mistakes of reasoning arise from failure on this point. The most common problem seems to be to treat an inductive or conductive argument's conclusion as though it had been arrived at deductively. That is, it's easy to use an inductive or conductive argument to reach a conclusion, and then to act as though that conclusion has been proved true beyond a shadow of a doubt, when it's only been shown to be probable or preferable. This is not only a mistake of reasoning, but it can also lead to strained relations between people.

For example, suppose you weigh all of the conflicting factors and reach the conclusion that in politics, you should support the Republicans. You arrived at your conclusion conductively, since it was a matter of weighing the arguments for and against voting Republican. And let's suppose that in the state where you live, the advantages of the Republicans over the Democrats are only slight, so that it took a fair bit of careful judgment to reach the conclusion that you should vote Republican. But then you meet a person who also professes to be a Christian, and it turns out that he generally votes for Democrats. Suppose, further, that you explain to him your reasons for favoring the Republicans, and he still indicates that he will vote Democratic. How are you then to regard him? Well, if you could deductively prove that Christians in your state should vote Republican, and this person had heard your proof and couldn't show any mistake in it, then you would have to regard the person as irrational or obstinate. But of course you can't prove any such conclusion deductively. Rather, your argument is a conductive one, and as such is a matter of judgment. It's possible for perfectly reasonable people to reach different judgments on such questions, without thereby demonstrating that they are irrational or obstinate. So in a case like this (one, I might add, that isn't at all far-fetched), understanding what kind of argument you've used to reach your conclusion plays an important role in shaping a proper attitude toward someone who disagrees with you. That's

because knowing that your argument was conductive would tell you not to hold your position as something definite, certain, and provable, but as something that involved a 'judgment call' that might legitimately be differed with.

Some people are very uncomfortable with admitting that there is any room for doubt about the conclusions they hold and believe, and so they resist recognizing that many of their beliefs have been arrived at inductively or conductively. They seem to think that if there is any possibility of their being mistaken, then knowing anything is impossible. In short, they seem to believe that to know something, you must know it on deductively certain grounds. But this is clearly a mistake, since we constantly act on the basis of knowledge that is arrived at inductively or even conductively. For instance, are you sitting on something right now? If so, why did you sit on it? Did you know with certainty that it would hold you up? Can you prove that there isn't a huge sink-hole underneath you right now that's about to open up so that you'll fall in and perish? Of course not. We constantly place ourselves in situations in which we have no *certain* knowledge that we're safe, and that's perfectly reasonable and right because we have *probable* knowledge. I can know—with a degree of probability that makes it right to say that I *know*—that it's safe for me to sit on the chair I'm sitting on, even though I can't prove that with complete certainty. And the same applies to many other areas of our knowledge.

So to summarize what we've said, we will avoid various errors if we keep the three kinds of arguments distinct in our minds, and we may also avoid stirring up strife. Those are strong reasons to be clear in our minds about the three kinds of arguments.

Terms and concepts discussed in this chapter

arguments in general (review)
non-Moleculan-analyzable arguments
cogency
deductive arguments
deductive arguments as implying certainty
cogency for deductive arguments
non-Moleculan deductive arguments
inductive arguments
inductive arguments as implying probability
cogency for inductive arguments
strong reasoning
conductive arguments
conductive arguments as implying preferability
cogency for conductive arguments
considerations and counter-considerations
pros and cons
areas in which conductive arguments are common
distinguishing among the three kinds

Exercises

Indicate which of the three kinds each of these arguments is, and give a reason for your answer:

1. Of 2,019 people interviewed, 53% said they would vote for Senator Riffraff. So we think Senator Riffraff is going to win the election.

2. On the one hand, the students didn't do very well on their other tests, so they could really use another grade for this marking period. On the other hand, they all need a break pretty badly. Furthermore, they would prefer that I cancel their last test. So I'm canceling it.

3. Henrietta is either in the computer room or in the study hall upstairs. She's not in study hall. Therefore, she is in the computer room.

4. All pumpkins are gourds. All gourds are vegetables. So all pumpkins are vegetables.

5. Students are like prisoners, in that they are not free to move around as they like. Prisoners get free, unlimited telephone use. So students should get that, too.

6. Dad would call from the hospital if Grandma's condition worsened. He hasn't called. So Grandma must be doing all right.

7. Cats are useless. Molly is a cat. *Ergo*, Molly is useless.[1]

8. Most kids my age dislike spinach, so I guess I dislike spinach.

9. Bob said, 'I'll see you later.' That might mean that he's planning to go to the game, and thought I was going to be there. Or he might have been referring to seeing me tomorrow at school. I think I told him I wouldn't be at the game. And I thought Tom said Bob wasn't going. So he must have meant tomorrow.

10. Every single one of my numerous friends is planning to vote for Congressman Sponge, so I think he's going to win.

11. There's nothing in the paper today about World War III breaking out, so I'm guessing it hasn't started.

12. Dr. Klamp has six advanced degrees in physics, astronomy, and geology. He says that the earth is 4.5 billion years old. He obviously knows what he's talking about. That's why I think the earth is that old.

13. Fed Chairman Greenspan says the economy is slowing down, so I guess I'll lose my job.

[1] *Ergo* is Latin for *therefore*.