

Chapter 24a

Analysing and Evaluating Arguments

1. Arguments

The heart of philosophy is argument. Having come this far in the course, you have accumulated much hands-on experience analysing and evaluating arguments. You have developed a high level of skill in handling arguments—that is, in figuring out what the chain of thought presented on the page is and in determining where that chain is strong and where it is weak. It will be useful now to describe explicitly what we are doing when we analyse and evaluate an argument. And it will be useful for you to acquire a particular technique of analysing arguments, of making clear the chain of thought in an argument. This technique involves constructing a flow chart or drawing a diagram of a target argument.

a) An argument. A single argument consists in a set of at least two statements, one (and only one) of which is the conclusion, the rest of which are premises. The conclusion is given as inferred from the premises, such that the truth of the premises would either guarantee the truth of the conclusion or make likely the truth of the conclusion.

“Roger was here yesterday, and so was Sally. Whenever Sally sees Roger, she’s moody for the next day or so. There’s a good chance, then, that Sally will be moody today.” That is a single argument. A couple more examples: “That wood won’t burn very well. It’s wet to the core.” “If the moon is made of cheese, then the moon is a great source of protein and calcium, and, as we know, the moon is made of cheese. Thus, the moon is a great source of protein and calcium.” “The Green Party will win at least a few seats this election, for the voters are not at all happy with any of the traditional parties. As well, many more ridings have a Green Party candidate than ever before. Moreover, the people running for the Greens are well respected in their communities.”

b) A statement (or a proposition). A statement or proposition describes something as being some way. People use statements to claim or contend that something is some way or to present theses or hypotheses about things. Statements are expressed in indicative sentences. (Any statement can be expressed in an indicative sentence; but maybe not every indicative sentence expresses a statement.) Here are some indicative sentences that express statements: “Tuesday follows Monday.” “Perseverance keeps honour bright.” “All happy families are alike.” “Jean Chrétien was Canada’s monarch for over a decade.” Here are some sentences that are not indicative sentences: “Try harder not to cough.” “Good show.” “How much is that doggy in the window?” “Stop right there.” “Would that summer comes early this year.”

Statements are true or false. No statement is both true and false and none is neither true nor false. Moreover, *only* statements can be true or false.

c) A premise. A statement (a proposition) is a premise when it is found in an argument and serves to provide reason for thinking that another statement in that argument (i.e., the conclusion) is true. The premises of an argument are all the statements contained in that argument other than the conclusion.

A premise in an argument can be called an assumption (that is, something merely assumed to be true) when but only when it is not also a conclusion of another argument in an extended argument.

d) The conclusion. A statement (a proposition) is a conclusion when it is found in an argument and is the statement meant to be supported by the premises of that argument.

A conclusion can *never* be called an assumption.

e) An inference. The inference in an argument is the reasoning supposed to take us from the premises to the conclusion. An inference is good if either the truth of the premises would ensure that the conclusion is true or the truth of the premises would make it very likely that the conclusion is true.

f) Indicator words. An argument may contain words that can help us to figure out which statements are meant as premises and which statement is meant as the conclusion. Words such as “as,” “for,” “since,” and “given that” tell us that the statement that follows is a premise in the argument; “thus,” “hence,” and “therefore” tell us that the statement that follows is the conclusion.

Not all arguments contain indicator words. Sometimes we have to figure out which statement is the conclusion and which are premises without the explicit guidance indicator words provide.

g) A good argument. An argument is a good argument when each premise is acceptable and the inference from the premises to the conclusion either guarantees or makes very likely the truth of the conclusion.

The word “true” does not apply to arguments. Only individual statements can be true, while arguments are sets of two or more statements. Good arguments are said to be valid or sound or strong or cogent, depending on the nature of the inference and whether the premises are true; bad arguments are said to be invalid or unsound or weak or not cogent.

h) A bad argument. There are four ways in which an argument can go wrong. 1) If the inference from the premises to the conclusion neither guarantees nor makes likely the truth of the conclusion, then the argument is bad. 2) If one of its premises is false or unacceptable, then the argument is bad. 3) If some point relevant to the matter at hand that tells against the conclusion of the argument has been left out, then the argument is bad. 4) If the argument is circular, that is, if one of its premises either is identical to its conclusion or is acceptable only if the conclusion is true, then the argument gives us no reason to accept its conclusion and, so, is bad.

i) Evaluating an argument. When evaluating an argument, ask: 1) is the inference from premises to conclusion such that if the premises are true, the conclusion would be at least very likely true?; 2) are the premises true or, at least, do I have reason to think one or another of them is not true?; 3) is everything relevant to the matter at hand represented within the argument’s premises? 4) Does the argument assume within its premises what it is suppose to show as its conclusion?

j) An extended argument (a chain argument). An extended argument is a series of two or more single arguments, in which the conclusion of one argument becomes a premise in a subsequent argument. In an extended argument, at least one statement plays two roles. First, it plays the role of conclusion, being asserted on the basis of an inference from at least one other statement. Second, it plays the role of premise, being a statement from which another statement is inferred.

People often use the term “an argument” to cover both single and extended arguments, though strictly it refers only to a single argument, containing but one inference and one conclusion.

k) An undefended premise. Those statements in an extended argument that do not appear anywhere in it as conclusions function in those arguments only as premises. As such, they are premises undefended by argument in that extended argument. An extended argument’s undefended premises are the statements simply assumed in that argument (or assumed by the person presenting that argument) to be true.

Each premise in a single argument that is not part of an extended argument is, of course, undefended in that argument and, so, is an assumption of that argument.

It doesn’t make much sense to try to understand the terms explained above just by reading and rereading the explanations. One can come to understand them only by using them, by using them in the hard work of analysing and evaluating arguments. After you have gone through a) to k) a couple times, move on to section 2 of this supplement, even if you are still unclear about a few things in a) to k).

2. Analysing arguments.

There are two steps to take when analysing an argument, whether a single argument or an extended argument. First, one must identify all the statements the argument contains. Second, one must identify all the inferences the argument contains. Identifying the inferences is the same as identifying each individual argument in an extended argument and identifying the chain of thought that links all the individual arguments together. The diagrams we will draw capture the inferences in arguments so that we can more easily evaluate them.

Let us begin with an easy example. Consider the following argument. “All men are mortal and Socrates is a man. Therefore, Socrates is mortal.” This argument contains three statements: 1. All men are mortal; 2. Socrates is a man; 3. Socrates is mortal. (We number the statements according to their position in the passage that contains the argument. The statement we encounter first when reading the passage is assigned the number one, the statement we encounter second the number two, and so on.) Statement 3 is the conclusion; it is introduced by the indicator word “therefore.”

Here is our diagram:

The arrow head represents the inference in the argument. Notice that statements 1 and 2 are joined by a bar and that it is at that bar that the arrow to 3 begins. That these statements are joined indicates that the inference to 3 is from both statements together.

Here is another easy example. “It would seem that the boss is here already. There’s a car in the boss’s parking space and the light is on in her office.” This argument contains three

statements: 1. The boss is here already; 2. There's a car in the boss's parking space; 3. The light is on in the boss's office. There are no indicator words in the passage containing the argument.

If we ask what someone who speaks this passage would be attempting to convey by it, though, we see that the conclusion is statement 1, that the boss is here already. Statements 2 and 3, then are the premises in the argument. Here is our diagram of this argument.

Notice that in this diagram the premises are *not* joined by a bar. There is an arrow directly from each to the conclusion. That indicates that each premise on its own is a reason (though perhaps a weak reason) for thinking the conclusion is true. Each is a bit of evidence that the conclusion is true. The argument has two inferences to its conclusion; in evaluating the argument, we are to take the sum of the two inferences. Each inference might be weak, but added together they might make the conclusion likely true.

Now let us consider a passage of prose that contains an extended argument. "Switching from cars that run on gasoline to cars that run on fuel cells won't reduce air pollution much at all.

Fuel cells generate electricity from hydrogen and oxygen. It takes a lot of power to produce hydrogen, though, and that requires burning large quantities of fossil fuels. Burning fossil fuels results in air pollution. In the end, then, driving a car powered by a fuel cell will pollute the air just about as much as will driving a gas guzzler."

The statements in this argument are the following:

1. Switching from cars that run on gasoline to cars that run on fuel cells won't reduce air pollution much at all.
2. Fuel cells generate electricity from hydrogen and oxygen.
3. It takes a lot of power to produce hydrogen.
4. Producing a lot of power requires burning large quantities of fossil fuels.
5. Burning fossil fuels results in air pollution.
6. Driving a car powered by a fuel cell will pollute the air just about as much as will driving a gas guzzler.

Here is a diagram of that argument:

Now it is time for us to do some exercises. For each of the three passages below, first find and number each individual statement. Then draw a diagram that captures the chain of thought expressed in the passage. Do them one at a time, checking your work against the answer key before moving on to the next. (The Answer Key is at the end of this supplement.)

1) Children owe a significant debt to their parents, for their parents brought them into this world and cared for them until they were able to care for themselves. A debt of this sort can be repaid in kind only. That is why children ought to care for their parents when their parents are no longer able to care for themselves.

2) Either the guards Sally just hired know how to do what they are supposed to do or they don't, and that means that they are either useless or dangerous. Consider: if the guards know how to do what they're supposed to do, they're useless, for no trespasser could be up to no good on that back lot anyway; there's nothing there to steal or damage. But if they don't know how to do what they're supposed to do, they're dangerous, for then they might mistake people cutting across the lot for thieves or vandals and shoot them.

3) To base one's treatment of someone on the fact that that person belongs to a particular race or sex is to demean that person, for respectful treatment consists in treating individuals according to the content of their character—and a person's skin colour or sex is not part of his or her character. Affirmative action, though, consists precisely in treating people according to their skin colour or sex, and not according to their character; thus, affirmative action demeans the individuals it is supposed to help. Since it is always wrong to demean an individual, affirmative action is always wrong.

3. Evaluating arguments

Have a good look at the diagram for the first argument above, the one according to which children ought to care for their parents when their parents can no longer care for themselves. Ask of each inference represented in the diagram whether that inference is good—do the premises really support the conclusion? If you find a weak inference, explain why it is weak. Ask of each undefended premise whether it is true. Do you find reason for doubting any undefended premise? If you doubt a premise, explain why it might be false. Think about the argument as a whole. Ask whether some piece of information regarding children and their relation to their parents, say, or about the nature of debt, has been left out, a piece of information that tells against the argument's conclusion. If you don't think the conclusion true, explain why

you reject it. Ask whether there is any circular reasoning in the argument. Is the truth of the conclusion presupposed by the argument?

Have a good look at the diagram for each of the remaining two arguments in the exercise.

Ask the same questions of each: 1) are the inferences strong?; 2) are the premises acceptable?; 3) is there reason to reject the conclusion, reason not represented in the argument?; 4) is an important question begged?

One weakness with the first argument concerns the inference from 2 and 3 to 1, from the statements that children's parents brought them into this world and cared for them until they were able to care for themselves to the statement that children owe a significant debt to their parents. This inference is weak given the fact that generally debts are not incurred by people in virtue of receiving what they are entitled to. Statements 2 and 3 do not, then, support statement 1. Another weakness is that statement 1 is false—or, at least, there is reason to think it false. (Remember that though the inference leading to statement 1 is weak, that doesn't mean that statement 1 is false. If we are to reject statement 1, we need a reason for thinking it false.) Children do not ask to be born and they are simply entitled to their parents' care; thus, children do not enter into a contractual agreement with their parents. Since they have entered into no contract with their parents, children assume no obligation toward their parents in receiving whatever care they receive from them.

Do you agree that the first argument is weak in the ways described above? If not, explain how the argument survives the criticism I've directed toward it.

4. A final exercise: Aquinas's third way

As a final exercise, identify each statement in the following argument and draw a diagram that captures the chain of thought in it. (Consult the answer key only when you are satisfied with your own diagram.) Say where the argument is strong and where it is weak.

This argument is the third way from Aquinas's *Summa Theologiae* to argue that God exists. It is often called the contingency argument. The contingency argument is, as is the first cause argument, a cosmological argument for the existence of God (or for the existence of a being having at least some of the attributes of God).

4) The third way is taken from possibility and necessity, and runs thus. We find in nature things that are possible to be and not to be, since they are found to be generated, and to be corrupted, and consequently, it is possible for them to be and not to be. But it is impossible for these always to exist, for that which can not-be at some time is not. Therefore, if everything can not-be, then at one time there was nothing in existence. Now if this were true, even now there would be nothing in existence, because that which does not exist begins to exist only through something already existing. Therefore, if at one time nothing was in existence, it would have been impossible for anything to have begun to exist; and thus even now nothing would be in existence—which is absurd. Therefore, not all beings are merely possible, but there must exist something the existence of which is necessary. But every necessary thing either has its necessity caused by another, or not. Now it is impossible to go on to infinity in necessary things which have their necessity caused by another, as has already been proved in regard to efficient causes. Therefore we cannot but admit the existence of some being having

of itself its own necessity, and not receiving it from another, but rather causing in others their necessity. This all men speak of as God.

Answer Keys

1) Children owe a significant debt to their parents, for their parents brought them into this world and cared for them until they were able to care for themselves. A debt of this sort can be repaid in kind only. That is why children ought to care for their parents when their parents are no longer able to care for themselves.

1. Children owe a significant debt to their parents.
2. Children's parents brought them into this world.
3. Children's parents cared for them until they were able to care for themselves.
4. A debt of the sort children owe their parents can be repaid in kind only.
5. Children ought to care for their parents when their parents are no longer able to care for themselves.

2) Either the guards Sally just hired know how to do what they are supposed to do or they don't, and that means that they are either useless or dangerous. Consider: if the guards know how to do what they're supposed to do, they're useless, for no trespasser could be up to no good on that back lot anyway; there's nothing there to steal or damage. But if they don't know how to do what they're supposed to do, they're dangerous, for then they might mistake people cutting across the lot for thieves or vandals and shoot them.

1. Either the guards Sally just hired know how to do what they are supposed to do or they don't.
2. The guards Sally just hired are either useless or dangerous.
3. If the guards know how to do what they're supposed to do, they're useless.
4. No trespasser could be up to no good on that back lot anyway.
5. There's nothing on that back lot to steal or damage.
6. (Implicit) If no one could be up to no good on that back lot anyway, then it's useless to guard it.
7. If the guards don't know how to do what they're supposed to do, they're dangerous.
8. If the guards don't know how to do what they're supposed to do, they might mistake people cutting across the lot for thieves or vandals and shoot them.
9. (Implicit) If the guards might mistake people cutting across the lot for thieves or vandals and shoot them, then the guards are dangerous.

3) To base one's treatment of someone on the fact that that person belongs to a particular race or sex is to demean that person, for respectful treatment consists in treating individuals according to the content of their character—and a person's skin colour or sex is not part of his or her character. Affirmative action, though, consists precisely in treating people according to their skin colour or sex, and not according to their character; thus, affirmative action demeans the individuals it is supposed to help. Since it is always wrong to demean an individual, affirmative action is always wrong.

1. To base one's treatment of someone on the fact that that person belongs to a particular race or sex is to demean that person.
2. Respectful treatment consists in treating individuals according to the content of their character.
3. A person's skin colour or sex is not part of his or her character.
4. Affirmative action consists precisely in treating people according to their skin colour or sex, and not according to their character.
5. Affirmative action demeans the individuals it is supposed to help.
6. It is always wrong to demean an individual.
7. Affirmative action is always wrong.

4) The third way is taken from possibility and necessity, and runs thus. We find in nature things that are possible to be and not to be, since they are found to be generated, and to be corrupted, and consequently, it is possible for them to be and not to be. But it is impossible for these always to exist, for that which can not-be at some time is not. Therefore, if everything can not-be, then at one time there was nothing in existence. Now if this were true, even now there would be nothing in existence, because that which does not exist begins to exist only through something already existing. Therefore, if at one time nothing was in existence, it would have been impossible for anything to have begun to exist; and thus even now nothing would be in existence—which is absurd. Therefore, not all beings are merely possible, but there must exist something the existence of which is necessary. But every necessary thing either has its necessity caused by another, or not. Now it is impossible to go on to infinity in necessary things which have their necessity caused by another, as has already been proved in regard to efficient causes. Therefore we cannot but admit the existence of some being having of itself its own necessity, and not receiving it from another, but rather causing in others their necessity. This all men speak of as God.

1. We find in nature things that are possible to be and not to be.
2. Things in nature are found to be generated and to be corrupted.
3. It is possible for them to be and not to be. [This is the same statement as 1, and so we can drop it.]
4. It is impossible for these always to exist.
5. That which can not-be at some time is not.
6. If everything can not-be, then at one time there was nothing in existence.
7. If at one time there was nothing in existence, even now there would be nothing in existence.
8. That which does not exist begins to exist only through something already existing.
9. If at one time nothing was in existence, it would have been impossible for anything to have begun to exist.
10. If it would have been impossible for anything to have begun to exist, then even now nothing would be in existence.
11. It is absurd that nothing now exists.
12. Not all beings are merely possible.
13. There must exist something the existence of which is necessary.
14. Every necessary thing either has its necessity caused by another or not.
15. It is impossible to go on to infinity in necessary things which have their necessity caused by another
16. [The argument that a series of efficient causes cannot regress to infinity can be rewritten to show that a succession of necessary things cannot regress to infinity.]
17. We cannot but admit the existence of some being having of itself its own necessity, and not receiving it from another, but rather causing in others their necessity.
18. A being having of itself its own necessity, and not receiving it from another, but rather causing in others their necessity is God.
19. God exists.

