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PHILOSOPHY
AN INTRODUCTORY ANTHOLOGY

Arguments: Why Do You Believe What You Believe?

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Categories: Logic and Reasoning, Epistemology, or Theory of Knowledge
Word count: 998

If someone says what they believe about an issue, and provides a reason for why they believe this, then they are giving an *argument*.[1]

Arguments are sets of statements or reasons ("premises") that are offered to try to support some other statement (a "conclusion").[2] People make and encounter arguments every day, about all sorts of issues.[3]

This essay is an introduction to what arguments are and how they can be good or bad.

1. The Parts of Arguments: Premises and Conclusions

An argument has a conclusion and at least one premise. The *conclusion* of the argument is the thesis that the argument is intended to convince you of.[4] The *premises* are meant to provide reason to believe the conclusion.[5]

Philosophers often number premises and conclusions to make discussing the argument easier. Example:

1. All horses are mammals.
2. Sebastian is a horse.
3. Therefore, Sebastian is a mammal.[6]

It's usually clearest to place the conclusion at the end of the list.

Authors often use language such as "therefore," "thus," "hence," "so," and "it follows that" to indicate conclusions. To indicate premises, language such as "since" and "because," and "the best evidence is that," and "after all" is common.

2. Validity and Strength

Structure, not just content, is crucial to the quality of an argument. Good arguments' premises are appropriately related to the conclusion: they lead to and support the conclusion. This can happen in two ways.

2.1. Valid Arguments

When the premises, if they *were* true, *guarantee* that the conclusion be true, then the argument is *valid*.[7] "Valid" has a special meaning in philosophy: it means that *it's impossible for an argument's premises to be true but the conclusion false.*

Example:

1. If a shape is a cube, then it has corners.
2. This shape is a cube.
3. Therefore, this shape has corners.

You can see that it's *impossible* for (1) and (2) to be true without (3)'s being true.

But in this argument, it *is* possible for (1) and (2) to be true without (3)'s being true:

1. If a shape is a cube, then it has corners.
2. The Empire State Building has corners.
3. Therefore, it's shaped like a cube.

Most buildings have corners but aren't cube-shaped, so the argument is *invalid*: *the premises can be true while the conclusion is false.*[8]

Importantly, both of these arguments' premises are true.[9] An argument could have only true premises and still be invalid. Validity is *not* about whether the premises *actually are* true: it's about whether, *if* they were true, they would guarantee the conclusion. Consider:

1. There are seventy-two planets in the Solar System.
2. Seventy-two is a prime number.
3. Therefore, there is a prime number of planets in the Solar System.

These premises are false. But if they *were* true, then the conclusion would have to be true. So it's valid (in the technical sense of "valid" used in philosophy).

2.2. Strong Arguments

Arguments' premises sometimes support the conclusions in this manner: given our background

knowledge, *if the premises were true, then the conclusion would probably be true*.[10] Such arguments are described as *strong*.

Example:

1. Someone released zebras in the Louvre.

2. The Mona Lisa displayed zebra bitemarks.

3. Therefore, the Mona Lisa was damaged by a zebra.

In real life, from what we know of zebras and the Mona Lisa, if (1)–(2) were true, then (3) would probably be true. The argument is strong.

In a strong argument, the premises (if reasonable in themselves to believe) *sufficiently support* the conclusion, but, unlike a *valid* argument, don't *guarantee* it: it's *possible* here that the bitemarks were from another animal, or forged, or from some other cause. So, the argument above is strong but not valid.

2.3. Reminders

Strength and validity are requirements for good arguments, but just because an argument is strong or valid, that doesn't mean its conclusion is in fact true. And neither weakness nor invalidity means a conclusion is false.

Strength and validity are about the *relationship* of the premises to the conclusion. Whether the premises are reasonable to believe, or whether there is good evidence for the premises, or whether someone is justified in believing all the premises, is another, separate issue.[11]

3. Soundness and Cogency

When arguments are valid *and* their premises are all true, they are *sound*.[12] Example:

1. If something contains water, then it contains hydrogen.

2. The ocean contains water.

3. Therefore, the ocean contains hydrogen.

Sound arguments always have true conclusions.[13] After all, when arguments are valid, the premises' truth *would* guarantee the conclusion's truth, and so if the premises *are* true (and the argument is valid), then the conclusion is true.

When an argument is strong *and* its premises are true, the argument is *cogent*. Example:

1. In many randomized, controlled trials, people who take aspirin rather than placebo have lower fevers.

2. Therefore, aspirin reduces fever.

The argument isn't *valid*, because it's possible that the aspirin itself isn't what's reducing the fever. But the argument is still strong and cogent, at least for most audiences.[14]

Cogent arguments always have conclusions that are probably true.[15] If they're strong, then the premises' truth would make the conclusion probably true, and so *if* the premises are true (and the argument is strong), then the conclusion is probably true.

To *object* to an argument, try to show that the argument is unsound or uncogent: that the argument is invalid or weak, has a false or unjustified premise, or both.

4. Conclusion: Using Arguments

Philosophers study how arguments *justify* people in believing conclusions. Arguments can convince an audience when they accept the premises but not yet the conclusion.[16] If someone believes the premises of an argument *are* true, and that *if* they're true then the conclusion is true (or probably true), then it seems contradictory or irrational for them to not also believe that the conclusion is true.[17]

The question of how to *cause,* or persuade or convince, your audience to believe you is also important, but unfortunately, good arguments don't always accomplish that goal.[18] But sometimes they do.

Notes

[1] Here "reasons" are understood to be the claims (such as beliefs or experiences, or beliefs about those experiences) that a person would appeal to as *evidence* for their view.

Sometimes, however, when people make a claim about the "reason" someone believes or think something, they attempt to state the cause of their belief: "He believes that because he's *jealous*," "She thinks that because she *wants to fit in with her friends*," "They think that because *their goal is to control people*," "She believes that because she feels guilty," and so on. It's important to notice that these claims about the (alleged) psychological *causes* of people's beliefs are not *arguments*: these are not the claims that people offer, or would offer, in support of their beliefs.

It is also important to notice that when we make claims about the causes of people's beliefs such as these, we are often mistaken: when people make claims about what motivates you to believe something (about an important issue), are they often correct, or are they often incorrect?

[2] Colloquially, we also simply "argue" with each other when we disagree with each other, or even yell at each other. But in philosophy, "arguments" are those sets of statements presented to try to convince someone of something.

This definition implies that sets of sentences are only *arguments* when there is some intention behind them: someone is trying to do something with the argument, for instance, convince people of the conclusion. For example, suppose a computer program randomly generates a set of sentences that, if presented by a person, would have been a sound argument. But the program itself is very simple; it's certainly not an artificial intelligence, and it has no intentions, nor goals, nor beliefs. Still, is that randomly-generated set of sentences itself an argument, even though there was no intention behind it, because no intelligent person was trying to use the argument to convince anyone of anything? The question of whether arguments require intentions is interesting, but there's little reason to go into it here; interested readers can consult other sources (McKeon, n.d., sect. 1).

Also, by this definition, we are taking premises to be *statements*, but strictly speaking, we might think that arguments could have (for example) *questions* as premises (such as rhetorical questions), or imperatives (commands) as conclusions ("Therefore, clean your room!").

[3] For example, you encounter an argument whenever someone tells you something that's intended to be evidence, as part of the project of convincing you of something. So if you've read a product review, or an opinion tweet, or your child tries to explain why they should stay up past bedtime, you've probably encountered at least one argument.

[4] Strictly speaking, an argument as presented might not contain an explicitly stated conclusion at all. For example, I might approach you and say, "For a donation of $20, you can fund a water filter to protect children from disease," and wait, expectantly. That looks like I offered an argument, even though I only gave you one premise and never explicitly stated a conclusion. In this case, the tacit conclusion might be, "Therefore, you should donate $20." Note, also, that we may or may not define arguments as requiring some intention behind them; see n. 2.

[5] Note that some of those premises might be conclusions from previous premises as well. They can be called "sub-conclusions." Overall, the description in text applies to most arguments you will encounter in philosophy, but there's room for dispute about whether other things might count as arguments. More precisely, one might say: An argument is a set of sentences, such that the conclusion is exactly one sentence in the set. This allows that some premises may be irrelevant to the conclusion. This also allows that a set of sentences can generate as many distinct arguments as there are combinations of premises and conclusions.

Also precisely, we might say that if there are n sentences in the set, then there are $n \times (n-1)!$ possible arguments that can be built out of that set: for every conclusion, there is a set of arguments, one for each possible arrangement of the premises. This definition is compatible with standard definitions of strength and validity.

[6] It's also common to note premises and conclusions with corresponding letters. In this case, for example, we might see: "(P1) All horses are mammals; (P2) Sebastian is a horse; (C1) therefore, Sebastian is a mammal."

[7] Trivially, then, it's also strong. But it can be misleading to describe a valid argument as (merely) "strong," in the same way that describing a pot of boiling water as "warm" is misleading, potentially very much so. Note that validity and soundness are normally defined in terms of truth (for example, in valid arguments, the premises cannot be true without the conclusion's being true), but arguably, we tend to approach premises from whether they are justified. This distinction usually doesn't matter in practice; when people assert that a premise is true, arguably, they're tacitly asserting that they're justified in believing that it's true.

[8] This argument commits a "formal" (form-based) fallacy called "Affirming the Consequent." That occurs when an argument contains if-p-then-q and q, and on that basis, infers p. A similar fallacy is Denying the Antecedent: when an argument contains if-p-then-q and not-p and on that basis, infers not-q. No argument of those forms (when p and q are not logically equivalent) is valid. These forms do,

however, bear some superficial resemblance to some valid argument forms. *Modus ponens* is the form in which an argument affirms if-*p*-then-*q* and affirms *p*, and on that basis, concludes *q*. *Modus tollens* is the form in which an argument affirms if-*p*-then-*q* and affirms not-*q*, and on that basis, concludes not-*p*. For a long list of fallacies, see Dowden (n.d.).

[9] Most philosophers believe that "true" generally means "corresponds to the facts of the world" (PhilPapers n.d.): this is the *correspondence theory of truth* (Glanzberg, 2022, sect. 1.1). For example, if someone says, "There is at least one desk in the classroom," what they say is true if, and only if, there is at least one desk in the classroom: that there is a desk in the room is a fact of the world that makes what they say true. If someone says, "There are twelve elephants in the classroom," this is not true, or is *false*, when there are *not* twelve elephants in the classroom: it is a fact of the world that there are not twelve elephants in the room.

[10] Here, it is important to note that whether the conclusion would be probably true also depends on the rest of the audience's knowledge. Additional, new evidence might be evidence against the conclusion and render it no-longer-justified. A basic principle of rationality is that you need to take into account *all* the evidence available to you. For example, apparently-well-established scientific conclusions can be overturned by new evidence, but it is difficult to imagine how new evidence could ever show that some cubes don't have corners. Thus, for cogent-but-unsound arguments, new evidence can in fact change whether the conclusion is justified or probably true. We sometimes refer to the Requirement of Total Evidence or the Total-Evidence Requirement: that one must take into account all available evidence in order to be justified in one's beliefs. After all, if a conclusion isn't proven by the premises, then there remains the possibility that new information should change our credence in that conclusion. For recent discussions of this requirement and an application to a present-day debate, see Barrett and Sober (2022) and Draper (2020). For a more-general discussion, see Wilson (1999, sect. 13.1.2) and Howson & Urbach (2006, p. 164).

The fact that whether a conclusion is probably true depends on the rest of the audience's knowledge implies that cogency of an argument is relative to an audience. But this is plausible; different audiences have different total-evidence available to them, and different people can be reasonable or unreasonable in accepting the same argument. For example, a defendant may secretly know that he committed a crime, but the jury might be rationally persuaded by the defense attorney's arguments, in part because they don't have the secret knowledge the defendant has. But it would probably be irrational for the defendant (who, for example, remembers committing the crime) to change his belief based on the defense attorney's arguments.

[11] Strong arguments and valid arguments can have unjustified premises, and they can have justified ones as well. Most philosophers assume that we can be "justified" in believing something without being justified in being certain of it: see "I think, therefore I am": Descartes on the Foundations of Knowledge by Charles Miceli and Epistemology, or Theory of Knowledge by Thomas Metcalf. However, there's room for debate here. Suppose that I count as "justified" in believing something if I'm justified in putting 67%-or-higher confidence in it. Suppose I'm justified in 67% confidence in believing that *p*, and justified in 67% confidence in believing that if *p* then *q*. Suppose that those two premises are statistically independent of each other. Then I would be only 44% justified in believing that *q*, and thereby not count as "justified." But it might seem strange to say that I could be "justified" in believing that *p* and "justified" in believing that if-*p*-then-*q* without thereby being "justified" in believing that *q*. This problem disappears if justification requires certainty or something very close to it. See Collins (n.d.) and The Probability Calculus by Thomas Metcalf.

[12] This is another point at which there's room for some debate. Someone might argue, for example, that not *all* the premises need be true, but only the proper subset of the premises *required* to deliver the conclusion deductively validly. Indeed, deduction is *monotonic*: adding a premise to a deductively valid argument cannot render it invalid. Example: "All humans are mortal. Socrates was human. Water is composed of uranium and plutonium. Therefore, Socrates was mortal." This argument clearly demonstrates its conclusion deductively validly, and someone who was justified in believing all the premises would be justified in believing the conclusion. Therefore, we might either want to *keep* our standard definition of soundness but add that some unsound arguments nevertheless *do* demonstrate their conclusions, or we might want to *revise* our definition to say that sound

arguments are those arguments that are valid and that there is some *subset S* of premises such that: (1) an argument with *S* as its premises and the original argument's conclusion would be valid and (2) all the premises in *S* are true. This may be a merely terminological dispute, but it does at least remind us of the important point that deductive arguments are monotonic.

[13] Similarly, valid and sound arguments have conclusions that are no less justified than the set of premises. In contrast, strong (but not valid) arguments sometimes have conclusions that *are* less justified than the set of the premises. The premises, even if justified, do not prove the conclusion.

[14] It's conceivable that someone have access to evidence we don't, and that person might actually be justified in rejecting the conclusion. As noted, whether an argument is strong seems to be relative to the audience. See note 10 above. Notice that we don't normally talk about the validity of arguments as relative to an audience, because whether it's possible for premises but not a conclusion to be true is independent of the audience's knowledge, except perhaps their knowledge of how deduction works; see Carroll (1895).

[15] Counterevidence would be evidence against that conclusion, for example from *another* argument (but not by a criticism of the original argument itself, which by hypothesis is cogent). See n. 10.

[16] If one's audience wouldn't accept the premises, then they have no reason to be persuaded. If they already accept the conclusion, then there's no point in trying to persuade them. And if the premises don't provide good evidence for the conclusion, then there's no point in using those premises to justify that conclusion. Thus, arguments work best when the audience accepts the premises but not yet the conclusion. Indeed, if one tries to convince one's audience of a conclusion by offering premises that they would accept only if they already accept your conclusion, then one may be committing the fallacy of "Begging the Question." For a detailed investigation of that fallacy, see Sinnott-Armstrong (1999).

[17] See Carroll (1895) for an entertaining discussion.

[18] This isn't necessarily a problem with the argument; some audiences are simply unreasonable.

How to *persuade* your audience is largely a topic for psychology; see e.g. Psychology Today (n.d.). Theoretically, if your audience is rational and you offer them a cogent argument, they'll change their minds. But many people are irrational about many issues. A well-studied area of this phenomenon is politics; see e.g. Caplan (2008) and Somin (2016).

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