

Refutation by Logical Analogy

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A deductive argument can be refuted (i.e., shown to be invalid, and hence unsound) by stating a second argument that has *all three* of the following features: (1) the same form as the first argument; (2) true premises; and (3) a false conclusion. This is called “refutation by logical analogy” because the arguments have analogous (similar) forms.¹

What is the rationale for this procedure? The first thing to understand is that validity is a formal or structural property of arguments. To say that an argument is valid is to say *nothing* about whether its constituent propositions are true. What it says is that *if* the premises are true, *then* the conclusion is true. A valid argument is such that it is logically impossible for its premise(s) to be true and its conclusion false. Validity is a *relation* between premise(s) and conclusion, not a *property* of premise(s) or conclusion. A valid argument is one that preserves truth. We value validity because—and only because—we value truth. It is a means to our end.²

Since validity concerns only the form of an argument, if two arguments have the same form and one of them is invalid, the other is invalid. (In other words, two arguments with the same form are either both valid or both invalid.) Suppose we are wondering whether a particular argument, X, is valid. One way to find out (and here I repeat what I said earlier) is to try to construct another argument of the same form as X that has true premises and a false conclusion. Suppose we can do this. Then, given the definition of “valid argument,” the second (constructed) argument is invalid, for (by definition) no *valid* argument has true premises and a false conclusion. But if the second argument is invalid and has the same form as X, then X is invalid.

¹It is also called the counterexample method of refutation.

²Compare life preservers. We value them not for their own sake, but for the sake of the lives they preserve. If we didn't value life, we wouldn't value life preservers. By the same token, if we didn't value truth, we wouldn't value validity. Think of valid argument forms as truth preservers.

Here's an example. Suppose I wish to refute the argument that, since no conservatives are liberals and all religious people are conservatives, all religious people are liberals. This argument—call it “A₁”—has the following form:

1. No C is L.
 2. All R is C.
- Therefore,
3. All R is L.

Let me substitute terms for the letters “C,” “L,” and “R” in such a way as to make 1 and 2 true and 3 false. Here is A₂:

- 1a. No triangles are squares.
 - 2a. All three-sided figures are triangles.
- Therefore,
- 3a. All three-sided figures are squares.

Premises 1a and 2a are true (in fact, necessarily so), but 3a is false (again, necessarily so). What this shows is that A₂ is invalid, for by definition no valid argument has true premises and a false conclusion. But if A₂ is invalid and A₂ has the same form as A₁, then A₁ is invalid. The refutation is complete.

Let me complicate things a bit. Suppose my aim is the *ad hominem* one of persuading a particular person, S, that his or her argument is invalid, and hence unsound.³ My strategy will be to construct a second argument that S *agrees* (1) has the same form as the first, (2) has true premises, and (3) has a false conclusion. Of course, S, through pride, stubbornness, or insincerity, may refuse to admit this, or may wish to think further about the alleged refutation, but in principle, one can refute arguments in this way.

Please note that failure to find an argument that satisfies the three requirements does *not* prove that the original argument is *valid*; it

³Arguments made to the world (i.e., to everyone) are said to be *ad rem*. Arguments made to a particular person, or to a particular group of similarly minded people, are said to be *ad hominem*. Do not confuse *ad hominem* argumentation, which is a legitimate argumentative technique, with the *ad hominem* fallacy, which consists in dismissing a person's argument on the basis of some defect in the person making the argument. In other words, don't confuse arguing *to* the person with *attacking* the person.

may simply reflect one's lack of creativity in thinking of a refuting analogy. The most one can say about an argument that one has tried but failed to refute is that it is *probably* valid. The strength of this conclusion (i.e., the degree of probability) is directly proportional to how long and how hard one tried to refute the argument—as well as how adept one is at refutations.