

**The *Reductio ad Absurdum***  
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**28 September 2006**

One can establish (prove) the truth of a proposition by (1) assuming its denial and (2) validly deducing a self-contradiction (absurdity) from it together with one or more other propositions that are known to be true. This procedure, or form of argument, is known by the Latin name “*reductio ad absurdum*” (reduction to absurdity). (It is also known as indirect proof and *reductio ad impossibile*.)

Strictly speaking, the *reductio ad absurdum* requires that all the additional propositions be known to be true. What if they’re not? What if they’re questionable? Then all one can infer from the fact that a self-contradiction has been deduced is that *either* the assumption *or* one of the additional propositions is false. One’s confidence that the assumption is false is no greater than one’s confidence that the other propositions are true. Put differently, to the extent that one is confident that the other propositions are *true*, one is confident that the assumption is *false*.

The *reductio ad absurdum* is a special case of a more general argumentative technique. Let us define “valid argument” as an argument in which, *if* the premises are true, then the conclusion is true. In other words, it is logically impossible for a valid argument to have true premises and a false conclusion. Valid arguments are truth-preserving. Suppose we know that the conclusion of a particular argument (call it “X”) is false. What else do we know? We know that *either* X is invalid *or* one or more of X’s premises is false (or both). This follows from the definition of “valid argument” just given. But all self-contradictions are false (though not conversely), so any argument the conclusion of which is a self-contradiction is either invalid or has one or more false premises. Different people may come to different conclusions about which of these is the case, and those conclusions will, in turn, require argumentation. For example, one person may claim that the *assumption* is false; another

may claim that one of the *added propositions* is false; yet another may question the *validity* of the argument.

A final twist. Suppose we adopt the *ad hominem* conception of argumentation in which the aim is to persuade a particular person to *believe* a given proposition rather than to establish its *truth*. The procedure is as follows. First, state the proposition of which the interlocutor is to be persuaded. Second, assume the denial of that proposition. Third, add propositions that are already believed by the interlocutor. Fourth, using only rules of inference that the interlocutor accepts as valid, deduce a self-contradiction. This shows the interlocutor that the assumption is inconsistent with his or her beliefs. Of course, it is open to the interlocutor to reject one of the *other* beliefs rather than the assumption; but that just shows him or her the cost of rejecting the original proposition. (After all, you can't *make* people believe things.) This procedure seeks not truth but consistency in belief.

To summarize, suppose you are trying to establish the truth of proposition *p* by means of a *reductio ad absurdum*. You must do the following:

1. Assume (assert) the denial of *p*, namely, non-*p*.
2. Using only valid rules of inference,
3. Deduce a known falsehood from non-*p* together with
4. Other known-to-be-true propositions.

If you can do this, you will have shown that the assumption (non-*p*) is false; and if non-*p* is false, then *p* is true. This is what you set out to prove.

There are two ways to strengthen the argument. First, since someone might disagree that the deduced "falsehood" is false, try to generate a self-contradiction. In other words, show that the premises entail a *necessary* falsehood rather than a *contingent* falsehood. Second, since someone might disagree that the "true propositions" are true, try to use only *necessary* truths (as opposed to *contingent*

truths) as premises. Necessary falsehoods can't possibly be true and can't reasonably be affirmed (believed); necessary truths can't possibly be false and can't reasonably be denied (disbelieved). If the inferences are truly valid, then the only way out is to deny (disbelieve) the assumption, which is precisely what the arguer set out to do. Here, then, is the strongest possible *reductio ad absurdum*:

1. Assume (assert) the denial of p, namely, non-p.
2. Using only valid rules of inference,
3. Deduce a *necessary* falsehood (i.e., a self-contradiction) from non-p together with
4. Other *necessarily* true propositions.

Here is the weakest possible (but still effective!) *reductio ad absurdum*:

1. Assume (assert) the denial of p, namely, non-p.
2. Using only rules of inference *accepted by your interlocutor as valid*,
3. Deduce a proposition *believed by your interlocutor to be false* from non-p together with
4. Other propositions *believed by your interlocutor to be true*.

This, as I said, is the *argumentum ad hominem*. Do not confuse the *argumentum ad hominem* ("argument to the person") with the *ad hominem* fallacy (attack on the person). The former is a legitimate argumentative technique; the latter is a fallacy. The *ad hominem* fallacy consists in dismissing an argument on the ground that the person making it is defective in some way. Example: If you argue that capitalism is unjust and I dismiss your argument on the ground that you're a Marxist, I commit this fallacy. I have attacked *you* (the person), not your argument. Persons are not arguments. Good people can make bad arguments and bad people good arguments. (I'm assuming, for the sake of argument, that Marxists are bad people.)

If you want to learn more about argumentation, see Irving M. Copi and Keith Burgess-Jackson, [\*Informal Logic\*](#), 3d ed. (Upper Saddle River, NJ: Prentice Hall, 1996).