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Necessary Consequence: Constructing Valid Arguments (Part 1)

by Michael Holloway

The reaction of many long-time readers to the title of this issue's column is probably something like this: "Finally! I thought he could only talk about how *not* to argue, and didn't think he'd ever get around to talking about arguing properly!" In previous issues, we've talked about why Christians need to know about logic and about the limits of logic. We've talked about the components of logical arguments, about various ways to classify arguments, and about several of the most common forms of invalid arguments. So far, we've not talked much at all about how to construct valid arguments; but as the saying goes, that was then, this is now.

In a real sense, the discussion in this column is premature. We have not yet introduced the distinction between traditional (or syllogistic) logic and symbolic logic, nor have we laid the requisite foundations for either approach, nor have we settled on which approach to pursue in detail. Nevertheless, I think that the average reader will find the discussion useful, even if the logicians among us will find it something less than satisfying.

The simplest way to construct a valid argument is to follow a pattern (or form) of argument that is known to be valid. There are many such argument forms, but we will look at only two of them in this issue.

Consider the following argument:

If it is raining, then Michael will take an umbrella when he goes outside. It is raining. Therefore, Michael will take an umbrella when he goes outside.

Although there are many words in this argument, its form can be expressed quite simply in the following way:

Premise 1: If P, then Q

Premise 2: P

Conclusion: Therefore, Q

The first premise asserts nothing about the truth or falsity of either P or Q alone, but it does say that *if* P is true, *then* Q will also be true. The second premise asserts that P is in fact true. From these two premises, concluding that Q is true is always valid. This particular form of argument is called *modus ponens* (from the Latin *modus*, meaning "method", and *ponere*, meaning "to affirm"). By substituting various propositions for P and Q, many valid arguments can be created. Here are three examples. Because all three follow the modus ponens form, they are all valid; are all three arguments also sound?

If the Bible is the Word of God, then it will be internally consistent. The Bible is the Word of God. Therefore, it will be internally consistent.

If abortion is murder, then it should be illegal. Abortion is murder. Therefore, it should be illegal.

If everyone should be eligible to vote, then voter registration should be as simple as possible.

Everyone should be eligible to vote. Therefore, voter registration should be as simple as possible.

Modus tollens (from the Latin *tollere*, meaning "to deny") is the name of another valid argument form. The first premise in the modus tollens argument form is the same as the first premise in the modus ponens form, that is: If P, then Q. The second premise, however, is different; rather than asserting P is true as in a modus ponens argument, the second premise in a modus tollens argument, denies that Q is true. As a result, the conclusion denies that P is true.

Premise 1: If P, then Q

Premise 2: Not Q

Conclusion: Therefore, not P

The following specific examples illustrate the use of the modus tollens form:

If it is raining, then Michael will take an umbrella when he goes outside. Michael did not take an umbrella when he went outside. Therefore, it is not raining.

If the Koran is the Word of God, then it will be internally consistent. The Koran is not internally consistent. Therefore, the Koran is not the Word of God.

If drama is a legitimate form of worship, then the Bible must say that it is. The Bible does not say that it is. Therefore, drama is not a legitimate form of worship.

Now that you know two valid argument forms, consider the following argument:

If Christianity is true, then it will be internally consistent. Christianity is internally consistent. Therefore, Christianity is true.

Does it use the form of either modus ponens or modus tollens?

At a quick glance, this argument may appear to be an instance of modus ponens, but if you examine the structure carefully, you will see that it is of the following form: If P, then Q. Q. Therefore, P. This is not modus ponens, because the second premise is Q (it should be P), and the conclusion is P (it should be Q). Rather than being a valid argument, this argument illustrates the fallacy of *affirming the consequent*.

In the example given above, it may not be immediately obvious that the argument is a fallacy; however, in the following example, which follows the same form, the invalidity of the argument is obvious.

If Augustine wrote *The Institutes of the Christian Religion*, then Augustine was a great theologian. Augustine was a great theologian. Therefore, Augustine wrote *The Institutes of the Christian Religion*.

Modus ponens is one of the most commonly used valid argument forms; affirming the consequent is one of the most commonly committed fallacies. If you hear or read any especially egregious examples of this fallacy, let me know. I'll include the most interesting examples in my next column. In the next column, we'll also look at the fallacy of *denying the antecedent*, and at some more valid argument forms.