

The Construction of Logical Argumentation

Introduction:

When all of the research has been performed the matter of “constructing” the thesis begins. One of the differences between a poorly constructed paper and an excellent one is the matter of “logic.” The best of research can quickly become a useless assortment of quotations if there are widespread violations of the rules of logic in the writing. Even good writing skills will cover very little in the way of fallacious logic.

The idea of logic is vitally important in both writing and preaching. As Carson points out:

This study is important because exegetical fallacies are painfully frequent among us among us whose God-given grace and responsibility is the faithful proclamation of the Word of God. Make a mistake in the interpretation of one of Shakespeare’s play, falsely scan a piece of Spenserian verse, and there is unlikely to be an entailment of eternal consequence; but we cannot lightly accept a similar laxity in the interpretation of Scripture” (Carson, *Exegetical Fallacies*, p. 12).

Logic is the science of necessary inference and is founded on the principle of *non-contradiction* (that is, something cannot be both true and false). Without going into a long explanation of Logic here are the main points as summarized by *The Logic Classroom* at <http://www.sjsu.edu/testupdates/faculty/carranza/intro.htm>

What is Logic?

Logic is the science of necessary inference. An inference is the forming of a conclusion from premises by logical methods -- the conclusion itself. The adjective *necessary* in *necessary inference* or *necessary consequence* means there is no way to avoid the conclusion of an argument. We define an argument as one or more propositions in support of another proposition. The propositions in support of the other proposition are called *premises*; the proposition supported by the premises is called the *conclusion*. More about *necessary inference* later, but first, what is a proposition?

Propositions

A proposition is a form of words in which the predicate is affirmed or denied of the subject of a declarative sentence. A proposition is the meaning of a declarative sentence. Declarative sentences are either true or false. Propositions are the premises and conclusions of arguments. Other sentences, in expressing commands, posing questions, or conveying exhortations are neither true nor false. Some questions, rhetorical questions, are intended as propositions; but if a question is not rhetorical, then it is neither true nor false.

Arguments

Arguments divide into two classes: deductive arguments and inductive arguments. This classification amounts to two different claims. The premises of Inductive Arguments claim to provide incomplete or partial reasons in support of the conclusion. The premises of Deductive Arguments claim to provide conclusive reasons for the conclusion. In Inductive Argument, the conclusion is said to be either probable or improbable. With Deductive Argument the conclusion either follows necessarily or it does not. That is to say, the conclusion is either a necessary consequence of the premises or it is not a necessary consequence of the premises. Another way of stating the same thing: A Deductive Argument consists of a conclusion presumably deduced from premises. The deduction of conclusions from premises is at the heart of logic.

Validity

The phrases *necessary consequence* and *necessary implication* mean *necessary inference*. The use of one or the other phrase depends on the emphasis. If one stresses that the premises imply a conclusion, one speaks of *necessary implication*. If one stresses the conclusion resulting from premises, one speaks of *necessary consequence*. With either phrase, the reference is a claim of *necessary inference* between premises and conclusion of a Deductive Argument. If the conclusion of a Deductive Argument is a necessary consequence of the premises, then the argument is valid; otherwise, invalid. Using other words: If the premises of a Deductive Argument *necessarily imply* the conclusion, then the argument is valid; otherwise, invalid.

Summarizing this section. Logic is the study of the relation between premises and conclusion in Deductive Arguments. If the conclusion follows from premises *necessarily* (that is, the conclusion is unavoidable), then the argument enjoys valid status; if not (that is, the conclusion can be avoided), then the argument is invalid. Every Deductive Argument is either valid or invalid.

Violations of the Rules of Logic

The violations of logic are most often referred to as “fallacies.” Fallacies will appear in both written and verbal form. Recognizing and avoiding logical fallacies and poor reasoning will increase the usefulness of your spoken and written word. Below are the common types of fallacies with some examples.

Anecdotal evidence

One of the simplest fallacies is to rely on anecdotal evidence. For example:

- “I’m sure that speaking in tongues must still be going on today, since my cousin goes to a church where they speak in tongues every Sunday.”

It’s quite valid to use personal experience to illustrate a point; but such anecdotes don’t really prove anything to anyone. Your friend may say he met Elvis in the supermarket, but those who haven’t had the same experience will require more than your friend’s anecdotal evidence to convince them.

Proper research methodology and content will overcome the fallacy of *Anecdotal Evidence*. It is important to remember that *Anecdotal Evidence* can only serve to illustrate, it is the weakest possible form of argumentation. If you make *Anecdotal Evidence* a foundation or pillar of your argumentation you may have some initial success with those who are easily swayed, but ultimately you have built an argument on sand. *Anecdotal Evidence* should generally be used in a very limited fashion in scholarly writing.

Argumentum ad baculum (the argument or appeal to force)

An Appeal to Force happens when someone resorts to force (or the threat of force) to try and push others to accept a conclusion. This fallacy is often used by politicians, and can be summarized as “might makes right”. The threat doesn’t have to come directly from the person arguing. For example:

- “... In any case, I know your phone number and I know where you live. Have I mentioned I am licensed to carry concealed weapons?”
- “...The budget that I have presented should be accepted without any further discussion, I do not need to mention of course, that I contribute more money to this church than anyone else in the membership.”

The *Appeal to Force* can either be direct and physical or indirect intimidation. Normally, this type of fallacy will not find its way into open scholarly work, but can more than often appear in internal memos.

Argumentum ad hominem

Argumentum ad Hominem literally means “argument against the man.” There are two types: *abusive* and *circumstantial*.

If you argue against some assertion by attacking the person who made the assertion, then you have committed the abusive form of *argumentum ad hominem*. A personal attack isn’t a valid argument, because the truth of an assertion doesn’t depend on the virtues of the person asserting it. For example:

- “Atheism is an evil philosophy. It is practiced by Communists and murderers.”

Sometimes in a court of law doubt is cast on the testimony of a witness. For example, the prosecution might show that the witness is a known perjurer. This is a valid way of reducing the credibility of the testimony given by the witness, and not *Argumentum ad Hominem*. However, it doesn’t demonstrate that the witness’s testimony is false in this particular case.

In scholarly work it is also a valid point to demonstrate that a particular author’s work has been criticized or proven to be inaccurate in the past, this again is not *Argumentum ad hominem*.

While this sort of evaluative criticism is a valid approach it also cannot be the key point of your presentation. You must argue *the facts* at hand

If you argue that someone should accept the truth of an assertion because of that person’s particular circumstances, then you have committed the circumstantial form of *argumentum ad hominem*. For example:

- “It is perfectly acceptable to kill animals for food. How can you argue otherwise when you’re quite happy to wear leather shoes?”

This is an abusive charge of inconsistency, used as an excuse for dismissing the opponent’s argument. The fallacy can also be used as a means of rejecting a particular conclusion. For example:

- “Only those who reject the Bible accept modern translations instead of the King James Version.”

This particular form of *Argumentum ad Hominem*, when you allege that someone is rationalizing a conclusion for selfish or manipulative reasons is also known as *Poisoning the Well*.

A special form of the *Argumentum as Hominem* is known as the *Tu quoque* or the “you too” fallacy. It occurs if you argue that an action is acceptable because your opponent has performed it. For instance:

- “You’re missed the entire point of the passage. So? You’ve mishandled the text before too.”

Argumentum ad ignorantiam

Argumentum ad ignorantiam means “argument from ignorance”. The fallacy occurs when it’s argued that something must be true, simply because it hasn’t been proved false. Or, equivalently, when it is argued that something must be false because it hasn’t been proved true.

Note that this isn't the same as assuming that something is false until it has been proved true; that's a basic scientific principle.

Here are a couple of examples:

- "Of course evolution is true, no one has proven it to be false."
- "Paul did not write the Pastoral Epistles, we have no original copies with his name on them."

Note: this fallacy doesn't apply in a court of law, where you're generally assumed innocent until proven guilty.

Also, in scientific investigation if it is known that an event would produce certain evidence of a particular occurrence, the absence of such evidence can validly be used to infer that the event didn't occur. However, inferences are not conclusive evidence.

For example:

- "A flood as described in the Bible would require an enormous volume of water to be present on the earth. The earth does not have a tenth as much water, even if we count that which is frozen into ice at the poles. Therefore no such flood occurred."

In science, we can validly assume from lack of evidence that something hasn't occurred. We cannot conclude with certainty that it hasn't occurred, though. This type of fallacy also often combines with the failure to consider other options and assumes facts that may affect the whole.

Of course, the history of science is full of logically valid, but terribly *wrong* conclusions. In 1893, the Royal Academy of Science were convinced by Sir Robert Ball that communication with the planet Mars was a physical impossibility, because it would require a flag as large as Ireland, which it would be impossible to wave. In a *National Geographic* article in the early 1920's a noted physicist "proved" that what appears to be a curveball from a baseball pitcher was an "optical illusion" that it was impossible for a man to spin a baseball hard enough to produce an alteration of trajectory.

The burden of proof is always on the person asserting something. Shifting the burden of proof, a special case of *Argumentum ad Ignorantiam*, the fallacy of putting the burden of proof on the person whom denies or questions the assertion. The source of the fallacy is the assumption that something is true unless proven otherwise.

- "OK, so if you don't think the gray aliens have gained control of the US government, can you prove it?"

Argumentum ad misericordiam

This is the *Appeal to Pity*, also known as *Special Pleading*. The fallacy is committed when someone appeals to pity or emotion for the sake of getting a conclusion accepted. For example:

- "I did not murder my mother and father! Please don't find me guilty; I'm suffering enough through being an orphan."
- "Certainly you cannot be upset with us for going to the faith healer, my father is suffering terribly and we just had to try something."

Argumentum ad populum

This is known as *Appealing to the Gallery, or Appealing to the People*. You commit this fallacy if you attempt to win acceptance of an assertion by appealing to a large group of people. This form of fallacy is often characterized by emotive language. For example:

- “Everyone agrees that the NIV is the best translation of the Bible.”

This type of fallacy is typical of newspaper and television news, as well as most advertising.

Argumentum ad numerum

This fallacy is closely related to the *argumentum ad populum*. It consists of asserting that the more people who support or believe a proposition, the more likely it is that that proposition is correct. For example:

- “Recent survey’s show that 90% of the adult population believe they have encountered angels. Conclusion (stated or unstated): Angels must be real and active today.”

The *argumentum ad populum* and *argumentum as numerum* are closely related to the *No True Scotsman Fallacy*.

Argumentum ad verecundiam

The *Appeal to Authority* uses admiration of a famous person to try and win support for an assertion. For example:

- “Peyton Manning of the Indianapolis Colts says to be a winner you must eat your Campbell’s Chunky Soup.”

This line of argument isn’t always completely invalid; for example, it may be relevant to refer to a widely regarded authority in a particular field; but only if you’re discussing the subject where the authority in question has legitimate expertise. For example, we can distinguish quite clearly between:

- “Dr. John MacArthur has stated that the Bible is inerrant and infallible.”
- or
- “Alec Baldwin says that George Bush will make a horrible president.”

Now while Dr. MacArthur is a recognized expert in theological and Biblical matters, and his view on the above statement carries a measure of weight; Alec Baldwin is an actor, so discussing national politics or the relative merit of the candidates is beyond the scope of his expertise; thus his opinion carries, or should carry, no more or less weight than the average person on the street.

Argumentum ad antiquitatem

This is the fallacy of asserting that something is right or good simply because it’s old, or because “that’s the way it’s always been.” The opposite of *Argumentum ad Novitatem*.

- “We have always closed the service with a hymn.”
- “The Puritans naturally have the best material on this subject.”

Argumentum ad novitatem

This is the opposite of the *Argumentum ad Antiquitatem*; it's the fallacy of asserting that something is more correct simply because it is new, or newer than something else is.

- “This commentary is based on the latest research and clearly supersedes any of the old conclusions of the Reformers.”

Argumentum ad crumenam

The fallacy of believing that money is a criterion of correctness; that those with more money are more likely to be right. The opposite of *Argumentum ad Lazarum*.

- “Joe here is a banker and quite a wealthy man, I'm certain he would make a fine church treasurer.”

Argumentum ad lazarum

The fallacy of assuming that someone poor is sounder or more virtuous than someone who's wealthier. This fallacy is the opposite of the *Argumentum ad Crumenam*.

- “I'm sure that Catholic theology must be correct. I mean look, my priest has taken a vow of poverty and given up all his worldly possessions. No one would do that for something that wasn't true.”

Argumentum ad nauseam

This is the incorrect belief that an assertion is more likely to be true, or is more likely to be accepted as true, the more often it is heard. So an *Argumentum ad Nauseam* is one that employs constant repetition in asserting something; saying the same thing over and over again until you're sick of hearing it. This is a key issue in examining Biblical commentaries. Many “true” facts have become accepted simply because they have been repeated year after year from one commentary to another.

The fallacy of Accident / Sweeping Generalization / Dicto Simpliciter

A sweeping generalization occurs when a general rule is applied to a particular situation, but the features of that particular situation mean the rule is inapplicable. It's the error made when you go from the general to the specific. For example:

- Baptist churches are always congregational in their polity, even though that church calls itself a baptist church, it has elders so it can't be a real baptist church.

People who try to decide moral and legal questions by mechanically applying general rules often commit this fallacy.

Converse Accident/Hasty generalization

This fallacy is the reverse of the Fallacy of Accident. It occurs when you form a general rule by examining only a few specific cases that aren't representative of all possible cases. For example:

- “Jim Bakker was an insincere Christian. Therefore all Christians are insincere.”

Non causa pro causa

The fallacy of *Non Causa Pro Causa* occurs when something is identified as the cause of an event, but it has not actually been shown to be the cause. For example:

- “I had a migraine headache, so I took my prescription medicine and prayed. A little later my headache disappeared. God graciously cured me of the headache.”

Post hoc ergo propter hoc

The fallacy of *Post Hoc Ergo Propter Hoc* occurs when something is assumed to be the cause of an event merely because it happened before that event. For example:

- “In 1950 we began a bus ministry and the church grew. Therefore if we want the church to grow we should begin a bus ministry.”

Cum hoc ergo propter hoc

This fallacy is similar to *post hoc ergo propter hoc*. The fallacy is to assert that because two events occur together, they must be causally related. It's a fallacy because it ignores other factors that may be the cause(s) of the events.

- “We canceled the Wednesday night prayer meeting and the next day the church was broken into.”

Petitio principii/Begging the question

This fallacy occurs when the premises are at least as questionable as the conclusion reached. For example:

- “We know that today we have sufficient tools to understand the Bible without knowing the original languages; therefore seminaries should drop classes in the original languages and focus on more practical issues.”

Circulus in demonstrando

This fallacy occurs if you assume as a premise the conclusion that you wish to reach. Often the proposition is rephrased so that the fallacy appears to be a valid argument. For example:

- “The Gospel of Matthew was written originally in Hebrew, so in our exegetical work it is useless to utilize the Greek, since we know it was not written originally in Greek but rather Hebrew.”
- “We know that Paul did not write the Pastoral Epistles. In reconstructing an account of the life of Paul we cannot make events mentioned in the Pastoral epistles mesh with the account of the Book of Acts. We should not use material from the Pastorals in creating an account of Paul's' life since we know that Paul did not write the Pastorals.”

Note that the argument is entirely circular; the premise is the same as the conclusion. An argument like the above was actually used by a writer writing on the life of Paul.

Circular arguments are surprisingly common, unfortunately. If you've already reached a particular conclusion once, it's easy to accidentally make it an assertion when explaining your reasoning to someone else.

Complex question /Fallacy of interrogation /Fallacy of presupposition

This is the interrogative form of *Begging the Question*. One example is the classic loaded question:

- “Have you stopped beating your wife?”

The question presupposes a definite answer to another question that has not even been asked. Lawyers in cross-examination often use this trick, when they ask questions like:

- “Where did you hide the money you stole?”

Similarly, politicians often ask loaded questions such as:

- “How long will United Nations interference in our affairs be allowed to continue?”

Another form of this fallacy is to ask for an explanation of something that is untrue or not yet established.

Ignoratio elenchi/Irrelevant conclusion

The fallacy of *Irrelevant Conclusion* consists of claiming that an argument supports a particular conclusion when it is actually logically nothing to do with that conclusion.

For example, you may argue that the conclusions of a particular writer are undoubtedly true. But you cannot then proceed to support your assertion by bringing a list of conclusions that have little or nothing to do with the assertion.

This type of argument typically arouses the emotions and clouds judgment that allows the supposed conclusion to have more weight than it should ever receive.

An example of one form of this would be in a recent advertisement for the Los Angeles Times Newspaper. The advertisement encourages people to subscribe to the newspaper, the narrator states that she receives the Times because she “likes to feel informed.” Note that no claim of actual or real information is given, the appeal is entirely emotive and therefore irrelevant to reality.

Equivocation /Fallacy of four terms

Equivocation occurs when a key word is used with two or more different meanings in the same argument. For example:

- “What could be more affordable than free software? But to make sure that it remains free, that users can do what they like with it, we must place a license on it to make sure that will always be freely redistributable.”

One way to avoid this fallacy is to choose your terminology carefully before beginning the argument, and avoid words like “free” which have many meanings.

Amphiboly

Amphiboly occurs when the premises used in an argument are ambiguous because of careless, convoluted or ungrammatical phrasing.

Fallacies of composition

One *Fallacy of Composition* is to conclude that a property shared by the parts of something must apply to the whole. For example:

- “The bicycle is made entirely of low mass components and is therefore very light-weight.”

The other Fallacy of Composition is to conclude that a property of a number of individual items is shared by a collection of those items. For example:

- “A car uses less gas and causes less pollution than a bus. Therefore cars are less environmentally damaging than buses.”

Fallacy of division

The *Fallacy of Division* is the opposite of the *Fallacy of Composition*. Like its opposite, it exists in two varieties. The first is to assume that a property of some thing must apply to its parts. For example:

- “You are studying at a rich college. Therefore you must be rich.”

The other is to assume that each item shares a property of a collection of items. For example:

- “Ants can destroy a tree. Therefore this ant can destroy a tree.”

The slippery slope argument

This argument states that should one event occur, so will other harmful events. There is no proof made that the harmful events are caused by the first event. For example:

- “If we cancel the Sunday night service people will have to go elsewhere for something to do with their time; if that happens people will find something more interesting than church therefore people might leave the church entirely.”

“A is based on B”fallacies / “...is a type of...”fallacies / Fallacy of the Undistributed Middle

These fallacies occur if you attempt to argue that things are in some way similar, but you don't actually specify in what way they are similar.

Examples:

- “Islam is based on faith, Christianity is based on faith, so isn't Islam a form of Christianity?”

- “Cats are a form of animal based on carbon chemistry, dogs are a form of animal based on carbon chemistry, so aren’t dogs a form of cat?”

Affirmation of the consequent

This fallacy is an argument of the form “A implies B, B is true, therefore A is true”. To understand why it is a fallacy, examine the truth table for implication given earlier. Here’s an example:

- “You get wet if you are outside in the rain. I was outside sleeping in my hammock and when I woke up I was all wet, therefore it must have rained while I was asleep.”

This is the converse of *Denial of the Antecedent*.

Denial of the antecedent

This fallacy is an argument of the form “A implies B, A is false, therefore B is false”. The truth table for implication makes it clear why this is a fallacy.

Note that this fallacy is different from *Non Causa Pro Causal* That has the form “A implies B, A is false, therefore B is false”, where A does not in fact imply B at all. Here, the problem isn’t that the implication is invalid; rather it’s that the falseness of A doesn’t allow us to deduce anything about B.

- “You get wet if you are outside in the rain. Even though I was outside, it did not rain, therefore I am not wet.” (as he wipes himself off)

This is the converse of the fallacy of *Affirmation of the Consequent*.

Converting a conditional

This fallacy is an argument of the form “If A then B, therefore if B then A”

- “If it’s raining outside and I don’t have an umbrella I get wet. So if I get wet, then it’s raining outside and I don’t have an umbrella.”

This fallacy is similar to the *Affirmation of the Consequent*, but phrased as a conditional statement.

Bifurcation

Also referred to as the “black and white” fallacy, bifurcation occurs if you present a situation as having only two alternatives, where in fact other alternatives exist or can exist.

- “Our Sunday night service is only attended by 30% of our congregation. We must have a huge sin problem in the church or people just don’t want to hear the preaching of the Word.”

Plurium interrogationum /Many questions

This fallacy occurs when someone demands a simple (or simplistic) answer to a complex question. “Just answer ‘yes’ or ‘no.’”

Non sequitur

A *non sequitur* (it does not follow) is an argument where the conclusion is drawn from premises that aren't logically connected with it. For example:

- “Since Egyptians did so much excavation to construct the pyramids, they must have been well versed in paleontology.”

Actually this type of fallacy can be quite amusing, and is really the basis for most situation comedy on television.

Red herring

This fallacy is committed when someone introduces irrelevant material to the issue being discussed, so that everyone else's attention is diverted away from the points made, towards a different conclusion. Often this is an *ad hominem* interjection.

- “But pastor, we shouldn't have this man for our Bible conference speaker. Haven't you heard about what is going on in the seminary where he graduated from?” [this man graduated from the seminary in question 30 years earlier]

Straw man

The straw man fallacy is when you misrepresent or caricature a position so that it can be attacked more easily, then knock down that misrepresented position, then conclude that the original position has been demolished. It's a fallacy because it fails to deal with the actual arguments that have been made.

The extended analogy

The fallacy of the *Extended Analogy* often occurs when some suggested general rule is being argued over. The fallacy is to assume that mentioning two different situations, in an argument about a general rule, constitutes a claim that those situations are analogous to each other.

- “I believe that the Inerrancy of the Bible is vitally important.”
- “But this would put you at odds with Kierkegaard who believed that you could come to know Christ only by personal experience.”
- “Are you saying I don't believe in Christ! How dare you!”

Audiatur et altera pars

Often, people will argue from assumptions that they don't bother to state. The principle of *Audiatur et Altera Pars* is that all of the premises of an argument should be stated explicitly. It's not strictly a fallacy to fail to state all of your assumptions; however, it's often viewed with suspicion.

Ad hoc

There is a difference between argument and explanation. If we're interested in establishing A, and B is offered as evidence, the statement “A because B” is an argument. If we're trying to establish the truth of B, then “A because B” is not an argument, it's an explanation.

The *Ad Hoc* fallacy is to give an after-the-fact explanation that doesn't apply to other situations. Often this *ad hoc* explanation will be dressed up to look like an argument. For example, if we assume that God treats all people equally, then the following is an *ad hoc* explanation:

- "I was healed from cancer by the Lord."
- "So, will He heal all believers who have cancer?"
- "Well, you must have sufficient faith."

Argumentum ad logicam

This is the "fallacy fallacy" of arguing that a proposition is false because it has been presented as the conclusion of a fallacious argument. It must always be remembered that a fallacious argument can arrive at true conclusion.

- "Take the fraction $16/64$. Now, canceling a 6 on top and a six on the bottom, we get that $16/64=1/4$."
- "Wait a second! You can't just cancel the six!"
- "Oh, so you're telling us $16/64$ is not equal to $1/4$, are you?"

The issue here is twofold: (1) to deal with the reasoning that was used to arrive at the conclusion and (2) to demonstrate that even though the conclusion is correct, if this reasoning is allowed to stand and proliferate throughout the paper, the entire thesis could become a "house of cards."

The "No True Scotsman" fallacy

Suppose I assert that no Scotsman puts sugar on his porridge. You counter this by pointing out that your friend Angus likes sugar with his porridge. I then say "Ah, yes, but no true Scotsman puts sugar on his porridge."

This is an example of an *ad hoc* change being used to shore up an assertion; combined with an attempt to shift the meaning of the words used original assertion. You might call it a combination of fallacies.