The Illogic Primer

LOGICAL FALLACIES CATALOG

The possibility of being wrong is the price we pay for the possibility of being right.

Fallacies of Distraction

Each of these fallacies is characterized by the illegitimate use of a logical operator in order to distract the reader from the apparent falsity of a certain proposition. The following fallacies are fallacies of distraction:

Argument from Ignorance Because something is not known to be true, it is assumed to be false.
Complex Question Two unrelated points are conjoined as a single proposition.
False Dilemmas and Excluded Possibilities Two choices are given when in fact there are three options.
Slippery Slope A series of increasingly unacceptable consequences is drawn.

Conditional (if-then)

The proposition If P then Q is true if and only if either P is false or Q is true. It is false only when P is true and Q is false.

Disjunction (or)

The proposition P and Q is true if and only if either P or Q are true. It is false only if both P and Q are false.

Conjunction (and)

The proposition P and Q is true if and only if both P and Q are true. It is false otherwise.

Fallacies of Definition

The purpose of a definition is to state exactly what a word means. A good definition should enable a reader to 'pick out' instances of the word or concept with no outside help.

Circular Definition The definition includes the term being defined as a part of the definition.
Conflicting Conditions The definition is self-contradictory.
Failure to Elucidate The definition is harder to understand than the term being defined.
Too Broad The definition includes items which should not be included.
Too Narrow The definition does not include items which should be included.

Syllogistic Errors

A categorical syllogism is an argument consisting of exactly three categorical propositions (two premises and a conclusion) in which there appear a total of exactly three categorical terms, each of which is used exactly twice.

Affirming the Consequent Any argument of the following form is invalid: (1) If A then B (2) B Therefore, A
Drawing Affirmative Conclusion The conclusion of a standard form categorical syllogism is affirmative, but at least one of the premises is negative.
Exclusive Premises A standard form categorical syllogism has two negative premises (a negative premise is any premise of the form 'No S are P' or 'Some S is not P').
Existential Fallacy A particular conclusion is drawn from universal premises.
Four Terms The fallacy is committed when a standard form categorical syllogism contains four terms.
Illicit Major The predicate term of the conclusion refers to all members of that category, but the same term in the premises refers only to some members of that category.
Undistributed Middle The middle term in the premises of a standard form categorical syllogism never refers to all of the members of the category it describes.

Non Sequitur

Denying the Antecedent Any argument of the following form is invalid: (1) If A then B (2) Not A (3) Therefore, Not B
Inconsistency The author asserts more than one proposition such that the propositions cannot all be true.

Category Errors

Composition Because the parts of a whole have a certain property, it is argued that the whole has that property.
Division Because the whole has a certain property, it is argued that the parts have that property.

Fallacies of Ambiguity

The fallacies in this section are all cases where a word or phrase is used unclearly. There are two ways in which this can occur. (1) The word or phrase may be ambiguous, in which case it has more than one distinct meaning. (2) The word or phrase may be vague, in which case it has no distinct meaning.

Accent Emphasis is used to suggest a meaning different from the actual content of the proposition.
Amphiboly An amphiboly occurs when the construction of a sentence allows it to have two different meanings.
Equivocation The same term is used with two different meanings.

Missing the Point

These fallacies have in common a general failure to prove that the conclusion is true.

Begging the Question The truth of the conclusion is assumed by the premises.
Irrelevant Conclusion An argument which purports to prove one thing instead proves a different conclusion.
Straw Man (Invidious Comparison) The author attacks an argument which is different from, and usually weaker than, the opposition's best argument.

Causal Fallacies

It is common for arguments to conclude that one thing causes another. But the relation between cause and effect is a complex one.

Complex Cause A single cause is identified when the effect is actually caused by a number of interacting objects or events.
Insignificance One thing is held to cause another, and it does, but it is insignificant compared to other causes of the effect.
Joint Effect One thing is held to cause another when in fact both are the effect of a single underlying cause.
Post Hoc Because one follows another, it is held to be caused by the other.
Wrong Direction The relation between cause and effect is reversed.

Statistical Confusion

A statistical generalization is a statement which is usually true, but not always true.

Accident A generalization is applied when circumstances suggest there should be an exception.
Converse Accident An exception to a generalization is applied to cases where the generalization should apply.

Inductive Fallacies

Inductive reasoning consists of inferring from the properties of a sample to the properties of a population as a whole.

Fallacy of Exclusion and Suppressed Evidence Evidence which would change the outcome of an inductive argument is excluded from consideration.
False and Imperfect Analogies The two objects or events being compared are relevantly dissimilar.
Hasty Generalization and Secundum Quid The sample is too small to support an inductive generalization about a population.
Slothful Induction and Ad Hoc Escapism The conclusion of an inductive argument is denied despite strong evidence.
Unrepresentative Sample The sample is unrepresentative of the sample as a whole.

Fallacies of Explanation

An explanation is a form of reasoning which attempts to answer the question "why?" For example, it is with an explanation that we answer questions such as, "Why is the sky blue?"

Limited Depth Theories explain phenomena by appealing to some underlying cause or phenomena. Theories which do not appeal to an underlying cause, and instead simply appeal to membership in a category, commit the fallacy of limited depth.
Limited Scope The theory doesn't explain anything other than the phenomenon it explains.
Non-Support The explained phenomenon does not in fact occur, or there is no evidence that it does occur.
Untestability The theory which explains cannot be tested.

Changing the Subject

The fallacies in this section change the subject by discussing the person making the argument instead of discussing reasons to believe or disbelieve the conclusion.

Ad Hominem The person presenting an argument is attacked instead of the argument itself.
Anonymous Authorities The authority in question is not named.
Appeal to Authority 1) The authority is not an expert in the field; 2) experts in the field disagree; 3) the authority wasn't speaking in earnest; 4) or, the authority is misrepresented.
Style Over Substance The manner in which an argument (or arguer) is presented is felt to affect the truth of the conclusion.

Truths and Propositions

Propositions and their truth values are two elemental ingredients of logical reasoning.

Propositions A logical operator joins two propositions to form a new, complex, proposition.
Truths A proposition is true if and only if what it says about the world is in fact the way it is.

Appeals to Motive

The fallacies in this section have in common the practise of appealing to emotions or other psychological factors. In this way, they do not provide reasons for belief.

Appeal to Consequence Intimidation of the listener with a threat of undesirable consequences.
Appeal to Force Coercing agreement by forceful or threatening means.
Appeal to Pity Seeking agreement by means of sympathy.
Argumentum Ad Populum A proposition argued to be true because it is widely held to be so.
Prejudicial Language Value or moral goodness is attached to believing the author.

When someone said, "Convince me that logic is necessary," Epictetus asked: "Do you wish me to demonstrate this to you?" "Yes." "Then must I use a demonstrative form of argument?" And when this was admitted: "Then how will you know whether I argue fallaciously?" And as the man was silent: "Don't you see," said Epictetus, "how even you yourself acknowledge that logic is necessary, since without its assistance you cannot as much as know whether it is necessary or not.