

### Theses

Your thesis is basically your primary conclusion (what you are trying to prove with your paper, whether it's proving a point or proving another point wrong). Thus, everything in your paper should be directed towards proving it right. If you can't identify how a part of your paper supports your conclusion, then you probably don't need that part.

### Premise Indicators

In an argumentative paper, you're always drawing conclusions. Besides the inevitable final conclusion (the re-stating of your points and your thesis), you are proving many minor points throughout the paper. In doing this, you will be using premises, which support and explain the conclusion(s). To make your arguments as clear as possible, it is wise to use "premise indicators" so that readers can differentiate premises from conclusions. Some premise indicators are: *because, since, for, for example, in that, given that, as indicated by, due to, we know this by*, etc.

### Conclusion Indicators

Similarly, when you come to your conclusions, it is wise to use "conclusion indicators" so that readers can differentiate them from premises. Some conclusion indicators are: *thus, therefore, hence, consequently, as a result, so, accordingly, clearly, must be that, shows that, conclude that, follows that, for this reason*, etc.

### Counter-premise Indicators

You may also want to bring up a piece of information that discredits your conclusion for the purpose of disproving that piece of information so as to make your conclusion that much more defensible (a great idea, I might add). These pieces of information are called counter-premises. Again, it is wise to use "counter-premise indicators" so as to differentiate your counter-premises from your premises and your conclusions. Some examples of counter-premise indicators are: *but, yet, however, on the other hand, admittedly, in contrast, although, even though, still, whereas, in spite of, despite*, etc. Using these indicators will help you to articulate your arguments very clearly. Keep in mind that it is good to use a variety of indicators (for your reader's sake).<sup>i</sup>

### Deductive and Inductive Reasoning

People often either get these terms mixed up or mistake them for being synonyms. In reality, they are very different. Deductive reasoning is proving a conclusion in such a way that, if the premises are true, the conclusion must also necessarily be true. In other words, it is reasoning based on *certainty*. Inductive reasoning, on the other hand, is proving a conclusion in such a way that, if the premises are true, the conclusion is probably true. Thus, it is reasoning based on *probability*. Therefore, use the language in your paper accordingly. If you are proving an argument in such a way that your conclusion must be true, then feel free to use the appropriate indicators. Indicators of deductive reasoning include: *deduce, infer, must be true*, etc. Conversely, if you are proving an argument based on probability, be careful about using the above indicators (a common mistake). Nevertheless, it is a good idea to use inductive reasoning indicators to make your method of argumentation as clear as possible. Some of these include: *probably, likely, most likely, probabilistically, more often than not, chances are, unlikely, not likely*, etc.

Example of a deductive argument: All humans have skin (first premise). Bob is a human (second premise). Therefore, Bob has skin (conclusion).

Example of an inductive argument: Most people who have red cars like to drive fast (first premise). Bob has a red car (second premise). Thus, it is likely that Bob likes to drive fast (conclusion).

## Using the Language of Logic Correctly: Validity and Soundness

### **Validity**

Validity is a term often used very loosely in writing and speaking. In the strictly logical sense, however, it is a term that only applies to deductive reasoning. Basically, a deductive argument is valid if the truth transfers from the premises in such a way that, if the premises are true, the conclusion must be true. Conversely, a deductive argument is invalid if the truth does not transfer correctly from the premises to the conclusion (if the premises are true but the conclusion can still be false). There are no degrees of validity (more valid, less valid, etc.); a deductive argument is either valid or invalid. Validity does not apply to inductive arguments; inductive arguments are either good or bad. However, degrees of goodness and badness do apply to inductivity (better, worse, etc.).

Example of Valid Reasoning: All spiders have two legs (first premise). Dave is a spider (second premise). Therefore, Dave has two legs (conclusion). *Note that, since validity has to do with form, even if one or all of the premises are false, the argument can still be valid.*

Example of Invalid Reasoning: All spiders have eight legs (first premise). Dave has eight legs (second premise). Therefore, Dave is a spider (conclusion).

### **Soundness**

Likewise, soundness is another term used too loosely that, in the purely logical sense, also only applies to deductive arguments. A deductive argument is sound if it has a valid form and if the premises are also true.

Example of Sound Reasoning: All spiders have eight legs (first premise). Dave is a spider (second premise). Therefore, Dave has eight legs (conclusion).

## Logical Fallacies

Fallacies are arguments that appear to be successful and correct but actually have a defect in their truth conduciveness. Getting to know logical fallacies is great for two reasons: 1.) you can spot them in your own work and eliminate them, making your work better and 2.) you can spot them in the work of others, making it easier for you to dismantle their arguments (or, help them build better ones if you're into being nice). Here are some basic logical fallacies:

*Argument from Ignorance (Ad Ignorantium):* establishing the truth or falsity of an argument because others have not proved it wrong or right, respectively. Example: "God does not exist because no one has proven that He does."

*Appeal to Authority (Ad Veracundiam):* advocating for a certain position because a popular person is of that position (but the popular person has no expertise regarding that position). Example: "You should buy a Porsche because that's what Donald Trump drives."

*Argument Ad Hominem:* directing the attack of an argument not at the argument's conclusion but at the person who asserts or defends it (either "abusive," in which the person is attacked, or "circumstantial," in which the circumstances the argument arose from are attacked). Example of

**Abusive:** “Of course you think that. You’re a bad person.” Example of Circumstantial: “Of course you think that. You had a bad childhood.”

**Appeal to Emotion (Ad Populum):** replacing the task of presenting evidence and rational argument with expressive language and other devices designed to excite enthusiasm or anger. Example: “I just think you should go because it’s really fun and you’ll just have an awesome time.”

**Appeal to Pity:** appealing to the mercy of an audience. Example: “People over there are really starving, so we need to go over there and help them right now.”

**Appeal to Force (Ad Baculum):** appealing to force in order to cause the acceptance of a conclusion. Example: “If you don’t pay me, I’ll hit you.”

**Irrelevant Conclusion (Ignoratio Elenchi):** when an argument purported to establish a particular conclusion is instead directed at proving a different conclusion. Example: “I shouldn’t have to pay my speeding ticket because there are a lot worse people out there than me that the cops should be paying attention to.”

**Complex Question:** asking a question in such a way as to presuppose the truth of some conclusion buried in the question. Example: “Have you stopped taking drugs yet?”

**False Cause (post hoc ergo propter hoc):** “x happened before y, so y must have happened because of x.” Example: “I got sick after I ate that slice of pizza, so that slice of pizza must have made me sick.”

**Begging the Question (Petito Principii):** assuming a conclusion’s truth in the effort to prove it. Example: “Everyone should wear Nike shoes because that’s what everybody is doing.”

**Accident:** when we presume the applicability of a generalization to individual cases that it does not properly govern. Example: “All businessmen are rich; therefore Bob the businessman is rich.”

**Converse Accident:** assuming that what is true of a particular case is true of the great run of cases. Example: “I have black hair. Matt has black hair. Therefore, all people have black hair.”

**Equivocation:** any time a term can be used in more than one sense and is used in one sense in the premises and another in the conclusion. Example: “All (river) banks are wet. So, don’t deposit your money in a (financial) bank, because it will get all wet.”

**Amphiboly:** when the meaning of a sentence is unclear because of a loose or awkward combination of words. Example: “I once shot an elephant in my pajamas.”

**Accent:** when a premise relies for its apparent meaning on one possible emphasis, but a conclusion is drawn from it that relies on the meaning of the same words accented differently. Example: “We should not speak ill of our friends.”

**Composition:** reasoning from the attributes of the parts of a whole to the attributes of the whole itself. Example: “The parts of a bulldozer aren’t heavy, so a bulldozer can’t be heavy.”

**Division:** arguing that what is true of a whole must also be true of its parts. Example: “Chocolate chip cookies are sweet, so all of their individual ingredients must be sweet, too.”<sup>ii</sup>

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<sup>i</sup> All lists of premise, conclusion, and counter-premise indicators came from the following source: Killoran, David M. LSAT Logical Reasoning Bible. Hilton Head Island, SC: PowerScore Incorporated, 2006.

<sup>ii</sup> Definitions of deductive reasoning, inductive reasoning, validity, soundness, and the fallacies came from notes from the following course: “Introduction to Logic: PHI225M.” Instr. Randy Barnhardt. Spring Semester 2005. Bethel University.