Writing Exercise: Logical Arguments and Fallacies

Today I want you to focus on understanding and forming logical arguments, as well as identifying and avoiding logical fallacies.

This exercise is designed to get you thinking about how to go about incorporating logical argumentation into your essay and why.

Logical Argumentation

A persuasive paper generally requires logical argumentation, supported by evidence, based on research, to convince the reader your claim is correct.

- Logic is the use of **valid reasoning**—In other words, if an argument is logical, its conclusion makes sense as the correct outcome of the premises
    - This is called **deductive reasoning**—an argument in which true premises guarantee a true conclusion, i.e., the conclusion follows *necessarily* from the premises, usual from general premises to specific premises
        - Deductive reasoning is usually presented as the opposite of **inductive reasoning**, which generally draws broad general conclusions from specific observations (i.e., conclusions are **inferred** from the data)
        - While many interpretive arguments use inductive reasoning, they have a greater chance of coming to false conclusions
    - A **conclusion** in logic is essentially the claim being made, which is the logical result of the **premises**, i.e., the propositions upon which an argument are formed
    - A **valid** argument is one in which the structure of the argument means that, *if* the premises are true, the conclusion *must* also be true—in other words, the logic of the argument works
        - Note the "if," however—Being logically valid does not necessarily mean the premises themselves are true
    - A **sound** argument is one that is logically valid *and* the premises are factually true—in other words, the logic of the argument works and its statements are true
- The simplest and most common structure of argument is the **syllogism**
    - A syllogism is a proposition/conclusion deductively inferred from two or more premises
        - The argument roughly takes the following form: A is B, C is A, therefore C is B
    - The classic example of a syllogistic argument is the following:

      All men are mortal.
      Socrates is a man.
      Therefore, Socrates is mortal.
    - HOWEVER, it's important to remember that an argument can be logical (i.e., valid) without necessarily being true (i.e., sound). Consider, for example, the following:

      All men are brilliant.
      I am a man.
      Therefore, I am brilliant.
    - This syllogism is valid, because its conclusion must be inferred from the premises, but is not true because one of its premises is not true

Logical Fallacies

Logical fallacies are mistakes in reasoning, rendering the argument invalid or false. They may be intentional or unintentional, but in either case, they undermine the strength of an argument. Some common fallacies are defined below:

- **Syllogistic Fallacy**: Incorrect reasoning within syllogistic logic: For example, from the premises some A are B, some B are C, people tend to come to a definitive conclusion that therefore some A are C.

  Some cats (A) are mean (B),
  Some mean things (B) are carnivores (C),
  Therefore, cats (A) are carnivores (C)

  - While the conclusion may be true, the argument isn't valid—consider another example:

    Some cats (A) are black things (B),
    Some black things (B) are televisions (C),
    Therefore, some cats (A) are televisions (C)
- **Hasty Generalization**: A generalization based on too little evidence, or on evidence that is biased. Example: "All men like beer and girls in bikinis."
- **Either/Or Fallacy**: Only two possibilities are presented when in fact several exist. Example: "If you don't support the President, you hate America."
- **Non Sequitur**: The conclusion does not follow logically from the premise. Example: "The candidate seems like a nice guy; he'd make a good leader."
- **Ad Hominem**: Arguing against the person instead of against the issue. Example: "How can we trust her with the economic future of the country? She cheats on her wife!"
- **Red Herring**: Distracting the audience by drawing attention to an irrelevant issue. Can also use redirection or "whattaboutism". Example: "You're accusing the President of sexual misconduct? What about what the last guy did? He used his private company to make millions of dollars from foreign dignitaries!"
- **Circular Reasoning/Begging the Question**: An argument that begs the question asks the reader to simply accept the conclusion without providing real evidence—the argument either relies on a premise that says the same thing as the conclusion ("circular reasoning"), or simply ignores an important (but questionable) assumption that the argument rests on (begging the question"). Example: "She is ignorant because she was never educated properly." OR "Useless courses like English 1120 should be dropped from the curriculum, because spending money on a useless course is a huge waste."
- **False Analogy**: Wrongly assuming that because two things are alike in some ways, they must be alike in all ways. Example: "All mass shooters played violent video games, therefore people who play violent video games may become mass shooters."
- **Post Hoc, Ergo Propter Hoc** (Latin for "after this, therefore because of this"): The mistake of assuming that, because event A is followed by event B, event A caused event B. Example: "We haven't had a problem with rodents in the office until after you started working here."
- **Equivocation**: Equates two meanings of the same word falsely. Example: Hot dogs are better than nothing. Nothing is better than steak. Therefore, hot dogs are better than steak.

- **Appeal to (Irrelevant) Authority**: Basing an argument primarily on the authority of an expert (or assumed expert) based solely on their likely knowledge, without providing evidence. Example: "As a make-up artist for Beyoncé, I know how tough make-up removers can be on delicate skin, which is why I use Vitaderm Cleansing Pads."
- **Argumentum ad Populum, the Appeal to Popularity/Consensus**: Also known as the "bandwagon" fallacy. Assuming something is true because a lot of people believe it, agree with it or do it. Example: "Hundreds of people switch to Gingko Insurance every week. Shouldn't you?"
- **Straw Man**: Oversimplifying or distorting an opposing point of view to make it easily dismissed. Example: "Mr. Darwin says that our species is descended from monkeys, but I don't think my grandparents look much like baboons."
- **Slippery Slope**: The false assumption that a single step in one direction inevitably leads to horrible implications as a result. Example: "If we legalize gay marriage, eventually we'll have to legalize bestiality and pedophilia."
- **Appeal to Ignorance/Appeal to a Lack of Evidence**: Appealing to a lack of information to prove a point, or arguing that, since the opposition cannot disprove a claim, the opposite stance must be true. Example: "People have been trying for centuries to prove that God exists. But no one has yet been able to prove it. Therefore, God does not exist." OR "People have been trying for years to prove that God does not exist. But no one has yet been able to prove it. Therefore, God exists."
- **Tu Quoque** (Latin for "you too")/**Appeal to Hypocrisy**: An "appeal to hypocrisy" asserts that an argument must be false because the person presenting the advice doesn't consistently follow it themselves. Example: "She wants us to move away from fossil fuels, but she took a gas-guzzling minivan to the press conference, so why should we listen to her about global warming?"
- **Genetic Fallacy**: The genetic fallacy is the claim that an idea, product, or person must be untrustworthy because of its origin (based on race, nation, ethnicity, gender, class, etc.). Example: "Well, he graduated from Alabama, so I'm not sure I'd trust him to run this project."
- **Argument from the Negative**: Arguing from the negative asserts that, since one position is unsound, the opposite stance must be true (similar to Appeal to Ignorance). Example: "It is clear that since increased gun control doesn't completely prevent criminals from getting hold of guns, we should loosen current gun restrictions."
- **Complex Question** (also called the "Loaded Question"): Phrasing a question or statement in such a way as to imply another unproven statement is true without evidence or discussion (often overlaps with Begging the Question). Example: "Why are the poor so lazy?"
- **Contradictory Premises** (also known as **a logical paradox**): Establishing a premise in such a way that it contradicts another, earlier premise. Example: "The United States doesn't torture, so if the United States is doing it, it can't be torture."

Practice Using Logic

While there are many ways to construct a logical argument, thinking of your argument as a form of syllogism is a good way to think about how to do so. You can work at the macro-level of the whole essay, or the micro-level of a paragraph.

1. Write out your **thesis/topic sentence/sub-claim**—the position you are taking in this essay/paragraph
    a. *Example: Gun control laws reduce gun deaths*
2. In a bulleted list, write out all of the "facts" (information, data, evidence, etc.) you have researched that led you to this claim
    a. Not all of the facts have to directly support your claim at this time
    b. Consider what evidence you were presented with that made you accept/adopt this idea
    c. Consider what evidence you were presented with that made you qualify/refine this idea
3. Select the most pertinent facts from this list that led you to your claim
4. Write out these facts as separate premises (as in a syllogistic argument)
    a. It may help to label each fact with a letter (A, B, C, etc.)
    b. *Example: New York (A) has some of the most restrictive gun control laws (B)*
5. Put these premises together into a syllogistic argument
    a. You may need to re-label them and try different orders
    b. You can have more than two premises! Arguments are complicated
    c. Consider what it means if a premise doesn't fit and how you can fix it
    d. Example: New York (A) has some of the most restrictive gun control laws (B)| States with the most restrictive gun control laws (B) have fewer gun deaths (C)
6. If your syllogism is valid, the conclusion should be clear. Compare the implied conclusion with your claim from step one
    a. Are the two statements saying the same thing?
        i. *Example: "Gun control laws reduce gun deaths" VS. "New York has few gun deaths"*
    b. If they are not, consider what the difference is
    c. Consider whether you need to adjust your claim or whether you need to find additional premises to the argument to get that claim
    d. If the statements are saying the same thing, what's next?
7. Once you have a completed syllogism, share your premises (without the conclusion) with a partner
    a. If it is valid, they should come to the correct conclusion
    b. If they do not come to the conclusion you had, examine your premises and see what went wrong with your logic
8. When your argument is both **valid** and **sound**, compose a paragraph (or outline) that puts the argument together in a way that is clear and natural, yet still presents the premises accurately.

Note: This is just an exercise to think about how to structure logical arguments. You will not necessarily use this exact formula every time, as that would probably feel too rigid or repetitive to your reader, but it is a helpful way to think about the structure of your arguments. This is meant merely as a possible and helpful model, not as a required template.