Vocabulary 11 - Logical Fallacies

Some NEW and Some REVIEW

1. Non Sequitur

Non sequitur translates as "it does not follow," meaning that the conclusion does not follow the premises (usually because of a faulty Implicit Reason/Assumption/Warrant). In other words the *non sequitur* means there is *a logical gap* between the premises or evidence and the conclusion. The *non sequitur* is a broad, categorical term, and so there are many different types of *non sequitur* fallacies, including *post hoc, hasty generalization, slippery slope, affirming the consequent* and simply *faulty assumption* or *warrant.*

Fallacy Ex: *"If you loved me you'd buy me this car."*
Fallacy Ex: *"If you loved me, you'd do anything to be with me."*
Fallacy Ex: *"I can't believe you don't like Speed; you loved Matrix and Keanu Reaves is in Speed."*

Fallacy: *it does not follow* that all *Matrix* lovers love *Speed*; the error is that one may love *Matrix in spite of the fact* that Keanu was in it (this is an *Affirming The Consequent* fallacy).

A *slippery slope* argument, for example, is *non sequitur* because *it does not follow* that legalizing one thing (gay marriage, medicinal marijuana) would *inevitably, necessarily or likely lead to* legalizing other things (polygamy, or heroine use).

2. Post Hoc, Faulty Causality, or Correlation vs. Causation

Post hoc is the shortened version of "post hoc ergo propter hoc", which translates as "after this, therefore because of this". In other words, the fallacy confuses correlation for causation, or mistakenly claiming that one thing caused another to happen since they happen in sequence. Correlation simply refers to two things happening at the same time, or one thing commonly happening before another thing happens; in other words, the frequency with which one thing occurs corresponds with the frequency with which another occurs. Causation of course means that the one thing occurring *causes* the other to occur. *Post hoc refers to mistaking* correlation for causation. **The flaw in the argument is that often a third cause exists, which is causing both to occur frequently, or perhaps the flaw is simply that both things commonly occur *regardless of each other.***

There are a couple key points to understand about this fallacy: **First**, the fallacy only occurs when *both things (reasons, premises) have actually occurred*; therefore, the fallacy doesn't apply to the future or to debates over whether or not one thing actually occurred. For example, in order to claim that the green-house gasses-global-warming argument is *post* hoc, you must first agree that a) there is a spike in greenhouse gasses, and b) global warming is actually occurring. **Second**, most often the fallacy occurs because of a third element that is responsible for causing both of the other elements. So, look for a "third cause". **Third**, reasonable skepticism reveals this to be an incredibly common fallacy in both everyday

arguments and in very formal, influential, widely believed, often "scientific arguments". For instance, most people recover from their colds a couple days after they take cold medication. But, of course, most people recover from their colds if they take no cold medication whatsoever. Many people get rich when they pray for wealth, but many people who never pray also get rich, and many people who pray to get rich stay poor; also, what about people who pray to other gods and get rich?

The danger rests in the degree of skepticism; extreme skepticism will reveal *all arguments post hoc*, and, in fact, this is the standard argument of most defense lawyers and traditionally all industries when it comes to questions such as cigarettes and lung cancer, safety glass in automobiles, seat belts in automobiles, airbags in automobiles, causes of air pollution, effects of pollution on health and so on; normally scientists prove *within a reasonable doubt* causation decades before the public and those responsible for the cause stop crying *post hoc*. Current, continuing debates over *post hoc* include pretty much every scientific argument that intersects with either faith (evolution, AIDS), industry (global warming) or economic interests.

Fallacy Ex: *Drinkers are more likely than non-drinkers to get lung cancer, suggesting drinking causes lung cancer.* (It turns out there is a strong correlation between consuming alcohol and developing lung cancer. The *post hoc* fallacy would be asserting that alcohol consumption *causes* lung cancer; the actual reason is that people who drink more also tend to smoke, or smoke more, than non drinkers.)
Fallacy Ex: Many claim that marijuana is a "gateway drug" because those who have smoked marijuana are more likely than those who haven't to go on to try other drugs. The *post hoc* fallacy would be asserting that marijuana use *leads to* increased use of other drugs; the more logical explanation is that those who are willing to try one drug are obviously also willing to try other drugs: the cause – willingness to try or use drugs – must necessarily exist *before* one tries pot; otherwise, you wouldn't try it in the first place.

3. Affirming the Consequent

This is a fairly difficult fallacy to understand or spot. It is categorical in nature and, essentially, means reversing an argument, or putting the cart before the horse, meaning reversing or confusing the general category with the specific/sub-category. Note that in this fallacy *the premises/reasons are actually correct or valid*; the error is found *between* the premises and conclusion. Usually, the error occurs because we incorrectly assume that the Premise was a sufficient condition, when in fact it was only a necessary condition (one of *many* conditions) necessary to prove the conclusion.

Fallacy Ex:
Premise: Ducks are birds.
Premise: Ducks swim in the water.
Premise: Chickens are birds.
False Conclusion: ***Chickens swim in the water***.
(Affirming The Consequent Fallacy: not *all* birds swim in water; swimming is neither a necessary or sufficient condition to be the thing "bird")

Fallacy Ex:

Premise: You loved *The Matrix.*
Premise: Keanu Reaves is in *The Matrix*
Premise: Keanu Reaves is in *Speed.*
Conclusion: ***You must love Speed.***
(Affirming The Consequent Fallacy: you may have like *The Matrix* even if you don't like Keanu Reaves, or in spite of the fact that he was in it, or maybe you liked him in it but hate him in everything else etc.)

Fallacy Ex:
Premise: Bob wants nationalized health care.
Premise: The Nazis had nationalized health care.
Conclusion: ***Nationalized health care will make us all Nazis!***
(Affirming The Consequent Fallacy: "nationalized health care" is not a sufficient reason to define the category of Nazism, any more than does "swims in water" defines the category "birds".

4. Hasty Generalization or Misunderstanding Statistics

This normally involves mistaking a small incidence for a larger trend. Racism is the most obvious example, especially when exposure to other races or groups is filtered thru the media, and so you have only seen a very small percentage of the actual group and what you've seen has been carefully chosen rather than due to random chance.

Fallacy Ex: Fishing also frequently tricks us into this fallacy; you get a hit on your first cast and assume you've found the perfect spot and the ideal lure, only to sit there getting skunked for the next hour.
Fallacy Ex: Most complain about how badly women drive, and if one examines the driving habits of women one finds that indeed they do get in many accidents. However, they get in *fewer* accidents than men.
Fallacy Ex: Assuming you are likely to be shot if you visit NYC, when, in fact, fewer people are murdered, per capita, in NYC than in most rural American small towns.

5. Fallacy Unrepresentative Sample or Fallacy of Exclusion

This is related to the Hasty Generalization, and refers to focusing attention on one group's behavior and assuming that behavior is unique to that group; yet, in fact, the behavior is common to many groups. It can also refer to important evidence which would undermine an inductive argument that is excluded from consideration. In an induction, the total relevant information needs to be examined. The fallacy occurs when relevant evidence which would undermine an inductive argument is excluded from consideration.

Fallacy Examples: *(i) To see how Canadians will vote in the next election we polled a hundred people in Calgary. This shows conclusively that the Reform Party will sweep the polls. (People in Calgary tend to be more conservative, and hence more likely to vote Reform, than people in the rest of the country.) (ii) The apples on the top of the box look good. The entire box of apples must be good. (Of course, the rotten apples are hidden beneath the surface.)* Identifying Proof: Show how the sample is relevantly different

from the population as a whole, then show that because the sample is different, the conclusion is probably different.

Fallacy Examples: *(i) Jones is Albertan, and most Albertans vote Tory, so Jones will probably vote Tory. (The information left out is that Jones lives in Edmonton, and that most people in Edmonton vote Liberal). (ii) The Leafs will probably win this game because they've won nine out of their last ten. (Eight of the Leafs' wins came over last place teams, and today they are playing the first place team.)* Identifying Proof: Give the missing evidence and show that it changes the outcome of the inductive argument. Note that it is not sufficient simply to show that not all of the evidence was included; it must be shown that the missing evidence will change the conclusion.

6. Slippery Slope

Arguing from the perspective that one change inevitably will lead to another.

Fallacy Ex: *"Why stop at $7.25 an hour? Why not raise the minimum wage to $15 or $20 an hour? For that matter, why not mandate the price of housing? ... If we believe Congress has the power to raise minimum wages, where do we go next?"* -- Bill Sali, *Argonaut*, 2/13/07

Fallacy Ex: *"The inevitable result of handgun control is the government seizure of all guns."*

Fallacy Ex: *If you get an F in a class it will probably lead to your being homeless.*

7. Faulty Analogy

Our language functions through comparisons, and it is common and useful to argue the validity of one point by comparing it to another, but often the comparison suggests that two things are more alike than they really are. It arises when one attempts to prove or disprove a claim using an analogy that is not suitable for the situation. That is, one makes wrong assumptions about a situation based on observations from another situation.

Fallacy Ex: *"Telephones and bananas are shaped similarly, both fitting well to our hands. Therefore, just like the telephones have a designer, bananas must have a designer too."*

Fallacy Ex: *"Cars cause many more deaths than firearms do, so if we are going to ban firearms, we should also ban cars."*

Fallacy Ex: *"Many addictions, such as drug addiction or alcoholism, causes many people to destroy their health and eventually ruin their life. Thus, getting addicted to your phone will ruin your life."*

8. Moral Equivalency

The implication that two moral issues carry the same weight or are essentially similar. The actions of A are **morally equivalent** to the actions of B, therefore A is just as good or bad as B, regardless of what the actual actions are.

Fallacy Ex: Equating the treatment of animals with the treatment of human beings.

Fallacy Ex: Equating acts of war with murder.

Fallacy Ex: Equating gay marriage with legalizing pedophilia.

Fallacy Ex: Equating being a wage slave with actual slavery.

Fallacy Ex: Equating all acts of war with terrorism.

9. Argument From Ignorance or Non-Testable Hypothesis

This is the fallacy that that which has not been proven false must or is likely to be true; however, the fallacy usually applies to concepts that haven't yet been adequately tested or are *beyond the realm of proof.* Our legal system protects us from this fallacy under the presumption of innocence guideline – "innocent until proven guilty".

Fallacy Ex: *You can't prove that there aren't Martians living in caves under the surface of Mars, so it is reasonable for me to believe there are.*
Fallacy Ex: *There is no evidence for the Loch Ness monster; therefore, the Loch Ness monster does not exist.*
Fallacy Ex: *No one on the council objected to the idea that he proposed, so everyone must think it's a great idea.*

10. Glittering Generality

This is the use of words so broadly defined – such as "love" or "freedom" or "rights" or "patriotism" etc. etc. – as to become essentially meaningless. It's the "one kind or another" nature of these words that makes them essentially pointless: they mean something different to everyone, and so their use in an argument frequently means nothing. "Love", for example, refers to both sexual passion and the nature of God or divine virtue. Technically, their use is probably not a fallacy, but their use tends to move an argument *no where* while inciting deep emotional responses. Thus, they are rhetorically useful and logically distracting. A general glittering generality is "terrorism" or "terrorist" as it first clearly refers to something most people abhor and second is used so broadly it actually applies to any act of war. This renders those involved in the "war on terror" (itself a misnomer) as themselves "terrorists". In the case of this word, however, the fallacy is likely equivocation; the word has been rendered semantically useless by having been so often *misused.* These words are emotionally appealing, and mostly have a positive connotation on people. Glittering generalities are words that literally sparkle (on the surface), 'cause they are successful in convincing the people, but have little or no real meaning when pondered on. **Examples of glittering generalities** include "vote for change," "pro choice," or "pro life."

11. Equivocation or Semantics (also, Splitting Hairs)

Using the inherent ambiguity of language to distract from the actual ideas or issues, or deliberately rephrasing the opposing argument incorrectly, and then addressing that rephrasing.
Fallacy Ex: *"No man of woman born" can kill Macbeth* (Macduff, who does kill Macbeth, was caesarian)
Fallacy Ex: Bill Clinton attempted to use this fallacy (with disastrous results!) when he denied having "sex" with Monica Lewinski. His defense was based on the "fact" that both the law and Webster's dictionary have a very limited definition of "sex".
Fallacy Ex: *The priest told me I should have faith. I have faith that my son will do well in school this year. Therefore, the priest should be happy with me.* **Explanation**: The term "faith" used by the priest, was in the religious sense of believing in God without sufficient evidence, which is different from having

"faith" in your son in which years of good past performance leads to the "faith" you might have in your son.

12. Occam's Razor Fallacy

Occam's Razor is the scientific principle that the simplest of any given hypotheses is likely to be the right one. Also called the "law of parsimony", **Occam's razor** is a mental model which states that "it is futile to do with more what can be done with fewer"—in other words, the simplest explanation is most likely the right one.

Fallacy Ex: *You don't keep up on your homework and start a paper the night before it's due. When it's returned to you it has a C- grade. You conclude the grade reflects the teacher's ignorance or personal dislike for you.* **Occam's Razor**: The paper was poorly written.

Fallacy Ex: *You drink five beers and climb behind the wheel of your father's Ford Explorer. When you slide off the road and roll it you blame him for not telling you the tires where worn and letting you drive a tippy SUV, because everyone knows you can hold your beer.* **Occam's Razor:** You were drunk, idiot.

13. Bandwagon Appeal

The **bandwagon fallacy** is also sometimes called the appeal to common belief or appeal to the masses because it's all about getting people to do or think something because "everyone else is doing it" or "everything else thinks this." The basic fallacy of democracy: that popular ideas are necessarily right. Of course in democracies like America popularity *does* play a certain degree in determining "right", so it's worth keeping in mind that America and most Western democracies are *constitutional democracies*, which means the political system *deliberately checks and balances mob rule* with codified principles like individual liberty and equality. Obvious examples of once popular moral and legal positions include race based slavery, legal cocaine, American women not being allowed to vote until 1920, prohibition, etc.

Fallacy Ex: *"C'mon, dude, everybody's doin' it."*

Fallacy Ex: *Everyone is voting, I guess voting is the right thing to do.*

Fallacy Ex: *Well the group was burning books so I should probably burn mine too.*

14. Begging the Question or Circular Argument

This is basically repeating the claim and never providing support for the premises, or, in other words, repeating the same argument over and over again. Often, dogmatic thinkers don't even realize this is a fallacy.

Fallacy Ex: *Fruits and vegetables are part of a healthy diet. After all, a healthy eating plan includes fruits and vegetables.*

Fallacy Ex: *"Obviously logging causes severe environmental damage. You don't have to be a scientist to see that; just go out and look at a clear cut and there it is: no trees."*

Fallacy Ex: *The reason everyone wants the new "Slap Me Silly Elmo" doll is because this is the hottest toy of the season!* **Explanation**: Everyone wanting the toy is the same thing as it being "hot," so the

reason given is no reason at all—it is simply rewording the claim and trying to pass it off as support for the claim.

15. Emotional Appeals

When it comes to determining the validity or factuality of a claim, *any* attempt to sway an argument via emotion, rather than the quality of the logic or evidence, can be considered a fallacy. This includes in *some but not all cases* the fallacy *argument from adverse consequences,* or "scare tactic"; bad things will happen to us if you do not agree with my argument. However, if one is arguing over *whether or not bad things will occur,* this is no longer a fallacy.

16. Dogmatism

The unwillingness to even consider the opponent's argument. The assumption that even when many, perhaps millions, of other people believe otherwise, only you can be correct. This is closely related to the Either/Or fallacy as it's based on the usually false assumption that competing theories or perspectives cannot co-exist within single systems. The assumption that those who disagree with you are "biased", while you are "objective". More broadly, the over application of a theory at the expense of discussing the actual issue, specific incidence or evidence at hand; the assertion that one's position is so correct that one should not even examine the evidence to the contrary. For example, the assumption that the economic theory of capitalism explains moral choices; or the assumption that socialism is morally wrong, even though you attend a public university; the assumption that welfare is wrong and all those who partake in it are lazy (even though you accept federal financial aid or would accept state aid in the case of a catastrophic accident or injury); the argument that drugs are morally wrong and drug addicts should all be locked up or even executed (although you drink alcohol and coffee and take Ritalin and your grandmother uses anti-depressants and you are grateful your alcoholic uncle was cured via AA); the assumption that all animals should be treated humanely (although you respect indigenous cultures that subsist on seal meat); and on and on and on….

17. Either/Or, Black/White, or False Dilemma

This fallacy simply paints an issue as one between two extremes with no possible room for middle ground or nuance or compromise. It is closely related to the *straw man* fallacy, which essentially paints one side, instead of both, as so extreme that no one can agree with it.

Fallacy Ex: *"You either support George Bush or you support the terrorists."*
Fallacy Ex: *"You either for me or your against me."*
Fallacy Ex: *"You don't support the Israeli occupation of Palestine? You must be an anti-Semite."*
Fallacy Ex: *"You support the existence of an Israeli state? You must support the occupation of Palestine."*

18. Straw Man

One side of the argument is presented as so extreme that no one will agree with it. Often this is done by referring to the exception, rather than the rule, and inferring that the exception is the rule.
Fallacy Examples: *"We either leave right now or we're never going to get there." "All PETA supporters support the bombing or destruction of laboratories." "If you surrender your freedoms, the terrorists have already won. You don't want that, do you?" "Hitler supported gun control, you know."*

19. Red Herring

This generally refers to changing the subject mid-debate, so that we start arguing about a tangential topic rather than the real or original issue.
Fallacy Ex: *We start debating the evidence supporting evolutionary theory, but you bring up the fact that believing this theory is depressing.*
Fallacy Ex: *We start debating the evidence supporting global warming, but you bring up the fact that believing this theory is depressing...or that Al Gore has a big house and flies on jets a lot.*

20. Argument From Authority

This is the flip side of the *ad hominem;* in this case, the argument is advanced *because of* those advancing it. But arguments from authority carry little weight: the history of human kind is consistent in one fact: the frequency of human error. Sometimes fallacious arguments from authority are obvious because they are arguments from *false* authorities. Supermodels who push cosmetics or pro athletes pushing home loans or even sports equipment are likely false authorities: first, we don't know the supermodel or athlete uses the product at all (odds are not), and second we *can assume* that the supermodel is beautiful without the product and the pro athlete was successful *without the equipment*...and that millionaire athletes probably don't need the kind of home loan you would.

To a degree, we also do well to differentiate between the different definitions of "authority". Authority can mean either power or knowledge. In the case of knowledge, we often find we must trust *people* to help us make sense of the vast and complex array of knowledge surrounding an issue – we do well, for example, in courtroom trials to consult psychologists and forensic authorities etc., or to consult with trained meteorologists, geologists, physicists, chemists etc. when debating global warming etc. – but we should view these people as *resources for understanding the logic and evidence,* rather than as those given the final say concerning the issue.

Fallacy Ex: *"The administration must know where the WMDs are or they wouldn't have sent American troops to look for them.*" (note, this is also a *non sequitur*)
Fallacy Ex: *". A little boy says that his friends should not go swimming in a river because his Mama said there were germs in the river.*
Fallacy Ex:*My sister-in-law, who is a teacher, said that this school is not somewhere that I would want to send my children.*