

## LOGIC and CRITICAL THINKING HELP FALLACIES AND SOPHISTRIES

Mastery of the critical thinking process is indispensable to one's well-being and success, not only in college but throughout life. One skill that critical thinkers find valuable is the ability to distinguish between reasoned evidence to support a point and evidence that is flawed and misleading. And so we plunge into a brief primer on informal logic, a world of fallacies and sophistries to be detected and avoided.

We'll begin with a few definitions and move on to some tricks to be wary of and some errors to avoid.

**Critical Thinking** is the process of correctly understanding and then evaluating an idea.

**Reasoning** is a logical progression through an idea.

**Logic** is a mathematical (testable) approach to reasoning.

A **fallacy** is an error in reasoning.

A **sophistry** is a planned attempt to mislead.

**Evidence** or **proof** is any support for a point (idea, opinion).

An **assertion** is an idea that is claimed to be true.

An **appeal** is a faulty type of evidence.

An **argument** is a systematic presentation of an idea.

**Validity**: a logical progression of an argument—not necessarily the truth.

**Non Sequitur--It Doesn't Follow**--A conclusion that just doesn't follow the evidence. (The "Jumping Frog" Example)

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**To present or evaluate an idea, follow these steps:**

- Define terms,
- Locate or state the main point,
- Outline or present the argument,
- Check the support.

## *Syllogisms Made Simple*

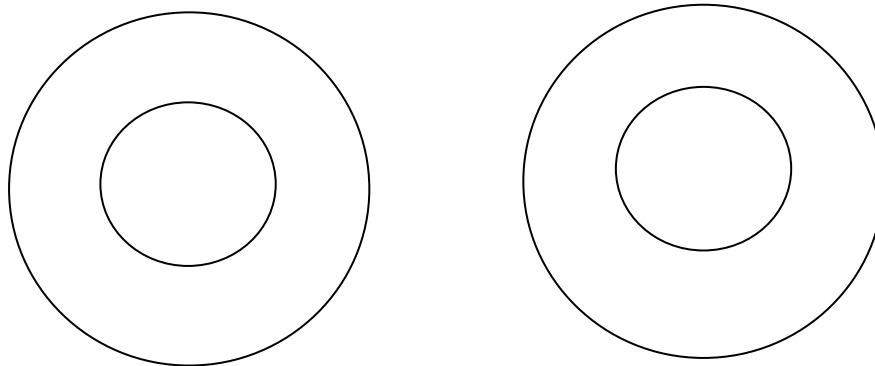
A *syllogism* is a three-step argument. Here's an example:

Major Premise:	<i>All humans will die.</i>
Minor Premise:	<i>Ralph is a human.</i>
Conclusion:	<i>Ralph will die.</i>

Sounds logical, huh? Try this one:

Major Premise:	<i>All ducks have feathers.</i>
Minor Premise:	<i>This creature has feathers.</i>
Conclusion:	<i>This creature is a duck.</i>

Humm, something is wrong with that one. We can use **Venn Diagrams** to test individual syllogisms.



A faulty conclusion such as the second one above is often referred to as a ***non sequitur***, which is Latin for “doesn’t follow.”

So we can see that a way exists to test the validity of an argument. Aristotle believed that most any idea could be broken into a series of syllogisms and then tested for validity. This is time-consuming work, however, because converting a multi-layered idea expressed in language to a series of mathematical (geometric) steps is not an easy process.

Fortunately, there are simpler ways to determine an idea’s validity—and that is to examine the quality of proof or evidence. Let’s take a quick look at some examples of faulty evidence or proof.

## FALLACIES AND SOPHISTRIES

### *Five Fallacies--The Idea Channel*

#### FALLACIES OF IRRELEVANCE

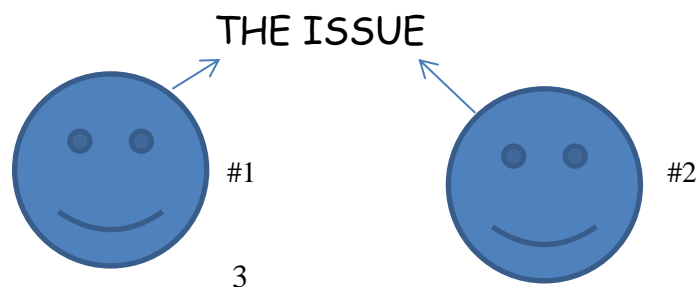
- ✓ Appeal to Ignorance
- ✓ Appeal to Authority
- ✓ Appeal to Pity
- ✓ Appeal to Force
- ✓ Appeal to Popular Attitudes (to the Masses) (“The Bandwagon”)
- ✓ Fallacy of Stress

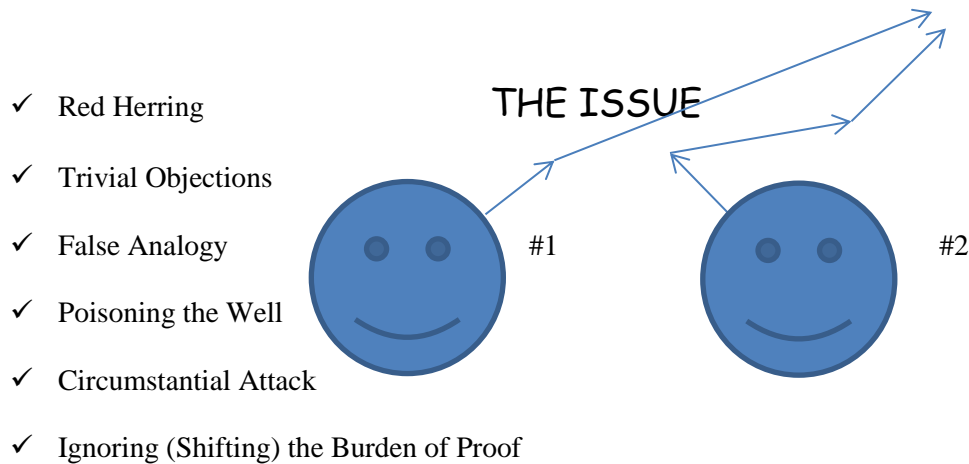
#### FALLACIES OF EVIDENCE

- ✓ Post hoc (false cause)
- ✓ Begging the Question
- ✓ Loaded Phrases and Questions
- ✓ Hasty Generalization
- ✓ Faulty Generalization
- ✓ Either/Or

#### SOPHISTRIES (Often these are efforts to divert the opponent and/or the audience’s attention from this issue. Best defense—Stick to the Issue)

- ✓ Ad Hominem
- ✓ Tu Quoque
- ✓ Straw Man





The first set is a group of **Fallacies** called **Appeals**. Remember, appeals have flaws—they do not represent trustworthy evidence.

[\(What's a Fallacy YouTube Example\)](#)

**APPEAL TO IGNORANCE:** Reasoning that since there exists no evidence that an idea or claim is false, it therefore must be true.

*Example:* The Better Business Bureau has never received a complaint about Bob's Radiator Repair Service; therefore, his business does reliable work.

**Advice:** This conclusion cannot be drawn simply because no evidence can be found to disprove it. Lack of evidence against an idea is not support for an idea.

**APPEAL TO AUTHORITY:** Reasoning that an authority or prominent personality in one field is also an expert in another field. [\(Tom Cruise YouTube Example\)](#) [\(Old Spice YouTube Example\)](#)

*Example:* Celebrity endorsements of products. These folks may be expert actors and athletes, but they are not necessarily experts at evaluating razor blades, cars, burgers, soft drinks, shoes or candidates. Advertisers hope, however, that we will transfer the star's authority or popularity to the product being sold.

**Advice:** Authorities are credible *only* in their own fields; check their credentials before accepting their claims.

**APPEAL TO PITY:** Evoking sorrow, sympathy, or pity to win a point or support an idea.

*Example:* A student says to an instructor: "Oh, please, I've just got to pass this course or my student loan will be cancelled and I'll have to return to

the orphanage and those horrible things will be done to me again!  
All I need's a 2.0 to save me from that cruel fate!"

**Advice:** Acting out of pity is not necessarily a valid reason for action.

**APPEAL TO FORCE:** Using physical intimidation and threats to win a point. Any attempt to coerce someone to comply.

*Examples:* Boss to employee: "You know I'm right, so if you keep disputing my position, I'll just have to get someone else to do your job."

Parent to child: Johnny, clean your room immediately or ELSE!

**Advice:** Though perhaps effective, force and intimidation are not reasoned support for one's position.

**APPEAL TO POPULAR ATTITUDES:** Sometimes called *Appeal to the Masses*, this is an attempt to win a point by appealing to popular attitudes and prejudices, rather than by providing adequate support. Also in this group is something called the *Bandwagon Appeal*, which asks us to accept that something is true because many or all people believe it.

*Examples:* Since 88% of the people polled believed in UFOs, they must exist.  
Since most Americans believe that the war in Iraq was a bad idea, the war in Iraq was a bad idea.  
This truck is the #1 selling truck in America, therefore, it's the best one to buy.

Common popular attitudes that are used as manipulators:

- Sex sells
- Patriotism (love of country)
- Dislike of the unusual, unfamiliar
- Offering easy answers and clearly drawn sides to complex issues (Pro Wrestling).

**Advice:** Cultures (and their values), religions, governments, and peer groups, and majorities can be incredibly strong forces shaping our behaviors and choices. Certainly, too, their message is that theirs is the RIGHT way,

not simply one of many options. No matter what their claim to authority, these entities can mislead and be misled.

**FALLACY OF STRESS:** Often referred to as *quoting out of context*, this is stressing a word or phrase to unfairly alter its meaning.

*Example:* Consider the imperative "EAT YOUR SOUP." Sound innocent enough, but say this sentence three times, each time stressing a different word. Note that each change projects a very different meaning. Try it: "EAT your soup," "eat YOUR soup," "eat your SOUP." See the difference?

*Example:* How about this statement arguing against equal rights for all citizens: "The Declaration of Independence states that 'all MEN are created equal.' If our Founding Fathers had meant for this to include women, this document would have mentioned women as well."

Say it aloud and stress the word "men." Do you feel the change in meaning?

When candidates claim that they were "quoted out of context," this is what they mean--that, when quoted by another, their words were given a stress that was unintended or absent in the original. Quoting out of context can also mean leaving out words from the original to change its meaning.

*Example:* Original comment from a famous historian named Dr. Jones: I encourage you to vote for candidate Griswald if you want to send the worst possible candidate to Washington, D.C.!

Candidate Griswald's use of this: Concerning my campaign, even Dr. Jones, a noted historian, said, "I encourage you to vote for Griswald . . . ."

**Advice:** Use a quotation only in context even though it may be very tempting to stress only the part you want.

**POST HOC (ERGO PROPTER HOC):** Translation: *After the fact, therefore because of the fact.* Assuming or claiming that Event A caused Event B simply because Event A happened just before Event B. ([Ernie and Bert YouTube Example](#)) ([What's a Fallacy YouTube Example](#)) ([Second Direct TV YouTube Example](#))

*Example:* The farmer and his wife on the train (told in class).

Or how about this excerpt from an opinion essay concerning the rise in juvenile crime rates:

Juvenile crime rose right after women began leaving the home and entering the workforce; therefore, it's obvious that mothers going to work were responsible for this increase.

Maybe, maybe not, but a **time** relationship between events (one happening just before the other) **is not enough proof** of a cause-effect relationship. There are such things as coincidences.

**NEW!** How about this one:

The number of teenage pregnancies in America began to rise shortly after the terrorist attacks of 9/11. Isn't it therefore obvious that acts of terrorism makes teenagers horny?

**YIKES!**

**Advice:** Be cautious when assigning causes to events. Assume a coincidence unless the cause-effect relationship can be logically established.

### **BEGGING THE QUESTION:** (*Circular Reasoning*)

The person advancing the argument asks you to grant as true an assumption that has not been proven (supported by evidence). ([Elaine Phone Number YouTube Example](#))

- In other words, the one advancing the argument "begs" that you accept the premise without offering proof.
- Or the arguer assumes to be true what he or she is trying to prove.
- Or a leap from an assumption to a fact without adequate proof.
- Also, using a source to support itself. (Defining a term by using the term itself.)

*Example:* See if you can spot the problem in the following: *People who want to spend millions on improving the slums believe that if we clean up the slums, slum dwellers will suddenly become responsible, productive citizens. This is obviously false: if slum dwellers were responsible and productive, they wouldn't be living in slums in the first place.*

*It is difficult to spot the error in the above statement, but we can probably sense that something just doesn't feel right. Here's why: In simplified words, it's arguing that slums are caused by shiftless people because shiftless people cause slums. But outside support for this assumption is not provided, so the argument goes around in circles. It "begs" us to grant that slum dwellers are irresponsible and unproductive without supporting this fundamental premise.*

*Example:* *Evolution has gone wrong: we humans are struggling to adapt to modern*

*diseases. Just look at the Ebola outbreak last year. It is obvious from how easy it was to catch and all of those who died that we have outpaced evolution's ability to provide us defenses. At fault is our ability to travel anywhere in the world quickly. We walk into places where diseases lurk--diseases evolution hasn't had time to provide us with antibodies.*

*Example: Candidate Smith was once affiliated with an organization that occasionally posted racist comments on its Website. I don't think it's very wise to support a racist for office.*

See the fallacy? The first sentence offers no defensible evidence to support the premise that Candidate Smith is a racist (being "affiliated" is not necessarily the same as supporting). However, the second sentence jumps to the conclusion that he or she is. In other words, we are being "begged" to accept as true a premise for which no legitimate support has been provided.

**Advice:** *Begging the Question* or *Circular Reasoning* is probably the most difficult fallacy to spot easily. Unfortunately, it is also one of the most widespread critical thinking errors. To simplify a defense against this error, remember and insist upon two things:

- Allow no argument to support itself; the proof of an idea can never be the initial premise.
- Always demand (and provide) legitimate support for any assumption. Never accept any assumption true without examining the evidence.

**HASTY GENERALIZATION:** Any generalization drawn from **too small a sample**.

*Example: Pretend we overhear this in the hallway: Of the thirty students in my math class, twelve are men, ten of whom failed the last exam while all of the women passed. This indicates that, on average, women are better math students than men. (Modern Warfare YouTube Example) (Student from Africa YouTube Example)*

**Advice:** Too small a sample to make that determination. Generalize only with great care.

**FAULTY GENERALIZATION:** Any generalization drawn from a **biased sample**.

*Example: Our survey of the nation's Lexus SUV owners indicates that most of these owners drive their SUV's to go sight-seeing between 3 and 5 p.m. on Sundays. This indicates that most Americans enjoy a leisurely drive on Sunday afternoons.*



If you look at the above claim closely, you will notice that, though only the nation's Lexus SUV owners have been surveyed (quite a large sampling), the generalization is made concerning the entire country. It well might be that only those who own a Lexus SUV enjoy or can afford to take a Sunday sight-seeing drive. See the unintended bias?

*Example:* Research the 1948 United States presidential election pitting Truman (who won) against Dewey. Check out what the pre-election polls indicated (these polls taken by calling random names in telephone books--what were then called "City Directories")--then check out the result. Look for the famous photo that Truman is holding the morning after the election.

**Advice:** If the sample is biased, the generalization may be faulty. Generalize only with great care.

**EITHER/OR REASONING:** Ignoring possible alternatives by attempting to simplify an idea or choice. ([Don't Have Sex YouTube Example](#)) ([Father YouTube Example](#))

Also called **FALSE DILEMMA**

**Example:** Let's say we hear this from an instructor: *Dirk's grades are very low this quarter; either he lacks the ability to do college work or he is lazy.*

Do you see the either/or dead-end? Other explanations exist: Perhaps Dirk was having family problems, had to get a job, did not meet a prerequisite, etc.

**Advice:** Consider **all valid options** before making a decision or judgment.

### **AND NOW THE REALLY NASTY ONES--IF USED INTENTIONALLY, these are SOPHISTRIES**

**AD HOMINEM** (*against the person*): Attacking an opponent rather than an opponent's position on an issue.

We all have many personal examples of this.

*Example:* Overheard in a legislative meeting: *No, I will not support the legislative bill. It's being supported by Senator Griswald, and there is not a more dishonest person in Congress. If he supports it, I oppose it!* ([Harold Ford YouTube Example](#)) ([Colbert Comedy Central Marijuana Example](#))

See the attack against the person, rather than his/her side of the issue?

**Advice:** Hesitate to use this attack to win. If it is used on you, request that your opponent STICK TO THE ISSUE.

**TU QUOQUE** (*you're one, too!*): Attempting to support or justify actions or beliefs because something else or someone else is just as bad.

*Example:* Heard in a debate about legalizing marijuana: *America should legalize marijuana. After all, alcohol is legal, and it's responsible for many more deaths than marijuana. If alcohol is legal, marijuana should be, too.*

*Example:* *Oh yeah? Well, most all the people I know cheats on their taxes, so why is it wrong for me to do it?*

See the Tu Quoque? The argument is that alcohol is at least as bad as marijuana; therefore, marijuana should be legalized since alcohol is legalized.

**Advice:** insist that your opponent STICK TO THE ISSUE.

**STRAW MAN:** Introducing a weaker, look-alike argument, disproving it, and then hoping the opposition and the audience will believe that the real issue was disproved.

*Example:* Imagine you are at a debate concerning the theory of evolution. The anti-evolution speaker says:

When considering the theory of evolution, we must remember that Darwin, its proponent, studied nearly 150 years ago when scientific equipment was very basic. In addition, Darwin generalized to the entire world by studying only one small, isolated island. Added to this is the fact that Darwin had very little formal education and absolutely no access to computers. Therefore, we can see that Darwin's theory of evolution must remain suspect.

The *Straw Man* is this: When Darwin lived, what scientific equipment he used, where he studied, his lack of formal education, and his not having access to computers are not the issue in question? The issue is his theory of evolution.

*Example:* Imagine we hear: When examining Senator Smith's new economic proposal, we must examine her voting record in the Congress. Senator Smith has never hesitated to vote for increased-spending initiatives. This should

certainly weigh heavily on whether we support her economic proposal.

Again, is the issue Senator Smith's previous voting record or is the issue her new economic proposal? Her voting record is a Straw Man.

**Advice:** When you feel a *straw man* being employed, insist that those involved **stick to the issue.** ([The Strawman Fallacy](#))

**TRIVIAL OBJECTIONS:** obscuring an issue by raising unimportant, petty objections.

*Example:* Let's say that someone invents a new light switch, one that will reduce electricity by a whopping 40%, but that the new switch will require a little larger hole be cut in the wall to install it. A *trivial objection* might be to complain about the inconvenience of having to cut the present hole a little larger. That is *trivial* compared to the economic and environmental benefit of saving 40%.

**FALSE ANALOGY:** An analogy occurs when two objects or events (A and B) are shown to be similar. Once this analogy is introduced, the premise is that since A has a certain property, B must have the same property. Take for example the parables of Jesus. Jesus compared God to an earthy father and then proposed that just as an earthy father would care for his children, so, too, would God care for humans.

An analogy becomes “false” when A and B are in fact different in a way that really matters. This screams for an example. A really goofy one is that since the air we breathe and water we drink share the same quality of being colorless, they must, therefore, both quench our thirst. Wikipedia has this one: Since the sun and a banana are the same color, they must, therefore, be the same size.

**Examples:**

The Web site OneGoodMove.org offers this one: *Employees are like nails. Just as nails must be hit in the head in order to make them work, so must employees.*

**Advice:** Before accepting that the two situations (A and B) are alike in the way that is being proposed, be sure that the two are analogous in a way that supports that comparison. So instead of accepting the new comparison and, therefore, risk being sidetracked by discussing it, first be sure that the two (A and B) are in fact the same in a way that really applies.

**RED HERRING:** Attempting to trick an opponent into arguing a weaker side issue rather than the real issue. One who is losing a debate but needs to

buy some time often uses this. ([Obama Campaign Ad YouTube Example](#))

*Example:* We are listening to a debate about whether women deserve equal pay for equal work. We hear: In a discussion of whether women should receive the same pay for the same work as men (equal pay for equal work), we must ask ourselves if it is fair that women demand the same pay as men while still expecting men to open doors for them, help them with their coats, heavy objects, etc. It seems that women want not only equal but preferred treatment.

See the trick? The speaker knows his position on the issue is weak (that women do not deserve equal pay for equal work), so he is attempting to mislead--misdirect--his opponent toward a discussion of men and women in social settings. His hope is that his opponent will chase the scent of the Red Herring--the social issue--and spend valuable time discussing that.

**Advice:** Insist that your opponent **stick to the issue**.

As a comeback, the other person in the debate might say, *As much as I would enjoy discussing the social expectations women may have for men, I am here to discuss the **issue of equal pay for equal work**. Could we please return to that?*

**POISONING THE WELL:** This takes several faces, but in general it is any attempt to sway an audience against an opponent by spoiling the issue under discussion or attacking the opponent.

*Example:* How's this for introducing an opponent: These are my views, and now my opponent who, by the way, was a member of the liberal Southern Democrats for America, will give you his.

The above is an attempt to “poison the well water” of the debate before an opponent’s turn to speak. The goal is to prejudice the audience against an opponent’s message before he or she gets a chance to deliver it.

**CIRCUMSTANTIAL ATTACK:** Relying only on past circumstances to predict future behavior. Try this:

*Example:* Heard from a candidate for election: If my opponent Ms. Burke is elected, she surely will support the big corporations; after all, she worked for Boeing and General Electric Corporation in the late 1990’s.

Perhaps, but it also might be that Ms. Burke’s earlier experiences with big corporations disillusioned her. If this is the case, she may well vote against big

corporations' interests in the future.

**Advice:** Insist that your opponent **stick to the issue**.

**IGNORING THE BURDEN OF PROOF:** Making a claim and then asking an opponent to disprove it. A popular saying in ancient Greece was *(S)he who asserts, must prove*.

*Example:* This country is going down the toilet, and if you don't think it is, then prove me wrong!

**Advice:** *(S)he who asserts, must prove* means that the burden of proof lies with the asserter and no one else. If you assert something (claim something is true), you are obligated to back it up. It is not up to your opponent to disprove it. The concept of "Innocent until proven guilty" is a good example of this rule put into practice.