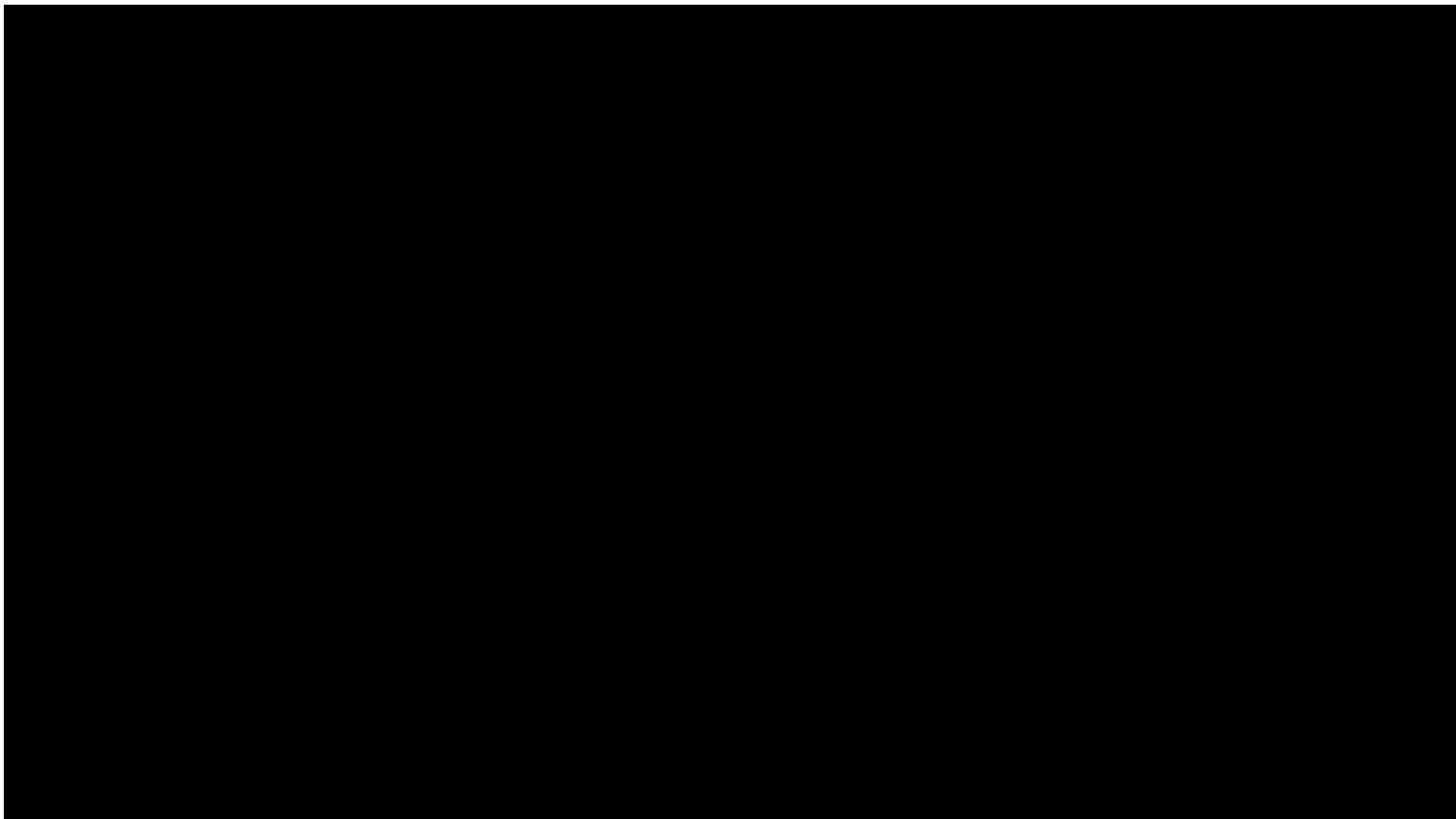


Monty Python & The Holy Grail

(1975)



Fallacies

Chapter 8

Logical Arguments

- Goal → To provide good reasons to accept a claim
- Why some arguments fail:
 - 1) Premises are false
 - 2) Reasoning is faulty
 - Or Both (as we shall see)
- Common Errors → Called Logical Fallacies

What is a fallacy?

- A fallacy is an error in logical reasoning
 - An argument that is unsound but often accepted as sound
- From the Latin verb *fallere* - “to deceive”
 - Worst case: **Intentional** -- Logical Deception
 - *Best Case*: **Unintentional** -- Logical Ignorance or (to be softer) Poor Logical Thinking

Good Arguments

- Logically correct and does provide good reasons for accepting a claim
- Meets the following conditions:
 - 1) Deductively Valid Or Inductively Strong and has premises that are true
 - 2) Validity and Strength is clear
 - 3) Employs understandable/clearly defined language
 - 4) Avoids: Ambiguity, Inconsistency, Unnecessary Vagueness, and Emotionally Manipulative Language (*Pathos*)
 - 5) Properly relates to the issue at hand

Good Arguments

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 - 5) Properly relates to the issue at hand
- These = those positive steps we have been addressing thus far in class

Why We Study Fallacies?

- 1) By understanding the errors that can be made, we are able to view all of the positive principles we have studied over the past 8 weeks more clearly
 - To see how they can be forgotten and/or ignored
- 2) KEY: Protection
 - (A) Our own *mistaken* uses of them
 - (B) Their use by others against us

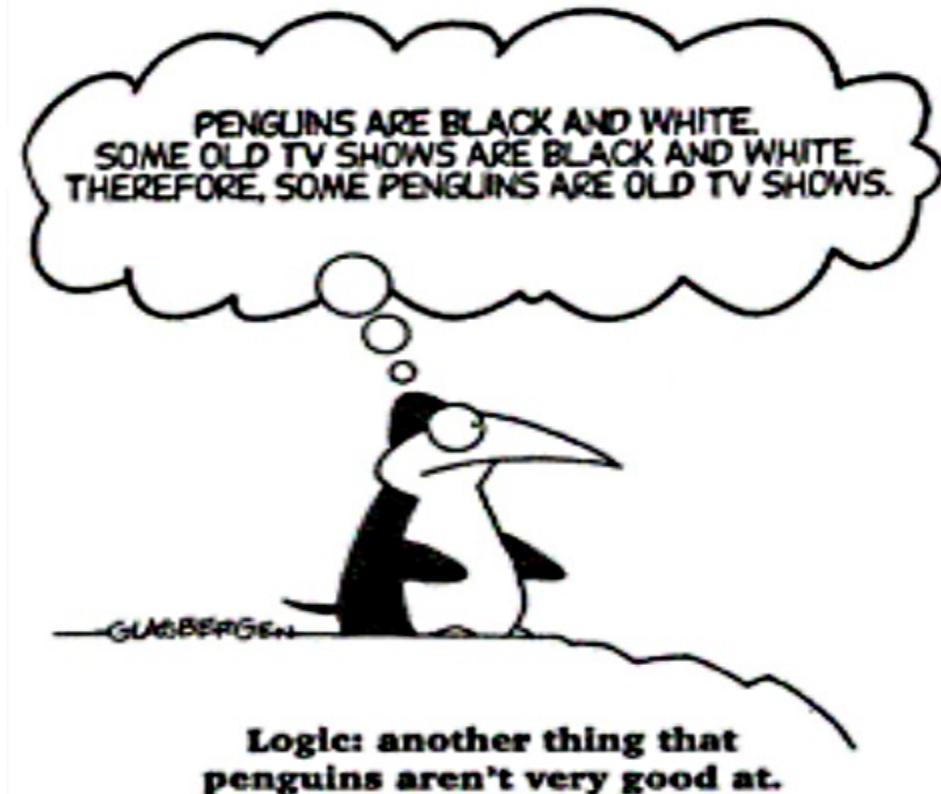
Obstacles We Encounter

- Fallacies can be *Psychologically Persuasive*
Can appeal to

 - Cognitive Biases - Views that skew our understanding of the world
 - Dispositional Attitudes: Hopes, Fears, Expectations, Etc.
 - We have spoken on multiple occasions about these biases/attitudes and how they can be problematic

Definition Again

- **Simple Definition:**
A fallacy is an error
in logical reasoning
- But we will need to
expand on that a
little ...



General Types of Fallacies

- Formal
- Informal

General Types of Fallacies

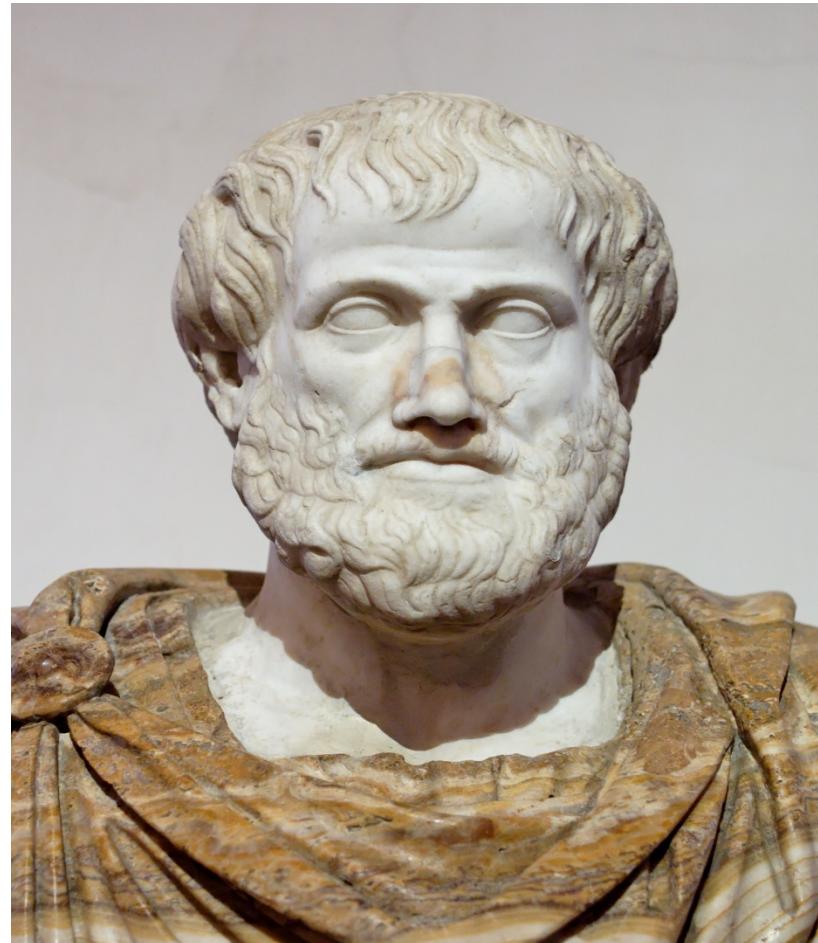
- Formal – Argument contains **structural errors**
 - Issues with the way the argument is put together
 - **Problem:** The form/structure of the argument is incorrect or bad
 - We look at this issue beginning on Friday
- Informal

General Types of Fallacies

- Formal - Structural Errors
- Informal - Not based on structural errors but content errors
 - Include: Using and/or appealing to the emotions, desires, fears, etc. of another (We spoke about rhetorical devices in this context)
 - Must examine the content of the argument to find the error
 - Most are also invalid arguments but not all (will review)

Aristotle (384 BCE - 322 BCE)

- “That some reasons are genuine while others seem to be but are not, is evident.”
– Aristotle



Informal Fallacies: General Classifications

- **Invalid Informal Fallacies: Non-Sequitur Fallacies** → “It does not follow”
 - 1) *Fallacies of Irrelevance*
 - 2) *Fallacies of Misconstrual*
 - Both represent Invalid Arguments
- **Valid Informal Fallacies**
 - 3) *Fallacies of Presumption*
 - *Represent Valid Arguments* → *issue is with the premises themselves (will also review)*

Useful Chart

<i>Formal Fallacies</i>	<i>Informal Fallacies</i>	
Invalid Form	Invalid Arguments	Valid Arguments
Appears Valid	Irrelevance	Misconstrual

Remember:

- 1) Formal concern structural errors
- 2) Informal (invalid and valid) concern content errors

Informal Fallacies: Type 1

- Fallacy of Irrelevance
 - Premises are not relevant to the conclusion

#1) Ad Hominem Fallacy

Latin: “Against the man.”

- To attack the individual making the argument as opposed to the argument being made

#1) Ad Hominem Fallacy

Latin: “Against the man”

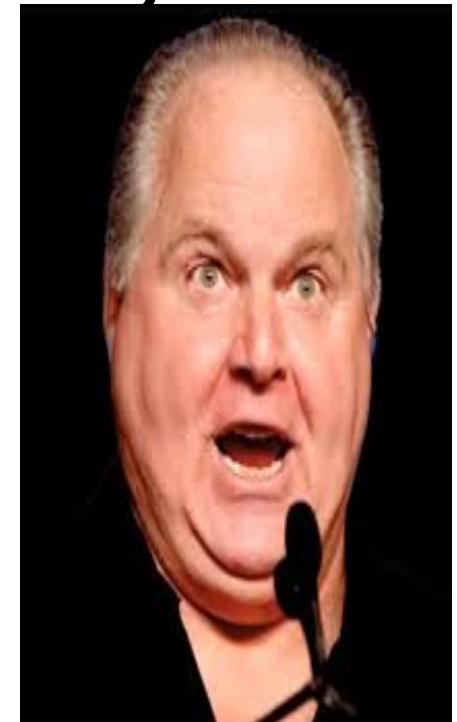
- To attack the individual making the argument as opposed to the argument being made
- *General Rule:* Respond to the argument and not to the person making the argument

#1) Ad Hominem Fallacy

- For Example:

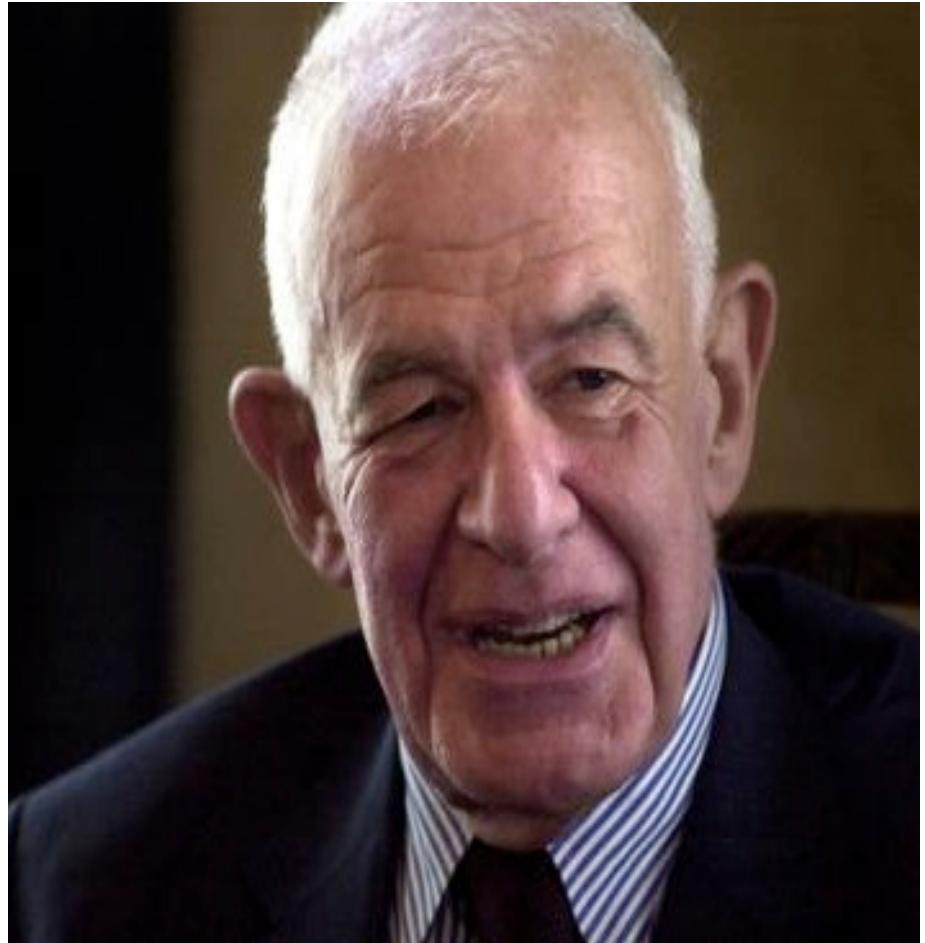
Rush Limbaugh in attempting to refute then House of Representatives Speaker Tom Foley's explanation of congressional overdrafts on the House Bank remarked:

“I think Speaker Foley suffers from the Pinocchio Disease, but instead of his nose getting bigger when he doesn’t tell the truth, his ears do. Foley’s ears are positively enormous these days.”



Ad Hominem

- Tom Foley
- 57th Speaker of the United States House of Representatives
1989 - 1995



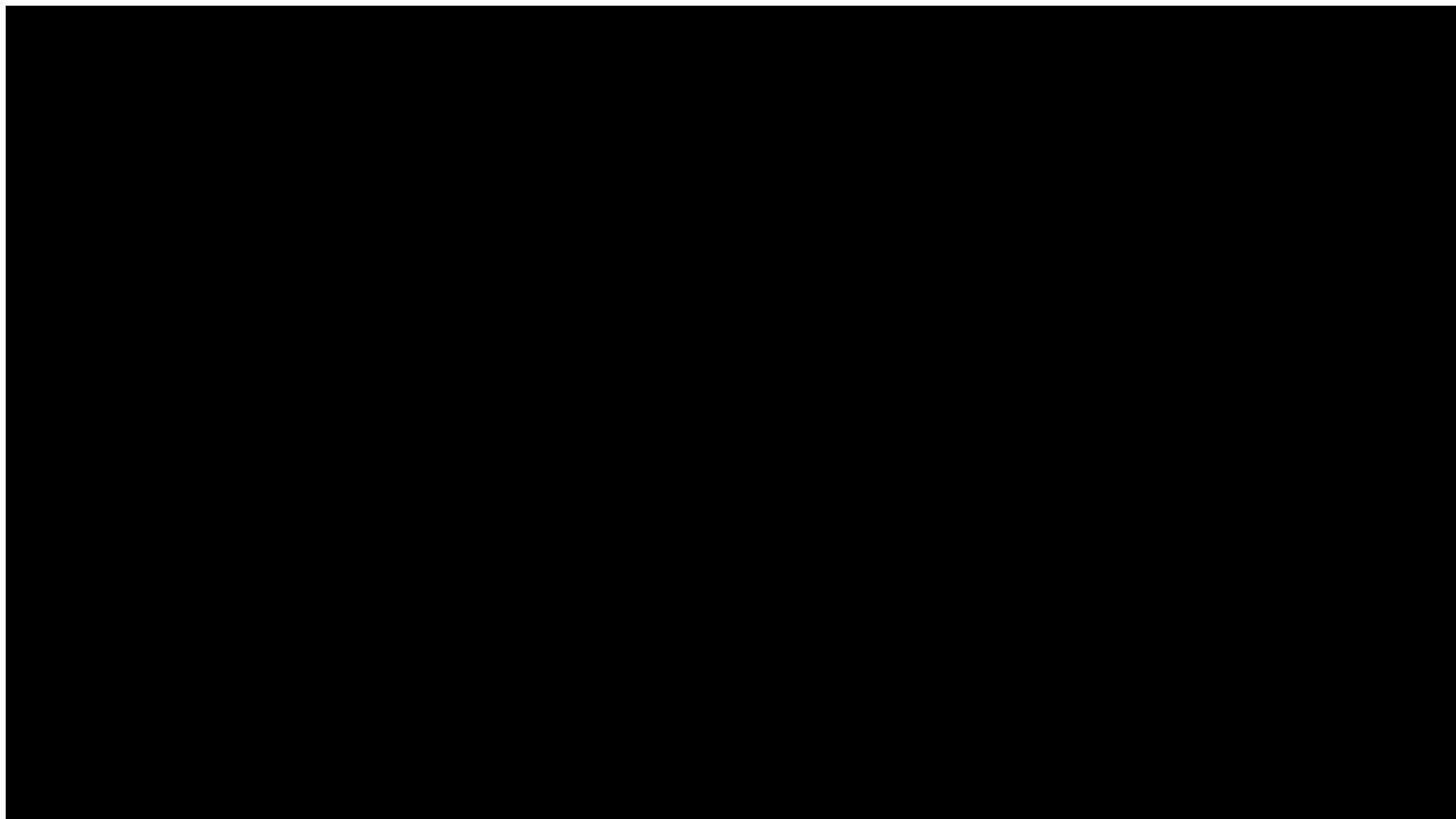
#1) Ad Hominem Example



#1) Ad Hominem Example



#1) Ad Hominem Example



Ad Hominem Examples

- Clip 1:
http://www.huffingtonpost.com/entry/trump-hillary-clinton-nasty-woman_us_58082d60e4b0dd54ce37c2d1
- Clip 2:
<http://www.independent.co.uk/news/world/americas/donald-trump-not-attractive-enough-natalia-stoynoff-sexual-assault-look-at-her-rally-kissed-a7360826.html>
- Clip 3: <https://www.newsy.com/embed/57584/>

Types of Ad Hominem

- Previous Examples: Personal Attack Ad Hominem

#2) *Guilt by Association* Ad Hominem

- Example:
- “**You think that global warming is man-made? Sounds like something those liberals would say.**”
- Issue: We are being asked to dismiss the belief in Global Warming because it is something held by a certain group
 - Also called: *Genetic Fallacy*

Ad Hominem Fallacy

- Why are they so effective?
- 1) Simply put: They are persuasive

Ad Hominem Fallacy

- Why are they so effective?
- 1) Simply put: They are persuasive
- 2) They are easier

Ad Hominem Fallacy

- Why are they so effective?
- 1) Simply put: They are persuasive
- 2) They are easier
- 3) They help one avoid the issue at hand

Ad Hominem

- “One must accept truth from whatever source it comes.”
– Maimonides



1135 – 1204 C.E.

#3) Ad Hominem Cont.

“There were 750,000 people in New York’s Central Park recently for Earth Day. They were throwing Frisbees, flying kites, and listening to Tom Cruise talk about how we have to recycle everything and stop corporations from polluting. Excuse me!”

“Didn’t Tom Cruise make a stock car movie in which he destroyed thirty-five cars, burned thousands of gallons of gasoline, and wasted dozens of tires? If I were given the opportunity, I would say to Tom Cruise, ‘Tom, most people don’t own thirty five cars in their life, and you just trashed thirty-five for a movie. Now your telling other people not to pollute the planet? Shut up, sir’.”

- Rush Limbaugh

#3) *Tu Quoque*

- Latin: “You’re another” or “You Too”
- When we say that a person’s claim is false because it is inconsistent with something else the person has said or done
- ‘Person Y’ condones ‘X’ but does not practice, condone or live by ‘X’. Therefore, ‘X’ must be false.

#3) *Tu Quoque*

- “The congressman would have us all believe that cigarette smoking is a social evil. A social evil that can only be eradicated by imposing a new tax on each pack of cigarettes sold. I urge you to consider that the congressman cannot be trusted. After all, we all know that he himself is a smoker.”

Two Points:

- 1) Whether or not someone is being hypocritical regarding his or her claims has no bearing on the evaluation of the argument itself
 - *Possible Exception:* If the credibility of a witness in a court of law is at issue
- 2) We must allow for change in one's beliefs

To Review:

- **Informal Fallacy Categories:**
 - A) Non-Sequitur (against the man): Invalid argument form
 - 1) Fallacies of Irrelevance
 - We have looked at the following:
 - » *Ad Hominem* (Personal Attack, Grouping *Ad Hominem* & *Tu QuoQue*)
 - 2) Fallacies of Misconstrual
 - B) Valid Form
 - 1) Fallacies of Presumption

Again: Useful Chart

<i>Formal Fallacies</i>	<i>Informal Fallacies</i>	
Invalid Form	Invalid Arguments	Valid Arguments
Appears Valid	Irrelevance	Misconstrual
		Presumption

Red Herring: Fallacy of Irrelevance #2

- Name for an irrelevant consideration that is brought into a discussion
 - A distraction technique
- A smokescreen

Red Herring: Fallacy of Irrelevance #2

- In response to a *New York Times* article stating that scientists now believe that dolphins have a highly developed intelligence.
- “*Could somebody please show me one hospital built by a dolphin? Could somebody show me one highway built by a dolphin? Could somebody show me one automobile invented by a dolphin?*”
- Rush Limbaugh

Red Herring: Fallacy of Irrelevance #2

The purpose of any red-herring is to distract us from the overall point or argument

To focus our attention on something else - a **smokescreen**

Difference Between Red Herring and Ad Hominem

You work for a chemical plant and you have just developed a new product that will eliminate stains on clothing without having to wash the item.

During a discussion about this newly developed product in front of a panel of evaluators, including a fellow chemist named John who opposes the product, you feel that you are losing the debate about why this product should be green-lit for production.

You respond ...

Difference Between Red Herring and Ad Hominem

Response #1:

- Well, isn't it John who recently denied pay raises to all the employees. Clearly, John does not care about this company.

Or

Response #2:

- Well, can anyone tell me why John felt that it was okay to cheat on his wife? I mean, he's a liar, right?

Difference Between Red Herring and Ad Hominem

Response #1:

- Well, isn't it John who recently denied pay raises to all the employees. Clearly, John does not care about this company.
 - **Red Herring** (more of a distracting tactic)

Or

Response #2:

- Well, can anyone tell me why John felt that it was okay to cheat on his wife? I mean, he's a liar, right?
 - **Ad Hominem** (more of an attack against John's character)

Red Herring: Example

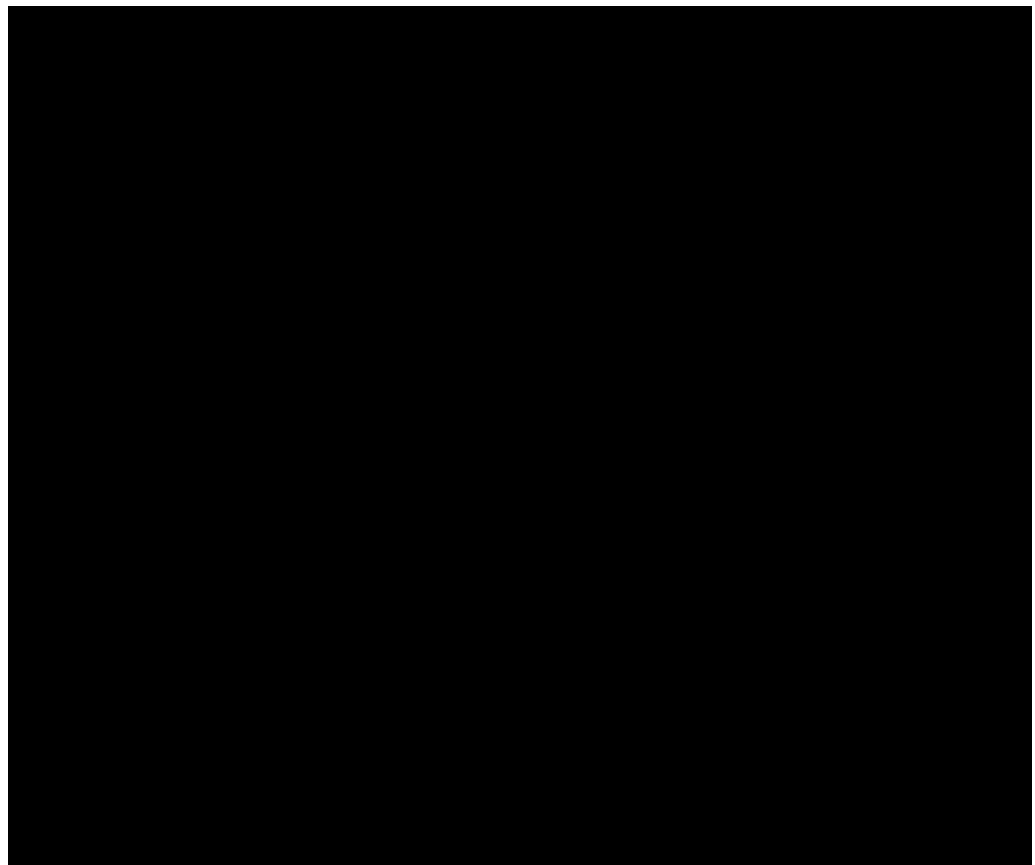
- The “Chewbacca Defense” from *South Park, Episode 27 from 1998.*
- Raised as an attempt to satirize the Defense of OJ Simpson given by Johnny Cochran
- <http://southpark.cc.com/clips/103454/the-chewbacca-defense>

Burden of Proof Fallacy: Fallacy of Irrelevance #3

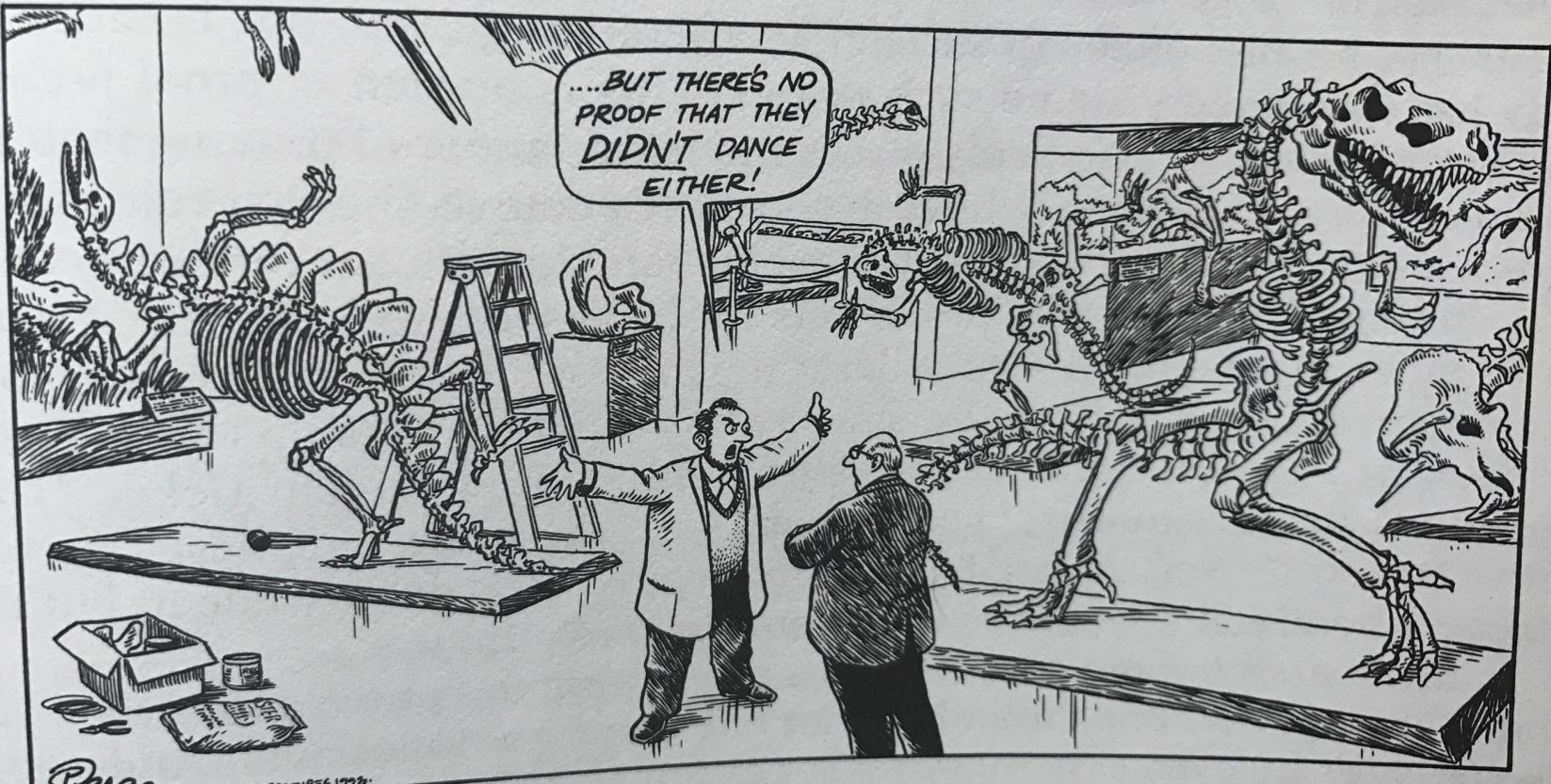
- Also known as *Argument ad Ignorantiam*
 - *Argument from Ignorance*
- Arguer claims that the conclusion is correct because no one has proved it wrong (or, for that matter, proved it right) or knows how to prove it wrong (or prove it right)

Burden of Proof Fallacy

Arguer claims that the conclusion is correct because no one has proved it wrong (or, for that matter, proved it right) or knows how to prove it wrong (or prove it right)



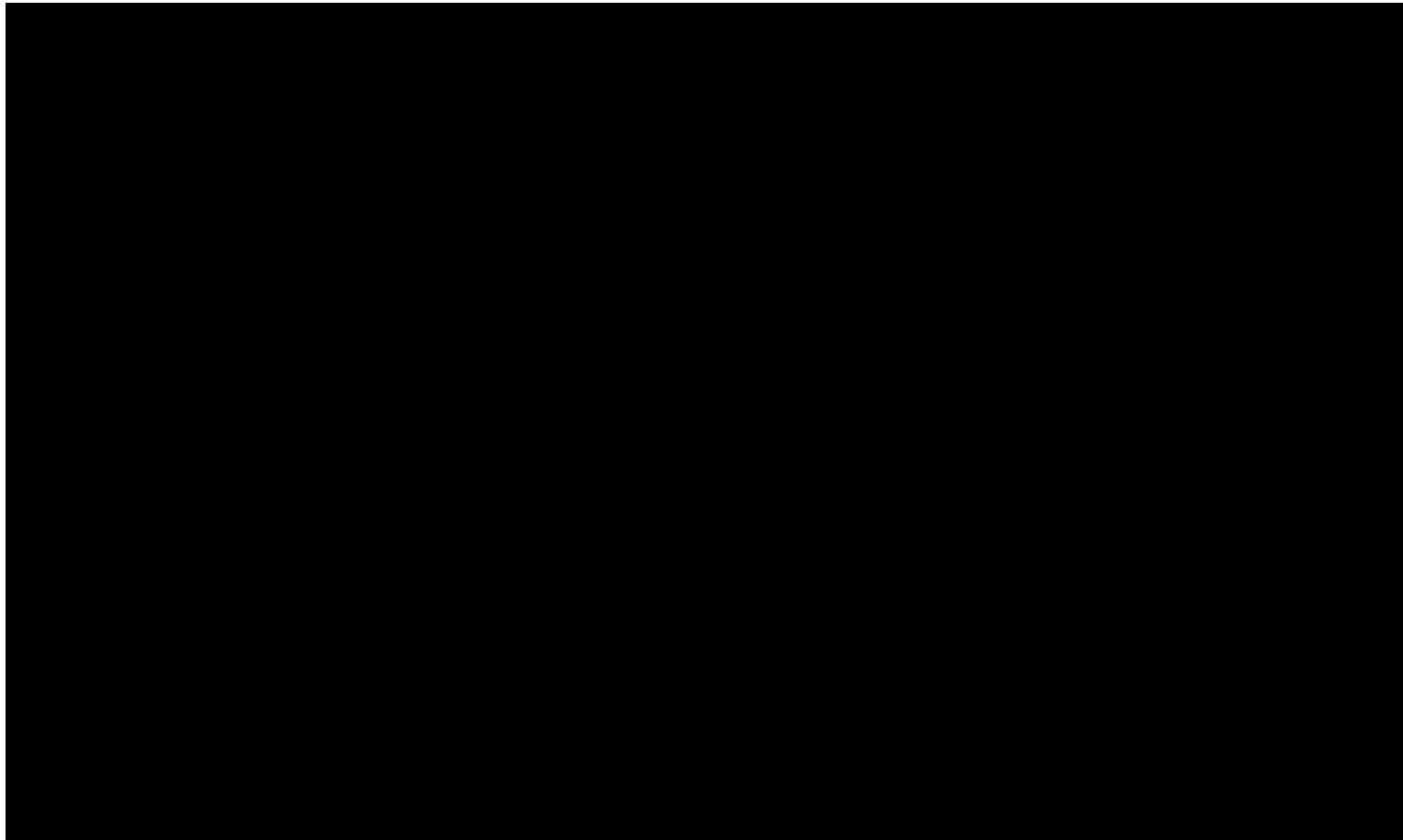
Burden of Proof Fallacy



Remember ...

- Fallacy of the Misplaced Burden of Proof
 - Burden of proof is always on the one making the more outrageous claim
- Closely related to this form: *Argument from Ignorance*
 - **Just because one cannot defend or prove something wrong – that does not mean that *it is* wrong or that *it is* right**

**A lack of evidence or explanation for something is
not therefore good evidence for its opposite -
*One More Example***



Next ...

- **2 More Fallacies of Irrelevance**
 - The following appeal to opinions outside of oneself to justify conclusions
- #4) ***Argument ad Populum***
 - Argument from the people
 - AKA: Bandwagon Fallacy
 - “**It must be true because everyone believes it**”
 - *Just because “X” is popular or well liked does not mean that “X” is true*

Next Continued ...

- 5) Appeal to Tradition
 - Example: *Acupuncture has been used for a thousand years in China. Therefore, it must work.*
 - Issue: *Tradition could be wrong*
 - Note: *Should not automatically accept a claim just because it represents something traditional*
 - However → Also Note: Not automatic grounds to reject it
 - *KEY POINT: Must evaluate claims on evidence alone*

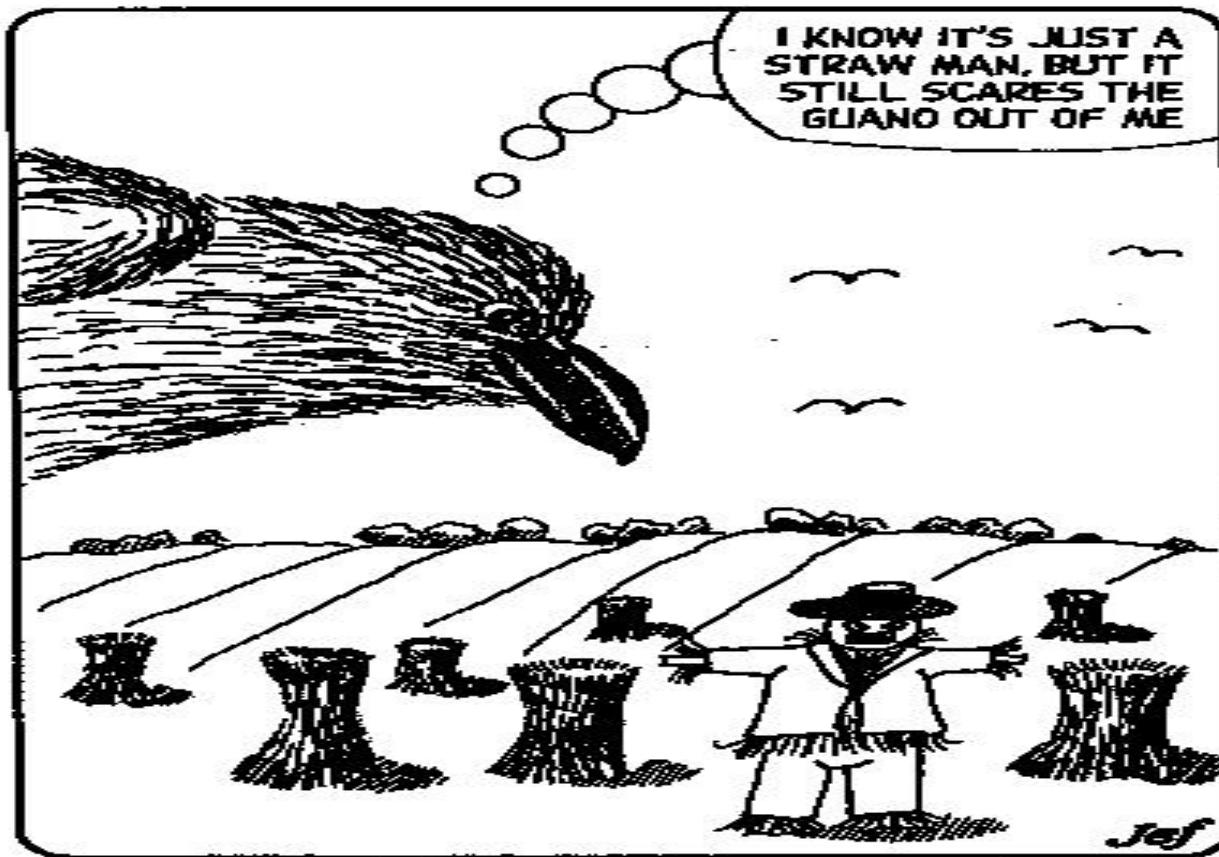
Fallacies of Irrelevance

- We have looked at the following:
 - 1) *Ad Hominem*
 - Personal Attack
 - Grouping *Ad Hominem*
 - *Tu QuoQue*
 - 2) Red Herring
 - 3) Argument ad Populum
 - 4) Appeal to Tradition

Informal Fallacies: Type 2

- *Fallacies of Misconstrual*
 - Fallacies that begin with relevant premises (thus not the Fallacy of Irrelevance)
 - Premises are then misconstrued or misrepresented to get some unwarranted conclusion
 - *Premises are relevant to the conclusion BUT insufficient to prove that conclusion*

Fallacy of Misconstrual #1) Straw Man



Strawman

An informal fallacy based on misrepresentation of an opponent's position. To "attack a straw man" is to create the illusion of having refuted a proposition by substituting a superficially similar yet weaker proposition and refuting it, without ever having actually refuted the original position.

Basic Breakdown of the Problem:

- (1) Reinterpret Claim A as a weak or absurd claim (Claim B)
- (2) Attack Claim B (by whatever means...)
- (3) Decide, therefore, that claim A (original claim) is false

Straw Man: Example

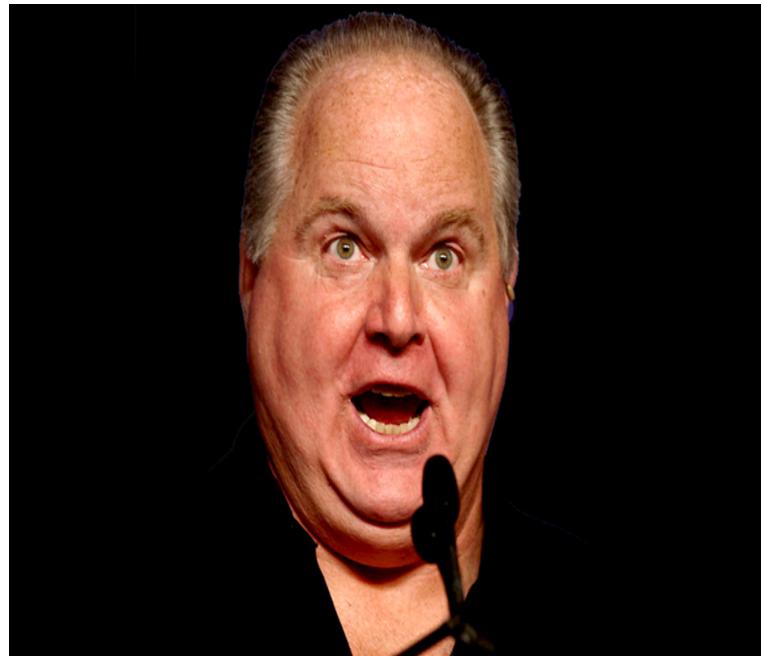
- “How do I feel about outlawing so called bump stocks? I think disarming everyone is ridiculous and dangerous.”

Straw Man: “Daily Show”



Straw Man

- “I’m a very controversial figure to the animal rights movement. They no doubt view me with some measure of hostility because I am constantly challenging their fundamental premise that animals are superior to human beings.”
 - Rush Limbaugh



Straw Man: Rand Paul



Straw Man: *The Crocoduck*



Straw Man Example

- <https://www.youtube.com/watch?v=MrEBBA9hQjA>
 - Rand Paul
 - United States Senator from Kentucky
 - Speaker of the House
 - Serving since 2011
 - Father is Ron Paul

Straw Man: *The Crocoduck*

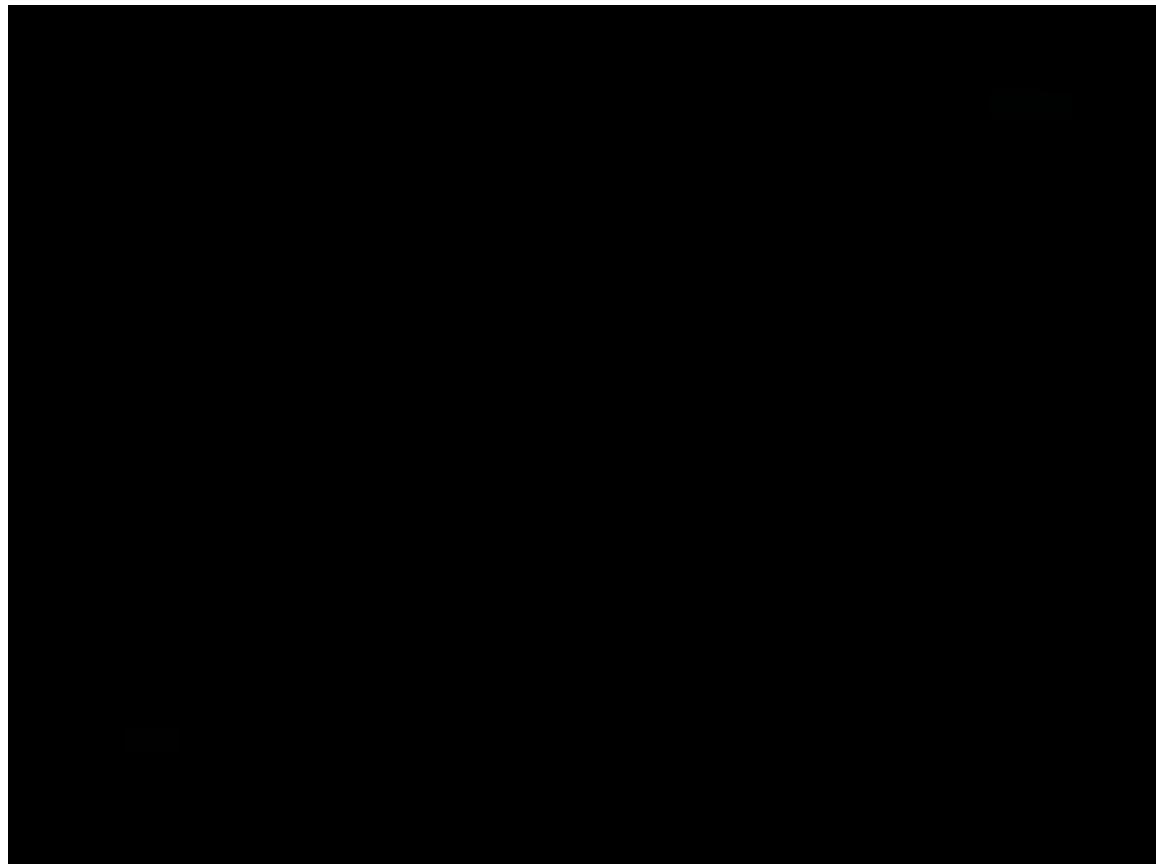
- <https://www.youtube.com/watch?v=x5tS-nXxe-c>
 - Kirk Cameron & the Crockoduck

Fallacy of Misconstual #2: Post Hoc, Ergo Propter Hoc:

- Means:
 - “After this, therefore, because of this”
- Related to Cause and Effect
- Occurs when one assumes that the fact that one event follows another that the first caused the second

Post Hoc Ergo Propter Hoc:

<https://www.youtube.com/watch?v=EJ1a0ymGCKA>



Post Hoc Ergo Propter Hoc:

<https://www.youtube.com/watch?v=EJa0ymGCKA>



#2) *Post Hoc Ergo Propter Hoc*

- Special Cases:
 - 2A) *Overlooking the Possibility of Coincidence*
 - Coincidences do happen from time to time
 - 2B) *Overlooking the Possibility of a Common Cause*
 - Maybe there is a cause of both

#3) Hasty Generalization

- Jumping to Conclusions
- Draw a conclusion about all things of a certain type without proper evidence to do so
- ***Example: “In my philosophy class we have been discussing some of the obstacles to discovering truth. Therefore, it is impossible to ever find truth.”***

Is the following an example ...

- “When polled about the level of satisfaction with the food choices in the cafeteria, 60% of a wide selection of students responded that they are not satisfied. Therefore, most people at the school, including faculty, are dissatisfied with the selection of food.”

To Review:

- Formal vs. Informal Fallacies
- Informal Fallacy Types:
 - Fallacies of Irrelevance (discussed)
 - Fallacies of Misconstrual (discussed)
 - Fallacies of Presumption (to discuss)

Informal Fallacy: Type 3

- Fallacies of Presumption
 - **Occurs when the premises presented do not represent established facts, although the inference made is valid**
 - Problem: Premises stated as *if* they were facts

Slippery Slope Argument: *Fallacy of Presumption #1*

- Definition: One undesirable action will inevitably lead to a worse action – which will also lead to a worse action – all the way down the slippery slope
- Issue: It is valid because it *could* happen

Slippery Slope Argument



Slippery Slope

Statement: “If we let ‘X’ happen, the first thing you know ‘Y’ will be happening.”

For Example:

“Teaching evolution in schools leads to loss of faith in God, and loss of faith leads to the weakening of moral values, which causes crime and social disorder. Therefore, evolution should not be taught in schools.”

Slippery Slope Fallacy

Example:



Misunderstanding of Slippery Slope ... There is no reason to think ...



Circular Reasoning

- Gold Miners example:
 - Two gold miners role a boulder away from its resting place and find three huge gold nuggets underneath. One says to the other, “Great! That’s one nugget for you and two for me,” handing one nugget to his associate.
 - “Wait a minute!” says the second miner. “Why do you get two and I get just one?”
 - “Because I am the leader of this operation,” says the first.
 - “What makes you the leader?” asks miner number two.
 - “I’ve got twice the gold as you,” answers miner number one.

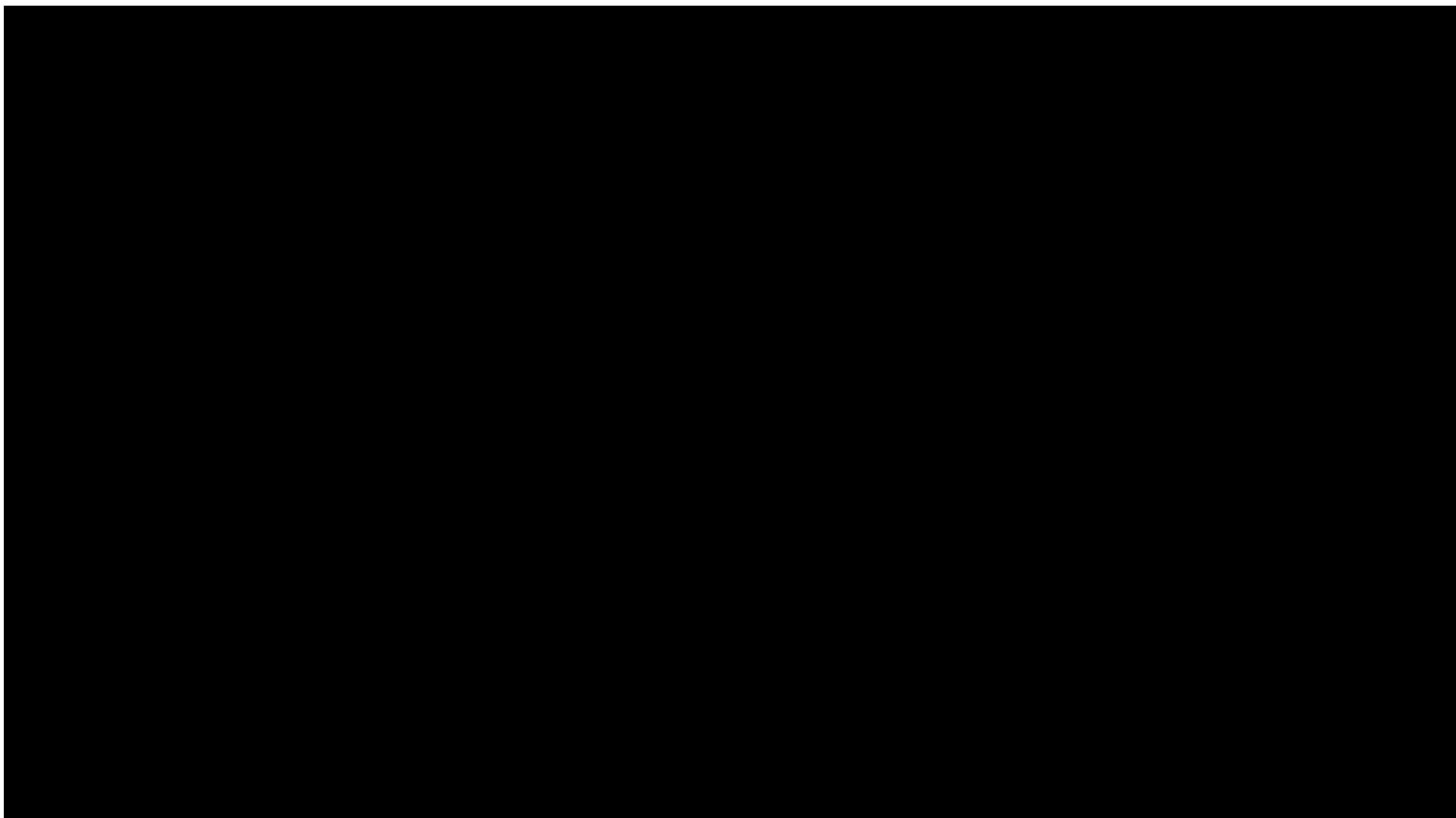
Circular Reasoning Cont.

- Also called: *Begging the Question*
- Latin: *Petitio Principii*

Circular Reasoning

- This is the attempt to argue for a conclusion by using that conclusion as a premise
- For example:
 - P
 - Therefore, P
- The very claim that is to be proved true is assumed true and/or is used as support to prove itself
- <https://www.youtube.com/watch?v=8CVbku6nxhU>

Circular Reasoning Example:



Circular Reasoning

- Example:
 - “God exists. We know that God exists because the Bible says so, and we should believe what the Bible says because it is the word of God.”
 - Why is this circular reasoning?

Circular Reasoning Example:



Circular Reasoning Cont.

- “To allow every man unbounded freedom of speech must always be, on the whole, advantageous to the state; for it is highly conducive to the interests of the community that each individual should enjoy a liberty, perfectly unlimited, of expressing his sentiments.”
–*Elements of Logic* by Richard Whately

Circular Reasoning Cont.

- (A) “To allow every man unbounded freedom of speech
- (B) must always be, on the whole, advantageous to the state;
- (C) for it is highly conducive to the interests of the community
- (D) that each individual should enjoy a liberty, perfectly unlimited, of expressing his sentiments.”

Note ...

- 1) Common Usage that is NOT illustrating a fallacy
 - Example: “The rising crime rate in Sacramento, California begs the question of whether the city has hired enough police officers to do the job.”

- Okay....
- Breathe ...

Review: The Basics

- Fallacy – An error in logical reasoning
- Two Forms:
 - Informal – Error in reasoning that is not simply due to the form. Results from a content error
 - *Recall: First catalogued by Aristotle*
 - Formal – An error in the form of the argument. Results from a structural error
 - Error lies in the logical form and not in the content – what was said (although there could also be a content error)

Argument Forms

- Deduction – Goal is certainty
- Induction – Goal is probability

Deduction

- Deduction
 - Intent is to demonstrate that the conclusion must be true if the premises are true

A Step Back...

- Evaluating a deductive argument (the basics revisited)
 - Two Step Process
 - Step 1: Valid or Invalid – Refers to the form or structure
 - Question: *If* the premises are true, is it the case that the conclusion *must* be true
 - Step 2: Sound or Unsound – Refers to the actual truth of the premises

Testing For Validity

- (1) Intuitive Test
 - Question: If all the premises are true, could the conclusion still be false (simply ask yourself)
 - Yes = *Invalid*
 - No = *Valid*
 - For example:
 - Premise 1: If John is running, then he is moving.
 - Premise 2: John is not running.
 - Conclusion: Therefore, John is not moving.

Formal Fallacy #1: Denying the Antecedent

- Conditional Claim – (*if then statement*)
 - *If p then q*
 - Remember the thought experiment we did on day one with the cards (E, T, 4, 7)
 - Both *p* and *q* in this example are variables that stand for simple sentences
 - [If John is running (*p*)], [then John is moving (*q*)]
 - *p* (or the first statement) = Antecedent
 - *Q* (or the second statement) = Consequent

Formal Fallacy #1: Denying the Antecedent

- Denying the Antecedent Form
- If John is running, then he is moving $p \rightarrow q$
John is not running. $\sim p$
Therefore, he is not moving. Th: $\sim q$

Note:

\rightarrow means “If...Then”

\sim (Tilde) means “not” or negation

Formal Fallacy #1: Denying the Antecedent

- Denying the Antecedent

If John is running, then he is moving

John is not running.

Therefore, he is not moving.

Form

$p \rightarrow q$

$\sim p$

Th: $\sim q$

- *Breakdown of the argument*

- *First Premise:* If condition p comes about (*antecedent*), condition q will follow (*consequent*)
- *Second Premise:* Condition p is not the case
- *Conclusion:* The consequent is false (condition q is not the case)

Formal Fallacy #1: Denying the Antecedent

- Denying the Antecedent

If John is running, then she is moving

John is not running.

Therefore, he is not moving.

Form

$p \rightarrow q$

$\sim p$

Th: $\sim q$

- *Breakdown of the argument*

- *First Premise:* If condition ***p*** comes about (*antecedent*), condition ***q*** will follow (*consequent*)
- *Second Premise:* Condition ***p*** is not the case
- *Conclusion:* The consequent is false (condition ***q*** is not the case)
 - **Problem:** The first premise does not state that condition *q* is the only condition that will satisfy *p*

Testing For Validity

- (2) Method of Counter-example
 - In terms of deduction, this would mean providing an example of a case when all the premises are true and the conclusion is false

Testing For Validity

If John is running, then he is moving.

John is moving.

Therefore, he is running.

Testing For Validity

If John is running, then he is moving.

John is moving.

Therefore, he is running.

If John is running, then he is moving.

$p \rightarrow q$

Testing For Validity

If John is running, then he is moving.

John is moving.

Therefore, he is running.

If John is running, then he is moving.

$p \rightarrow q$

John is moving.

q

Testing For Validity

If John is running, then he is moving.

John is moving.

Therefore, he is running.

If John is running, then he is moving.

$p \rightarrow q$

John is moving.

q

Therefore, he is running.

TH: p

Formal Fallacy #2: Affirming the Consequent

- *Affirming the Consequent*

Form

$p \rightarrow q$

q

TH: p

If John is running, then he is moving.

John is moving.

Therefore, he is running.

- Problem
 - Looking at the first premise, it tells us that if a certain condition is met (**antecedent**) a certain result (**consequent**) will follow
 - The premise does not say that the antecedent is the ONLY condition that will satisfy the consequent
 - Does not say IFF (if and only if John is running will she be moving)
 - Nor that if the consequent is met that the antecedent must also be met

Review: Discussed Formal Fallacies

- Formal Fallacy – Error with the form or structure of the argument
- Two *Conditional Formal Fallacious Forms*:
 - Denying the antecedent:
 - $p \rightarrow q$
 - $\sim p$
 - Therefore, $\sim q$
 - Affirming the consequent:
 - $p \rightarrow q$
 - q
 - Therefore, p

Be Careful Not to Confuse the Following:

Denying the Antecedent WITH Modus Ponens

- **Formal Fallacy (Structural Error)**

- *Denying the Antecedent*

If John is running, then he is moving

Form

$p \rightarrow q$

John is not running.

$\sim p$

Therefore, he is not moving.

Th: $\sim q$

- **No Error (Valid Form)**

- *Modus Ponens* (“the way that affirms by affirming”) OR
Affirming the Antecedent

- If John is running, then he is moving

$p \rightarrow q$

- John is running

p

- Therefore, John is moving

Th: q

Be Careful Not to Confuse the Following:

Affirming the Consequent WITH Modus Tollens

- Formal Fallacy (Structural Error)

- *Affirming the Consequent*

If John is running, then he is moving

Form

$p \rightarrow q$

John is moving .

q

Therefore, John is running.

Th: p

- No Error (Valid)

- *Modus Tollens* (the way that denies by denying) – Denying the Consequent

- If John is running, then he is moving

$p \rightarrow q$

- John is not moving

$\sim q$

- Therefore, John is not running

Th: $\sim p$

Practice

- Please state if each of the following are valid or invalid:
 - 1) If my cat is on the bed, then it is sleeping.
 - My cat is sleeping.
 - Therefore, my cat is on the bed
- 2) If I attend class today, then I will understand the material.
- I did not attend class today.
- Therefore, I do not understand the material.

Answers

- 1) If my cat is on the bed, then it is sleeping.
 - My cat is sleeping.
 - Therefore, my cat is on the bed
-
- $p \rightarrow q$ **Invalid: Affirming the Consequent**
 - q
 - p

Answers

- 2) If I attend class today, then I will understand the material.
 - I did not attend class today.
 - Therefore, I do not understand the material.
-
- $p \rightarrow q$ **Invalid: Denying the Antecedent**
 - $\sim p$
 - $\sim q$

Group Work

- Construct an example of each of the following:
 - *Modus Ponens*
 - *Modus Tollens*
 - *Denying the Antecedent*
 - *Affirming the Consequent*
- Be prepared to share your answers with the class