

(Logical) Fallacies



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What is a (logical) fallacy?

- A "fallacy" is a **mistake**, and a "logical fallacy" is a **mistake in reasoning**.
- In logic, the term "fallacy" is used in two related, but distinct ways. For example:
 - "Argumentum ad Hominem is a fallacy."
 - "Your argument is a fallacy."
- To be a fallacy, a type of reasoning must be **potentially deceptive**. Moreover, in order for a fallacy to be worth identifying and naming, it must be **a common type of logical error**.

History

- **Aristotle** was both the first **formal logician**—codifying the rules of correct reasoning—and the first **informal logician**—cataloging types of incorrect reasoning (fallacies).
- He was both the first to name types of logical error, and the first to group them into categories. The result is his book *On Sophistical Refutations*.

History

- **Plato** (Aristotle's teacher) was the first philosopher to collect examples of bad reasoning, which is an important preliminary piece of field work before naming and cataloging.
- Plato's "Euthydemus" preserves a collection of fallacious arguments in dialogue form, putting the perhaps exaggerated examples into the mouths of two sophists. For this reason, fallacious arguments are sometimes called "**sophisms**" and bad reasoning "sophistry".

History

- In the centuries since Plato and Aristotle, many great philosophers and logicians have contributed to fallacy studies, among them John Locke, John Stuart Mill, Jeremy Bentham, and Arthur Schopenhauer.
- <http://www.fallacyfiles.org/>

Why study fallacies?

- Even if you could count on reasoning correctly 100% of the time, you cannot count on others doing so. In logical self-defense, you need to be able to spot poor reasoning, and—more importantly—to understand it.
- Studying formal logic and the rules of correct reasoning is like having a road map that shows how to get from point A to point B. However, even the best navigators sometimes get lost, and it helps if the roads that go nowhere are clearly labeled "DEAD END", "WRONG WAY", or "DO NOT ENTER".



Taxonomy of fallacies

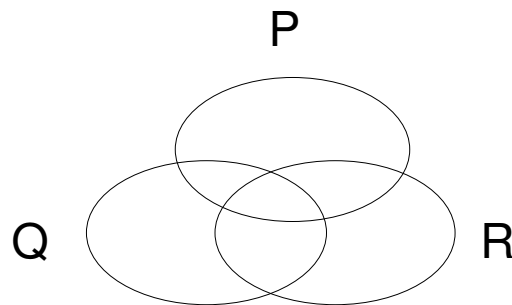
- Aristotle classified his list of fallacies into two types:
 - Linguistic: Those which depend on language.
 - Non-linguistic: Those which do not depend on language.
- Subsequent logicians have usually extended Aristotle's classification by subdividing the second, non-linguistic, category into, for instance, fallacies of relevance and fallacies of presumption. However, most such classifications have remained relatively "flat", with all fallacies on the same level
- In recent years, some logicians have begun to make use of the notion of a **subfallacy, that is, a fallacy which is a specific version of a more general fallacy**. A subfallacy has whatever features the more general fallacy has, together with specific features which set it apart and make it worth naming in its own right.

Informal vs formal fallacies

- An informal fallacy is one that is not formal, that is, it is **a type of fallacy in which the content of the argument is relevant to its fallaciousness**, or which is fallacious for epistemological, dialectical, or pragmatic reasons. Typically, informal fallacies occur in non-deductive reasoning, which relies on content as well as form for cogency.
- **A formal fallacy is based solely on logical form**, and an informal fallacy takes into account the non-logical content of the argument.
- Robert Audi (General Editor), *The Cambridge Dictionary of Philosophy*, 1995.
- S. Morris Engel, *With Good Reason: An Introduction to Informal Fallacies* (Fifth Edition) (St. Martin's, 1994).

Examples of Formal Fallacies

- The masked man is Mr. Hyde; The witness believes that the masked man committed the crime; Therefore, the witness believes that Mr. Hyde committed the crime.
- $P=Q$; $b(P=R)$; Therefore $b(Q=R)$
- No moslems are christians; No jews are moslems; Therefore, no jews are christians.
- Not (P and Q); Not (P and R); Therefore Not (Q and R)
- It isn't both raining and snowing; It isn't raining; Therefore, it's snowing.
- Not (P and Q); Not P; Therefore (Not Q)

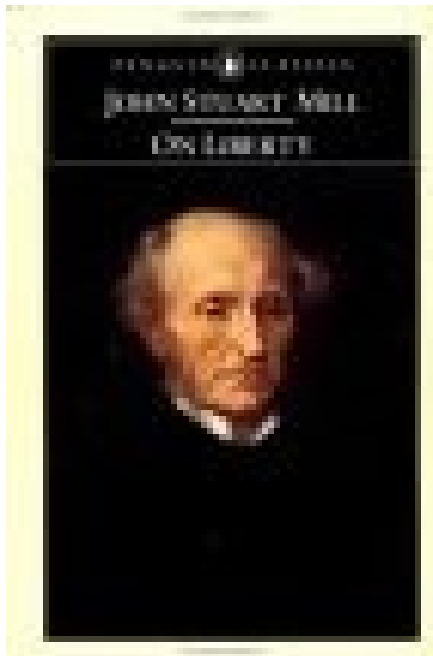
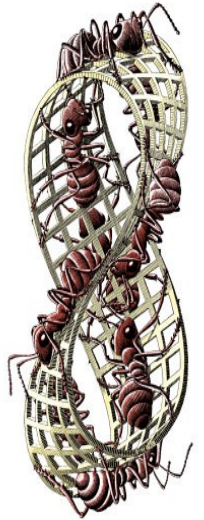


Taxonomy of Informal fallacies

<u>One-Sidedness</u>			
<u>Red Herring</u>	<u>Appeal to Consequences</u>	<u>Appeal to Force</u>	
	<u>Bandwagon Fallacy</u>	<u>Wishful Thinking</u>	
	<u>Emotional Appeal</u>	<u>Wishful Thinking</u> (see above)	
	<u>Genetic Fallacy</u>	<u>Argumentum ad Hominem</u>	<u>Poisoning the Well</u>
		<u>Appeal to Misleading Authority</u>	<u>Tu Quoque</u>
		<u>Etymological Fallacy</u>	<u>Appeal to Celebrity</u>
	<u>Guilt by Association</u>	<u>The Hitler Card</u>	
	<u>Straw Man</u>		
	<u>Two Wrongs Make a Right</u>	<u>Tu Quoque</u> (see above)	
	<u>Special Pleading</u>		
<u>Vagueness</u>	<u>Appeal to Nature</u> (see above)		
	<u>Fake Precision</u>		
	<u>Slippery Slope</u>		
<u>Weak Analogy</u>	<u>Question-Begging Analogy</u> (see above)		
	<u>Unrepresentative Sample</u>	<u>Hasty Generalization</u>	
		<u>The Anecdotal Fallacy</u>	

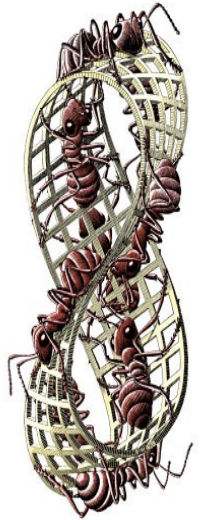
One-sidedness

- Also known as: Card Stacking, Ignoring the Counter-evidence, One-Sided Assessment, Slanting, Suppressed Evidence



“He who knows only his own side of the case, knows little of that. His reasons may be good, and no one may have been able to refute them. But if he is equally unable to refute the reasons on the opposite side; if he does not so much as know what they are, he has no ground for preferring either opinion.” (John Stuart Mill, On liberty)

One-sidedness



- Q: “You've spoke about having seen the children's prisons in Iraq. Can you describe what you saw there”
- A: “The prison in question is at the General Security Services headquarters, which was inspected by my team in Jan. 1998. It appeared to be a prison for children—toddlers up to pre-adolescents—whose only crime was to be the offspring of those who have spoken out politically against the regime of Saddam Hussein. It was a horrific scene. Actually I'm not going to describe what I saw there because what I saw was so horrible that it can be used by those who would want to promote war with Iraq, and right now I'm waging peace.”
- Source: Massimo Calabresi, "Scott Ritter in His Own Words", Time, 9/14/2002

One-sidedness

- A one-sided case presents only evidence favoring its conclusion, and ignores or downplays the evidence against it. In inductive reasoning, it is important to consider all of the available evidence before coming to a conclusion. For example, suppose that you have observed several white swans; then you might conclude:
 - “All swans are white.”
 - But if the evidence available to you consists in observations of several white swans and a black one, whatever conclusion that you draw needs to be consistent with this evidence.
 - To leave the black swan out of your reasoning would be One-sidedness.



One-sidedness

- It is **by no means always fallacious to present a one-sided argument**. As is usual with fallacies, we have to take the **context** of the argument into consideration.
 - a trial attorney presents a one-sided case in favor of a client.
 - the prosecutor's job is to present a one-sided case for conviction.
 - A political candidate's campaign will present only a positive case for the candidate's election, and a case against the candidate's opponents.
 - The other side can always be relied upon to present the negative case. We voters, by listening to both sides of the campaign, can make an objective decision about how to vote based upon all the available evidence. This is why it is important to **pay attention to all sides during a campaign**, and to hear different political points of view. People who listen to only one side will inevitably form one-sided opinions.

One-sidedness

- Another major source of **non-fallacious bias is in the world of advertising**. We have no reason to expect advertisers or salespeople to tell us what is wrong with their product, or why we should buy some other manufacturer's product instead. This is why we should take such pitches with a heavy dose of skepticism.
- In this case, unfortunately, all too seldom do we hear the other side of the argument, as promoters of products seem to be reluctant to criticize competitors.
- As rational consumers, we need to turn to consumer publications to hear the other side of the story.

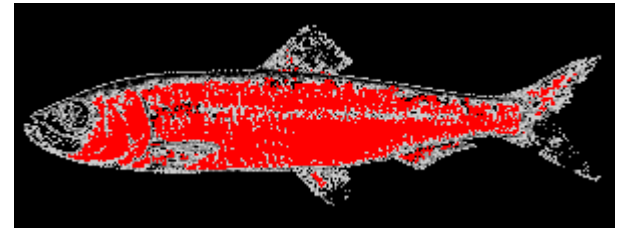
One-sidedness

- One-sidedness is **fallacious in contexts where we have a right to demand objectivity**. Two such contexts are **news stories** and **scientific or other scholarly writing**:
 - Most major newspapers aspire to a reputation for objectivity, or fairness, on their news pages. Slanting in a news story may lead the reader into drawing false conclusions, which means that the story is a booby-trap.
 - Scholars are expected to examine all of the evidence and come to a conclusion. Thus, a one-sided lack of objectivity is a cardinal scholarly sin. This is why **scholars should listen to others in their field even when—in fact, especially when—they disagree**. It is only when scholars have considered all of the arguments, that they can come to an objective conclusion.

One-sidedness

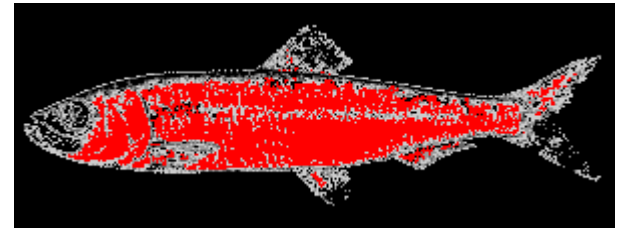
- Monroe C. Beardsley, *Thinking Straight: Principles of Reasoning for Readers and Writers* (Prentice-Hall, 1950), Section 14, pp. 77-80.
- T. Edward Damer, *Attacking Faulty Reasoning: A Practical Guide to Fallacy-Free Arguments* (Third Edition) (Wadsworth, 1995), pp. 147-149.
- Peter Suber, "The One-Sidedness Fallacy". A handout for a logic course.

Red Herring



- Also known as Ignoratio Elenchi ("ignorance of refutation"), Irrelevant Thesis
- The name of this fallacy comes from the sport of fox hunting in which a dried, smoked herring, which is red in color, is dragged across the trail of the fox to throw the hounds off the scent.
- Thus, a "red herring" argument is one which **distracts the audience from the issue in question through the introduction of some irrelevancy.**
- This frequently occurs during debates when there is an at least implicit topic, yet it is easy to lose track of it.
- By extension, it applies to **any argument in which the premisses are logically irrelevant to the conclusion.**

Appeal to consequences



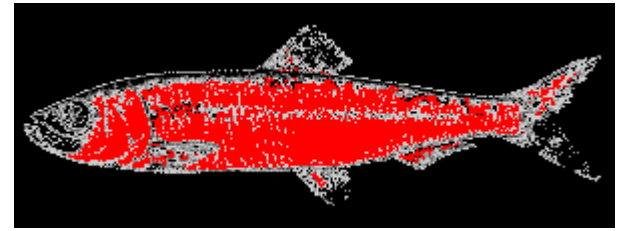
- Also known as Appeal to Consequences of a Belief, Argumentum ad Consequentiam
- Positive form:
 - (Belief in) p leads to good consequences.
 - (Where the good consequences are irrelevant to the truth of p .)
 - Therefore, p is true.
- Negative form:
 - (Belief in) p leads to bad consequences.
 - (Where the bad consequences are irrelevant to the falsity of p .)
 - Therefore, p is false.

Appeal to consequences



- Example: “...I want to list seventeen summary statements which, if true, provide abundant reason **why the reader should reject evolution and accept special creation** as his basic world-view. ...
 13. Belief in special creation has a salutary influence on mankind, since it encourages responsible obedience to the Creator and considerate recognition of those who were created by Him. ...
 16. Belief in evolution and animal kinship leads normally to selfishness, aggressiveness, and fighting between groups, as well as animalistic attitudes and behaviour by individuals.”
- Even if belief in creationism makes people polite and well-behaved, it may be false; even if belief in evolution tends to make people selfish and aggressive, it may be true. Belief in Santa Claus may make people less selfish and aggressive, still he does not exist.
- Source: Henry M. Morris, *The Remarkable Birth of Planet Earth* (Creation-Life Publishers, 1972), pp. vi-viii.

Appeal to consequences



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Bandwagon Fallacy

- Comes from the phrase "jump on the bandwagon" or "climb on the bandwagon". Political candidates would ride a bandwagon through town, and people would show support by climbing aboard the wagon.
- Also known as: Appeal to Popularity, Argument by Consensus, Argumentum ad Populum, Authority of the Many
- “Everyone is selfish; everyone is doing what he believes will make himself happier. The recognition of that can take most of the sting out of accusations that you're being "selfish." Why should you feel guilty for seeking your own happiness when that's what everyone else is doing, too? [Harry Browne, "The Unselfishness Trap", from How I Found Freedom in an Unfree World (1973)]
- Advertising is a rich source of Bandwagon arguments, with many products claiming to be "number 1" or "most popular", even though this is irrelevant to the product's merits.

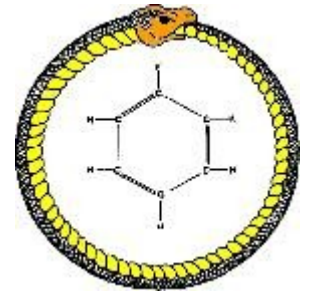


Appeal to Emotion



- **Emotion is not always out of place in logical thinking.**
- Appeals to emotion are fallacious when intended to influence our beliefs, but they are sometimes reasonable when they aim to motivate us.
 - The fact that we desire/fear something to be true gives not the slightest reason to believe/discard it
 - But the desire/fear for something is often a good reason to pursue/flee
- Subfallacies: Appeal to Envy (Argumentum ad Invidiam), Appeal to Fear (Argumentum ad Metum), Appeal to Hatred (Argumentum ad Odium), Appeal to Pity (Argumentum ad Misericordiam), Appeal to Pride (Argumentum ad Superbiam)
- T. Edward Damer, *Attacking Faulty Reasoning: A Practical Guide to Fallacy-Free Arguments* (Third Edition) (Wadsworth, 1995), pp. 44-56.
- David Hackett Fischer, *Historians' Fallacies: Toward a Logic of Historical Thought* (Harper Torchbooks, 1970), p. 304.

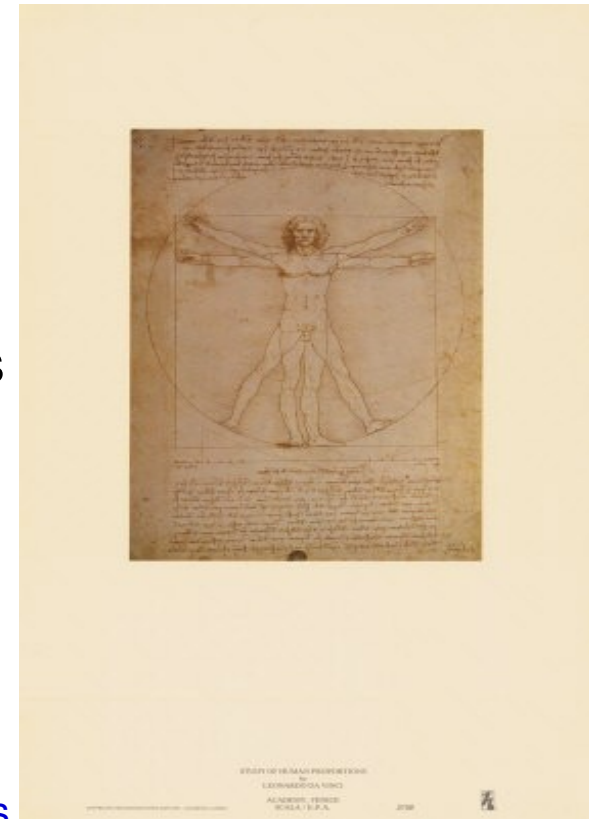
Genetic Fallacy



- “*Difficult as it may be, it is vitally important to separate argument sources and styles from argument content. In argument the medium is not the message.*” [Bruce N. Waller, *Critical Thinking: Consider the Verdict* (Third Edition) (Prentice Hall: 1998), p. 5.]
- For example, the chemist Kekulé claimed to have discovered the ring structure of the benzene molecule during a dream of a snake biting its own tail.
- the Genetic Fallacy is committed **whenever an idea is evaluated based upon irrelevant history.**
- Subfallacies:
 - Ad Hominem
 - Appeal to Misleading Authority
 - Etymological Fallacy

Argumentum ad Hominem (personal attack)

- A debater commits the Ad Hominem Fallacy when he **introduces irrelevant personal premisses** about his opponent. Such red herrings may successfully distract the opponent or the audience from the topic of the debate.
 - **Abusive**: attack on irrelevant personal qualities of the opposition like character or appearance. The opponent feels it necessary to defend herself, thus being distracted.
 - **Circumstantial**: some irrelevant personal circumstances of the opponent are offered as evidence as in "Of course, that's what you'd expect him to say."
 - **Poisoning the Well**
 - **Tu Quoque**



Alan Brinton, "The Ad Hominem" in [Fallacies: Classical and Contemporary Readings](#)

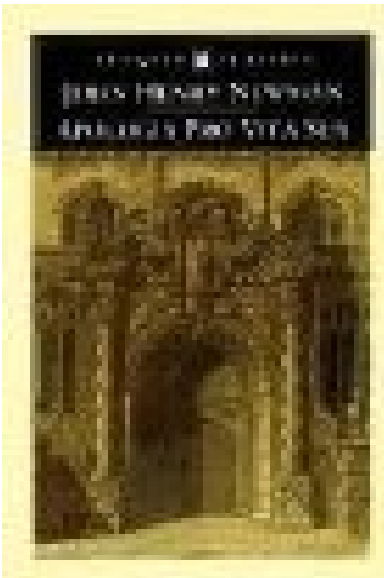
Frans H. Van Eemeren & Rob Grootendorst, [Argumentum Ad Hominem: A Pragma-Dialectical Case in Point](#), ibid

Douglas N. Walton, [Arguer's Position: A Pragmatic Study of Ad Hominem Attack, Criticism, Refutation, and Fallacy](#)

Poisoning the Well



- The phrase "poisoning the well" ultimately alludes to the medieval European myth that the black plague was caused by Jews poisoning town wells—a myth which was used as an excuse to persecute Jews.
- The phrase was first used in its relevant sense by Cardinal John Henry Newman during a controversy with Charles Kingsley:



...[W]hat I insist upon here...is this unmanly attempt of his, in his concluding pages, to cut the ground from under my feet;—to poison by anticipation the public mind against me, John Henry Newman, and to infuse into the imaginations of my readers, suspicion and mistrust of every thing that I may say in reply to him. This I call poisoning the wells.

"I am henceforth in doubt and fear," he says, "as much as any honest man can be, concerning every word Dr. Newman may write. How can I tell that I shall not be the dupe of some cunning equivocation?" ...

(John Henry Newman, [Apologia Pro Vita Sua](#), 1864)

Poisoning the Well



- “I wish it were possible for men to get really emotionally involved in this question [abortion]. It is really impossible for the man, for whom it is impossible to be in this situation, to really see it from the woman's point of view. That is why I am concerned that there are not more women in this House available to speak about this from the woman's point of view.” (House of Commons Debates of Canada, Volume 2, November 30, 1979, p. 1920)
- As with regular ad hominem, the well may be poisoned in **either an abusive or circumstantial** way:
 - “Only an ignoramus would disagree with fluoridating water.” (Abusive)
 - “My opponent is a dentist, so of course he will oppose the fluoridating of water, since he will lose business.” (Circumstantial)
- Poisoning the Well is not, strictly speaking, a logical fallacy since it is not a type of argument. Rather, **it is a logical boobytrap set by the poisoner to tempt the unwary audience into committing an ad hominem fallacy.** As with all forms of the ad hominem, one should keep in mind that **an argument can and must stand or fall on its own, regardless of who makes it.**

Tu Quoque (2 wrongs make a right)



- Q: Now, the United States government says that you are still funding military training camps here in Afghanistan for militant, Islamic fighters and that you're a sponsor of international terrorism.... Are these accusations true? ...
- Osama Bin Laden: ...At the time that they condemn any Muslim who calls for his right, they receive the highest top official of the Irish Republican Army at the White House as a political leader, while woe, all woe is the Muslims if they cry out for their rights. Wherever we look, we find the US as the leader of terrorism and crime in the world. The US does not consider it a terrorist act to throw atomic bombs at nations thousands of miles away, when it would not be possible for those bombs to hit military troops only. These bombs were rather thrown at entire nations, including women, children and elderly people and up to this day the traces of those bombs remain in Japan. The US does not consider it terrorism when hundreds of thousands of our sons and brothers in Iraq died for lack of food or medicine. So, there is no base for what the US says and this saying does not affect us....
- Source: "CNN March 1997 Interview with Osama bin Laden" (PDF)

Tu Quoque (2 wrongs make a right)



- Bin Laden's response is not a good example of the tu quoque fallacy because he is speaking directly to the issue by first pointing out the petitio principii problem with the question that was posed to him. **He is exposing the error of implicitly equating certain forms of "military training camps" and "fighters" with "terrorism", and not others. One convenient and not fallacious way for him to do so is by pointing out the similarities between the activity of the criticizer (U.S.) and the activity about which he is being questioned.** To label one "terrorism" and not the other is, he is arguing, itself a fallacy. [Lindsay Brown on <http://www.fallacyfiles.org/tuquoque.html>]
- See also: Julian Baggini, "Tu Quoque", Bad Moves, 10/1/2004

Appeal to Misleading Authority

- Cheating by the Soviets:
- Barry Schweid of the Associated Press, in his efforts to criticize President Reagan's space-based defense against Soviet missiles, came up with a report from some Stanford University group that claimed to find little evidence of cheating by the Soviet Union on arms-control treaties.
- Where were they when Secretary of Defense Caspar Weinberger and George Shultz, secretary of state, and several members of our military forces went on TV and described and enumerated the different times and ways that the Soviet Union has cheated on the 1972 Anti-Ballistic Missile Treaty?
- Does Schweid really believe that the group at Stanford is more knowledgeable about U.S. arms-control policy than all our military experts, with Congress thrown in for good measure? If I thought that was true, I wouldn't sleep much tonight. And I doubt if he would either.
- (Middleton B. Freeman, Louisville, "Letters From Readers", The Courier-Journal, April 1, 1987.)

Appeal to Misleading Authority

- before relying upon expert opinion, go through the following checklist:
 - Is this a matter which **I can decide without appeal** to expert opinion? If the answer is "yes", then do so. If "no", go to the next question:
 - Is this a matter upon which **expert opinion is available**? If not, then your opinion will be as good as anyone else's. If so, proceed to the next question:
 - **Is the authority an expert** on the matter? If not, then why listen? If so, go on:
 - **Is the authority biased** towards one side? If so, the authority may be untrustworthy. At the very least, before accepting the authority's word seek a second, unbiased opinion. That is, go to the last question:
 - **Is the authority's opinion representative** of expert opinion? If not, then find out what the expert consensus is and rely on that. If so, then you may rationally rely upon the authority's opinion.
- If an argument to authority cannot pass these five tests, then it commits the fallacy of appeal to misleading authority.

Appeal to Misleading Authority



“Noted psychologist Dr. Frasier Crane recommends that you buy the EZ-Rest Hot Tub.”

“Economist John Kenneth Galbraith argues that a tight money policy is the best cure for a recession. (Although Galbraith is an expert, not all economists agree on this point.)”

Guilt by association (Bad Company Fallacy)

- “The most telling moment in last night's [State of the Union] speech came after the president noted that "key provisions of the Patriot Act are set to expire next year." In response, notes the New York Times, "some critics in Congress applauded enthusiastically." If Osama bin Laden watched the speech, one imagines him applauding too.” [James Taranto, "The al Qaeda Cheering Section", Best of the Web Today, 1/21/2004]
- **Group/Person X accepts idea Y, therefore it must be wrong.**
- Hitler was in favor of euthanasia/vegetarianism , therefore euthanasia/vegetarianism is wrong.
- All communists are civil rights supporters, Martin Luther King, Jr. is a civil rights supporter, therefore Martin Luther King, Jr. is a communist (i.e. bad, McCarthyism)



Straw Man

- "Straw man" is one of the best-named fallacies. Imagine a fight in which one of the combatants sets up a man of straw, attacks it, then proclaims victory. All the while, the real opponent stands by untouched.
- A common straw man is an **extreme man**. Extreme positions are more difficult to defend because they make **fewer allowances for exceptions**, or counter-examples.
- extremists are those who take positions starting with **"all" or "no"**. For instance, the extremists in the abortion debate are those who argue that no abortions are permissible, or that all abortions are.
- Straw Man arguments often attack a political party or movement at its extremes, where it is weakest. Such straw men are often part of the process of **"demonization"**, e.g. McCarthyism.



- More to discover at <http://www.fallacyfiles.org/>