

Informal Fallacies

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“Logic is the science of sciences, and the art of arts.”

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-- John Duns Scotus, 13th century.



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“Nothing can be more important than the art of formal reasoning according to true logic.”

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-- Gottfried Wilhelm Leibniz



3

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“Logic is the basis for all other sciences”

- ◆ “There is a special discipline, called logic, which is considered to be the basis for all other sciences.”
- “Logic evolved into an independent science long ago, earlier even than arithmetic and geometry.”
- A. Tarski, 1941.
- ◆ “Mathematical Logic, it is a science prior to all others, which contains the ideas and principles underlying all sciences.”
- K. Gödel, 1944.



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“Logic is the basis for all other sciences”

◆ “The development of Western Science has been based on two great achievements, the invention of the formal logical system (in Euclidean geometry) by the Greek philosophers, and the discovery of the possibility of finding out causal relationships by systematic experiment (at the Renaissance).”

-- A. Einstein, 1953.



5

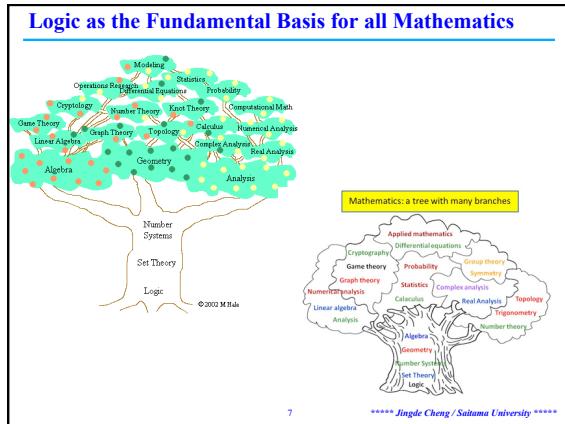
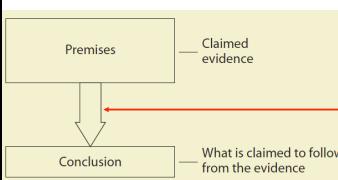
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“Fields of Science and Technology” by UNESCO

- ◆ “Proposed International Standard Nomenclature for Fields of Science and Technology,” UNESCO/NS/ROU/257 rev.1, 1988.
- ◆ 11. **Logic**, 12. Mathematics
- ◆ 21. Astronomy and Astrophysics, 22. Physics, 23. Chemistry, 24. Life Sciences, 25. Earth and Space Science
- ◆ 31. Agricultural Sciences, 32. Medical Sciences, 33. Technological Sciences
- ◆ 1203. **Computer Science**
3304. **Computer Technology**



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**Logic: What Is It?**

[From P.J. Hurley, "A Concise Introduction to Logic"]

- What entails what?
- What follows from what?
- Why? What are the evaluation criteria?
- How to establish/define the evaluation criteria?
- How to evaluate arguments/reasoning?
- It is LOGIC to answer these fundamental questions.



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Fallacies: What Are They and Why Study Them ?

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Fallacies: What are They?

❖ Fallacy [OED, 2nd Edition, 1989]

- ♦ “1. Deception, guile, trickery; a deception, trick; a false statement, a lie. Obs.”
- ♦ “2. Deceitfulness (obs.). b.2.b Deceptiveness, aptness to mislead, unreliability.”
- ♦ “3.a. A deceptive or misleading argument, a sophism. In Logic esp. a flaw, material or formal, which vitiates a syllogism; any of the species or types to which such flaws are reducible. Also, sophistical reasoning, sophistry. In certain phrases in the formal terminology of Logic, as fallacy of accident (see quot.); fallacy of composition (see composition 4 b); fallacy of division, the fallacy that whatever is true of a whole must be true of any part or member of that whole.”
- ♦ “3. b. Also in extended use (cf. 4, 5): fallacy of misplaced argument (see quot. 1942); fallacy of misplaced concreteness (see quot.); fallacy of simple location, acc. to A. N. Whitehead, an assumption that underlies the whole of science since the 17th century, viz. a form of materialism which holds that the space-time location of a material object is not dependent on reference to other space-time regions; fallacy of the inversion of parts (see quot. 1867); fallacy of the perfect dictionary (see quot. 1938).”
- ♦ “4.4 A delusive notion, an error, esp. one founded on false reasoning. Also, the condition of being deceived, error.”

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Fallacies: What are They?

- ❖ The definition of fallacy
 - ♦ There is no universally accepted definition of “*fallacy*”.
- ❖ The definition of fallacy [C&C]
 - ♦ A fallacy is a type of argument that seems to be correct, but contains a mistake in reasoning.
- ❖ The definition of fallacy [Hurley]
 - ♦ A fallacy is a defect in an argument that consists in something other than false premises alone.
- ❖ The definition of fallacy [Kelley]
 - ♦ In the broadest sense of the term, a fallacy is any error in reasoning. But the term is normally restricted patterns of errors that occur with some frequency, usually because the reasoning involved has a certain surface plausibility.

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Fallacies: What are They?

❖ The definition of fallacy [Layman]

- ♦ Fallacies are errors in reasoning tend to be psychologically persuasive.

❖ The definition of fallacy [N&R&V]

- ♦ Fallacies (in the broadest sense) are simply mistakes that occur in arguments and affect their cogency. In Latin, the verb ‘fallere’ means ‘to deceive’.
- ♦ Fallacious arguments may be deceptive, because they often superficially appear to be good arguments. But deception is not a necessary condition of a fallacy, as we use that term here. Whenever we reason invalidly or irrelevantly, accept premises we should not, or fail to make appropriate use of relevant facts at our disposal, we commit a fallacy.

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Fallacies: What are They?

• The definition of fallacy [Johnson]

- ◆ A fallacy is an error in reasoning. Both deductive and inductive arguments may be fallacies.
- ◆ Some fallacies are detectable by an examination of the form of the argument; they are called *formal fallacies*. All other fallacies are called *informal fallacies*, and they are must be detected by an examination of the content of the argument.
- ◆ Logicians have distinguished many types of informal fallacious, although they have by no means agreed on uniform classification. Nevertheless, certain common types are recognized fairly universally.
- ◆ Many informal fallacious are traditionally referred to by their Latin names.



13

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Fallacies: Why Your Should Study Them? [Kelley]

• The first reason

- ◆ The first reason is to help you avoid them in your own thinking and identify them when they are used against you in debate.
- ◆ Forewarned is forearmed.

• The second reason

- ◆ The second reason is that understanding why these patterns of argument are fallacious will help us understand the nature of good reasoning.
- ◆ Just as doctors increase their understanding of health by studying diseases, we can gain clarity about good arguments by seeing what is wrong with bad ones.



15

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Fallacies: Why Study Them?

• Logic is a normative and/or prescriptive discipline

- ◆ Logic deals with *what entails what* or *what follows from what*, and aims at determining which are the correct conclusions of a given set of premises, i.e., to determine which arguments and/or reasoning are valid.
- ◆ It is a normative science to evaluate various arguments.
- ◆ One of the central tasks of logic
- ◆ Because fallacies are related to “mistakes” and/or “errors”, they depend, of course, on some correctness criteria.
- ◆ Because logic is the study of distinguish good (correct) from bad (incorrect) arguments/reasoning, fallacies are, of course, important objects of study.
- ◆ One of the central tasks of logic is to identify the ways in which we are tempted to reason incorrectly.



14

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Formal Fallacies and Informal Fallacies

• Formal fallacies and informal fallacies

- ◆ Fallacies are usually divided into two groups: formal and informal.

• Formal fallacies and informal fallacies [Hurley]

- ◆ A *formal fallacy* is one that can be identified by merely examining the form or structure of an argument. Formal fallacies occur only in deductive arguments.
- ◆ An *informal fallacy* is one that can be detected only by examining the content of the argument.

• Notes

- ◆ “Formal” and “informal” are relative but not absolute.
- ◆ “Informal” things are usually not considered as the objects of study by “formal logic”.



16

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Formal Fallacies: Examples

• Formal fallacies

- ◆ A formal fallacy involves the explicit use of invalid form of inference, or the misuse of a valid form of inference.

• Examples

- ◆ If dogs are birds, then dogs are animals; dogs are animals; therefore, dogs are birds.
- ◆ “If A, then B; B; therefore A.”
- ◆ If dogs are birds, then dogs are animals; dogs are not birds; therefore, dogs are not animals.
- ◆ “If A, then B; not A; therefore not B.”
- ◆ All dogs are animals; all cats are also animals; therefore, all cats are dogs.
- ◆ “All A are B; all C are also B; therefore all C are A.”



17

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Various Types of Fallacies

Various Types of Fallacies



18

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Various Types of Fallacies

Classification of fallacies

- ◆ There is no universally accepted classification of fallacies.
- ◆ Since the time of Aristotle, logicians have attempted to classify the various informal fallacies.
- ◆ Aristotle himself identified thirteen and separated them into two groups.
- ◆ The work of subsequent logicians has produced dozens more, rendering the task of classifying them even more difficult.

No single umbrella theory

- ◆ The various informal fallacies accomplish their purpose in so many different ways that no single umbrella theory covers them all.



19

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Various Types of Fallacies [C&C]

Fallacies of defective induction

- ◆ In fallacies of defective induction, which are also common, the mistake arises from the fact that the premises of the argument, although relevant to the conclusion, are so weak and ineffective that relying on them is a blunder.

Four varieties of fallacies of defective induction

- ◆ D1: The argument from ignorance
- ◆ D2: The appeal to inappropriate authority
- ◆ D3: False cause
- ◆ D4: Hasty generalization



21

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Various Types of Fallacies [C&C]

Fallacies of relevance

- ◆ Fallacies of relevance are the most numerous and the most frequently encountered. In these fallacies, the premises of the argument are simply not relevant to the conclusion. However, because they are made to appear to be relevant, they may deceive.

Seven varieties of fallacies of relevance

- ◆ R1: The appeal to the populace
- ◆ R2: The appeal to emotion
- ◆ R3: The red herring
- ◆ R4: The straw man
- ◆ R5: The attack on the person
- ◆ R6: The appeal to force
- ◆ R7: Missing the point (irrelevant conclusion)



20

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Various Types of Fallacies [C&C]

Fallacies of presumption

- ◆ In fallacies of presumption, too much is assumed in the premises. The inference to the conclusion depends mistakenly on these unwarranted assumptions.

Three varieties of fallacies of presumption

- ◆ P1: Accident
- ◆ P2: Complex question
- ◆ P3: Begging the question



22

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Various Types of Fallacies [C&C]

Fallacies of ambiguity

- ◆ The incorrect reasoning in fallacies of ambiguity arises from the equivocal use of words or phrases. Some word or phrase in one part of the argument has a meaning different from that of the same word or phrase in another part of the argument.

Five varieties of fallacies of ambiguity

- ◆ A1: Equivocation
- ◆ A2: Amphiboly
- ◆ A3: Accent
- ◆ A4: Composition
- ◆ A5: Division



23

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Fallacies of Relevance [C&C]

R1. The Appeal to the Populace (ad Populum)

- ◆ An informal fallacy committed when the support offered for some conclusion is an inappropriate appeal to the multitude.
- ◆ When correct reasoning is replaced by devices calculated to elicit emotional and non-rational support for the conclusion urged.

R2. The Appeal to Emotion

- ◆ An informal fallacy committed when the support offered for some conclusion is emotions -- fear, envy, pity, or the like -- of the listeners.
- ◆ When correct reasoning is replaced by appeals to specific emotions, such as pity, pride, or envy.



24

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Fallacies of Relevance [C&C]

♣ R3. The Red Herring

- ◆ An informal fallacy committed when some distraction is used to mislead and confuse.
- ◆ When correct reasoning is manipulated by the introduction of some event or character that deliberately misleads the audience and thus hinders rational inference.

♣ R4. The Straw Man

- ◆ An informal fallacy committed when the position of one's opponent is misrepresented and that distorted position is made the object of attack.
- ◆ When correct reasoning is undermined by the deliberate misrepresentation of the opponent's position.



25

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Fallacies of Relevance [C&C]

♣ R7. Missing the Point (Ignoratio Elenchi)

- ◆ An informal fallacy committed when one refutes, not the thesis one's interlocutor is advancing, but some different thesis that one mistakenly imputes to him or her.
- ◆ When correct reasoning is replaced by the mistaken refutation of a position that was not really at issue.



27

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Fallacies of Relevance [C&C]

♣ R5. Argument Against the Person (ad Hominem)

- ◆ An informal fallacy committed when, rather than attacking the substance of some position, one attacks the person of its advocate, either abusively or as a consequence of his or her special circumstances.
- ◆ When correct reasoning about some issue is replaced by an attack upon the character or special circumstances of the opponent.

♣ R6. Appeal to Force (ad Baculum)

- ◆ An informal fallacy committed when force, or the threat of force, is relied on to win consent.
- ◆ When reasoning is replaced by threats in the effort to win support or assent.



26

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Fallacies of Defective Induction [C&C]

♣ D2. The Appeal to Inappropriate Authority (ad Verecundiam)

- ◆ An informal fallacy in which the appeal to authority is illegitimate, either because the authority appealed to has no special claim to expertise on the topic at issue, or, more generally, because no authority is assured to be reliable.
- ◆ When the premises of an argument appeal to the judgment of some person or persons who have no legitimate claim to authority in the matter at hand.



29

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Fallacies of Defective Induction [C&C]

♣ D3. False Cause (non Causa pro Causa)

- ◆ An informal fallacy in which the mistake arises from accepting as the cause of an event what is not really its cause.
- ◆ When one treats as the cause of a thing that which is not really the cause of that thing, often relying (as in the subtype post hoc ergo propter hoc) merely on the close temporal succession of two events.

♣ D4. Hasty Generalization (converse accident)

- ◆ An informal fallacy in which a principle that is true of a particular case is applied, carelessly or deliberately, to the great run of cases.
- ◆ When one moves carelessly or too quickly from one or a very few instances to a broad or universal claim.



30

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Fallacies of Presumption [C&C]

♣ P1. Accident

- ◆ An informal fallacy in which a generalization is applied to individual cases that it does not govern.
- ◆ When one mistakenly applies a generalization to an individual case that it does not properly govern.

♣ P2. Complex Question (Plurium Interrogationum)

- ◆ An informal fallacy in which a question is asked in such a way as to presuppose the truth of some proposition buried in the question.
- ◆ When one argues by asking a question in such a way as to presuppose the truth of some assumption buried in that question.



31

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Fallacies of Presumption [C&C]

♣ P3. Begging the Question (Petitio Principii)

- ◆ An informal fallacy in which the conclusion of an argument is stated or assumed in one of the premises.
- ◆ When one assumes in the premises of an argument the truth of what one seeks to establish in the conclusion of that same argument.



32

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Fallacies of Ambiguity [C&C]

♣ A1. Equivocation

- ◆ An informal fallacy in which two or more meanings of the same word or phrase have been confused.
- ◆ When the same word or phrase is used with two or more meanings, deliberately or accidentally, in formulating an argument.

♣ A2. Amphiboly

- ◆ An informal fallacy arising from the loose, awkward, or mistaken way in which words are combined, leading to alternative possible meanings of a statement.
- ◆ When one of the statements in an argument has more than one plausible meaning, because of the loose or awkward way in which the words in that statement have been combined.



33

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Fallacies of Ambiguity [C&C]

♣ A3. Accent

- ◆ An informal fallacy committed when a term or phrase has a meaning in the conclusion of an argument different from its meaning in one of the premises, the difference arising chiefly from a change in emphasis given to the words used.
- ◆ When a shift of meaning arises with in an argument as a consequence of changes in the emphasis given to its words or parts.



34

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Fallacies of Ambiguity [C&C]

♣ A4. Composition

- ◆ An informal fallacy in which an inference is mistakenly drawn from the attributes of the parts of a whole to the attributes of the whole itself.
- ◆ This fallacy is committed (a) when one reasons mistakenly from the attributes of a part to the attributes of the whole, or (b) when one reasons mistakenly from the attributes of an individual member of some collection to the attributes of the totality of that collection.



35

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Fallacies of Ambiguity [C&C]

♣ A5. Division

- ◆ An informal fallacy in which a mistaken inference is drawn from the attributes of a whole to the attributes of the parts of the whole.
- ◆ This fallacy is committed (a) when one reasons mistakenly from the attributes of a whole to the attributes of one of its parts, or (b) when one reasons mistakenly from the attributes of a totality of some collection of entities to the attributes of the individual entities within that collection.



36

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Fallacies of Ambiguity [C&C]

Notes on composition and division

- ◆ Unlike accident and converse accident, composition and division are fallacies of ambiguity, resulting from the multiple meanings of terms.
- ◆ Wherever the words or phrases used may mean one thing in one part of the argument and another thing in another part, and those different meanings are deliberately or accidentally confounded, we can expect the argument to be fallacious.



37

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Various Types of Fallacies [Hurley]

Fallacies of relevance

- ◆ The **fallacies of relevance** include *appeal to force*, *appeal to pity*, *appeal to the people*, *argument against the person*, *accident*, *straw man*, *missing the point*, and *red herring*.
- ◆ These fallacies share the common characteristic that the arguments in which they occur have premises that are *logically irrelevant* to the conclusion.
- ◆ Yet the premises may appear to be psychologically relevant, so the conclusion may seem to follow from the premises, even though it does not follow logically.
- ◆ In a good argument the premises provide genuine evidence in support of the conclusion.
- ◆ In an argument that commits a fallacy of relevance, on the other hand, the connection between premises and conclusion is emotional.



39

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Various Types of Fallacies [Hurley]

Fallacies of presumption

- ◆ The **fallacies of presumption** include *begging the question*, *complex question*, *false dichotomy*, and *suppressed evidence*.
- ◆ These fallacies arise because the premises presume what they purport to prove.
- ◆ Begging the question presumes that the premises provide adequate support for the conclusion when in fact they do not, and complex question presumes that a question can be answered by a simple “yes,” “no,” or other brief answer when a more sophisticated answer is needed.
- ◆ False dichotomy presumes that an “either ... or ...” statement presents jointly exhaustive alternatives when in fact it does not, and suppressed evidence presumes that no important evidence has been overlooked by the premises when in fact it has.



41

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Fallacies of Ambiguity [C&C]

A4. Composition

- ◆ An informal fallacy in which an inference is mistakenly drawn from the attributes of the parts of a whole to the attributes of the whole itself.

A5. Division

- ◆ An informal fallacy in which a mistaken inference is drawn from the attributes of a whole to the attributes of the parts of the whole.
- ◆ Unlike accident and converse accident, composition and division are fallacies of ambiguity, resulting from the multiple meanings of terms. Wherever the words or phrases used may mean one thing in one part of the argument and another thing in another part, and those different meanings are deliberately or accidentally confounded, we can expect the argument to be fallacious.



38

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Various Types of Fallacies [Hurley]

Fallacies of weak induction

- ◆ The **fallacies of weak induction** include *appeal to unqualified authority*, *appeal to ignorance*, *hasty generalization*, *false cause*, and *weak analogy*.
- ◆ These fallacies occur not because the premises are logically irrelevant to the conclusion, as is the case with the fallacies of relevance, but because the connection between premises and conclusion is not strong enough to support the conclusion.
- ◆ In fallacies of weak induction, the premises provide at least a shred of evidence in support of the conclusion, but the evidence is not nearly good enough to cause a reasonable person to believe the conclusion.
- ◆ Like the fallacies of relevance, however, the fallacies of weak induction often involve emotional grounds for believing the conclusion.



40

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Various Types of Fallacies [Hurley]

Fallacies of ambiguity

- ◆ The **fallacies of ambiguity** include *equivocation* and *amphiboly*.
- ◆ These fallacies arise from the occurrence of some form of ambiguity in either the premises or the conclusion (or both).
- ◆ An expression is ambiguous if it is susceptible to different interpretations in a given context.
- ◆ The words “light” and “bank” are ambiguous, as is the statement “Tuna are biting off the Washington coast.”
- ◆ When the conclusion of an argument depends on a shift in meaning of an ambiguous word or phrase or on the wrong interpretation of an ambiguous statement, the argument commits a fallacy of ambiguity.



42

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Various Types of Fallacies [Hurley]

❖ Fallacies of grammatical analogy

- ◆ The *fallacies of grammatical analogy* include *composition* and *division*.
- ◆ Arguments that commit these fallacies are grammatically analogous to other arguments that are good in every respect.
- ◆ Because of this similarity in linguistic structure, such fallacious arguments may appear good yet be bad.



43

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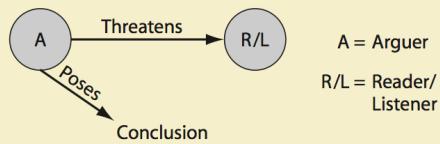
Fallacies of Relevance: Appeal to Force [Hurley]

❖ Appeal to force

(*Argumentum ad Baculum*: Appeal to the “Stick”)

- ◆ The appeal to force fallacy usually accomplishes its purpose by psychologically impeding the reader or listener from acknowledging a missing premise that, if acknowledged, would be seen to be false or at least questionable.

Appeal to force



45

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Fallacies of Relevance: Appeal to Force [Hurley]

❖ Appeal to force

(*Argumentum ad Baculum*: Appeal to the “Stick”)

- ◆ The *fallacy of appeal to force* occurs whenever an arguer poses a conclusion to another person and tells that person either implicitly or explicitly that some harm will come to him or her if he or she does not accept the conclusion.
- ◆ The fallacy always involves a threat by the arguer to the physical or psychological well-being of the listener or reader, who may be either an individual or a group of people.
- ◆ Obviously, such a threat is logically irrelevant to the subject matter of the conclusion, so any argument based on such a procedure is fallacious.



44

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Fallacies of Relevance: Appeal to Force [Hurley]

❖ Appeal to force

(*Argumentum ad Baculum*: Appeal to the “Stick”): Examples

- ◆ The fallacy often occurs when children argue with one another:
“Child to playmate: Sesame Street is the best show on TV; and if you don’t believe it, I’m going to call my big brother over here and he’s going to beat you up.”
- ◆ The example can be interpreted as concealing the following premises, they are most likely false:
“If my brother forces you to admit that Sesame Street is the best show on TV, then Sesame Street is in fact the best show.”
- ◆ The conclusion of the argument is “Sesame Street is the best show on TV.”



46

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Fallacies of Relevance: Appeal to Force [Hurley]

❖ Appeal to force

(*Argumentum ad Baculum*: Appeal to the “Stick”): Examples

- ◆ The fallacy often occurs among adults as well:
“Secretary to boss: I deserve a raise in salary for the coming year. After all, you know how friendly I am with your wife, and I’m sure you wouldn’t want her to find out what’s been going on between you and that sextuplet client of yours.”
- ◆ The example can be interpreted as concealing the following premises, they are most likely false:
“If I succeed in threatening you, then I deserve a raise in salary.”
- ◆ The conclusion of the argument is “the secretary deserves a raise in salary.”



47

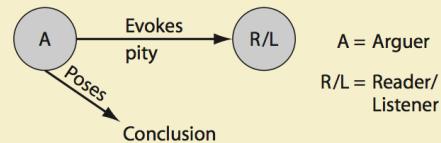
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Fallacies of Relevance: Appeal to Pity [Hurley]

❖ Appeal to pity (*Argumentum ad Misericordiam*)

- ◆ The *appeal to pity fallacy* occurs when an arguer attempts to support a conclusion by merely evoking pity from the reader or listener.
- ◆ This pity may be directed toward the arguer or toward some third party.

Appeal to pity



48

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Fallacies of Relevance: Appeal to Pity [Hurley]

❖ Appeal to pity (*Argumentum ad Misericordiam*): Examples

- ◆ “Taxpayer to judge: Your Honor, I admit that I declared thirteen children as dependents on my tax return, even though I have only two. But if you find me guilty of tax evasion, my reputation will be ruined. I’ll probably lose my job, my poor wife will not be able to have the operation that she desperately needs, and my kids will starve. Surely I am not guilty.”
- ◆ The conclusion of this argument is “Surely I am not guilty.”
- ◆ Obviously, the conclusion is not logically relevant to the arguer’s set of pathetic circumstances, although it is psychologically relevant.



49

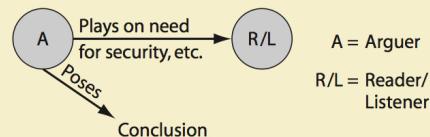
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Fallacies of Relevance: Appeal to the People [Hurley]

❖ Appeal to the people (*Argumentum ad Populum*)

- ◆ Nearly everyone wants to be loved, esteemed, admired, valued, recognized, and accepted by others. The *appeal to the people* uses these desires to get the reader or listener to accept a conclusion.
- ◆ Two approaches are involved: direct or indirect.

Appeal to the people



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Fallacies of Relevance: Appeal to the People [Hurley]

❖ Appeal to the people (*Argumentum ad Populum*)

- ◆ The direct approach occurs when an arguer, addressing a large group of people, excites the emotions and enthusiasm of the crowd to win acceptance for his or her conclusion.
- ◆ The objective is to arouse a kind of mob mentality.
- ◆ This is the strategy used by nearly every propagandist and demagogue.
- ◆ An appeal to negative emotions, such as suspicion and fear, can also generate a mob mentality. The *appeal to fear* is a variety of the direct approach.



51

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Fallacies of Relevance: Appeal to the People [Hurley]

❖ Appeal to the people (*Argumentum ad Populum*)

- ◆ In the indirect approach the arguer aims his or her appeal not at the crowd as a whole but at one or more individuals separately, focusing on some aspect of their relationship to the crowd.
- ◆ The indirect approach includes such specific forms as the *bandwagon argument*, *appeal to vanity*, *appeal to snobbery*, and *appeal to tradition*.
- ◆ Both the direct and indirect approaches have the same basic structure:
You want to be accepted/included in the group/loved/esteemed. ... Therefore, you should accept XYZ as true.



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Fallacies of Relevance: Appeal to the People [Hurley]

❖ Appeal to the people (*Argumentum ad Populum*): Examples

- ◆ An example of the bandwagon argument: “Of course you want to buy Zing toothpaste. Why, 90 percent of America brushes with Zing.”
- ◆ The idea is that you will be left behind or left out of the group if you do not use the product.
- ◆ Other examples of the bandwagon argument:
“Everyone nowadays is on a low-carb diet. Therefore, you should go on a low-carb diet, too.”
“Practically everybody believes in life after death. Therefore, you should believe in life after death, too.”



53

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Fallacies of Relevance: Appeal to the People [Hurley]

❖ Appeal to the people (*Argumentum ad Populum*): Examples

- ◆ The appeal to vanity often associates the product with someone who is admired, pursued, or imitated; the idea being that you, too, will be admired and pursued if you use it.
- ◆ The recent television and billboard ads for the U.S. Marine Corps provide an example. The ads show a strong, handsome man in uniform holding a gleaming sword, and the caption reads: “The Few, the Proud, the Marines.”
- ◆ The message is that if you join the Marines, then you, too, will be admired and respected, just like the handsome man in the uniform.
- ◆ Another example: “Daniel Craig wears an Omega wristwatch. Thus, if you want to be like him, you will buy and wear an Omega watch, too.”



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Fallacies of Relevance: Appeal to the People [Hurley]

Appeal to the people (*Argumentum ad Populum*): Examples

- ◆ In the appeal to snobbery the crowd that the arguer appeals to is a smaller group that is supposed to be superior in some way -- more wealthy, more powerful, more culturally refined, more intelligent, and so on.
- ◆ As the argument goes, if the listener wants to be part of this group, then he or she will do a certain thing, think in a certain way, or buy a certain product.
- ◆ An example of the appeal to snobbery:
“The Lexus 400 series is not for everyone. Only those with considerable means and accomplishment will acquire one. To show the world that you are among the select few, you will want to purchase and drive one of these distinguished automobiles.”
- ◆ Even if a group of snobs might happen to think or feel something, this is not a logical reason for why you should act in conformity.

55

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Fallacies of Relevance: Appeal to the People [Hurley]

Appeal to the people (*Argumentum ad Populum*): Examples

- ◆ The appeal to tradition occurs when an arguer cites the fact that something has become a tradition as grounds for some conclusion.
- ◆ The claim that something is a tradition is basically synonymous with the claim that a lot of people have done it that way for a long time.
- ◆ Two examples of the appeal to tradition:
“Traditionally, professional sporting events have been preceded by the national anthem. Therefore, professional sporting events should continue to be preceded by the national anthem.”
“Serving turkey on Thanksgiving Day is a long-standing tradition. Therefore, we should serve turkey next Thanksgiving Day.”

56

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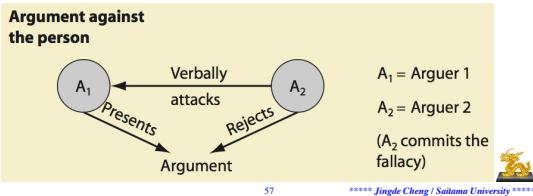


Fallacies of Relevance: Argument Against the Person [Hurley]

Argument against the person (*Argumentum ad Hominem*)

- ◆ This fallacy always involves two arguers. One of them advances (either directly or implicitly) a certain argument, and the other then responds by directing his or her attention not to the first person's argument but to the first person himself. When this occurs, the second person is said to commit an *argument against the person*.

Argument against the person



57

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Fallacies of Relevance: Argument Against the Person [Hurley]

Argument against the person (*Argumentum ad Hominem*)

- ◆ The argument against the person occurs in three forms: the *ad hominem abusive*, the *ad hominem circumstantial*, and the *tu quoque*.
- ◆ In the *ad hominem abusive*, the second person responds to the first person's argument by verbally abusing the first person.
- ◆ The *ad hominem circumstantial* begins the same way as the *ad hominem abusive*, but instead of heaping verbal abuse on his or her opponent, the respondent attempts to discredit the opponent's argument by alluding to certain circumstances that affect the opponent. By doing so the respondent hopes to show that the opponent is predisposed to argue the way he or she does and should therefore not be taken seriously.

58

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Fallacies of Relevance: Argument Against the Person [Hurley]

Argument against the person (*Argumentum ad Hominem*)

- ◆ The *tu quoque* (“you too”) fallacy begins the same way as the other two varieties of the *ad hominem* argument, except that the second arguer attempts to make the first appear to be hypocritical or arguing in bad faith.
- ◆ The second arguer usually accomplishes this by citing features in the life or behavior of the first arguer that conflict with the latter's conclusion.
- ◆ The fallacy often takes the form, “How dare you argue that I should stop doing X; why, you do (or have done) X yourself.”

59

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Fallacies of Relevance: Argument Against the Person [Hurley]

Ad hominem abusive: Examples

- ◆ “Television entertainer Bill Maher argues that religion is just a lot of foolish nonsense. But Maher is an arrogant, shameless, self-righteous pig. Obviously his arguments are not worth listening to.”
- ◆ The author of this argument ignores the substance of Maher's argument and instead attacks Maher himself.
- ◆ However, because Maher's personal attributes are irrelevant to whether the premises of his religion argument support the conclusion, the argument attacking him is fallacious.

60

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Fallacies of Relevance: Argument Against the Person [Hurley]

❖ Ad hominem abusive: Examples

- ◆ “Secretary of State Hillary Clinton argues that Israel should hold the line on new settlements in Palestine. But Clinton is not Jewish, and she has never had any great affection for Israel. Thus, her arguments are worthless.”
- ◆ Whether Hillary Clinton is Jewish and whether she does or does not have any great affection for Israel have nothing to do with whether her premises support her conclusion.

61

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Fallacies of Relevance: Argument Against the Person [Hurley]

❖ Tu quoque: Examples

- ◆ “Political operative Newt Gingrich has argued about the need to preserve family values. But who is he to talk? Gingrich has been married three times. He divorced his first wife while she was hospitalized for cancer, and he engaged in an extramarital affair while he was married to his second wife. Clearly, Gingrich’s arguments are trash.”
- ◆ The details of Gingrich’s personal life are irrelevant to whether his premises support his conclusion. Thus, this argument is fallacious.

63

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Fallacies of Relevance: Argument Against the Person [Hurley]

❖ Ad hominem circumstantial: Examples

- ◆ “The D argues that C has no business in T and that the West should do something about it. But the D just wants the C to leave so he can return as leader. Naturally he argues this way. Therefore, we should reject his arguments.”
- ◆ The author of this argument ignores the substance of the D’s argument and attempts to discredit it by calling attention to certain circumstances that affect the D — namely, that he wants to return to Tibet as its leader.
- ◆ But the fact that the D happens to be affected by these circumstances is irrelevant to whether his premises support a conclusion.

62

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Fallacies of Relevance: Accident [Hurley]

❖ Accident

- ◆ The fallacy of accident gets its name from the fact that one or more accidental features of the specific case make it an exception to the rule.

❖ Accident: Examples

- ◆ “Freedom of speech is a constitutionally guaranteed right. Therefore, John Q. Radical should not be arrested for his speech that incited the riot last week.”
- ◆ The general rule is that freedom of speech is normally guaranteed, and the specific case is the speech made by John Q. Radical.
- ◆ Because the speech incited a riot, the rule does not apply.

65

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Fallacies of Relevance: Accident [Hurley]

❖ Accident: Examples

- ◆ “People are obligated to keep their promises. When Jessica married Tyler, she promised to stay with him for life. Therefore, she should stay with him now, even though he has become an abusive spouse addicted to gambling and drugs.”
- ◆ The general rule is that people are obligated to keep their promises, and the specific case is that Jessica should keep her promise to stay with Tyler.
- ◆ The rule does not apply because Tyler is no longer the same person that Jessica made her promise to.

66

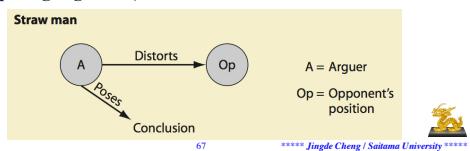
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Fallacies of Relevance: Straw Man [Hurley]

Straw man

- The **straw man fallacy** (involving two arguers) is committed when an arguer distorts an opponent's argument for the purpose of more easily attacking it, demolishes the distorted argument, and then concludes that the opponent's real argument has been demolished.
- By so doing, the arguer is said to have set up a straw man and knocked it down, only to conclude that the real man (opposing argument) has been knocked down as well.



Fallacies of Relevance: Straw Man [Hurley]

Straw man: Examples

- "Mr. Goldberg has argued against prayer in the public schools. Obviously Mr. Goldberg advocates atheism. But atheism is what they used to have in Russia. Atheism leads to the suppression of all religions and the replacement of God by an omnipotent state. Is that what we want for this country? I hardly think so. Clearly Mr. Goldberg's argument is nonsense."
- Mr. Goldberg, who is the first arguer, has presented an argument against prayer in the public schools. The second arguer then attacks Goldberg's argument by equating it with an argument for atheism. He then attacks atheism and concludes that Goldberg's argument is nonsense. Since Goldberg's argument had nothing to do with atheism, the second argument commits the straw man fallacy.

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Fallacies of Relevance: Straw Man [Hurley]

Straw man: Examples

- "The garment workers have signed a petition arguing for better ventilation on the work premises. Unfortunately, air-conditioning is expensive. Air ducts would have to be run throughout the factory, and a massive heat exchange unit installed on the roof. Also, the cost of operating such a system during the summer would be astronomical. In view of these considerations the petition must be rejected."
- The petition is merely for better ventilation in the factory -- maybe a fan in the window during the summer.
- The arguer exaggerates this request to mean an elaborate air-conditioning system installed throughout the building.
- He then points out that this is too expensive and concludes by rejecting the petition.

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Fallacies of Relevance: Straw Man [Hurley]

Straw man: Examples

- "The student status committee has presented us with an argument favoring alcohol privileges on campus. What do the students want? Is it their intention to stay boozed up from the day they enter as freshmen until the day they graduate? Do they expect us to open a bar for them? Or maybe a chain of bars all over campus? Such a proposal is ridiculous!"
- The arguer distorts the request for alcohol privileges to mean a chain of bars all over campus. Such an idea is so patently outlandish that no further argument is necessary.

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Fallacies of Relevance: Missing the Point [Hurley]

Missing the point (*Ignoratio Elenchi*)

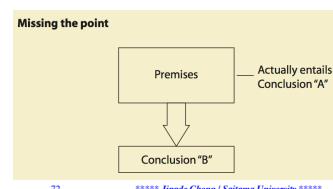
- Missing the point** illustrates a special form of irrelevance. This fallacy occurs when the premises of an argument support one particular conclusion, but then a different conclusion, often vaguely related to the correct conclusion, is drawn.
- Whenever one suspects that such a fallacy is being committed, he or she should be able to identify the correct conclusion, the conclusion that the premises logically imply.
- This conclusion must be significantly different from the conclusion that is actually drawn.
- "*Ignoratio elenchi*" in Latin means "ignorance of the proof."

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Fallacies of Relevance: Missing the Point [Hurley]

Missing the point (*Ignoratio Elenchi*)

- The arguer is ignorant of the logical implications of his or her own premises and, as a result, draws a conclusion that misses the point entirely.
- The fallacy has a distinct structure all its own, but in some ways it serves as a catchall for arguments that are not clear instances of one or more of the other fallacies.
- An argument should not be identified as a case of missing the point, however, if one of the other fallacies fits.



Fallacies of Relevance: Missing the Point [Hurley]

✳️ Missing the point (*Ignoratio Elenchi*): Examples

- ◆ “Crimes of theft and robbery have been increasing at an alarming rate lately. The conclusion is obvious: We must reinstate the death penalty immediately.”
- ◆ At least two correct conclusions are implied by the premise of the argument: either “We should provide increased police protection in vulnerable neighborhoods” or “We should initiate programs to eliminate the causes of the crimes.”
- ◆ Reinstating the death penalty is not a logical conclusion at all.
- ◆ Among other things, theft and robbery are not capital crimes.



73

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Fallacies of Relevance: Missing the Point [Hurley]

✳️ Missing the point (*Ignoratio Elenchi*): Examples

- ◆ “Abuse of the welfare system is rampant nowadays. Our only alternative is to abolish the system altogether.”
- ◆ In the argument the premises logically suggest some systematic effort to eliminate the cheaters rather than eliminating the system altogether.



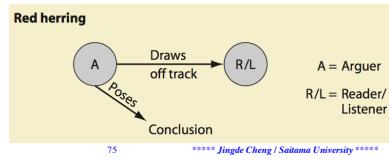
74

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Fallacies of Relevance: Red Herring [Hurley]

✳️ Red herring

- ◆ The **red herring fallacy** is committed when the arguer diverts the attention of the reader or listener by changing the subject to a different but sometimes subtly related one.
- ◆ He or she then finishes by either drawing a conclusion about this different issue or by merely presuming that some conclusion has been established.
- ◆ By so doing, the arguer purports to have won the argument.



75

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Fallacies of Relevance: Red Herring [Hurley]

✳️ Red herring

- ◆ The fallacy gets its name from a procedure used to train hunting dogs to follow a scent.
- ◆ A red herring (or bag of them) is dragged across the trail with the aim of leading the dogs astray.
- ◆ Since red herrings have an especially potent scent (caused in part by the smoking process used to preserve them), only the best dogs will follow the original scent.
- ◆ To use the red herring fallacy effectively, the arguer must change the original subject of the argument without the reader or listener noticing it.
- ◆ One way of doing this is to change the subject to one that is subtly related to the original subject.



76

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Fallacies of Relevance: Red Herring [Hurley]

✳️ Red herring: Examples

- ◆ “Environmentalists are continually harping about the dangers of nuclear power. Unfortunately, electricity is dangerous no matter where it comes from. Every year hundreds of people are electrocuted by accident. Since most of these accidents are caused by carelessness, they could be avoided if people would just exercise greater caution.”
- ◆ The original issue is whether nuclear power is dangerous. The arguer changes this subject to the danger of electrocution and proceeds to draw a conclusion about that. The new subject is clearly different from the possibility of nuclear explosion or meltdown, but the fact that both are related to electricity facilitates the arguer’s goal of leading someone off the track.



77

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Fallacies of Relevance: Red Herring [Hurley]

✳️ Red herring: Examples

- ◆ “There is a good deal of talk these days about the need to eliminate pesticides from our fruits and vegetables. But many of these foods are essential to our health. Carrots are an excellent source of vitamin A, broccoli is rich in iron, and oranges and grapefruit have lots of vitamin C.”
- ◆ The original issue is pesticides, and the arguer changes it to the value of fruits and vegetables in one’s diet. Again, the fact that the second topic is related to the first assists the arguer in committing the fallacy. In neither case does the arguer draw a conclusion about the original topic, but by merely diverting the attention of the reader or listener, the arguer creates the presumption of having won the argument.



78

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Fallacies of Relevance: Red Herring [Hurley]

❖ Red herring

- ◆ A second way of using the red herring effectively is to change the subject to some flashy, eye-catching topic that is virtually guaranteed to distract the listener's attention.
- ◆ Topics of this sort include sex, crime, scandal, immorality, death, and any other topic that might serve as the subject of gossip.



79

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Fallacies of Relevance: Red Herring [Hurley]

❖ Red herring: Examples

- ◆ “Professor Conway complains of inadequate parking on our campus. But did you know that last year Conway carried on a torrid love affair with a member of the English Department? The two used to meet every day for clandestine sex in the copier room. Apparently they didn't realize how much you can see through that fogged glass window. Even the students got an eyeful. Enough said about Conway.”



80

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Fallacies of Relevance: Red Herring [Hurley]

❖ Red herring vs. straw man

- ◆ The red herring fallacy can be confused with the straw man fallacy because both have the effect of drawing the reader/listener off the track.
- ◆ This confusion can usually be avoided by remembering the unique ways in which they accomplish this purpose.
- ◆ In the straw man, the arguer begins by distorting an opponent's argument and concludes by knocking down the distorted argument.
- ◆ In the red herring, the arguer ignores the opponent's argument (if there is one) and subtly changes the subject.
- ◆ Thus, to distinguish the two fallacies, one should attempt to determine whether the arguer has knocked down a distorted argument or simply changed the subject.
- ◆ Also keep in mind that straw man always involves two arguers, at least implicitly, whereas a red herring often does not.



81

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Fallacies of Relevance: Red Herring [Hurley]

❖ Red herring and straw man vs. missing the point

- ◆ Both the red herring and straw man fallacies are susceptible of being confused with missing the point, because all three involve a similar kind of irrelevancy.
- ◆ To avoid this confusion, one should note that both red herring and straw man proceed by generating a new set of premises, whereas missing the point does not.
- ◆ Straw man draws a conclusion from new premises that are obtained by distorting an earlier argument, and red herring, if it draws any conclusion at all, draws one from new premises obtained by changing the subject.
- ◆ Missing the point, however, draws a conclusion from the original premises.
- ◆ Also, in the red herring and straw man, the conclusion, if there is one, is relevant to the premises from which it is drawn; but in missing the point, the conclusion is irrelevant to the premises from which it is drawn.
- ◆ Finally, remember that missing the point serves in part as a kind of catchall fallacy, and a fallacious argument should not be identified as a case of missing the point if one of the other fallacies clearly fits.



82

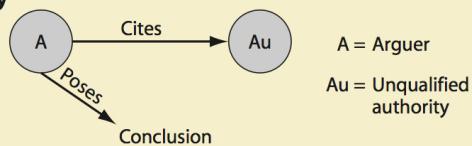
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Fallacies of Weak Induction: Appeal to Unqualified Authority [Hurley]

❖ Appeal to unqualified authority (*Argumentum ad Verecundiam*)

- ◆ The **appeal to unqualified authority fallacy** is a variety of the argument from authority and occurs when the cited authority or witness lacks credibility.

Appeal to unqualified authority



83

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Fallacies of Weak Induction: Appeal to Unqualified Authority [Hurley]

❖ Appeal to unqualified authority (*Argumentum ad Verecundiam*)

- ◆ There are several reasons why an authority or witness might lack credibility.
- ◆ The person might lack the requisite expertise, might be biased or prejudiced, might have a motive to lie or disseminate “misinformation,” or might lack the requisite ability to perceive or recall.



84

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Fallacies of Weak Induction: Appeal to Unqualified Authority [Hurley]

Appeal to unqualified authority (*Argumentum ad Verecundiam*): Examples

- ◆ “Dr. Bradshaw, our family physician, has stated that the creation of muonic atoms of deuterium and tritium hold the key to producing a sustained nuclear fusion reaction at room temperature. In view of Dr. Bradshaw’s expertise as a physician, we must conclude that this is indeed true.”
- ◆ This conclusion deals with nuclear physics, and the authority is a family physician.
- ◆ Because it is unlikely that a physician would be an expert in nuclear physics, the argument commits an appeal to unqualified authority.

85

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Fallacies of Weak Induction: Appeal to Ignorance [Hurley]

Appeal to Ignorance (*Argumentum ad Ignorantiam*): Examples

- ◆ “People have been trying for centuries to provide conclusive evidence for the claims of astrology, and no one has ever succeeded. Therefore, we must conclude that astrology is a lot of nonsense.”
- ◆ “People have been trying for centuries to disprove the claims of astrology, and no one has ever succeeded. Therefore, we must conclude that the claims of astrology are true.”
- ◆ The premises of an argument are supposed to provide positive evidence for the conclusion. The premises of these arguments, however, tell us nothing about astrology; rather, they tell us about what certain unnamed and unidentified people have tried unsuccessfully to do. This evidence may provide some slight reason for believing the conclusion, but certainly not sufficient reason.

87

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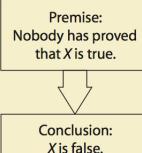


Fallacies of Weak Induction: Appeal to Ignorance [Hurley]

Appeal to Ignorance (*Argumentum ad Ignorantiam*)

- ◆ When the premises of an argument state that nothing has been proved one way or the other about something, and the conclusion then makes a definite assertion about that thing, the argument commits an *appeal to ignorance*.
- ◆ The issue usually involves something that is incapable of being proved or something that has not yet been proved.

Appeal to ignorance



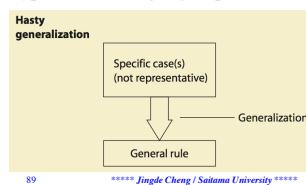
86

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Fallacies of Weak Induction: Hasty Generalization [Hurley]

Hasty generalization (Converse accident)

- ◆ The mere fact that a sample is small, however, does not necessarily mean that it is atypical.
- ◆ On the other hand, the mere fact that a sample is large does not guarantee that it is typical.
- ◆ In the case of small samples, various factors may intervene that render such a sample typical of the larger group.
- ◆ In the case of large samples, if the sample is not random, it may not be typical of the larger group.



89

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Fallacies of Weak Induction: Hasty Generalization [Hurley]

Hasty generalization (Converse accident)

- ◆ Hasty generalization is otherwise called “converse accident” because it proceeds in a direction opposite to that of accident.
- ◆ Whereas accident proceeds from the general to the particular, converse accident moves from the particular to the general.
- ◆ The premises cite some characteristic affecting one or more atypical instances of a certain class, and the conclusion then applies that characteristic to all members of the class.



90

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Fallacies of Weak Induction: Hasty Generalization [Hurley]

❖ Hasty generalization (Converse accident): Examples

- ◆ “Today’s money managers are a pack of thieves, every last one of them. Look at Bernie Madoff and Robert Allen Stanford. They ripped off billions of dollars from thousands of trusting clients. And Raj Rajaratnam profited to the tune of millions of dollars through illegal insider trading.”
- ◆ “Before the last presidential election, three residents of Harlem were quoted as saying they supported Barack Obama even though they knew nothing about his policies. Obviously the issues played no role in the outcome of that election.”
- ◆ In these arguments a conclusion about a whole group is drawn from premises that mention only a few instances.
- ◆ Because such small, atypical samples are not sufficient to support a general conclusion, each argument commits a hasty generalization.



91

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Fallacies of Weak Induction: Hasty Generalization [Hurley]

❖ Hasty generalization (Converse accident): Examples

- ◆ “One hundred thousand voters from Orange County, California, were surveyed on their choice for governor, and 68 percent said they intend to vote for the Republican candidate. Clearly the Republican candidate will be elected.”
- ◆ Even though the sample cited in this argument is large, the argument commits a hasty generalization. The problem is that Orange County is overwhelmingly Republican, so the mere fact that 68 percent intend to vote for the Republican candidate is no indication of how others in the state intend to vote. In other words, the survey was not conducted randomly, and for this reason the argument is fatally flawed.



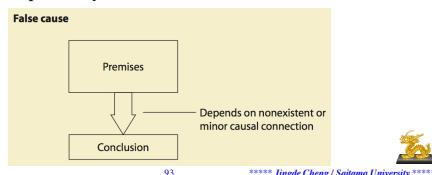
92

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Fallacies of Weak Induction: False Cause [Hurley]

❖ False cause

- ◆ The fallacy of *false cause* occurs whenever the link between premises and conclusion depends on some imagined causal connection that probably does not exist.
- ◆ Whenever an argument is suspected of committing the false cause fallacy, the reader or listener should be able to say that the conclusion depends on the supposition that *X* causes *Y*, whereas *X* probably does not cause *Y* at all.



93

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Fallacies of Weak Induction: False Cause [Hurley]

❖ False cause

- ◆ The false cause fallacies includes the following varieties:
- ◆ *post hoc ergo propter hoc* (“after this, therefore on account of this”),
- ◆ *non causa pro causa* (“not the cause for the cause”),
- ◆ *oversimplified cause*,
- ◆ *gambler’s fallacy*, and
- ◆ *slippery slope*.



94

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Fallacies of Weak Induction: False Cause [Hurley]

❖ *post hoc ergo propter hoc* example

- ◆ “During the past two months, every time that the cheerleaders have worn blue ribbons in their hair, the basketball team has been defeated. Therefore, to prevent defeats in the future, the cheerleaders should get rid of those blue ribbons.”
- ◆ The argument depends on the supposition that the blue ribbons caused the defeats.
- ◆ The argument illustrates a variety of the false cause fallacy called *post hoc ergo propter hoc* (“after this, therefore on account of this”).
- ◆ This variety of the fallacy presupposes that just because one event precedes another event, the first event causes the second.
- ◆ Obviously, mere temporal succession is not sufficient to establish a causal connection.
- ◆ Nevertheless, this kind of reasoning is quite common and lies behind most forms of superstition.



95

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Fallacies of Weak Induction: False Cause [Hurley]

❖ *non causa pro causa* example

- ◆ “Successful business executives are paid salaries in excess of \$100,000. Therefore, the best way to ensure that Ferguson will become a successful executive is to raise his salary to at least \$100,000.”
- ◆ “There are more laws on the books today than ever before, and more crimes are being committed than ever before. Therefore, to reduce crime we must eliminate the laws.”
- ◆ The first argument depends on the supposition that a high salary causes success, and the second on the supposition that laws cause crime. In no case is it likely that any causal connection exists.



96

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Fallacies of Weak Induction: False Cause [Hurley]

❖ non causa pro causa example

- ◆ The two arguments illustrate a variety of the false cause fallacy called **non causa pro causa** ("not the cause for the cause").
- ◆ This variety is committed when what is taken to be the cause of something is not really the cause at all and the mistake is based on something other than mere temporal succession.
- ◆ In reference to the first argument, success as an executive causes increases in salary -- not the other way around -- so the argument mistakes the cause for the effect.
- ◆ In reference to the second argument, the increase in crime is, for the most part, only coincidental with the increase in the number of laws.
- ◆ Obviously, the mere fact that one event is coincidental with another is not sufficient reason to think that one caused the other.



97

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Fallacies of Weak Induction: False Cause [Hurley]

❖ Oversimplified cause example

- ◆ "The quality of education in our grade schools and high schools has been declining for years. Clearly, our teachers just aren't doing their job these days."
- ◆ In the argument, the decline in the quality of education is caused by many factors, including lack of discipline in the home, lack of parental involvement, too much television, and drug use by students.
- ◆ Poor teacher performance is only one of these factors and probably a minor one at that.



99

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Fallacies of Weak Induction: False Cause [Hurley]

❖ Gambler's fallacy example

- ◆ The fourth variety of false cause we will consider is called the **gambler's fallacy**.
- ◆ This fallacy is committed whenever the conclusion of an argument depends on the supposition that independent events in a game of chance are causally related.



101

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Fallacies of Weak Induction: False Cause [Hurley]

❖ Oversimplified cause example

- ◆ The third variety of the false cause fallacy, and one that is probably committed more often than either of the others in their pure form, is **oversimplified cause**.
- ◆ This variety occurs when a multitude of causes is responsible for a certain effect but the arguer selects just one of these causes and represents it as if it were the sole cause.
- ◆ The oversimplified cause fallacy is usually motivated by self-serving interests.
- ◆ Sometimes the arguer wants to take undeserved credit for himself or herself or give undeserved credit to some movement with which he or she is affiliated.
- ◆ At other times, the arguer wants to heap blame on an opponent or shift blame from himself or herself onto some convenient occurrence.



98

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Fallacies of Weak Induction: False Cause [Hurley]

❖ Oversimplified cause example

- ◆ "Today, all of us can look forward to a longer life span than our parents and grand-parents. Obviously we owe our thanks to the millions of dedicated doctors who expend every effort to ensure our health."
- ◆ In the argument, the efforts of doctors are only one among many factors responsible for our longer life span.
- ◆ Other, more important factors include a better diet, more exercise, reduced smoking, safer highways, and more stringent occupational safety standards.



100

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Fallacies of Weak Induction: False Cause [Hurley]

❖ Gambler's fallacy example

- ◆ "A fair coin was flipped five times in a row, and each time it came up heads. Therefore, it is extremely likely that it will come up tails on the next flip."
- ◆ In fact, it is no more likely that the coin will come up tails on the next flip than it was on the first flip.
- ◆ Each flip is an independent event, so earlier flips have no causal influence on later ones.
- ◆ Thus, the fact that the earlier flips came up heads does not increase the likelihood that the next flip will come up tails.



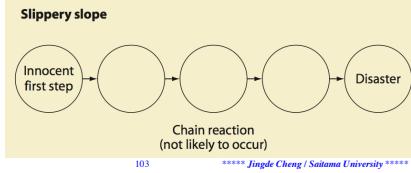
102

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Fallacies of Weak Induction: False Cause [Hurley]

Slippery slope example

- ◆ The fallacy of **slippery slope** is a variety of the false cause fallacy.
- ◆ It occurs when the conclusion of an argument rests on an alleged chain reaction and there is not sufficient reason to think that the chain reaction will actually take place.
- ◆ The slippery slope fallacy can involve various kinds of causality.



103

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Fallacies of Weak Induction: False Cause [Hurley]

Slippery slope example

- ◆ “Immediate steps should be taken to outlaw pornography once and for all. The continued manufacture and sale of pornographic material will almost certainly lead to an increase in sex-related crimes such as rape and incest. This in turn will gradually erode the moral fabric of society and result in an increase in crimes of all sorts. Eventually a complete disintegration of law and order will occur, leading in the end to the total collapse of civilization.”
- ◆ Because there is no good reason to think that the mere failure to outlaw pornography will result in all these dire consequences, this argument is fallacious.
- ◆ An equally fallacious counterargument is as follows:
- ◆ “Attempts to outlaw pornography threaten basic civil rights and should be summarily abandoned. If pornography is outlawed, censorship of newspapers and news magazines is only a short step away. After that there will be censorship of textbooks, political speeches, and the content of lectures delivered by university professors. Complete mind control by the central government will be the inevitable result.”
- ◆ Both arguments attempt to persuade the reader or listener that the welfare of society rests on a “slippery slope” and that a single step in the wrong direction will result in an inevitable slide all the way to the bottom.

104

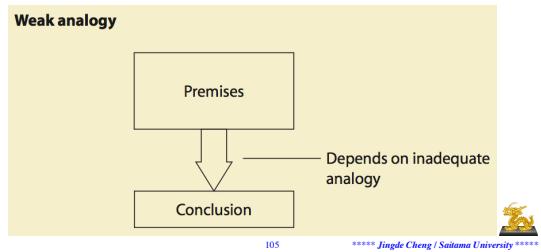
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Fallacies of Weak Induction: Weak Analogy [Hurley]

Weak analogy

- ◆ The fallacy of **weak analogy** is committed when the analogy is not strong enough to support the conclusion that is drawn.



105

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Fallacies of Weak Induction: Weak Analogy [Hurley]

The basic structure of an argument from analogy

- ◆ The basic structure of an argument from analogy is as follows:
- Entity A has attributes a, b, c, \dots and z .
- Entity B has attributes a, b, c .
- Therefore, entity B probably has attribute z also.

Evaluating an argument from analogy

- ◆ Evaluating an argument having this form requires a two-step procedure: (1) Identify the attributes a, b, c, \dots that the two entities A and B share, and (2) determine how the attribute z , mentioned in the conclusion, relates to the attributes a, b, c, \dots .
- ◆ If some causal or systematic relation exists between z and $a, b, or c$, the argument is strong; otherwise, it is weak.

106

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Fallacies of Weak Induction: Weak Analogy [Hurley]

Weak analogy examples

- ◆ “Amber’s dog is similar in many ways to Kyle’s cat. Both like being petted, they enjoy being around people, they beg for food at the dinner table, and they sleep with their owners. Amber’s dog loves to romp on the beach with Amber. Therefore, Kyle’s cat probably loves to romp on the beach with Kyle.”
- ◆ In this argument the similarities cited between Amber’s dog and Kyle’s cat probably have nothing to do with the cat’s attitude toward romping on the beach. Thus, the argument is fallacious.
- ◆ In the given example, the two entities share the attributes of liking to be petted, enjoying people, begging for food, and sleeping with their owners. Because it is highly probable that none of these attributes is systematically or causally related to romping on the beach, the argument is fallacious.

107

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Fallacies of Weak Induction: Weak Analogy [Hurley]

Weak analogy examples

- ◆ “The flow of electricity through a wire is similar to the flow of water through a pipe. Obviously a large-diameter pipe will carry a greater flow of water than a pipe of small diameter. Therefore, a large-diameter wire should carry a greater flow of electricity than a small-diameter wire.”
- ◆ “The flow of electricity through a wire is similar to the flow of water through a pipe. When water runs downhill through a pipe, the pressure at the bottom of the hill is greater than it is at the top. Thus, when electricity flows downhill through a wire, the voltage should be greater at the bottom of the hill than at the top.”
- ◆ The first argument is good and the second is fallacious.

108

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Fallacies of Weak Induction: Weak Analogy [Hurley]

Weak analogy examples

- ◆ Both arguments depend on the similarity between water molecules flowing through a pipe and electrons flowing through a wire.
- ◆ In both cases there is a systematic relation between the diameter of the pipe/wire and the amount of flow.
- ◆ In the first argument this systematic relation provides a strong link between premises and conclusion, and so the argument is a good one.
- ◆ But in the second argument a causal connection exists between difference in elevation and increase in pressure that holds for water but not for electricity.
- ◆ Water molecules flowing through a pipe are significantly affected by gravity, but electrons flowing through a wire are not. Thus, the second argument is fallacious.

109

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Fallacies of Presumption: Begging the Question [Hurley]

Begging the question (*Petitio Principii*)

- ◆ The Latin name for this fallacy, *petitio principii*, means “request for the source.”
- ◆ The actual source of support for the conclusion is not apparent, and so the argument is said to beg the question.
- ◆ After reading or hearing the argument, the observer is inclined to ask, “But how do you know *X*?” where *X* is the needed support.

The first form of begging the question (*Petitio Principii*)

- ◆ The first, and most common, way of committing this fallacy is by leaving a possibly false key premise out of the argument while creating the illusion that nothing more is needed to establish the conclusion.

111

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Fallacies of Presumption: Begging the Question [Hurley]

The first form of begging the question (*Petitio Principii*) examples

- ◆ “It’s obvious that the poor in this country should be given handouts from the government. After all, these people earn less than the average citizen.”
- ◆ This arguments begs the question “Just because the poor earn less than the average citizen, does this imply that the government should give them handouts?”
- ◆ “Clearly, terminally ill patients have a right to doctor-assisted suicide. After all, many of these people are unable to commit suicide by themselves.”
- ◆ This arguments begs the question “Just because terminally ill patients cannot commit suicide by themselves, does it follow that they have a right to a doctor’s assistance?”

113

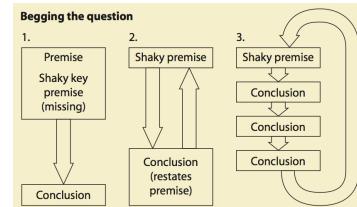
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Fallacies of Presumption: Begging the Question [Hurley]

Begging the question (*Petitio Principii*)

- ◆ The fallacy of *begging the question* is committed whenever the arguer creates the illusion that inadequate premises provide adequate support for the conclusion by leaving out a possibly false (shaky) key premise, by restating a possibly false premise as the conclusion, or by reasoning in a circle.



110

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Fallacies of Presumption: Begging the Question [Hurley]

The first form of begging the question (*Petitio Principii*) examples

- ◆ “Murder is morally wrong. This being the case, it follows that abortion is morally wrong.”
- ◆ This arguments begs the question “How do you know that abortion is a form of murder?”
- ◆ “We know that humans are intended to eat lots of fruit because the human hand and arm are perfectly suited for picking fruit from a tree.”
- ◆ This arguments begs the question “Does the structure and function of the human hand and arm tell us what humans should eat?”

112

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Fallacies of Presumption: Begging the Question [Hurley]

The first form of begging the question (*Petitio Principii*)

- ◆ These questions indicate that something has been left out of the original arguments.
- ◆ These premises are crucial for the soundness of the arguments.
- ◆ If the arguer is unable to establish the truth of these premises, then the arguments prove nothing.
- ◆ However, in most cases of begging the question, this is precisely the reason why such premises are left unstated.
- ◆ The arguer is not able to establish their truth, and by employing rhetorical phraseology such as “of course,” “clearly,” “this being the case,” and “after all,” the arguer hopes to create the illusion that the stated premise, by itself, provides adequate support for the conclusion when in fact it does not.

114

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Fallacies of Presumption: Begging the Question [Hurley]

♣ The second form of begging the question (*Petitio Principii*)

- ♦ The second form of *petitio principii* occurs when the conclusion of an argument merely restates a possibly false premise in slightly different language.
- ♦ In such an argument, the premise supports the conclusion, and the conclusion tends to reinforce the premise.



115

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Fallacies of Presumption: Begging the Question [Hurley]

♣ The third form of begging the question (*Petitio Principii*)

- ♦ The third form of *petitio principii* involves circular reasoning in a chain of inferences having a first premise that is possibly false.
- ♦ Cases in which circular reasoning may convince involve long and complex arguments having premises that depend on one another in subtle ways and a possibly false key premise that depends on the conclusion.



117

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Fallacies of Presumption: Begging the Question [Hurley]

♣ The second form of begging the question (*Petitio Principii*) examples

- ♦ “Capital punishment is justified for the crimes of murder and kidnapping because it is quite legitimate and appropriate that someone be put to death for having committed such hateful and inhuman acts.”
- ♦ In this argument, saying that capital punishment is “justified” means the same thing as saying that it is “legitimate and appropriate.”
- ♦ “Anyone who preaches revolution has a vision of the future for the simple reason that if a person has no vision of the future he could not possibly preach revolution.”
- ♦ In this argument, the premise and the conclusion say exactly the same thing.



116

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Fallacies of Presumption: Begging the Question [Hurley]

♣ The third form of begging the question (*Petitio Principii*) examples

- ♦ “Verizon has the best cell phone service. After all, their phones have the clearest sound. And we know this is so because customers hear better on Verizon phones. And this follows from the fact that Verizon has digital technology. But this is exactly what you would expect given that Verizon has the best cell phone service.”
- ♦ On encountering this argument, the attentive reader is inclined to ask, “Where does this reasoning begin? What is its source?”
- ♦ Since the argument goes in a circle, it has no beginning or source, and as a result it proves nothing.



118

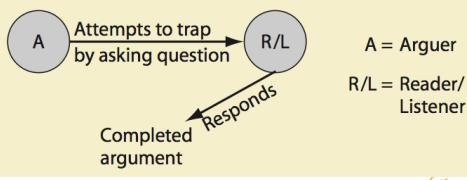
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Fallacies of Presumption: Complex Question [Hurley]

♣ Complex question

- ♦ The *fallacy of complex question* is committed when two (or more) questions are asked in the guise of a single question and a single answer is then given to both of them.

Complex question



119

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Fallacies of Presumption: Complex Question [Hurley]

♣ Complex question

- ♦ Every complex question presumes the existence of a certain condition.
- ♦ When the respondent's answer is added to the complex question, an argument emerges that establishes the presumed condition.
- ♦ Thus, although not an argument as such, a complex question involves an implicit argument.
- ♦ This argument is usually intended to trap the respondent into acknowledging something that he or she might otherwise not want to acknowledge.



120

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Fallacies of Presumption: Complex Question [Hurley]

Complex question examples

- ◆ “Have you stopped cheating on exams? Where did you hide the marijuana you were smoking?”
- ◆ Let us suppose the respondent answers “yes” to the first question and “under the bed” to the second. The following arguments emerge:
- ◆ “You were asked whether you have stopped cheating on exams. You answered, “Yes.” Therefore, it follows that you have cheated in the past.
- You were asked where you hid the marijuana you were smoking. You replied, “Under the bed.” It follows that you were in fact smoking marijuana.”



121

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Fallacies of Presumption: Complex Question [Hurley]

Complex question examples

- ◆ Obviously, each of the questions is really two questions:
- ◆ “Did you cheat on exams in the past? If you did cheat in the past, have you stopped now? Were you smoking marijuana? If you were smoking it, where did you hide it?”
- ◆ If respondents are not sophisticated enough to identify a complex question when one is put to them, they may answer quite innocently and be trapped by a conclusion that is supported by no evidence at all; or, they may be tricked into providing the evidence themselves.
- ◆ The correct response lies in resolving the complex question into its component questions and answering each separately.



123

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Fallacies of Presumption: Complex Question [Hurley]

Complex question examples

- ◆ On the other hand, let us suppose that the respondent answers “no” to the first question and “nowhere” to the second. We then have the following arguments:
- ◆ “You were asked whether you have stopped cheating on exams. You answered, “No.” Therefore, you continue to cheat.
- You were asked where you hid the marijuana you were smoking. You answered, “Nowhere.” It follows that you must have smoked all of it.”



122

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Fallacies of Presumption: False Dichotomy [Hurley]

False dichotomy

- ◆ The *fallacy of false dichotomy* is committed when a disjunctive (“either . . . or . . .”) premise presents two unlikely alternatives as if they were the only ones available, and the arguer then eliminates the undesirable alternative, leaving the desirable one as the conclusion.
- ◆ Such an argument is clearly valid, but since the disjunctive premise is false, or at least probably false, the argument is typically unsound.



124

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Fallacies of Presumption: False Dichotomy [Hurley]

False dichotomy

- ◆ The fallacious nature of false dichotomy lies in the illusion created by the arguer that the disjunctive premise presents jointly exhaustive alternatives.
- ◆ If it did, the premise would be true of necessity.
- ◆ But in the fallacy of false dichotomy, not only do the two alternatives fail to be jointly exhaustive, but they are not even likely.
- ◆ As a result, the disjunctive premise is false, or at least probably false.
- ◆ Thus, the fallacy amounts to making a false or probably false premise appear true.



125

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Fallacies of Presumption: False Dichotomy [Hurley]

False dichotomy examples

- ◆ “Either you let me attend the Dixie Chicks concert or I’ll be miserable for the rest of my life. I know you don’t want me to be miserable for the rest of my life, so it follows that you’ll let me attend the concert.”
- ◆ “Either you use Ultra Guard deodorant or you risk the chance of perspiration odor. Surely you don’t want to risk the chance of perspiration odor. Therefore, you will want to use Ultra Guard deodorant.”
- ◆ “Either you buy only American-made products or you don’t deserve to be called a loyal American. Yesterday you bought a new Toyota. It’s therefore clear that you don’t deserve to be called a loyal American.”
- ◆ In none of these arguments does the disjunctive premise present the only alternatives available, but in each case the arguer tries to convey that impression.



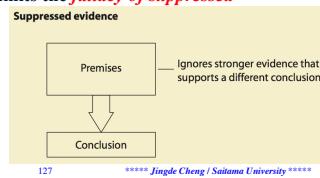
126

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Fallacies of Presumption: Suppressed Evidence [Hurley]

Suppressed evidence

- ◆ A cogent argument is an inductive argument with good reasoning and true premises. The requirement of true premises includes the proviso that the premises not ignore some important piece of evidence that outweighs the presented evidence and entails a very different conclusion.
- ◆ If an inductive argument does indeed ignore such evidence, then the argument commits the *fallacy of suppressed evidence*.



Fallacies of Presumption: Suppressed Evidence [Hurley]

Suppressed evidence

- ◆ A way that an arguer can commit the suppressed evidence fallacy is by creating the presumption that the premises are both true and complete when in fact they are not. Such fallacy can also be classified as a fallacy of presumption.
- ◆ Another way that an arguer can commit the suppressed evidence fallacy is by ignoring important events that have occurred with the passage of time that render an inductive conclusion improbable.
- ◆ Yet another form of suppressed evidence is committed by arguers who quote passages out of context from sources such as the Bible, the Constitution, and the Bill of Rights to support a conclusion that the passage was not intended to support.



128

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Fallacies of Presumption: Suppressed Evidence [Hurley]

Suppressed evidence examples

- ◆ "Most dogs are friendly and pose no threat to people who pet them. Therefore, it would be safe to pet the little dog that is approaching us now."
- ◆ If the arguer ignores the fact that the little dog is excited and foaming at the mouth (which suggests rabies), then the argument commits a suppressed evidence fallacy.
- ◆ "During the past sixty years, Poland has enjoyed a rather low standard of living. Therefore, Poland will probably have a low standard of living for the next sixty years."
- ◆ This argument ignores the fact that Poland was part of the Soviet bloc during most of the past sixty years, and this fact accounts for its rather low standard of living. However, following the collapse of the Soviet Union, Poland became an independent nation, and its economy is expected to improve steadily during the next sixty years.



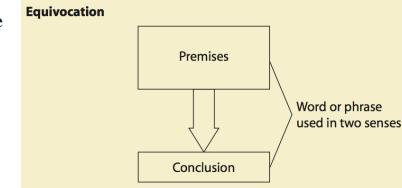
129

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Fallacies of Ambiguity: Equivocation [Hurley]

Equivocation

- ◆ The *fallacy of equivocation* occurs when the conclusion of an argument depends on the fact that a word or phrase is used, either explicitly or implicitly, in two different senses in the argument.
- ◆ Such arguments are either invalid or have a false premise, and in either case they are unsound.



Fallacies of Ambiguity: Equivocation [Hurley]

Equivocation

- ◆ To be convincing, an argument that commits an equivocation must use the equivocal word in ways that are subtly related.
- ◆ Another technique is to spread the shift in meaning out over the course of a lengthy argument.
- ◆ A third technique consists in using such phrases one way in a speech to one group and in a different way in a speech to an opposing group.



131

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Fallacies of Ambiguity: Equivocation [Hurley]

Equivocation examples

- ◆ "Some triangles are obtuse. Whatever is obtuse is ignorant. Therefore, some triangles are ignorant."
- ◆ In this argument "obtuse" is used in two different senses. In the first premise it describes a certain kind of angle, while in the second it means dull or stupid.
- ◆ "Any law can be repealed by the legislative authority. But the law of gravity is a law. Therefore, the law of gravity can be repealed by the legislative authority."
- ◆ This argument equivocates on the word "law." In the first premise it means statutory law, and in the second it means law of nature.



132

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Fallacies of Ambiguity: Equivocation [Hurley]

❖ Equivocation examples

- ◆ “We have a duty to do what is right. We have a right to speak out in defense of the innocent. Therefore, we have a duty to speak out in defense of the innocent.”
- ◆ This argument uses “right” in two senses. In the first premise “right” means morally correct, but in the second it means a just claim or power.
- ◆ “A mouse is an animal. Therefore, a large mouse is a large animal.”
- ◆ This argument illustrates the ambiguous use of a relative word. The word “large” means different things depending on the context. Other relative words that are susceptible to this same kind of ambiguity include “small,” “good,” “bad,” “light,” “heavy,” “difficult,” “easy,” “tall,” and “short.”

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Fallacies of Ambiguity: Amphiboly [Hurley]

❖ Amphiboly

- ◆ The original statement is usually asserted by someone other than the arguer, and the ambiguity usually arises from a mistake in grammar or punctuation -- a missing comma, a dangling modifier, an ambiguous antecedent of a pronoun, or some other careless arrangement of words.
- ◆ Because of this ambiguity, the statement may be understood in two clearly distinguishable ways.
- ◆ The arguer typically selects the unintended interpretation and proceeds to draw a conclusion based on it.

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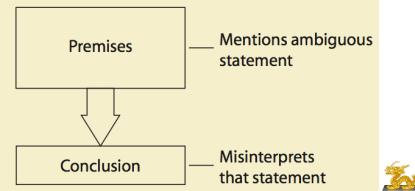


Fallacies of Ambiguity: Amphiboly [Hurley]

❖ Amphiboly

- ◆ The *fallacies of ambiguity* occurs when the arguer misinterprets an ambiguous statement and then draws a conclusion based on this faulty interpretation.

Amphiboly



134

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Fallacies of Ambiguity: Amphiboly [Hurley]

❖ Amphiboly examples

- ◆ “The tour guide said that standing in Greenwich Village, the Empire State Building could easily be seen. It follows that the Empire State Building is in Greenwich Village.”
- ◆ The premise of this argument contains a dangling modifier. Is it the observer or the Empire State Building that is supposed to be standing in Greenwich Village? The factually correct interpretation is the former.
- ◆ “John told Henry that he had made a mistake. It follows that John has at least the courage to admit his own mistakes.”
- ◆ In this argument the pronoun “he” has an ambiguous antecedent; it can refer either to John or to Henry. Perhaps John told Henry that Henry had made a mistake.

136

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Fallacies of Ambiguity: Amphiboly [Hurley]

❖ Amphiboly examples

- ◆ “Professor Johnson said that he will give a lecture about heart failure in the biology lecture hall. It must be the case that a number of heart failures have occurred there recently.”
- ◆ In this argument the ambiguity concerns what takes place in the biology lecture hall; is it the lecture or the heart failures? The correct interpretation is probably the former.
- ◆ The ambiguity can be eliminated by inserting commas (“Professor Johnson said that he will give a lecture, about heart failure, in the biology lecture hall”) or by moving the ambiguous modifier (“Professor Johnson said that he will give a lecture in the biology lecture hall about heart failure”). Ambiguities of this sort are called *syntactical ambiguities*.

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Fallacies of Grammatical Analogy: Composition [Hurley]

❖ Composition

- ◆ The *fallacy of composition* is committed when the conclusion of an argument depends on the erroneous transference of an attribute from the parts of something onto the whole.
- ◆ In other words, the fallacy occurs when it is argued that because the parts have a certain attribute, it follows that the whole has that attribute, too, and the situation is such that the attribute in question cannot be legitimately transferred from parts to whole.

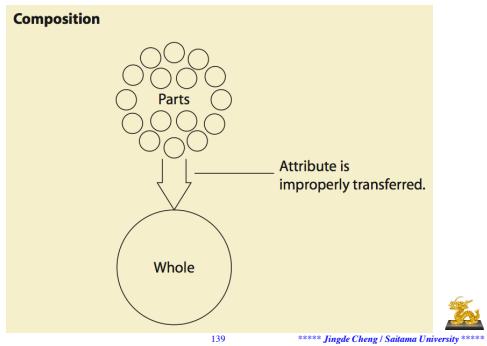
138

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Fallacies of Grammatical Analogy: Composition [Hurley]

Composition



Fallacies of Grammatical Analogy: Composition [Hurley]

Composition examples

- ◆ “Maria likes anchovies. She also likes chocolate ice cream. Therefore, it is certain that she would like a chocolate sundae topped with anchovies.”
- ◆ “Each player on this basketball team is an excellent athlete. Therefore, the team as a whole is excellent.”
- ◆ “Each atom in this teacup is invisible. Therefore, this teacup is invisible.”
- ◆ “Sodium and chlorine, the atomic components of salt, are both deadly poisons. Therefore, salt is a deadly poison.”
- ◆ In these arguments the attributes that are transferred from the parts onto the whole are designated by the words “Maria likes,” “excellent,” “invisible,” and “deadly poison,” respectively. In each case the transference is illegitimate, and so the argument is fallacious.

140

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Fallacies of Grammatical Analogy: Division [Hurley]

Division

- ◆ The **fallacy of division** is the exact reverse of composition. As composition goes from parts to whole, division goes from whole to parts.
- ◆ The fallacy is committed when the conclusion of an argument depends on the erroneous transference of an attribute from a whole (or a class) onto its parts (or members).

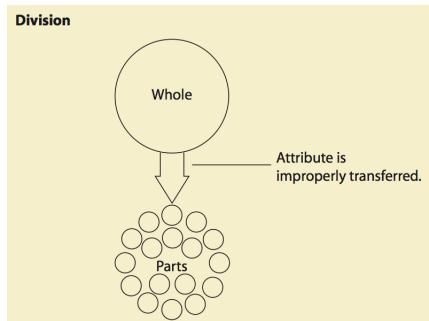
141

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Fallacies of Grammatical Analogy: Division [Hurley]

Division



Fallacies of Grammatical Analogy: Division [Hurley]

Division examples

- ◆ “Salt is a nonpoisonous compound. Therefore, its component elements, sodium and chlorine, are nonpoisonous.”
- ◆ “This airplane was made in Seattle. Therefore, every component part of this airplane was made in Seattle.”
- ◆ “The Royal Society is over 300 years old. Professor Thompson is a member of the Royal Society. Therefore, Professor Thompson is over 300 years old.”
- ◆ In each case the attribute, designated respectively by the terms “nonpoisonous,” “made in Seattle,” and “over 300 years old,” is illegitimately transferred from the whole or class onto the parts or members.

143

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Various Types of Fallacies [Kelley]

Subjectivist fallacies

- ◆ The cardinal virtue in reasoning is objectivity: a commitment to thinking in accordance with the facts and interpreting them logically.
- ◆ The subjectivist fallacies involve the violation of objectivity in one way or another.

SUMMARY Subjectivist Fallacies

Subjectivism: using the fact that one believes or wants a proposition to be true as evidence of its truth.

Appeal to emotion (argumentum ad populum): trying to get someone to accept a proposition on the basis of an emotion one elicits.

Appeal to majority (argumentum ad baculum): trying to get someone to accept a proposition on the basis of a threat.

144

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Various Types of Fallacies [Kelley]

❖ Fallacies involving credibility

- ◆ Fallacies involving credibility involve a misuse of the standards for credibility.

SUMMARY Fallacies Involving Credibility

Appeal to authority (*argumentum ad verecundiam*): using testimonial evidence for a proposition when the conditions for credibility are not satisfied or the use of such evidence is inappropriate.

Ad hominem: using a negative trait of a speaker as evidence that his statement is false or his argument weak.

145

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Various Types of Fallacies [Kelley]

❖ Fallacies of logical structure

- ◆ Fallacies of logical structure involve more subtle logical errors within the argument itself. .

SUMMARY Fallacies of Logical Structure

Begging the question (circular argument): trying to support a proposition with an argument in which that proposition is a premise.

proposition as evidence for the truth of the opposing proposition.

Equivocation: using a word in two different meanings in the premises and/or conclusion.

Diversion: trying to support one proposition by arguing for another proposition.

147

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Various Types of Fallacies [Layman]

❖ Fallacies involving ambiguity

- ◆ In these fallacies, arguments are flawed because they contain ambiguous words (phrases or statements) or because they involve a subtle confusion between two closely related concepts.

❖ Four varieties of fallacies involving ambiguity

- ◆ Equivocation
- ◆ Amphiboly
- ◆ Composition
- ◆ Division

149

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Various Types of Fallacies [Kelley]

❖ Fallacies of Context

- ◆ Fallacies in this category include arguments that “jump to conclusions.”

SUMMARY Fallacies of Context

False alternative: excluding relevant possibilities without justification.

Post hoc: using the fact that one event preceded another as sufficient evidence for the conclusion that the first caused the second.

Hasty generalization: inferring a general proposition from an inadequate sample of particular cases.

Accident: applying a generalization to a special case in disregard of qualities or circumstances that make it an exception to the generalization.

Slippery slope: arguing against a proposed action or policy by claiming, with insufficient evidence, that it will lead to a series of increasingly bad consequences.

Composition: inferring that a whole has a property merely because its parts have that property.

Division: inferring that a part has a property merely because the whole has that property.

146

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Various Types of Fallacies [Layman]

❖ Fallacies involving irrelevant premises

- ◆ These fallacies involve the use of premises that are logically irrelevant to their conclusions, but for psychological reasons, the premises may seem relevant.

❖ Six varieties of fallacies involving relevance

- ◆ Argument against the person (Ad hominem fallacy)
- ◆ Straw man fallacy
- ◆ Appeal to force (Ad baculum fallacy)
- ◆ Appeal to the people (Ad populum fallacy)
- ◆ Appeal to pity (Ad misericordiam fallacy)
- ◆ Appeal to ignorance (Ad Ignorantiam fallacy)

148

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Various Types of Fallacies [Layman]

❖ Fallacies involving unwarranted assumptions

- ◆ In these fallacies, errors in reasoning result when the arguer makes an unwarranted assumption. An unwarranted assumption is one that, in context, stands in need of support.

❖ Five varieties of fallacies involving unwarranted assumptions

- ◆ Begging the question (Petitio principii)
- ◆ False dilemma
- ◆ Appeal to unreliable authority (Ad verecundiam fallacy)
- ◆ False cause fallacy
- ◆ Complex question

150

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Various Types of Fallacies [N&R&V]

❖ Fallacies of relevance

- ◆ Fallacies of relevance occur when the premises of an argument are simply not relevant to the conclusion.
- ◆ In addition, the fallacies of relevance often involve a distractive element which diverts attention away from this very problem.

❖ Circular reasoning

- ◆ Circular reasoning is the fallacy of assuming what we are trying to prove.

❖ Semantic fallacies

- ◆ Semantic fallacies result when the language employed to construct arguments has multiple meanings or is excessively vague in a way that interferes with assessment of the argument.



151

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Fallacies of Relevance [N&R&V]

❖ Fallacies of relevance

- ◆ Fallacies of relevance occur when the premises of an argument have no bearing upon its conclusion.
- ◆ Such arguments are often called *non sequiturs* (from the Latin phrase ‘*non sequitur*’, meaning “it does not follow”).
- ◆ We will distinguish a number of different fallacies of relevance, though the generic error is the same in each case.

❖ A number of different fallacies of relevance

- ◆ Ad hominem abusive arguments, Straw man arguments, Ad baculum arguments, Ad verecundiam arguments, Ad populum arguments, Ad misericordiam arguments, Ad ignorantiam arguments, Ignoratio elenchi, and Red herring.



153

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Various Types of Fallacies [N&R&V]

❖ Inductive fallacies

- ◆ Inductive fallacies occur when the probability of an argument’s conclusion, given its premises – i.e., its inductive probability -- is low, or at least less than the arguer supposes.

❖ Formal fallacies

- ◆ Formal fallacies occur when we misapply a valid rule of inference or else follow a rule which is demonstrably invalid.

❖ Fallacies of false premises

- ◆ An argument has false premises.



152

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Fallacies of Relevance [N&R&V]

❖ Ad hominem arguments

- ◆ *Ad hominem* arguments try to discredit a claim or proposal by attacking its proponents instead of providing a reasoned examination of the proposal itself.

- ◆ “Ad hominem” means “against the person.”

❖ Varieties of Ad hominem arguments

- ◆ *Ad hominem* arguments come in at least five varieties.
- ◆ *Ad hominem* abusive arguments, The fallacy of guilt by association, Tu quoque (“you too”) arguments, Vested interest arguments, and Circumstantial ad hominem fallacies.



154

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Fallacies of Relevance [N&R&V]

❖ Ad hominem abusive arguments

- ◆ *Ad hominem abusive arguments* attack a person's age, character, family, gender, ethnicity, social or economic status, personality, appearance, dress, behavior, or professional, political, or religious affiliations.
- ◆ The implication is that there is no reason to take the person's views seriously.



155

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Fallacies of Relevance [N&R&V]

❖ Ad hominem abusive argument examples

- ◆ “Jones advocates fluoridation of the city water supply. Jones is a convicted thief. Therefore, we should not fluoridate the city water supply.”
- ◆ Even if Jones is a convicted thief, this has no bearing on whether the water supply should be fluoridated. To dismiss Jones' view simply because Jones is reprehensible is to commit the *ad hominem* abusive fallacy.
- ◆ “Jones says he saw my client commit a crime. Jones is a habitual drunkard. Therefore, Jones' testimony is worthless.”
- ◆ This is a borderline case. If Jones is a habitual drunkard, that surely is somewhat relevant to the reliability of his testimony, but the relevance in this case is not extremely strong or direct. Jones' observation might well have taken place when he was sober.



156

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Fallacies of Relevance [N&R&V]

♣ The fallacy of guilt by association

- ♦ *The fallacy of guilt by association* is the attempt to repudiate a claim by attacking not the claim's proponent, but the company he or she keeps, or by questioning the reputations of those with whom he or she agrees.
- ♦ This is also known as *poisoning the well*, which suggests a fitting scenario.



157

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Fallacies of Relevance [N&R&V]

♣ Tu quoque ("you too") arguments

- ♦ *Tu quoque ("you too") arguments* attempt to refute a claim by attacking its proponent on the grounds that he or she is a hypocrite, upholds a double standard of conduct, or is selective and therefore inconsistent in enforcing a principle.
- ♦ The implication is that the arguer is unqualified to make the claim, and hence that there is no reason to take the claim seriously.



159

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♣ Tu quoque ("you too") argument examples

- ♦ "Jones believes we should abstain from liquor. Jones is a habitual drunkard. Therefore, we should not abstain from liquor."
- ♦ Jones' actions have no bearing on the truth or falsity of his belief, even if he holds the belief hypocritically; the argument commits a tu quoque fallacy.

Fallacies of Relevance [N&R&V]

♣ Vested interest argument examples

- ♦ "Jones supports the fluoridation bill pending in Congress. He does so because he owns a major fluoridation firm, which will reap huge dividends if the bill passes. Therefore, we should not support this bill."
- ♦ Once again, the premises are irrelevant to the conclusion. Fluoridation may well be justified independently of Jones' allegedly selfish motives.
- ♦ The argument commits the vested interest fallacy.
- ♦ Whether Jones stands to gain or lose from fluoridation is immaterial.
- ♦ What counts is whether fluoridation is hygienically desirable, whether it is cost-effective, and so forth.



161

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Fallacies of Relevance [N&R&V]

♣ The fallacy of guilt by association: Example

- ♦ "Jones advocates fluoridation of the city water supply. Jones spends much of his free time hanging around with known criminals, drug addicts, and deviants. Therefore, we should not fluoridate the city water supply."
- ♦ The premises are irrelevant to the conclusion; even if Jones has detestable friends, what he advocates may well be true.
- ♦ Notice that it would not be a fitting reply merely to contest the second premise ("Jones actually spends most of his free time helping the elderly and performing volunteer work in hospitals").
- ♦ The central logical issue here is not whether Jones is the victim of a smear, but the failure to produce any premises germane to the conclusion.



158

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Fallacies of Relevance [N&R&V]

♣ Vested interest arguments

- ♦ *Vested interest arguments* attempt to refute a claim by arguing that its proponents are motivated by the desire to gain something (or avoid losing something).
- ♦ The implication is that were it not for this vested interest, the claim's proponents would hold a different view, and hence that we should discount their argument.



160

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Fallacies of Relevance [N&R&V]

♣ Circumstantial ad hominem fallacies

- ♦ *Circumstantial ad hominem fallacies* are sometimes grouped in a single category with vested interest fallacies, but there is a distinction between them.
- ♦ The circumstantial version of the ad hominem fallacy is the attempt to refute a claim by arguing that its proponents endorse two or more conflicting propositions.
- ♦ The implication is that we may therefore safely disregard one or all of those propositions.



162

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Fallacies of Relevance [N&R&V]

♣ Circumstantial ad hominem fallacies: Examples

- ◆ “Jones says he abhors all forms of superstition. Jones also says that breaking a mirror brings bad luck. Therefore, there probably is some thing to superstition after all.”
- ◆ This is an ad hominem circumstantial fallacy.
- ◆ Jones’ claims, whether consistent or not, have by themselves no bearing on the truth of the conclusion.



163

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Fallacies of Relevance [N&R&V]

♣ Straw man argument examples

- ◆ “There can be no truth if everything is relative. Therefore, Einstein’s theory of relativity cannot be true.”
- ◆ The premise is completely irrelevant to the conclusion, because Einstein’s theory does not assert that everything is relative (whatever that means).
- ◆ The claim that everything is relative is a straw man, and the argument implicitly attacks this straw man rather than examining Einstein’s actual theory.
- ◆ Thus even if the premise is true (which is certainly doubtful; it is difficult even to see what this premise could mean), it offers no support for the conclusion .



165

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Fallacies of Relevance [N&R&V]

♣ Straw man arguments

- ◆ **Straw man arguments** attempt to refute a claim by confusing it with a less plausible claim (the straw man) and then attacking that less plausible claim instead of addressing the original issue.
- ◆ The term comes from medieval fencing, where participants warmed up by practicing against dummies (straw men) before facing flesh-and-blood adversaries.
- ◆ A straw man argument may in fact provide good reasons against the less plausible claim that it confuses with the real issue, but these reasons will be irrelevant to the real issue itself.



164

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Fallacies of Relevance [N&R&V]

♣ Ad baculum arguments

- ◆ **Ad baculum arguments** (*appeals to force, appeals to the stick*) are attempts to establish a conclusion by threat or intimidation.

Fallacies of Relevance [N&R&V]

♣ Ad baculum argument examples

- ◆ “If you don’t vote for me, Ms. Jones, I’ll tell everybody you are a liar
Therefore, You ought to vote for me.”
- ◆ The premise is irrelevant to the justification of the conclusion. Coercion, threats, and intimidation may be persuasive in some cases, but they have no place in any scheme of rational appraisal.
- ◆ Note that it makes no difference how Jones responds to this threat; even if she capitulates, that does not change the fact that this sort of “reasoning” is logically unacceptable.



166

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♣ Ad verecundiam arguments

- ◆ **Ad verecundiam arguments** (*appeals to authority*) occur when we accept (or reject) a claim merely because of the prestige, status, or respect we accord its proponents (or opponents).

Fallacies of Relevance [N&R&V]

♣ Ad verecundiam argument examples

- ◆ “My teacher says that I should be proud to be an American. Therefore, I should be proud to be an American.”
- ◆ Without some further evidence that the teacher’s statement is correct or justified, the premise is simply irrelevant to the conclusion.
- ◆ Saying something does not make it so, no matter how eminent the speaker.



167

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♣ Questions

- ◆ How about adding the following premise to each of the above examples?
“Everything my teacher says is true.”
“Everything her teacher says is true.”



168

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Fallacies of Relevance [N&R&V]

❖ Ad populm arguments

- ◆ *Ad populm arguments (appeals to the people)* occur when we infer a conclusion merely on the grounds that most people accept it.
- ◆ This fallacy has the form:
X says that *P*. Therefore, *P*.
which makes it analogous to appeal to authority.
- ◆ However, the ‘X’ in this case stands for majority opinion, not the views of a specialized (or glamorous) person or minority.



169

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Fallacies of Relevance [N&R&V]

❖ Ad populm argument examples

- ◆ “More people drive Chevrolets than any other car. Therefore, Should not you? (A rhetorical question indicating that you should)”
- ◆ This is a bandwagon version of ad populm fallacy.
- ◆ The premise is simply irrelevant. It provides no evidence that Chevrolets are good cars or right car for you to drive, or even that you should be driving at all.
- ◆ The popularity of Chevrolets may result from their quality, but the argument gives us no reason to believe that it does.
- ◆ It could as well be a function of the effectiveness of the advertising used to promote them or other factors unrelated to their suitability for your needs.



171

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Fallacies of Relevance [N&R&V]

❖ Ad populm argument examples

- ◆ “Everybody believes that premarital sex is wrong. Therefore, premarital sex is wrong.”
- ◆ The issue is not whether ‘everybody’ in fact believes this (though that premise is in fact false), but what we may infer from such a premise.
- ◆ The argument fails to establish any relevant connection between premises and conclusion and hence it is fallacious.



170

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Fallacies of Relevance [N&R&V]

❖ Ad misericordiam arguments

- ◆ *Ad misericordiam arguments (appeals to pity)* ask us to excuse or forgive an action on the grounds of extenuating circumstances.
- ◆ They seek clemency for breaches of duty, or sympathy for someone whose poor conduct or noncompliance with a rule is already established.
- ◆ An appeal to pity may be either legitimate or fallacious, depending on whether or not the allegedly extenuating circumstances are genuinely relevant to the case.



173

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Fallacies of Relevance [N&R&V]

❖ Ad misericordiam argument examples

- ◆ “Oh, officer, you see my baby here was crying for some candy and I took her to the candy store before I came back to my car. Therefore, should not give me a parking ticket.”
- ◆ This is an ad misericordiam fallacy.
- ◆ The arguer appeals to the officer’s pity, but the appeal is clearly irrelevant.
- ◆ There is no reason not to get a parking ticket.



174

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Fallacies of Relevance [N&R&V]

Ad ignorantiam arguments

- ◆ *Ad ignorantiam arguments (appeal to ignorance)* have one of the following two forms:
- ◆ It has not been proved the P.
Therefore, not P.
- ◆ It has not been proved that not P.
Therefore, P.

Ad ignorantiam argument examples

- ◆ “No one has ever proved that God exists.
Therefore, God does not exist.”
- ◆ “No one has ever proved that God does not exist.
Therefore, God exists.”
- ◆ Both examples are fallacious appeal to ignorance. Nothing about the existence of God follows from our inability to prove God’s existence or nonexistence.



175

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Fallacies of Relevance [N&R&V]

Ignoratio elenchi examples

- ◆ “Any amount of inflation is bad for the economy.
Last month inflation was running at an annual rate of 10 percent.
This month the inflation rate is only 7 percent.
Therefore, the economy is on the upswing.”
- ◆ Given the premises, what follows is only that the rate of inflation is slowing down.
- ◆ Inflation is still occurring (i.e., things are still getting worse), but more slowly than before.
- ◆ This is very different from maintaining that the economy is improving; indeed, it suggests the opposite conclusion.



177

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Fallacies of Relevance [N&R&V]

Ignoratio elenchi

- ◆ *Ignoratio elenchi (missing the point)* occurs when the premises of an argument warrant a different conclusion from the one the arguer draws.
- ◆ This can be very embarrassing, especially if the conclusion which does follow contradicts or undermines the one actually drawn.
- ◆ The expression “missing the point” is also used as a general catchphrase to describe the fallacies of relevance. However, we shall reserve it for the precise mistake just mentioned.



176

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Fallacies of Relevance [N&R&V]

Red herring

- ◆ A *red herring* is an extraneous or tangential matter used purely to divert attention away from the issue posed by an argument. (The phrase stems from a method used to train hunting dogs to track down a scent.)
- ◆ Because it is irrelevant, a red herring contributes nothing to an argument, though it may mislead its audience into thinking otherwise.
- ◆ Red herrings are rhetorical devices.
- ◆ They enable those who use them to mask other defects hampering an argument, and thus to evade the real issue.



178

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Fallacies of Relevance [N&R&V]

Red herring example

- ◆ “Some members of the police force may be corrupt, but there are corrupt politicians, corrupt plumbers, corrupt salespeople, and even corrupt preachers.
There are also lots of honest cops on the job.
Therefore, let’s put police corruption in perspective (the implication being, of course, that police corruption is not as bad as it may seem).”
- ◆ Rhetorical grandiloquence is here employed to throw us “off the scent” of the real issue, which is what to do about police who accept bribes.
- ◆ The argument attempts to lull its audience into complacency about this issue.
- ◆ Notice that the first premise contains a whiff of *tu quoque*. (Why single out police for punishment? Corruption exists in all walks of life.)
- ◆ The second premise invites us to feel sympathy for honest police officers who are beleaguered by the bad reputation of their brethren (another diversionary tactic).
- ◆ Furthermore, the real conclusion (that police corruption is not as bad as it may seem) is not explicitly stated, so that we are less inclined to notice that the premises are irrelevant to it.



179

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Circular Reasoning [N&R&V]

Circular reasoning

- ◆ *Circular reasoning* (also called *petitio principii* and *begging the question*) occurs when an argument assumes its own conclusion.
- ◆ Such an argument is always valid (since if the assumptions are all true, the conclusion must surely be true!).
- ◆ And it is not lacking in relevance (for what could be more relevant to a statement than that statement itself?).
- ◆ Furthermore, if all the assumptions happen to be true, the argument is actually sound.
- ◆ But it is useless as a means of proving its conclusion.



180

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Circular Reasoning [N&R&V]

♣ Circular reasoning

- ♦ Either the argument is offered in a context in which the conclusion is already known to be true (in which case there is no point in trying to prove it), or it is offered in a context in which the conclusion is doubtful.
- ♦ If the conclusion is doubtful, then so (to precisely the same degree) is the assumption which is identical to it.
- ♦ An argument which employs doubtful assumptions (even if they are, unbeknownst to us, true) provides no more credibility for its conclusion than its premises already have.
- ♦ Hence, in neither context does a question-begging argument advance the credibility of its conclusion.



181

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Circular Reasoning [N&R&V]

♣ Circular reasoning examples

- ♦ “Capital punishment is justified. For our country is full of criminals who commit barbarous acts of murder and kidnapping. And it is perfectly legitimate to punish such inhuman people by putting them to death.”
- ♦ This argument argues for the conclusion that capital punishment is justified by assuming that it is legitimate to put certain criminals to death.
- ♦ Obviously these two statements say the same thing, even though the alleged truth of the latter is psychologically strengthened by the statement of the other premise.
- ♦ So the argument begs the question.



182

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Circular Reasoning [N&R&V]

♣ Question-begging epithets

- ♦ *Question-begging epithets* are phrases that prejudice discussion and thus in a sense assume the very point at issue.
- ♦ Often they suggest an ad hominem abusive attack: ‘godless communist’, ‘knee-jerk liberal’, ‘Neanderthal conservative’, ‘reactionary’, ‘bra burner’, ‘redneck’.
- ♦ They need not, however, be part of a question-begging argument.
- ♦ They often amount to nothing more than name-calling.



183

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Circular Reasoning [N&R&V]

♣ Complex questions

- ♦ *Complex questions* are a rhetorical trick somewhat akin to question-begging arguments.
- ♦ The question ‘Have you stopped beating your spouse?’, for example, presupposes an answer to the logically prior question ‘Did you ever beat your spouse?’.
- ♦ If this implicit question has not been answered affirmatively, then the original question is illegitimate, a verbal trap to lure the unwary.
- ♦ It is illegitimate because it presupposes what has not been established, namely, that the person being questioned has beaten his or her spouse.
- ♦ A complex question, of course, is not even a statement, let alone an argument.
- ♦ But its resemblance to question-begging arguments invites brief comment.



184

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Semantic Fallacies [N&R&V]

♣ Semantic fallacies

- ♦ Semantic fallacies occur when the language employed to express an argument has multiple meanings or is excessively vague in ways that interfere with assessment of the argument’s cogency.

♣ Ambiguity

- ♦ *Ambiguity (equivocation)* is multiplicity of meaning.
- ♦ Most words and many phrases have more than one meaning.
- ♦ Ambiguity generates fallacies when the meaning of an expression shifts during the course of an argument, causing a misleading appearance of validity.



185

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Semantic Fallacies [N&R&V]

♣ Ambiguity examples

- ♦ “It is silly to fight over mere words. Discrimination is just a word. Therefore, it is silly to fight over discrimination.”
- ♦ In this context ‘discrimination’ can have one of two meanings:
 - (1) action or policy based on prejudice or partiality or
 - (2) the word ‘discrimination’ itself.
 (In the latter case, the word should in fact be enclosed in quotation marks, but unfortunately, many people ignore that convention.)



186

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Semantic Fallacies [N&R&V]

♣ Ambiguity examples

- ◆ “It is silly to fight over mere words.
Discrimination is just a word.
Therefore, it is silly to fight over discrimination.”
- ◆ Now if we take ‘discrimination’ to mean the word itself in both its occurrences, there is no fallacy, and the argument is valid and perhaps even sound. (It seems a bit odd, however, to speak of fighting over this word.)
- ◆ On the other hand, if we take ‘discrimination’ in both its occurrences to mean discriminating action or policy, then although the argument is again valid, the second premise is certainly false; hence the argument fails.



187

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Semantic Fallacies [N&R&V]

♣ Amphiboly

- ◆ **Amphiboly** is ambiguity at the level of sentence structure, i.e., ambiguity not traceable to any particular word in a sentence but to the way the words are assembled.
- ◆ One logically troublesome source of amphiboly is the occurrence of both universal and existential quantifiers in the same English sentence.
- ◆ This generates ambiguity that can be represented in predicate logic by changing the relative scopes of the quantifiers.



189

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Semantic Fallacies [N&R&V]

♣ Amphiboly examples

- ◆ “Some number is greater than any number.
Therefore, some number is greater than itself.”
- ◆ The premise is amphibolous in the way indicated above.
- ◆ Under interpretation 1, the premise is true, but the inference is invalid (obviously, since the conclusion is false).
- ◆ And under interpretation 2, the inference is valid but the premise is false. Hence under no interpretation is the argument sound.



191

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Semantic Fallacies [N&R&V]

♣ Ambiguity examples

- ◆ “It is silly to fight over mere words.
Discrimination is just a word.
Therefore, it is silly to fight over discrimination.”
- ◆ What seems most likely is that the arguer intended ‘discrimination’ to mean the word in the premise and the action or policy in the conclusion.
- ◆ In that case, the premises may both be true, but they are irrelevant to the conclusion and the argument is invalid.
- ◆ However, confusion with the other two interpretations can give rise to a deceptive appearance of both relevance and validity. Under this third interpretation, the arguer commits a fallacy of ambiguity.



188

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Semantic Fallacies [N&R&V]

♣ Amphiboly examples

- ◆ “Some number is greater than any number.
Therefore, some number is greater than itself.”
- ◆ The sentence ‘Some number is greater than any number’ has two meanings:
 - (1) For any number x , there is some number or other (not necessarily the same in each case) which is greater than x .
 - (2) There is some number y which is greater than all numbers.
- ◆ Under interpretation 1, the statement is true. For every number x , there is a greater number: $x+1$, for example. But under interpretation 2 it is false. For interpretation 2 implies that y is greater than itself (since y is greater than all numbers and is itself a number), which of course is impossible.



190

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Semantic Fallacies [N&R&V]

♣ Vagueness

- ◆ **Vagueness** is indistinctness of meaning, as opposed to multiplicity of meaning.

♣ Vagueness examples

- ◆ “Discriminating palates prefer wine x .
I have a discriminating palate.
Therefore, I should drink wine x .”
- ◆ This version is valid, and the premises are relevant to the conclusion. However, the meanings of the premises are so indistinct that their truth is in question.
- ◆ Exactly what is a “discriminating palate,” and who (besides the arguer) has one? Anyone who likes wine x ? That would be a criterion, but it would be question-begging.



192

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Semantic Fallacies [N&R&V]

❖ Vagueness examples

- ◆ “Discriminating palates prefer wine x.
I have a discriminating palate.
Therefore, I should drink wine x.”
- ◆ In advertising, the meanings of words are often left indistinct so that consumers may interpret them in whatever way they find most flattering. But that is not the end of a vagueness here.
- ◆ Even if we could decide who has a “discriminating palate,” to what things are such people supposed to prefer wine x? To all other wines? To the cheapest wines? To rotten meat? Unless these questions are answered, nothing definite has been asserted.
- ◆ We cannot tell whether or not the premises are true, and so we should not accept the argument.

193

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Semantic Fallacies [N&R&V]

❖ Doublethink example

- ◆ The aim of Newspeak is to make thought, and therefore dissent, impossible.
- ◆ The fraud underlying Newspeak cannot be grasped, even by the officials who introduce and maintain it.
- ◆ Orwell's concepts have inspired considerable research into the extent to which everyday conversation, scientific jargon, and military, political, corporate, and bureaucratic discourse in contemporary society incorporate elements of Orwellian doublethink.

195

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Semantic Fallacies [N&R&V]

❖ Doublethink

- ◆ An extreme version of vagueness is **doublethink**, in which every sentence cancels out its predecessor and contradicts its successor.
- ❖ **Doublethink example**
- ◆ George Orwell's novel 1984 describes a fictional society (Oceania) whose rulers invent a language (Newspeak) which operates on this self-destructive principle.
- ◆ Newspeak is also a systematized form of lying in which every utterance is unverifiable.
- ◆ There is no access to facts except through distorted records, all composed in Newspeak.

194

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Semantic Fallacies [N&R&V]

❖ Accent examples (newspaper headline)

- ◆ “STUDENTS DEMONSTRATE New Laser Beam Techniques Used to Retrieve Coins from Vending Machines”
- ◆ The first line encourages the reader to believe that (college?) students are engaged in political protest.
- ◆ The second makes us expect a major scientific breakthrough.
- ◆ The third again forces us to reinterpret the entire message.
- ◆ Reliance on the first line or first and second lines alone leads to erroneous conclusions.
- ◆ To draw such conclusions is to commit the fallacy of accent.

197

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Semantic Fallacies [N&R&V]

❖ Accent

- ◆ **Accent** refers to emphases that generate multiple (and often misleading) interpretations.
- ◆ Newspaper headlines, contractual fine print, commercial “giveaways,” and deceptive contest entry forms are frequent sources of fallacies of accent.

196

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Inductive Fallacies [N&R&V]

❖ Inductive fallacies

- ◆ **Inductive fallacies** occur when the inductive probability of an argument (i.e., the probability of its conclusion given its premises) is low, or at least lower than the arguer thinks it is.

❖ Hasty generalization

- ◆ **Hasty generalization** means fallaciously inferring a conclusion about an entire class of things from inadequate knowledge of some of its members.
- ◆ Hasty generalizations are usually fallacious statistical or inductive generalizations.
- ◆ Occasionally, the term is used in a broader sense, to describe any fallacious extrapolation from observed to unobserved data.

198

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Inductive Fallacies [N&R&V]

❖ Hasty generalization examples

- ◆ “Last Monday I wrecked my car.
The Monday before that my furnace broke.
Therefore, bad things always happen to me on Mondays.”
- ◆ The inductive probability of this argument is extremely low.
- ◆ Two bad events on two Mondays are hardly sufficient to warrant a sweeping conclusion about all Mondays.
- ◆ This is a fallacy of hasty generalization.



199

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Inductive Fallacies [N&R&V]

❖ Faulty analogy examples

- ◆ “The American colonies justly fought for their independence in 1776.
Today the American Football Alliance is fighting for its independence.
Therefore, the Alliance’s cause is just too.”
- ◆ The analogy is extremely weak at best. The two causes really have little in common, except for the word ‘independence’ and the aura it promotes.
- ◆ As a result, the argument has quite a low inductive probability. Anyone who offers such an argument thinking that it lends much support to its conclusion thereby commits the fallacy of faulty analogy.



201

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Inductive Fallacies [N&R&V]

❖ The gambler’s fallacy examples

- ◆ “On each of the last ten throws, this coin has come up heads. Therefore, if tossed again, it is almost certain to come up tails.”
- ◆ This is an instance of the gambler’s fallacy.
- ◆ If the coin in question is fair, then the tosses are independent events, and the probability of tails on the next toss is 0.5, regardless of what has happened in the past.
- ◆ A long string of heads, however, may provide evidence that the coin or the method by which it is tossed is not fair, but biased in favor of heads. In that case, the probability of tails on the next toss is even less than 0.5.
- ◆ In neither case does a run of heads increase the probability of tails on a succeeding toss.



203

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Inductive Fallacies [N&R&V]

❖ Faulty analogy

- ◆ **Faulty analogy** is an inductive fallacy associated with analogical reasoning.
- ◆ In analogical reasoning we assert that object x has certain similarities with object(s) y, and that y has a further property P. We then conclude that x has P.
- ◆ This form of reasoning sometimes has a fairly high inductive probability.
- ◆ The inductive probability of analogical reasoning depends quite sensitively, however, on the degree and relevance of the similarity. If the similarity is slight or not particularly relevant, then a fallacy is likely to result.



200

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Inductive Fallacies [N&R&V]

❖ The gambler’s fallacy

- ◆ **The gambler’s fallacy** is an argument of the form: x has not occurred recently. Therefore, x is likely to happen soon.
- ◆ This sort of reasoning is fallacious if ‘x’ designates a type of event whose occurrences are more or less independent (i.e., one occurrence of which does not affect the likelihood of others).
- ◆ The fallacy gets its name from the propensity of gamblers who have had a run of bad luck to think “my luck is bound to change soon.”



202

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Inductive Fallacies [N&R&V]

❖ False-cause fallacy

- ◆ **False cause** is a term covering a variety of logical sins.
- ◆ Most simply, it means confusing a cause with an effect.
- ◆ But it may also mean offering an immediate causal explanation for an event without considering alternatives.
- ◆ Another variant is *post hoc ergo propter hoc* (after this, therefore because of this—often abbreviated to *post hoc*), in which a causal relationship is inferred merely from the temporal proximity of two or more events.
- ◆ What is common to all **false-cause fallacies** is that their conclusions are causal claims which are inadequately supported by their premises.



204

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Inductive Fallacies [N&R&V]

❖ False-cause fallacy examples

- ◆ “Every prophet or messiah is a charismatic leader.
Therefore, the exercise of talent for leadership is a road to religious inspiration.”
- ◆ Even if the premise were true (which is doubtful), it would not make the conclusion probable.
- ◆ A correlation between leadership and inspiration does not mean that leadership causes inspiration.
- ◆ In this case, it is obviously far more likely to be the other way around: the religious inspiration motivates the leadership.
- ◆ But even that is not a foregone conclusion.



205

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Inductive Fallacies [N&R&V]

❖ False-cause fallacy examples

- ◆ “Johnny Touchdown is a great athlete.
Johnny Touchdown takes amphetamines regularly.
Therefore, amphetamines help make Johnny a great athlete.”
- ◆ Again we have a correlation of two factors, but no evidence to indicate that this correlation is causal.
- ◆ The probability of the conclusion, given the premise, is low.
- ◆ In this case, the argument also suppresses important evidence, since it is common knowledge that although amphetamines may temporarily help to combat fatigue, they do not enhance playing performance; in the long run they actually impair it.



207

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Inductive Fallacies [N&R&V]

❖ False-cause fallacy examples

- ◆ “Every prophet or messiah is a charismatic leader.
Therefore, the exercise of talent for leadership is a road to religious inspiration.”
- ◆ There are yet other logical possibilities.
- ◆ Perhaps some independent third factor (genetic, social, or even supernatural) is responsible for each of these two qualities.
- ◆ Or perhaps the correlation is a coincidence.
- ◆ Nothing in the premise rules out any of these possibilities, and so the probability of the conclusion, given the premise, is quite low.



206

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Inductive Fallacies [N&R&V]

❖ False-cause fallacy examples

- ◆ “The patient became violently ill immediately after eating lunch.
There were no signs of illness prior to eating, and she was in good spirits during the meal.
She is in good health overall, and her medical history shows no record of physical problems.
Therefore, she was the victim of food poisoning.”
- ◆ The patient should be carefully examined. It would help to inspect or analyze the food she ate.
- ◆ We would also want to know whether anyone else who ate the same food (or used the same dishes, utensils, or serving bowls) has become ill.
- ◆ Even so, there is a variety of alternative explanations (cardiac arrest, stroke, asphyxiation, or sudden onset of a disease which has undergone a prior incubation period) available to the physician.



209

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Inductive Fallacies [N&R&V]

❖ False-cause fallacy examples

- ◆ Two important qualifications need to be made with respect to the above example.
- ◆ First, to label the reasoning post hoc (a variety of false cause) is not to say that its conclusion is false. In this sense ‘false cause’ is a misnomer. It means merely that the evidence contained in the premises does not by itself make the conclusion very probable.
- ◆ Second, although the argument does not support its conclusion very well, it may nevertheless be prudent to consider it in deciding what action to take.



210

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Inductive Fallacies [N&R&V]

♣ The fallacy of suppressed evidence

- ♦ In addition to the fallacies discussed above, the *fallacy of suppressed evidence* is often classified as an inductive fallacy.
- ♦ This is the fallacy of ignoring evidence bearing negatively on an inductively inferred conclusion.
- ♦ It is, however, unlike the other inductive fallacies discussed here, in that it may occur even if the argument's inductive probability is quite high and is not overestimated by the arguer.



211

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Formal Fallacies [N&R&V]

♣ Notes about formal fallacies

- ♦ Any argument with at least one valid form is valid.
- ♦ Valid arguments can have invalid forms as well.
- ♦ Having an invalid form does not mean that an argument commits a formal fallacy.
- ♦ A formal fallacy is clearly committed only if the argument is in fact invalid.
- ♦ If it happens that an arguer uses an invalid rule to produce a valid argument, and if we somehow know that the invalid rule was the one that the arguer was relying on (perhaps without realizing that it is invalid), then we may justly convict the arguer of committing a formal fallacy even though the argument is valid.



213

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Formal Fallacies [N&R&V]

♣ Fallacy of denying the antecedent: examples

- ♦ “If it rains heavily tomorrow, then the game will be postponed.
It will not rain heavily tomorrow.
Therefore, the game will not be postponed.”
- ♦ We can see that the argument itself is invalid by finding a counterexample.
- ♦ A counterexample for this argument is a situation in which the premises are both true (i.e., if it rains heavily tomorrow, the game will be postponed; but it is not going to rain heavily tomorrow) and yet the conclusion is false.



215

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Formal Fallacies [N&R&V]

♣ Formal fallacies

- ♦ *Formal fallacies* occur when we misapply a valid rule of inference or else follow a rule which is demonstrably invalid.
- ♦ An invalid rule of inference is an argument form that has some invalid instances.
- ♦ Thus in identifying formal fallacies, it is not sufficient simply to show that an argument has an invalid form.
- ♦ If a formal fallacy is suspected, it is important to ascertain both that the rule on which the reasoning seems to be based is invalid (by using the methods of formal logic) and that the argument itself is invalid.
- ♦ Typically we show that the argument itself is invalid by finding a *counterexample*, an actual or logically possible case in which the premises of the argument are true and its conclusion is false.



212

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Formal Fallacies [N&R&V]

♣ Fallacy of denying the antecedent

- ♦ The invalid rule by which the arguer of a *fallacy of denying the antecedent* reasoned is called “*denying the antecedent*”.
- ♦ An invalid argument as a fallacy of denying the antecedent has the following invalid form:
if R then P, not R, therefore, not P.
- ♦ The invalidity of the form can be verified by truth tables.
- ♦ The name of the fallacy comes from the second premise.
- ♦ In denying the antecedent, there is always a conditional premise and a second premise which is the denial (negation) of the antecedent of the conditional. The conclusion is the negation of the consequent of the conditional.



214

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Formal Fallacies [N&R&V]

♣ Fallacy of denying the antecedent: examples

- ♦ “If it rains heavily tomorrow, then the game will be postponed.
It will not rain heavily tomorrow.
Therefore, the game will not be postponed.”
- ♦ There are a number of ways in which the conclusion could be false (i.e., the game will be postponed) under these conditions.
- ♦ Perhaps it will snow heavily tomorrow, so that the game will be postponed because of snow.
- ♦ Perhaps the visiting team will miss its incoming flight, so that the game has to be postponed for that reason.
- ♦ These possibilities are counterexamples, and there are many others as well.
- ♦ The arguer has simply made a mistake in reasoning, supposing that the conclusion validly follows from these premises when in fact it does not.



216

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Formal Fallacies [N&R&V]

❖ Fallacy of affirming the consequent

- ◆ Another formal fallacy closely related to denying the antecedent is “*affirming the consequent*”.
- ◆ This fallacy occurs when we reason according to the following invalid form:
if P then Q, Q, therefore, P.
- ◆ The name of the fallacy comes from the second premise, which affirms the consequent of the first.



217

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Formal Fallacies [N&R&V]

❖ Fallacy of composition

- ◆ The *fallacy of composition* occurs when we invalidly impute characteristics of one or more parts of a thing to the whole of which they are parts.
- ◆ This fallacy has the following form:
p₁, p₂, ..., p_n are parts of w.
p₁, p₂, ..., p_n have property F.
therefore, w has property F.
- ◆ Here p₁, p₂, ..., p_n may be any member of objects, possibly just a single object.
- ◆ Fallacies of composition cannot be spotted by considering the argument form alone, since the form of the fallacy of composition has some valid instance.



219

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Formal Fallacies [N&R&V]

❖ Fallacy of division

- ◆ The converse of the fallacy of composition is the *fallacy of division*.
- ◆ Whereas in composition we invalidly impute characteristics of the parts to the whole, in division we invalidly impute characteristics of the whole to the parts.
- ◆ This fallacy has the following form:
w has property F.
p₁, p₂, ..., p_n are parts of w.
therefore, p₁, p₂, ..., p_n have property F.
- ◆ Here p₁, p₂, ..., p_n may be any member of objects, possibly just a single object.



221

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Formal Fallacies [N&R&V]

❖ Fallacy of affirming the consequent: examples

- ◆ “If Smith inherited a fortune, then she is rich.
She is rich.
Therefore, she inherited a fortune.”
- ◆ This is a fallacy of affirming the consequent.
- ◆ The argument has the form indicated above and is moreover clearly invalid.
- ◆ A typical counterexample for this argument is a scenario in which both of the premises are true but in which it is false that Smith inherited her fortune; rather, she made it by creating a successful software corporation.



218

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Formal Fallacies [N&R&V]

❖ Fallacy of composition: examples

- ◆ “Every sentence in this book is well written.
Therefore, This book is well written.”
- ◆ This is a typical fallacy of composition.
- ◆ It has the form indicated above (if we prefix it with the obvious assumption that sentences in the book are parts of the book) and is in fact invalid.
- ◆ To see its invalidity, consider the following counterexample.
- ◆ We can imagine or compose a book in which each sentence satisfies grammatical and aesthetic criteria while the sentences and paragraphs bear no relation to one another, resulting in incoherence.
- ◆ This would make the conclusion false while the premise is true.



220

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Formal Fallacies [N&R&V]

❖ Fallacy of division: examples

- ◆ “This book is written in English.
Therefore, every sentence in this book is in English.”
- ◆ This is a fallacy of division.
- ◆ A counterexample is that though the book is written in English, one or more sentences (e.g., quotations) may be in another language.
- ◆ However, the converse argument (which has the form of fallacies of composition) is valid:
“The sentences of this book are parts of this book.
Every sentence of this book is in English.
Therefore, this book is in English.”



222

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Fallacies of False Premises [N&R&V]

❖ Fallacies of false premises

- ◆ *Fallacies of false premises* are mistakes of just the sort the name suggests.
- ◆ So arguments that commit this fallacy may be valid, but are never sound.
- ❖ **The false dichotomy**
- ◆ One common instance is *the false dichotomy*.
- ◆ This fallacy is committed when we make the false assumption that only one of a number of alternatives holds.



223

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Fallacies of False Premises [N&R&V]

❖ Slippery slope fallacy

- ◆ A *slippery slope fallacy* occurs when the conclusion of an argument rests upon an alleged chain reaction, suggesting that a single step in the wrong direction will result in a disastrous or otherwise undesirable outcome.
- ◆ We may represent this form of reasoning as follows: if A1 then A2, if A2 then A3, ... if An then An+1. It should not be the case that An+1. Therefore, it should not be the case that A1.
- ◆ The phrase ‘it should not be the case that’ is to be understood in a moral sense.



225

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Fallacies of False Premises [N&R&V]

❖ Slippery slope fallacy examples

- ◆ “If you step on a crack, you break your mother’s back. If you break your mother’s back, you commit a moral outrage. You should not commit a moral outrage. Therefore, you should not step on a crack.”
- ◆ This is a transparent slippery-slope fallacy.
- ◆ The first premise is false.
- ◆ The second may be as well, since breaking your mother’s back by accident would not be a moral outrage.
- ◆ Moreover, depending on the interpretations of the conditionals, the argument may be invalid in a rather subtle way.



227

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Fallacies of False Premises [N&R&V]

❖ The false dichotomy examples

- ◆ “Either you are with us or you are against us. You are not with us. Therefore, you must be against us.”
- ◆ In many contexts, the first premise would be false.
- ◆ There is a third option—namely, the option of remaining neutral in the (unnamed) issue at hand.
- ◆ Notice that the reasoning is perfectly correct. The argument is an instance of disjunctive syllogism and is therefore valid.
- ◆ Moreover, the premises are quite relevant to the conclusion.
- ◆ The mistake, then, is merely the falsity of the first premise.



224

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Fallacies of False Premises [N&R&V]

❖ Slippery slope fallacy

- ◆ Although this form may seem valid, in fact its validity depends on the interpretation of the conditional ‘if ... then ...’ and the way it interacts with the deontic operator (should be).
- ◆ However, the fallacy usually labeled “slippery slope” is a problem not only with the validity of such reasoning, but also with the truth of its premises.
- ◆ That is why we include slippery slope in the class of fallacies of false premises.



226

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Fallacies of False Premises [N&R&V]

❖ Slippery slope fallacy examples

- ◆ Imagine a scenario in which you are going to break your mother’s back, but not as a result of stepping on a crack.
- ◆ That is, you are going to do it whether you step on a crack or not.
- ◆ Then, under certain interpretations of ‘if ... then ...’ (the material interpretation), the first premise is true.
- ◆ Suppose the other premises are true as well.
- ◆ Still, it may be false that you should not step on a crack, since stepping on a crack does not actually result in breaking your mother’s back.
- ◆ Thus under certain interpretations of ‘if ... then ...’, the argument has a counterexample and is therefore invalid.



228

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Various Types of Fallacies [Johnson]

♣ Appeal to authority (Argumentum ad Verecundiam)

- ◆ An *appeal to authority* is an argument in which the testimony of someone believed to be an authority is cited in support of a conclusion.
- ◆ The fallacy occurs when the person cited in not in fact an authority on the matter or for some reason should not be relied upon.

♣ Examples of appeal to authority

- ◆ "Well, I wouldn't listen to Bishop Desmond Tutu's version of the situation in South Africa, because Jerry Falwell says that Tutu is a phony."
- ◆ "According to my physics professor, Emily Dickinson's poetry is for the birds. That's good enough for me."
- ◆ "Barry Bonds is America's greatest baseball player. I have that on the authority of his father, Bobby Bonds."

229

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Various Types of Fallacies [Johnson]

♣ Appeal to the people (Argumentum ad Populum)

- ◆ The *appeal to people* fallacy is a variation on the appeal to authority. It consists in arguing that some statement S is true because most people believe S. It is in effect an appeal to commonly or traditionally held beliefs.

♣ Examples of appeal to people

- ◆ "America's best-selling pickup: Ford."
- ◆ "Well, for centuries people have believed in God, and I just don't see how so many people could be mistaken. So that's why I choose to believe."
- ◆ "Working one's way through college is a cherished American concept. (Dr. Newman, former president of the University of Rhode Island)"

♣ To recognize the fallacy of appeal to people

- ◆ To recognize the fallacy of appeal to people, look for an argument in which the conclusion is based on assertions about commonly or traditionally held beliefs.

231

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Various Types of Fallacies [Johnson]

♣ To recognize the fallacy of appeal to force

- ◆ Rather than offering a relevant reason for the conclusion, the arguer poses a threat to the listener, saying, in effect, "accept my conclusion or you'll be sorry."
- ◆ Obviously, the fact that the arguer poses a threat does not make the arguer's conclusion true or even probably true.
- ◆ To recognize the appeal to force, look for the presence of a threat that is either explicit or subtly disguised.

233

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Various Types of Fallacies [Johnson]

♣ The basic structure of appeal to authority

- ◆ Authority A asserts that S. Therefore, S.
- ◆ The fallacy of appeal to authority occurs when the authority cited is not qualified in the relevant matters or, less typically, is not free from adverse influences.

♣ To recognize the fallacy of appeal to authority

- ◆ To identify the fallacy of appeal to authority, we ask two questions: (1) Is the authority in fact a qualified authority about matters related to S? (2) Is there any good reason to believe that the authority may be biased in matters related to S?
- ◆ To recognize the appeal to authority, look for an argument based primarily on the premise that some person (or some publication) reports that S is true. The fallacy occurs when the person (or publication) is not relevantly qualified or is not speaking without bias.

230

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Various Types of Fallacies [Johnson]

♣ Appeal to force (Argumentum ad Baculum)

- ◆ An *appeal to force* is an argument based upon a threat.
- ◆ Arguers using this type of appeal try to persuade you by pointing out their power over you or by warning you of the bad consequences of refusing to accept their argument.

♣ Examples of appeal to force

- ◆ "Ladies and gentlemen of the jury, if you do not bring in a verdict of guilty, you may be this killer's next victim!"
- ◆ "Look, I give out the grades in this course, so I guess I should know that your answer is wrong!"
- ◆ "Smith, we can't have this statement on expenditures coming to the attention of the president. You've been the accountant here for nearly twenty years. It should be a shame to ruin all that now. I think it would be wise of you to take another look at the books, don't you?"

232

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Various Types of Fallacies [Johnson]

♣ Appeal to pity (Argumentum ad Misericordiam)

- ◆ Someone offering an *appeal to pity* is reasoning, in effect, "You should accept my conclusion out of pity."
- ◆ Such arguers urge you to believe something by arousing your sympathy for them or their cause.

♣ To recognize the fallacy of appeal to pity

- ◆ To recognize the fallacy of appeal to pity, look for premises that appeal to your sympathy.

234

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Various Types of Fallacies [Johnson]

Examples of appeal to pity

“There is no question that what this young man did is intolerable and repugnant. He admits it himself. But you’re not here to evaluate this man’s conduct morally; you’re here to try him and determine his guilt or innocence. And as you think this over, I want you to think hard about this young man, his home life and his future, which you now hold in your hands. Think about his broken home, never knowing his father, being left by his mother. Think about the poverty he’s known. The foster homes, the birthdays going unnoticed, and the Christmas he’s never had. And think hard about what life in prison will do to him. Think about these things, and I know you will acquit him of this crime.”



235

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Various Types of Fallacies [Johnson]

Examples of appeal to ignorance

- ◆ “Well, I’ve examined all the arguments for the existence of God, and I’ve seen that none of them proves that God exists. That’s reason enough for me: there is no God!”
- ◆ “Scientists have not proven that AIDS cannot be transmitted through casual contact. Therefore, we should avoid casual contact with suspected AIDS carriers.”

To recognize the fallacy of appeal to ignorance

- ◆ Lack of evidence that S is true is not normally evidence against it, and vice versa.
- ◆ To recognize the fallacy of appeal to ignorance, look for an absence of proof or evidence. Be aware of the two types of cases in which lack of evidence for S is relevant to the truth or falsity of S.



237

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Various Types of Fallacies [Johnson]

Appeal to ignorance (Argumentum ad Ignorantiam)

- ◆ When arguers claim that some statement S is true because, they say, we have failed to show that S is false, they are guilty of the fallacy of *appeal to ignorance*.
- ◆ If they argue that S is false because we have failed to show that S is true, they are also guilty of this fallacy.
- ◆ In each case the lack of proof or good evidence for the truth (or falsity) of S is used as a reason for concluding that S is false (or true).

The two forms of the appeal to ignorance

- ◆ We do not know that S is false (true).
Therefore, S is true (false).



236

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Various Types of Fallacies [Johnson]

Ad Hominem abusive

- ◆ The *Ad Hominem abusive* argument is an attack upon the opponent’s character, implying that what he or she says should not be believed because of this character flaw.

The underlying idea of Ad Hominem abusive

- ◆ Whatever anyone with undesirable characteristic X says is probably not true.
Person A has undesirable characteristic X.
Therefore, whatever A says is probably not true.

Examples of Ad Hominem abusive

- ◆ “Well now, you’ve all heard Professor Clark tell us about the theory of evolution. But I’m not surprised that he neglected to tell you that he is a godless atheist! How can this man speak the truth, I ask you?”
- ◆ “Franklin Putnam says he’d make a good president. But he’s no man for the White House; not only has been divorced, but he’s a Catholic and divorced!”



239

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Various Types of Fallacies [Johnson]

To recognize the fallacy of Ad Hominem abusive

- ◆ The abusive Ad Hominem argument, in effect, involves two claims: first, that the opponent possesses a certain undesirable or negative characteristic and, second, that the opponent’s words or abilities are not to be trusted because of that characteristic.
- ◆ Thus, an abusive Ad Hominem argument may be fallacious either because the person does not possess the characteristic ascribed to him or her or because possessing that characteristic is not relevant to the truth of his or her statements.
- ◆ To recognize the fallacy of Ad Hominem abusive, look for an attack on the person’s character rather than the person’s statements.



240

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Various Types of Fallacies [Johnson]

Ad Hominem circumstantial

- ◆ The *Ad Hominem circumstantial* argument implies that the opponent has special, usually self-interested, reasons for his or her claims.
- ◆ Thus, the argument attempts to refute the person's statement not by offering reasons against it but by suggesting that the person him-self does not have good reasons or honest motives for the position.

Examples of Ad Hominem circumstantial

- ◆ "The auto industry lobbyists have been arguing that tax reform is unnecessary. But just remember this: It is the auto industry that stands to benefit the most if there is no change in the current tax laws."
- ◆ "I'm not surprised that your mechanic recommends a complete engine overhaul. Do you know how much money he stands to make from that?"

241

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Various Types of Fallacies [Johnson]

The structure of the fallacy of Ad Hominem circumstantial

- ◆ Person A has self-interested reasons for asserting S. Therefore, S is probably not true.
- ◆ The fallacy is apparent if you consider that even if the change of self-interested motives is true, it still does not follow that what the person says is not true or even probably not true.

To recognize the fallacy of Ad Hominem circumstantial

- ◆ To recognize the fallacy of Ad Hominem circumstantial, look for an argument that claims that the opponent advances his or her argument not because it is true but because the opponent has some other, usually ulterior, motive for wanting his or her argument accepted.

242

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Various Types of Fallacies [Johnson]

Ad Hominem tu quoque ("you, too!")

- ◆ The *Ad Hominem tu quoque* ("you, too!") argument is an argument in which one defends oneself by accusing one's attacker, usually of a similar wrongdoing.
- ◆ Appropriately, this fallacy is sometimes called the fallacy of "*two wrongs make a right*".

Examples of Ad Hominem tu quoque

- ◆ "Yes, I admit, I did lie to you about last night. But you've lied to me."
- ◆ "Congressman Pyle accuses me of wasting taxpayers' money on political junkets. Well, you'll be interested to know that he has the track record in Congress for so-called working vacations. Working in the Bahamas! Come now, Mr. Pyle."

To recognize the fallacy of Ad Hominem tu quoque

- ◆ To recognize the fallacy of Ad Hominem tu quoque, look for an argument that attempts to offer a defense by accusing the accuser of a similar wrongdoing.

243

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Various Types of Fallacies [Johnson]

False cause

- ◆ The fallacy of *false cause* is committed when an arguer concludes that one event or thing A causes another event or thing B when in fact there is no good evidence of a causal relation.
- ◆ One common type of false cause, called *post hoc, ergo propter hoc* (Latin for "after this, therefore because of this"), consists of concluding that A causes B because A preceded B.
- ◆ Another type of fallacy of false cause may be called *oversimplification*. This fallacy occurs when an arguer explains the occurrence of some event or phenomenon in terms of one (or more) of its least important causes.

244

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Various Types of Fallacies [Johnson]

Examples of post hoc, ergo propter hoc

- ◆ "Statistics show that nearly every heroin user started out by using marijuana. It's reasonable to conclude, then, that marijuana smoking naturally leads to the harder drug."
- ◆ "Last night I was so angry at my brother I wished he was dead. And now he's in the hospital. God, if only I hadn't thought that. It's all my fault. I'll never feel hatred again, not of anyone!"

Examples of oversimplification

- ◆ "I blame the television media for the epidemic of hijackings, kidnapping, and other acts of terrorism. If we would stop televising terrorist acts, they'd stop."

245

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Various Types of Fallacies [Johnson]

To recognize the fallacy of false cause

- ◆ To recognize the fallacy of false cause, look for a claim that one thing B is caused by or explained as the result of some other thing A. Then consider whether there is any good evidence that A causes B.
- ◆ The variation called oversimplification can usually be spotted when an arguer proposes a solution to a problem while at the same time overlooking more plausible causal factors.

246

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Various Types of Fallacies [Johnson]

Slippery slope

- ◆ The fallacy of **slippery slope** is actually a variation of the fallacy of false cause; it involves a claim that a chain of causal events will occur.
- ◆ This fallacy is committed when a person argues that some event or practice he or she disapproves of will trigger a sequence of events ultimately leading to some undesirable consequence.
- ◆ The reasoning is that since we do not want the undesirable consequence, we ought therefore to oppose the initial event or practice. The fallacy in the reasoning consists in the false assumption that the claim of events will in fact occur.



247

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Various Types of Fallacies [Johnson]

Either/or fallacy

- ◆ The **either/or** fallacy, sometimes called **false dichotomy**, consists of mistakenly assuming that there are only two possible solutions to some problem or that solving some problem consists of choosing between only two alternatives.
- ◆ The argument moves by showing that one of the alternatives is false or unacceptable and concludes that the other must be true.
- ◆ We can imagine variations of the either/or fallacy in which an argument rests on the mistaken assumption that only three alternatives or four alternatives are available. The fallacy in each case consists in overlooking some other, less extreme alternative.



249

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Various Types of Fallacies [Johnson]

Examples of either/or fallacy

- ◆ “I don’t like Smith any more than you do, but voting for him is better than voting for Brown.”
- ◆ “Either we give in to these terrorists’ demands and jeopardize the lives of thousands of Americans or we refuse and risk the lives of the hostages. Well, I for one will not risk the lives of Americans all over the world. So we must not give in to these terrorists.”
- ◆ “The idea of deliberately causing trauma, deliberately injuring the head of a living baboon, is extremely distasteful. But if we are not allowed to continue this research, then we will simply not learn how to treat human beings with head injuries. It is unfortunate, but it must be done.”

To recognize the either/or fallacy

- ◆ To recognize the **either/or** fallacy, look for an argument that makes the false assumption that there are only two alternatives (or perhaps three or more) available and that one must be taken because the other is unacceptable.



251

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Various Types of Fallacies [Johnson]

Examples of slippery slope

- ◆ “You’ve all heard of grade inflation. Well, I want to speak to you about grade depression: the serious harm we do to students by grading them too hard rather than too easily. What does it do to students to measure them by too strict a standard? If it frustrates them, it conditions them to expect failure. They recoil from responsibility, always taking the easy route rather than learning to challenge and hence improve themselves. They develop habits of dependency, and many develop the symptoms of neurosis and other psychological disorders. Can we afford a generation of weak, dependent people unsuited for the demands of contemporary society?”

To recognize the fallacy of slippery slope

- ◆ To recognize the fallacy of **slippery slope**, look for an argument claiming that a certain practice or event will initiate a series of events ultimately leading to some undesirable consequence.



248

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Various Types of Fallacies [Johnson]

The form of the either/or fallacy

- ◆ Either X or Y.
Not Y.
Therefore, X.
- ◆ Note: This is a valid argument form, Disjunctive Syllogism. Therefore, the fallacy does not consist in its logical form. It consists rather in a false premise – the premise stating that only two alternatives are available, even if there are other possible alternatives.

Examples of either/or fallacy

- ◆ “As I see it, either we enforce the death penalty or we eventually find the convicted murderer out on parole. We cannot have murderers going free, so we had better start enforcing the death penalty.”



250

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Various Types of Fallacies [Johnson]

Equivocation

- ◆ The fallacy of **equivocation** occurs when the conclusion of an argument rests upon the **equivocal use of a word or phrase**, that is, its use in two different senses.

Examples of equivocation

- ◆ “Philosophy is an art. Art is studied by art historians. Therefore, philosophy is studied by art historians.”
- ◆ “Logic is the study of argument. Well, that’s one course I could ace. I know all about arguments. I’ve learned from experts. You should hear the arguments my parents have.”

To recognize the fallacy of equivocation

- ◆ To recognize the fallacy of **equivocation**, look for reasoning that involves a shift between two or more senses of a key word or phrase in the argument.



252

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Various Types of Fallacies [Johnson]

❖ Hasty generalization

- ◆ The fallacy of *hasty generalization* occurs when a generalization is formed on the basis of an unrepresentative sample.

❖ Examples of hasty generalization

- ◆ "I've spoken to the members of the campus Audubon Club, and they prefer to use the activity fund for a film series on birds. So probably a majority of the two thousand students would prefer a film series on birds."
- ◆ "The most surprising aspect of this survey was that 40 percent of the yes votes were from women under forty years of age. What does this say about the sexual revolution? It says, in the boudoir at least, it has been an abysmal failure."



253

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Various Types of Fallacies [Johnson]

❖ Fallacy of composition and Fallacy of division

- ◆ The fallacy of *composition* and the fallacy of *division* consist of fallacious reasoning about the relationship between a whole and its parts or a group and its members. They are sometimes called the *part/whole* fallacies.

❖ Fallacy of composition

- ◆ The fallacy of *composition* occurs when an arguer mistakenly concludes that the whole must have some characteristic because each part or member has the characteristic.

❖ Fallacy of division

- ◆ The fallacy of *division* is fallacious reasoning from the whole to the parts. The arguer mistakenly concludes that each part or member of the whole must have some characteristic because the whole has the characteristic.



255

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Various Types of Fallacies [Johnson]

❖ To recognize the fallacy of hasty generalization

- ◆ To recognize the fallacy of hasty generalization, look for a conclusion that generalizes over a group.
- ◆ Notice whether the basis for the generalization is both representative of the group and sufficiently large to justify the generalization.



254

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Various Types of Fallacies [Johnson]

❖ The form of the fallacy of composition

- ◆ Letting W stand for the whole and f for some feature. We can represent the form of this type of argument as follows: Each member of W is f. Therefore, W is f.

❖ Examples of the fallacy of composition

- ◆ "Each member of the orchestra is excellent, so the orchestra is excellent."
- ◆ "The pink sweater is gorgeous. The purple skirt over there is smashing. I love those red shoes in the window, and how about that terrific yellow vest on the mannequin! Let's face it, it will make a great outfit for you!"
- ◆ "Smoking this cigarette surely can't harm me. So how can smoking cigarette harm me?"



256

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Various Types of Fallacies [Johnson]

❖ To recognize the fallacy of composition

- ◆ To recognize the fallacy of composition, look for an argument that moves from a claim about the parts or members of a group to a conclusion about the whole. Consider then whether it is justifiable to attribute what is true of the parts to the whole.



257

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Various Types of Fallacies [Johnson]

❖ The form of the fallacy of division

- ◆ Letting W stand for the whole and f for some feature. We can represent the form of this type of argument as follows: W is f. Therefore, Each member of W is f.

❖ Examples of the fallacy of division

- ◆ "The union voted to strike. Therefore, every member of the union voted to strike."
- ◆ "Humans are only animals capable of philosophical thinking. Thus, every person is capable of philosophical thinking."
- ◆ "Tornadoes are common in the Midwest. Therefore, since Kansas City is in the Midwest, tornadoes are common in Kansas City."
- ◆ "The team won a trophy. Therefore, every player won a trophy."



258

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Various Types of Fallacies [Johnson]

◆ To recognize the fallacy of division

- ◆ To recognize the fallacy of division, look for an argument that moves from a claim about a whole or a group to a conclusion about one or all of the members of the whole. Then consider whether it is justifiable to attribute what is true of the whole to its parts.

259

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Various Types of Fallacies [Johnson]

◆ False analog

- ◆ The strength of an argument from analogy depends on (1) the relevance of the possession of features f, g, and h to the possession of feature j, and (2) the absence of relevant dissimilarities.
- ◆ If either criterion is not satisfied, then the argument commits the fallacy of *false analog*.

◆ Examples of the fallacy of false analog

- ◆ "Professor Hart teaches philosophy, and he is no fun at parties. Professor Milton teaches philosophy too, so he is probably no fun at parties either."
- ◆ "Professor Hart teaches philosophy, has a pet cat, reads German, drives a foreign car, likes to cook, and is no fun at parties. Professor Milton teaches philosophy, has a pet cat, reads German, drives a foreign car, likes to cook. So he is probably no fun at parties either."

261

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Various Types of Fallacies [Johnson]

◆ Begging the question

- ◆ *Begging the question* is the fallacy of assuming the conclusion in one's premises.

◆ Examples of the fallacy of begging the question

- ◆ "(I) The Bible asserts that God exists. (2) The Bible is the truth revealed by God. (3) Therefore, God exists."

◆ Notes

- ◆ The above argument is (*classically*) valid. Indeed, arguments that beg the question are usually (*classically*) valid. However, premise (2) is true only if the conclusion (3) is true. In other words, the premise does not offer independent support for the conclusion; it assumes the conclusion.
- ◆ Thus, the argument assumes the very thing that is purports to prove. A person using an argument of this form is often said to be guilty "*circular reasoning*," for the support for the conclusion is itself supported by the conclusion.

263

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Various Types of Fallacies [Johnson]

◆ Argument from analogy

- ◆ An *argument from analogy* draws a conclusion about something on the basis of an analogy with or resemblance to some other thing.
 - ◆ The assumption is that if two or more things are alike in some respects, they are alike in some other respect.
 - ◆ Letting A and B represent two different things, events or practices and letting f, g, h, and j represent features or properties, we can represent the form of the argument from analogy as follows:
- A and B are both f, g, and h.
A is also j.
Therefore, probably B is j.

260

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Various Types of Fallacies [Johnson]

◆ To recognize the fallacy of false analog

- ◆ To recognize the fallacy of false analog, look for an argument that draws a conclusion about one thing, event, or practice on the basis of its analogy or resemblance to others.
- ◆ The fallacy occurs when the analogy or resemblance is not sufficient to warrant the conclusion, as when, for example, the resemblance is not relevant to the possession of the inferred feature or there are relevant dissimilarities.

262

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Various Types of Fallacies [Johnson]

◆ Examples of the fallacy of begging the question

- ◆ "It is plain to see that suicide is morally wrong because, as any thinking person will admit, no one is ever justified in taking his or her own life."
- ◆ "I'm sorry I missed your class today, Professor Hart. Did I miss anything important?"
- ◆ "Mr. President, are you going to support further unnecessary military spending?"

◆ To recognize the fallacy of begging the question

- ◆ To recognize the fallacy of division, look for an argument, reply, or question that assumes already the very issue under debate.
- ◆ Be aware that a question-begging argument may appear to offer legitimate, independent support, but on closer examination a premise in fact either itself rests upon the conclusion or restates the conclusion in different words.

264

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Various Types of Fallacies [Johnson]

Straw man

- ◆ The fallacy of **straw man** occurs when an arguer responds to an opponent's argument by misrepresenting it in a manner that makes it appear more vulnerable than it really is, proceeds to attack that argument, and implies that he or she has defeated the opponent.
- ◆ It is called the straw man fallacy because, rather than attacking the "real man," the opponent sets up and knocks over a "straw man."

Examples of the fallacy of straw man

- ◆ "Don't be fooled by statistics showing some sort of correlation because smoking and lung cancer. Any logic student can tell you that it does not necessarily follow that a person will get cancer from smoking cigarettes."

265

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Various Types of Fallacies [Johnson]

Examples of the fallacy of straw man

- ◆ "Councilman Winters says that all home owners should be required to put fences around their swimming pools in order to warn children. But we all know that any child who really wants to get to a neighbor's pool will find some way to get over any fence."
- ◆ "Robert Ardrey and others have argued for the theory of evolution by adducing evidence that humans evolved from a rather smallish, apelike hominid, Australopithecus africanus, who, they say, was an aggressive, territorial hunter and carnivore. In their zeal to establish this theory of theirs, they overlook one crucial fact: We are not all carnivores! How does their theory of descent from the apes account for the fact that many humans, indeed, most humans in the world, live on a diet of vegetables and grains, not meat?"

266

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Various Types of Fallacies [Johnson]

To recognize the fallacy of straw man

- ◆ To recognize the fallacy of straw man, look for a response that misrepresents an opponent's argument in order to defeat it more easily.
- ◆ The arguer appears to be attacking the opponent's position, but in fact the arguer is attacking a misrepresentation of it.

267

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Various Types of Fallacies [Johnson]

Red herring

- ◆ The fallacy of **red herring** gets its name from the practice of using a herring, a particularly smelly fish when cooked, to divert hunting dogs from the scent of a fox.
- ◆ To commit the fallacy of **red herring** in an argument is to draw attention away from an issue by raising some other, seemingly related issue. In so doing, the arguer attempts to sidetrack the opponent's argument.

Examples of the fallacy of red herring

- ◆ "Friends and neighbors, I urge you to defeat the proposal to make jail sentences mandatory for drunk drivers. My opponent claims that it will reduce the number of accidents caused by drunk drivers. But if we really want to reduce traffic accidents, then we should stand behind those men and women whose chief responsibility is our safety. I am referring, of course, to our valiant police officers. What we need to do is increase their salaries, beef up the police force, and, most importantly, stop butting into their business with troublesome proposals!"

268

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Various Types of Fallacies [Johnson]

Examples of the fallacy of red herring

- ◆ "I agree with my opponent that pornography is a national problem, and I am almost persuaded by his argument that women are being degraded and victimized by pornography. I say, almost persuaded ... utile I remember the facts that my opponent obviously overlooks: namely, that the people of Tibet are not merely degraded and victimized, they are deprived of every right due a human being. And what I don't understand is how we convince ourselves that our so-called national problem takes precedence over genuine oppression and suffering."

To recognize the fallacy of red herring

- ◆ To recognize the fallacy of red herring, look for an argument in which the speaker responds by directing attention away from the issue to other, seemingly related issue.

269

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Various Types of Fallacies [Johnson]

Inconsistency

- ◆ The fallacy of **inconsistency** involves reasoning from inconsistent premises, that is, statements that cannot be simultaneously true.

What is wrong with inconsistency ?

- ◆ From the practical standpoint the most obvious answer is that we cannot rely on a person who argues inconsistently or maintains inconsistent positions.
- ◆ There are two other reasons why inconsistency is a serious error in reasoning. First, arguments with inconsistent premises necessarily fail to be good arguments because it cannot be the case that all premises are simultaneously true. Secondly, an argument with inconsistent premises does not distinguish good reasoning from bad because any statement can be (**classically**) validly deduced from inconsistent premises.

270

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Various Types of Fallacies [Johnson]

❖ Examples of the fallacy of inconsistency

- ◆ “(1) It is raining.
 (2) Therefore, it is raining or Mexico is north of the United States.
 (3) It is not raining.
 (4) Therefore, Mexico is north of the United States.”

❖ Notes

- ◆ The inference from (1) to conclusion (2) is a (**classically**) valid deduction. Given that it is raining, it necessarily follows that (2). Notice that (2) does not assert that “it is raining” is true and “Mexico is north of the United States” is true. It asserts only that one or the other is true. Now premise (3) – the denial of (1) – asserts that it is not the case that it is raining. Thus, since “it is raining” is false and “it is raining or Mexico is north of the United States” is true, “Mexico is north of the United States” must follow as a valid inference. From inconsistent premises we have (**classically**) validly deduced (4).

271

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Various Types of Fallacies [Johnson]

❖ To recognize the fallacy of inconsistency

- ◆ To recognize the fallacy of inconsistency, look for an argument with premises that are either implicitly or explicitly inconsistent.

272

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