



CRITICAL THINKING

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LECTURE 7

Fallacies of Weak Induction



Summary

In this lecture, we will learn four types of **Fallacies of Weak Induction**:

- (a) **Hasty Generalization** (unsuccessful Inductive Generalization)
- (b) **Weak Analogy** (unsuccessful Analogical Argument)
- (c) **False Cause** (unsuccessful suppressed ABE – causal type)
- (d) **Slippery Slope** (Domino Effect)

Part I. Fallacies of Weak Induction – general introduction

Arguments committing the **fallacies of weak induction** all share the following **two general features**:

- (1) the premises are **relevant** to the conclusion (i.e., the truth/falsity of the premises has some impact on the probability for the conclusion), **but**
- (2) the evidence provided by the premises is **not enough** to make the conclusion acceptable (i.e., the premises, even if true, do not make the conclusion more likely to be true than false).

- ✦ All arguments committing the fallacies of weak induction are **nondeductively unsuccessful**.
- ✦ They are called “fallacies of weak induction” because they all involve weak inductive arguments (i.e., what we call in this Subject “unsuccessful nondeductive arguments” – the same thing).
- ✦ We are going to look at three types of fallacies of weak induction this week. Each has a specific argument form.

Example

P. All Liberal Party front benchers oppose gay marriage.

C. All Liberal Party supporters oppose gay marriage.

- The argument commits a specific type of fallacy of weak induction, called “hasty generalization” (more on next slide).
- P is **relevant** to C, for its truth/falsity has an impact on the chance for C (e.g., the falsity of P would reduce the chance for C to zero.)
- However, **the evidence provided by P alone is not enough to make the generalization in the conclusion acceptable.**

We have learnt in previous weeks several forms of nondeductive arguments. Now, if an argument fitting one of those forms turns out to be nondeductively unsuccessful, then it commits a **corresponding** fallacy of weak induction:

- ✦ An argument commits the **fallacy of Hasty Generalization** if it is an **unsuccessful inductive generalization**.
- ✦ An argument commits the **fallacy of Weak Analogy** if it is an **unsuccessful analogical argument**.
- ✦ An argument commits the **fallacy of False Cause** if it involves an **unsuccessful ABE of the causal type**.

Part II. Three Fallacies of Weak Induction

(a) Hasty Generalization

N% of a (non-representative) sub-group in group X has feature F.

N% of group has feature F.

P. All (i.e., 100%) of the cases of removal of aboriginal children reported by Andrew Bolt involve parents either voluntarily giving up their children or having a history of neglecting or abusing their children, and are therefore justified.

C. All cases of removal of aboriginal children involve ... and are therefore justified .

P*. No religious satire will offend me (sub-group).

C*. No religious satire will offend people (whole group).

P**. At least 40% of 50 randomly surveyed current CRT students are female.

C**. At least 40% of all current CRT students are female.

General Structure:

- A hasty generalization is an inductive generalization where the sub-group referred to by the premise is **non-representative**.
- If the sub-group involved is representative, then it is not a fallacy of hasty generalization.
- Given the way “hasty generalization” is defined, all arguments committing hasty generalization are nondeductively **unsuccessful**.

Hasty Generalization – unsuccessful argument

Hasty Generalization – unsuccessful argument

- NOT hasty generalization
- successful Inductive Generalization

(b) Weak Analogy

A weak analogy is just an analogical argument where there is **no systematic connection between {Fs}** (observed features for both primary and secondary analogues) **and K** (observed for primary analogue, but unobserved and merely analogically inferred for secondary analogue).

General Form of Analogical Argument

A1 has the set of features {Fs} and the feature K. (observed)
 A2 has the set of features {Fs} and the feature K. (observed)
 :
 B is similar to A1, A2, ... in having the set of features {Fs}. (observed)

 B is also similar to A1, A2, ... in having the feature K. (analogically inferred)

} Items A1, A2, ... are the primary analogues

} Item B is the secondary analogue

P1. Cars A1, A2, and A3 are all red and have low mileage.
 P2. Car B is also red.

 C. Car B also has low mileage.

- **Weak Analogy - unsuccessful argument**
- **NO systematic connection between the colour of a car and its mileage**

P1*. Cars A1, A2, and A3 are all new and have low mileage.
 P2*. Car B is also new.

 C*. Car B also has low mileage.

- **successful Analogical Argument**
- **Systematic connection between the age of a car and its mileage**

A weak analogy is simply an analogical argument where there is **no systematic connection between {Fs}** (observed features for both primary and secondary analogues) **and K** (observed for primary analogue, but unobserved and merely analogically inferred for secondary analogue).

P1. Argument A is valid and its conclusion is true.
 P2. Argument B is valid.

 C. Argument B' s conclusion is true.

Valid & True Conclusion
 All men are mammals.
 All mammals are animals.

 All men are animals. (**true**)

Valid & False Conclusion
 All men are mammals.
 All mammals can fly.

 All men can fly. (**false**)

- **Weak Analogy - unsuccessful argument**
- **NO systematic connection between validity itself and the truth/falsity of conclusion**
- Connection is between (a) validity-plus-true-premises and (b) true conclusion.
- Validity alone doesn' t entail truth/falsity of the conclusion.

P1*. Argument A is nondeductively successful and its conclusion has a greater than 50% chance to be true.
 P2*. Argument B is nondeductively successful.

 C*. Argument B' s conclusion has a greater than 50% chance to be true.

Success & Probable Conclusion
 Most human beings have 2 lungs.
 You are a human being.

 You have 2 lungs. (**probably true**)

Success & Improbable Conclusion
 Most human beings have only 1 lung.
 You are a human being.

 You have only 1 lung. (**probably false**)

- **Weak Analogy - unsuccessful argument**
- **NO systematic connection between nondeductive success itself and probability for the conclusion**
- Connection is between (a) success-plus-true-premises and (b) greater than 50% probability for the conclusion.
- Success alone doesn' t entail greater than 50% probability for the conclusion.

- It is easy to believe that one event that happens after another event is caused by the earlier one. But we must be careful not to mistake **coincidence** for a causal relationship.
- “Post hoc ergo propter hoc” means “after this, therefore because of this”. This is the origin of the name “**post hoc**” fallacy, which is one variety of the “**false cause**” fallacy.

(c) False Cause (“post hoc” variety)

Event B occurred after event A.

Event A caused event B.

False Cause as suppressed ABE

B occurred after A.

Hypothesis “A caused B” best explains B occurring after A. (suppressed premise)

A caused B.

Complex False Cause (see Hurley, chapter 3.3)

B occurred after A.

Hypothesis “A caused B” best explains B occurring after A. (suppressed)

A caused B. (suppressed, from two premises above)

In order to produce/avoid future events similar to B, we need to first produce/avoid events similar to A.

Why is it a fallacy?

- Whatever caused event B happened prior to B. But not everything that happened prior to B is its cause.
- So, that B occurred after A is, by itself, not a good enough reason for concluding that A caused B.
- The **general argument form** “B occurred after A, therefore B was caused by A” is **fallacious**.

Further analysis: an unsuccessful suppressed ABE

- We can think of the post hoc fallacy as an unsuccessful (suppressed) ABE, which is committed when a person observes B occurring after A, and then takes the “A caused B” as the **best explanation** for the order of events - when it isn't really the best explanation.
- To provide a full treatment of an argument committing post hoc (or any other variety of false cause), we need to (1) point out what causal hypothesis it endorses, and (2) give better explanations for the events in question, and show the argument's hypothesis is probably false.

Example: A = Going to bed late last night.
 B = Scoring well for the test today.

Better explanation = Studying hard

The **Fallacy of Slippery Slope** (or Domino Effect) involves improbable claims about some **causal chain** of reactions to an initial **innocent event**, which is taken as the start of a domino track – where the first domino topples and causes the next one to fall, which in turn causes the next one to fall, and so on ..., and eventually causes a **disastrous event**.

(d) Slippery Slope (Domino Effect)

Event A - via a causal chain of events - would lead to a disastrous event B.

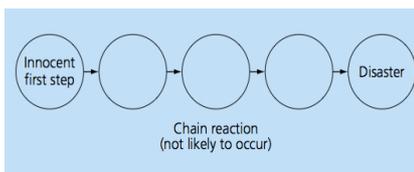
We should not let event A occur.

Case 1: We should refuse permission for people to go to Switzerland for medically assisted death. For once our society accepts that, it will soon accept our doctors killing off difficult patients without any qualms.

Case 2: Some parents want to use prenatal treatment to improve the health prospects of their children. It shouldn't be allowed. Otherwise, the government will soon be forcing eugenic programs on people.

Case 3: The collapse of even a small number of big banks would shortly lead to another global financial crisis. So the government must safeguard the big banks.

Case 1 – fallacy, given evidence/experience from Europe
Case 2 – fallacy, given evidence/experience from USA
Case 3 – not a fallacy, given the 2008 GFC



When is it a fallacy?

- A single event often does not cause a cascade of other effects (e.g., you can remove a brick without the wall collapsing). When an argument asserts an unlikely causal chain of effects, it commits the **Slippery Slope Fallacy**.
- Some events - like the toppling of each domino on the track – do have reliably predictable chains of effects. When an argument, in the form of **Slippery Slope Argument**, asserts a likely causal chain of effects, it does not commit any fallacy.

An empirical matter that requires empirical evidence

- It can be hard to determine if a slippery slope argument commits a fallacy or not, because that is an **empirical matter** which cannot be decided a priori. (“A priori” means “independent of experience”.)
- Before the 2008 GFC, it would have seemed unlikely to many people that the collapse of a few important financial institutions would have caused a world-wide crisis. In this case, there was a world-wide network of debt swaps and structured investments that operated like the domino track.

Summary

In this lecture, we have learnt four types of **Fallacies of Weak Induction**:

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- (c) **False Cause** (unsuccessful suppressed ABE – causal type)
- (d) **Slippery Slope** (Domino Effect)



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