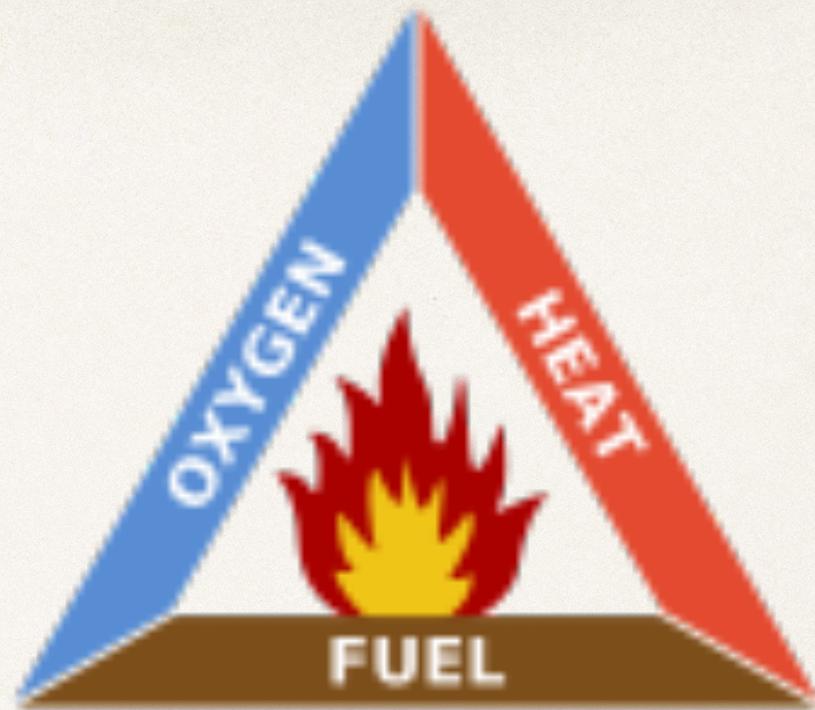


# *Necessary versus Sufficient Conditions*

---



Marcello Di Bello

Lehman College CUNY

PHI 169 - Fall 2014

*The Power of  
Deduction*

# From Last Week: Key Points in the Infanticide Argument

---

- Infants and fetuses are equivalent in the sense that they both lack the right to life
  - Fetuses have no right to life insofar as abortion is permitted and justified
  - Infants have no right to life either. Why?
    - One has the right to X *only if* one is harmed by being deprived of X
    - Infants are not harmed when they are deprived of life. Why?
      - One is harmed in being deprived of one's life *only if* one can make aims about one's future life
      - Infants cannot make aims about their future life

# An Important Distinction

---

*Necessary condition*

*Sufficient condition*

You Tube Video on the distinction

[https://www.youtube.com/watch?v=5LqNm9d2\\_I](https://www.youtube.com/watch?v=5LqNm9d2_I)

# (1) What's the Difference?

The baby grows *only if* it eats

Eating food is a *necessary condition* for the baby to grow

But eating food need **not be sufficient** for the baby to grow. The baby might need other things (e.g. healthy environment, protection) in order to grow.

## (2) What's the Difference?

---

The sidewalk gets wet *if* it rains.

Raining is a *sufficient condition* for the sidewalk to get wet.

But the rain need **not be necessary** for the sidewalk to get wet. The sidewalk could get wet in other ways, for example, by pouring water on it.

# Necessary v. Sufficient Conditions Within Arguments

---

# (1) Does The Conclusion Follow Deductively From the Premises?

---

**Premise:** If money supply increases, prices will go up.

**Premise:** The money supply in the US is increasing.

**Conclusion:** Prices in the US will go up.

YES! According to the  
premises, an increase in the  
money supply is **sufficient for**  
an increase in prices.

## (2) Does The Conclusion Follow Deductively From the Premises?

---

**Premise:** If money supply increases, prices will go up.

**Premise:** The money supply in the US is not increasing.

**Conclusion:** Prices in the US will not go up.

NO! According to the premises, an increase in money supply is sufficient for an increase in prices, but it *need not be necessary*.

# Necessary or Sufficient Condition?

---

A human has the right to X *only if* being deprived of X causes harm to the human.

A human has the right to X *if* being deprived of X causes harm to the human.

“being deprived of X causes harm to the human” is a *necessary condition* for “a human has the right to X”

“being deprived of X caused harm to the human” is a *sufficient condition* for “a human has the right to X”

# (1) Is This Step Deductively Valid?

---

*Assumption:* An infant is harmed by being deprived of life *if* it is capable of making aims about its future life.

*Fact:* An infant is *not* capable of making aims about its future life.

*Intermediate conclusion:*  
An infant is *not* harmed by begin deprived of life.

NO!

## (2) Is This Step Deductively Valid?

---

*Assumption:* An infant is harmed by being deprived of life only if it is capable of making aims about its future life.

*Fact:* An infant is not capable of making aims about its future life.

*Intermediate conclusion:*  
An infant is not harmed by begin deprived of life.

YES!

# On the Power of Deductively Valid Arguments

---

# A Conversation in the Jury Room

---

**Juror 1:** The defendant didn't kill the victim intentionally. It was an accident.

**Juror 2:** I agree. Do you also agree that if the defendant killed the victim by accident, not intentionally, then the defendant is not guilty of murder?

**Juror 1:** Yes, I agree. If one kills another by accident, one cannot be guilty of murder.

**Juror 2:** Do you agree that if one is not guilty of murder, one cannot be convicted of murder.

**Juror 1:** Yes, if one is not guilty, one cannot be convicted of murder.

**Juror 2:** So, do you agree that the defendant cannot be convicted of murder?

**Juror 1:** No, I don't agree! The defendant should be convicted of murder! I am sure of that!

# What To Think of Juror 1?

---

*Juror 2* is reasoning as follows:

*Premise:* The defendant killed the victim by accident

*Premise:* If one kills by accident, one is not guilty of murder

*Premise:* If one is not guilty of murder, one cannot be convicted of murder

*Conclusion:* The defendant cannot be convicted of murder

*Juror 1* accepts all the premises but does not accept the conclusion

Juror 1 is contracting himself  
and being irrational

# The Power of Deductively Valid Arguments

---

Suppose an argument is deductively valid.

Suppose you find no fault with the premises and accept them.

What does that mean for the conclusion?

**Rationality** requires you to accept the conclusion as well, *however absurd it might be*.

If You Check Every Step of the  
Infanticide Argument, You'll See That  
It Is Deductively Valid

---

*Assumption (2):* A human (adult, fetus, infant) is harmed by being deprived of life *only if* it is capable of making aims about its future life.

*Fact:* An infant cannot make any aims about its future life

*Assumption (1):* A human (adult, fetus, infant) has the right to X *only if* being deprived of X causes harm to the human.

*Intermediate conclusion:* An infant who is deprived of life is not harmed.

*Intermediate conclusion:* Infants do not have the right to life.

*See next slide*

*See previous slide*

*Intermediate conclusion:* Infants do not have the right to life.

*Assumption (3):* Fetuses do not have the right to life.

Both an infant and a fetus lack the right to life.

# What Can We Do if an Argument is Deductively Valid, Yet We Really Dislike its Conclusion?

---

Ignore the argument and think that only an idiot would believe such an absurd conclusion.

Insist that the conclusion must clearly be wrong but avoid saying why.

Engage with the argument and try to see if its premises are false.

# The Infanticide Argument is Deductively Valid, But Are its Premises True?

---

In a deductive argument the conclusion always follow from the premises—i.e. when the premises are true, the conclusion is invariably true. So, *if we want to attack the conclusion of a deductive argument, we must attack one of the premises.*

# An Uncontroversial Premise

---

**Fact:** An infant cannot make any aims about its future life.

*There is no point in attacking this premise. It is hard to deny.*

# More Controversial Premises

---

**Assumption (1):** A human (adult, fetus, infant) has the right to X *only if* being deprived of X causes harm to the human.

**Assumption (2):** A human (adult, fetus, infant) is harmed by being deprived of life *only if* it is capable of making aims about its future life.

These premises can be subject to attack. How?  
Think of situations in which they are false.

Can something have the right to X and yet not be harmed if it is deprived of X?

Can something be harmed by being killed and yet it is incapable of making aims about its future life?

# Different Ways for Understanding the World and Ourselves

---

Personal experience

Rational arguments and abstract reasoning

Scientific observations, experiments and data collection

Religious faith and personal beliefs

*Reasoning is something that we all share as human beings. By contrast, personal experiences and religious beliefs differ. Reasoning is a promising way to reach agreement and harmony.*



*Israël ex. Cum Priul. Reg.*

*des Voleurs infames et perdus,  
suits malheureux a cet arbre pendus*

*Monstrent bien que le crime (horrible et noire engeance)  
Est luy mesme instrument de honte et de vengeance.*

*Et que cest le Destin des hommes vicieux  
Desprouuer tost ou tard la iustice des Cie*

Jaques Callot, The Miseries of War, 1632

# Europe in the 17th century

The Thirty Year War (1618-1648) caused 8 million causalities

# Leibniz's Dream of Peace

---

*The only way to rectify our reasonings  
is to make them as tangible as those of  
the mathematicians, so that we can find  
our error at a glance, and when there are  
disputes among persons, we can simply  
say: Let us calculate [calculemus],  
without further ado, to see who is right.  
(from *The Art of Discovery*, 1685)*

