

PHI 1101

Types of beliefs: Uncontroversial - $2+2=4$
Controversial - gay marriage

How to tell if a belief is **good**

- Evaluate our beliefs or other people's by reasoning/logic

Intrusive/Manipulative Persuasion

Ex: advertising, Nayirah Testimony

Misconceptions about **Critical Thinking**

1. Locks us into rigid patterns of thought
 - Described as: mechanical, linear, formal, unhuman
 - CT is contrasted with creative, free and easy thinking

X Wrong, no need to think logically all the time. Sometimes we need to apply CT to evaluate the validity of our arguments.

2. CT assumes there is a right and wrong point of view which everyone accepts
 - No, there is relativism in everything
 - CT **does not assume**: truth will always be known and certain
1 single position is right
 - CT **does maintain** that sometimes 1 point of view can be more reasonable

End of Intro

Aristotle: Human beings are rational animals.

The ability to think of reason is the most fundamental characteristic of humans.

Certain conscious human activity involves reasoning. (ex: predicting weather, making discoveries). Animals exhibit this but at a lower level than humans vs humans maintaining reasoning as our identity.

Reasoning	Mere Thinking
Conscious, active, systematic process of analysing, evaluating and formulating beliefs in accordance with rational standards	conscious
	Not an active process
	Ex: watching TV, listening to lecture

Logical Reasoning (ARGUMENT - central idea of this course): active process of linking thoughts together in such a way that one thought provides support for another thought
So important because it justifies your beliefs

What is an argument?

- Instruments used in rational persuasion
- Set of claims (statements) in which some of the premises are intended to support others (conclusion)
- **Conclusion:** claim that is supported by the premise(s)
- **Premise:** a claim that supports the conclusion
- **Argument = Premise(s) + Conclusion(s)**
- Each time we move from a premise or a set of premises to a conclusion, we infer or make an inference

Claims: also called statement or proposition, is a sentence that can either be true or false (but not both).

Ex: "That water looks polluted", "Maurice smells bad", "Taxes are too high".

To recognize an argument is to identify premise(s) and conclusion(s).

Ex: John is armed so he is dangerous.

Premise: john is armed

Conclusion: he is dangerous

Note that:

An argument is a matter of intention and context.

Ex: Today is the 5th. Yesterday was the 4th. This is understood in 3 different ways:

- a) 1st sentence as premise and the second as a conclusion
- b) 1st sentence as conclusion and 2nd as conclusion
- c) Sentences are 2 unrelated observations with no inference intended.

But if it says: "Today is the 5th. So yesterday was the 4th." We know the relation.

Indicators:

Premise indicators:

Since, for, seeing as, the reason is that, because, as is implied by, on account of the fact that, given that, due to the fact that, implies that, indicates that, proves that.

Conclusion indicators:

Therefore, consequently, hence, we may conclude, is shown by, is indicated by, is proven by, is implied by.

Note that:

"And, also, besides, but, nevertheless" are not inference indicators.

Inference indicators are not an infallible indication that an inference is being drawn.

Ex: Since lightning struck his bedroom, he has been acting peculiarly.

Unstated (Implicit) Premises and Conclusions

Enthymemes: Arguments with implicit premises and conclusions (not openly and explicitly stated).

- Still genuine parts of arguments

Ex: The bigger the burger the better the burger.

The burgers are bigger at Burger King.

Implicit conclusion: The burgers are better at Burger King.

2 General Considerations:

- Length of arguments
- Arguments and bad arguments (still an argument)

What is *not* an argument?

Disagreement (dispute):

- Critical and active but does not examine the structure of an entire commentary, taking some statements as justifications or proofs for others.
- Critical reasoning priority is revising our own systems of beliefs not cultivating a dislike for others

Description:

Colour, state, texture, etc.

Report of facts:

Date, event, location.

Explanation:

More on this in Chap. 2

Questions:

Don't make claims.

Commands:

Give me your pen.

Exclamations.

Most important part of this chapter: distinguishing between simple and complex arguments.

Simple	Complex
Single argument with 1 conclusion	Argument with at least one intermediate conclusion (more than one inference)
Unlimited premises	Either the chauffeur or the butler killed Thickson. But the Butler was in London the

	day of the murder. So he didn't do it. It must have been the chauffeur.
Ex: Since Paul Wilson has little education and does not get along well with people, he almost certainly will not be successful in his new job.	Check online

Chapter 2 (Sept. 19)

- Knowledge aims at truth.
- Argument aims at taking us closer to the truth
- **Therefore**, logic's main task is to tell the good arguments from the bad ones (evaluating an argument)

Evaluating an argument means analyzing it, ie. identifying the premise(s) and conclusion(s) and the relationship between them (structure). Analyzing argument is slightly arbitrary or artificial, but it is helpful. There are different ways:

1. Putting arguments in standard form
2. Diagramming arguments

The strategy:

1. Detect the conclusion
2. Identify inference indicators (since, because, therefore)
3. Rule out descriptions, reports, disputes
4. Simple or complex?
 - a. If simple find the conclusion
 - b. If complex find the final conclusion and the intermediate conclusion(s)
5. Ignore unnecessary elements (Come on. Pay attention.)
6. Reformulate claims when necessary

Ex.: How can you possibly say that poetry is getting better? → Poetry is not getting better.
7. The only rule: Do what you can as you can. Start with what is clear and build from there.

Standard Form

Outlining an argument and expressing it in the form of a list. Each claim is numbered, premises and conclusions are clearly labelled, premises always appearing in the list before the conclusions they support, and inferences indicated by referring to the premises supporting a given conclusion.

Simple Argument: Standard Form

** draw the line and put therefore dots **

1. Strikes by public employees are illegal. (P)
2. The teachers at PS 197 are public employees. (P)

(triangle of dots) The strike by the teachers at PS 197 is illegal.

OR

3. So Betty won't go. 1,2
1 + 2



3

same thing for arguments with multiple dependent premises

Independent + Dependent Arguments

Ex: Jake is a philosopher. All philosophers are geeks. Jake has a Chewbacca plush hat.
Therefore, Jake is a geek.

Standard form:

1. Jake is a philosopher
2. All philosophers are geeks
3. And, Jake has a Chewbacca plush hat.
4. Jake is a geek. (1, 2), 3

Diagram

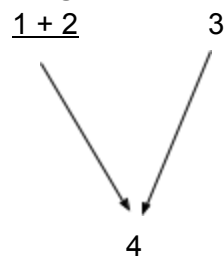


Diagram for Complex Arguments

1. Premise
2. Premise
3. Intermediate conclusion
4. Premise
5. Conclusion

1 + 2



3 + 4



5

Real arguments are messy!! Claims are not clear, words used with denotations, unstated premises/conclusions.

Arguments vs Explanations

Explanations have reasons (like arg.) but arguments persuade people. Arguments convince someone that something is true but, in an explanation, that something is true is usually taken for granted and reasons are given to show why it is true.

Ex of explanation:

I already know Adam stole the money because Jane told me that Steve told her so. If you can put the text into a single claim then it is an explanation. (most of the time)

Conditionals, Disjunctives and Unless

- Make just one claim:
- 1. Conditionals “If...then...”
- 2. Disjunctive “either, or”
- 3. Unless

The three steps (to evaluating)

1. Recognize the argument (Chapter 1)
2. Analyze the argument (Chapter 2)
3. Evaluate the argument (Chapter 3-7)

The purpose of analysing arguments (putting them in standard form + diagrams) is to aid in their evaluation. Evaluating is used to determine if an argument is good or bad.

Examples

What is the difference between arguments 1 and 2?

1. John is armed. So, John is dangerous. **Non-deductive**
2. All men are mortals. Socrates is a man. Therefore, Socrates is mortal. **Deductive**

Deductive Arguments (Syllogism)

- The premises are meant to guarantee the conclusion. (100%)
- The argument is intended to provide logically conclusive support for its conclusion. Not a matter of **degree**. Final, definitive, undeniable support.
- Characterized as valid or invalid.
- If: $A = B, B = C$ Therefore, $A = C$ **HYPOTHETICAL SYLLOGISM**
- All men are mortals. Socrates is a man. Therefore, Socrates is mortal. **Predicate instantiation**
- If whales are mammals, they have lungs. Whales are mammals. Therefore, whales have lungs. **Modus Ponens** $P \rightarrow Q, P$ Therefore Q

More examples:

Everyone in the yard yesterday was exposed to the virus, and you were there then. That means that you were exposed to the virus.

Non-deductive Arguments (Induction)

- The premises are meant to confer some high degree of probability on the conclusion. (99% or less)
- When we evaluate deductive arguments we describe them as either **successful** or **unsuccessful**

Examples:

1. Jenna was stoned and stabbed. So she is dead.
2. Swan A is white. Swan B is white. Swan C is white. Therefore all swans are white.
3. 85% of Americans believe in creationism. Quine is an American. So, Quine believes in creationism.
4. Senators Duffy, Brazeau, Wallin and Harb have all been caught fudging their expenses. Obviously, all senators abuse their expense accounts.
5. Hitler, Stalin and Pol Pot started as dictators and finished as mass murderers. It's clear that dictatorial power inevitably leads to killing.

Evaluating deductive arguments (validity, truth, soundness)

Truth:

Truth or falsity only applies to single statements or claims (premises and conclusion)

Validity:

Validity is a matter of the support that a set of premises lends to a conclusion. It is a question of whether a certain relationship (structure) holds between premises and conclusion. Validity does not require the premises of an argument to be true.

Soundness:

A valid argument with all true premises and a true conclusion is called a sound argument.

But what exactly are valid/invalid and sound/unsound arguments?

When evaluating any arguments, we ask 2 **independent** questions:

1. Are the premises true? Or false?
2. How much support its premises provide for the conclusion?

4 possibilities:

1. False premises and a false conclusion **Valid**
2. False premises and a true conclusion **Valid**
3. True premises and a true conclusion **Valid and Sound**
4. True premises and a false conclusion **Invalid**

Examples: (notice, all are of the structure of 2 premises and 1 conclusion, so easier)

1. The moon is made of green cheese, and everything made of green cheese orbits the earth. Therefore, the moon orbits the earth. (false + false → true) **Valid**
2. Neptune is made of green cheese, and everything made of green cheese orbits the earth. Therefore, Neptune orbits the earth. (false + false → false) **Valid**

3. All men are mortals. Socrates is a man. Therefore, Socrates is mortal. (true + true → true) **Valid and Sound**
4. All bats are mammals, and most mammals do not have wings. Clearly, then, bats do not have wings. (true + true → false) **Invalid**

Pigs have wings. Any animal with wings can fly. So, pigs can fly.

- The premises are both false.
- The conclusion is also false.
- The premises support the conclusion, therefore the argument is valid.

Describing Validity:

Preliminary Description - an argument is **valid** if and only if it is impossible for all of its premises to be true and its conclusion false.

Other formulations of the same thing:

1. An argument is valid if the truth of its premises guarantees the truth of its conclusion.

Any argument that has a contradiction in its premises is valid

Testing the validity of an argument:

Informal

- Imagine a scenario where the premises can be true and the conclusion false
- If we discover a possible case, then the argument is invalid
- If no scenario can be imagined, then the argument is valid

Examples:

All the relatives of the deceased were at the funeral. So there's no denying everyone at the funeral was a relative of the deceased. **Invalid**. It is possible that others than the relatives were present in the funeral.

Quiz: ON MIDTERM

1. Any sound argument is valid. T
2. Any valid argument is sound. F
3. A sound argument must have a true conclusion. T
4. A valid argument must have a true conclusion. F
5. Not all sound arguments are valid. F
6. Any argument with a false premise is unsound. T
7. Some valid arguments have all true premises and a false conclusion. F
8. A valid argument with a false conclusion must have at least one false premise. T
9. No sound arguments are invalid. T

Non deductive Arguments

- Do not conform to patterns except the 4
- An argument intended to provide probable (but not conclusive) support for its conclusion
- The premises of a non-deductive argument are meant to make the conclusion probable or likely
- Support for the conclusion is a matter of degree

- Non-deductive arguments can be described as successful or unsuccessful (bc they can't be valid)

Evaluating non-deductive arguments:

Ask 3 questions:

1. Are the premises acceptable?
2. Are the premises relevant to the conclusion?
3. If so, do they provide adequate support for the conclusion?
 - Unacceptable premises = bad argument (we dismiss it)
 - Irrelevant premises = does not provide support
 - Inadequate premises = does not provide enough support

The questions of **acceptability** and **relevance** ask each premise independently, but the question of adequacy asks the entire set of premises.

Three degrees of probability:

1. If the premises of an argument make the conclusion **almost certain**, then we describe the argument as **successful** and describe the degree of support
2. On the other hand, if the premises do not render the conclusion close to certain, only to plausible, then it's still **successful**, but we describe the support which the premises lend to the conclusion as **very likely**.
3. If the premises of an argument provide **some basis** for the conclusion, but no great support, then it's still **successful**, but we describe the matter of degree upon which the premises support the conclusion as being **somewhat likely** (barely likely than not)

A successful nondeductive argument can have premises that make the conclusion **close to certain, very likely, or somewhat likely**.

Examples

1. There are times when many of us may need to protect ourselves from intruders. Thus, we should all keep hand grenades on our bedside table. **Inadequate premise**
2. Cole has been acting suspiciously for days, and he told Rachel he was going to steal something valuable. We may surmise that Cole is up to no good. **Inadequate premise**
3. Most undergrads never take organic chemistry. So, the chances are that Claude, a grad premed student, did not take organic chemistry.

Types of nondeductive arguments

1. **Inductive Generalizations**: whenever we begin with observations about some member of a group, and end with a generalization about all of them. From particulars to general.
 - a. Examples: 'I've owned 2 Dell computers, and both sucked. I'm starting to think all Dell computers are crap.'
 - b. 'I got food poisoning the last time I went to that restaurant; now, I'm afraid to go back.'
 - c. **To evaluate: look at the sample, the larger the sample, the more reliable it is/ accurately represents group. Must be representative of target group**

- 2. Statistical Syllogisms:** have 3 line patterns, movement from general to particular
- a. Most people who attend uni are free thinkers. Erica is at uni. She is a free thinker.

To evaluate:

- Identify the individual being examined
- The group to which that individual belongs
- The characteristic being attributed
- The proportion of the group said to have that characteristic

Ex: 96% of Americans belong to some religious group or other. Quine is an American. → Quine belongs to some religious group or other.

3. Plausibility Arguments: the premises of a plausibility argument are meant to work together to build a case for the conclusion being plausible or reasonable

- To discern amount of support from premises ask: is the number of confirming instances relatively high? Is there a disconfirming instance?
- Does not fit any particular pattern
- Requirement: at least some of the premises of the argument must be positively relevant to the conclusion
- **Ex:** Jones had a strong motive to murder Smith. Jones had an opportunity to murder Smith. The murder weapon had Jones' fingerprints. Jones was psychologically capable of killing Smith. → therefore, Jones murdered Smith.
- ^^ conclusive proof reveals that Jones was in another country at the very time that Smith was murdered

Evaluating Complex Deductive Arguments

The formula: if each inference (sub-argument) in a complex argument is valid, the whole argument is valid.

Premise → Intermediate Conclusion → Final Conclusion

^ successful ^unsuccessful overall: unsuccessful

If a complex argument is made up of any number of valid inferences but even just one non-deductively successful inference then it is non-deductively successful.

If a complex argument is made up of two or more non-deductively successful inferences it can still be non-deductively unsuccessful.

Ex:

1. 60% of the volunteers in the arthritis study were given placebo rather than ibuprofen.
2. Cohen was a volunteer in this study
3. Cohen was given a placebo. 1, 2
4. 70% of those given placebo experienced pain
5. Cohen experienced pain. 3, 4

60% (successful)

70% of the 60% (successful)

Overall: 42% (unsuccessful)

Things to do to evaluate (basically the test formula)

1. Determine the type (N or D then which sub-type (plausible, syllogism, inductive))
2. successful/ unsuccessful
3. Degree of success/ unsuccessful

From slides exercises p.42:

7. Non-deductive, inductive generalization, unsuccessful because number of students of the taken opinion is too small and they belong to a specific, unrelated and biased group (algebra class)

8. Non-deductive, plausibility argument, successful, somewhat likely. 9. Statistical syllogism 10. Inductive generalisation 11. IG 12. PA 13. IG 14. IG 15. IG 16. SS somewhat likely

17. SS unsuccessful, factual judgement and value judgement can't be based upon each other

Exercises p.48-50 (maybe 46?)

1. The premise is not acceptable. 2. The premise does not provide adequate support. 3. Relevant but not adequate support. Relevant information is missing. 4. Relevant but not adequate support. Information about King's current state is unavailable. 5. Irrelevant premise.

Oct. 10, 2017

Material in section "Equivalent Forms" is **not** covered (p.65-75)

Common Deductive Argument Types

1. **Argument based on Mathematics:** Ex: Mark has twice as many cats as Susan. Susan has 3 cats; therefore, ark has 6 cats.
2. **Argument from Definition:** truth of conclusion is guaranteed by definition.
Ex: Harold is Matilda's son. Therefore, Matilda is Harold's mother.
Or, Jackson is a liar; therefore, he doesn't tell the truth.
3. **Categorical Syllogism:** syllogism (two premised argument) with each statement starting with "all, some, none, every" (chapter 5)
4. **Sentential (Propositional) Deductive Arguments:**
Modes Pones (MP) Constructive Dilemma (CD)
Modes Tollens (MT) Conjunction (Conj)
Hypothetical Syllogism (HS) Simplification (Simp)
Disjunctive Syllogism (DS) Addition (Add)

Sentential Forms (symbolizing)

Symbols to represent statements and argument forms:

Sentential variables: P, Q, R, S ...

Connectives:

- ~ not (negation)
- v either ... or
- and, but, yet
- If, then...
- () for grouping

Conjunction = \wedge ex: Alice rode her bike, and John walked. $p \wedge q$
 Disjunction = \vee ex: Alice rode her bike, or John walked. $p \vee q$
 Negation = \sim ex: Alice did not ride her bike. $\sim p$
 Conditional = \rightarrow ex: If Alice rode her bike, then John walked. $p \rightarrow q$

The sentence immediately after "if" is called the **antecedent**, and the sentence after "then" is called the **consequent**. Symbolized as: $p \rightarrow q$

Modus Ponens (MP)

If Spot barks, a burglar is in the house. Spot is barking. Therefore, a burglar is in the house.
 If p, then q. P is always the antecedent and it is what is repeated.
 P.
 Therefore, q.

Variations:

$\sim P \rightarrow \sim Q$	$\sim P \rightarrow Q$	$P \rightarrow \sim Q$
$\sim P$	$\sim P$	P
Then $\sim Q$	Then Q	Then $\sim Q$

Modus Tollens (MT)

If you work in a bar, you're over 19. You're not over 19. So, you must not work in a bar.

If p, then q.	$P \rightarrow Q$
Not q.	$\sim Q$
Therefore not p.	Then, $\sim P$

Variations:

$\sim P \rightarrow \sim Q$	$P \rightarrow \sim Q$	$\sim P \rightarrow Q$
Q	Q	$\sim Q$
Then P	Then $\sim P$	Then P

Hypothetical Syllogism (HS)

If Guy steals the money, he will go to jail. If Guy goes to jail, his family will suffer. Therefore, if Guy steals the money, his family will suffer.

If p, then q.	$P \rightarrow Q$
If q, then r.	$Q \rightarrow R$
Therefore, if p then r.	Then, $P \rightarrow R$

Disjunctive Syllogism (DS)

Either Ralph walked the dog or he stayed home. He did not stay home. Therefore, Ralph walked the dog.

$P \vee Q$
 $\sim Q$
Then, P

Variations:

$\sim P \vee Q$	$P \vee \sim Q$	$\sim P \vee \sim Q$	$\sim P \vee Q$
Q	$\sim P$	P	$\sim Q$
Then, $\sim P$	Then, $\sim Q$	Then, $\sim Q$	Then, $\sim P$

Constructive Dilemma (CD)

Either it is forecasted to rain tomorrow, or it is forecast to rain today. If it is forecast to rain tomorrow, we will play the baseball game today. If rain today, we will play tomorrow. Therefore, either we will play the game today or tomorrow.

$P \vee Q$
 $P \rightarrow R$
 $Q \rightarrow S$
Then, $R \vee S$

Conjunction (Conj)

The class is large. The students are noisy. Thus, the class is large and the student are noisy.

P
 Q
Then, P and Q

Simplification (Simp) chain of reasoning

I am an optimist. And I am a fair individual. Therefore, i am an optimist.

$P \wedge Q$
Then, P (or Q)

Addition (add) also called **weakening**

It is raining. Therefore, it is raining or it is sunny.

P
Then, $P \vee Q$

Two invalid argument forms

1. Denying the Antecedent (DA)

If a dog bites the mailman it must be punished. Our dog didn't bite the mailman.
Therefore, she shouldn't be punished.

$P \rightarrow Q$

$\sim P$

Then, $\sim Q$

1. Affirming the Consequent (AC) formal fallacy

If my car is out of gas, it will stop running. My car stopped running. Therefore, my car is out of gas.

$P \rightarrow Q$ $P \rightarrow \sim Q$

Q $\sim Q$

Then, P Then, P

Valid forms in the Groups all these are modus ponens

1. $(A \cdot B) \rightarrow C$

$(A \cdot B)$

C

2. $((A \vee B) \vee C) \rightarrow (D \rightarrow E)$

$((A \vee B) \vee C)$

Then, $D \rightarrow E$

3. $\sim(A \cdot B) \rightarrow (C \vee D)$

$\sim(A \cdot B)$

Then, $\sim(C \vee D)$

Using the forms to show validity (of complex arguments)

Some complex arguments mix the forms so we use the forms to restructure them and prove their validity. This is called **chaining inferences**. A chain of valid inferences is called a **proof**.

If each inference in a complex argument is valid, the whole argument is valid. (repetition from past), we are looking at complex deductive argument.

Ex:

1. $E \rightarrow \sim N$

2. $\sim N \rightarrow A$

3. $E \rightarrow A$ 1, 2 HS

4. E

5. A 3, 4 MP

Another ex: implicit premises

1. $E \rightarrow (A \rightarrow B)$

Originally the argument was: 1. $E \rightarrow (A \rightarrow B)$

2. $A \cdot E$

2. $A \cdot E$.

3. A 2, simp

3. B

4. E 2, simp

5. $A \rightarrow B$ 1, 4 MP
6. B 3, 5 MP

Types of Conditional Sentences:

The consequent/antecedent switch

- He will have a fit **if** you come home late tonight. If you come home late tonight, he will have a fit. ($P \rightarrow Q$)

Only if

- We consider the fragment after "if" as the consequent and the other clause as antecedent. Always!! Very emphasized in class.
- Tom is a cat only if Tom is a mammal. Equivalent to: If Tom is a cat, then Tom is a mammal. P only if $Q = (P \rightarrow Q)$

Provided that

- She will win the election provided that she debates well. Equivalent to: If she debates well, she will win the election. P provided that $Q = Q \rightarrow P$

Unless

- The grass will die unless there is rain soon. Equivalent to: If there is not rain soon, the grass will die. P unless $Q = \sim Q \rightarrow P$

P. 59 answers

2. MT 4. MP 6. MT 8. MP 10. DA 12. MP 24. MT

P. 60 part C answers 2. $S \rightarrow G$ $G \rightarrow T$ $S \rightarrow T$ HS 4. DA 10. MT CHECK EXTRA EXERCISES FOR TEST

Example of chain of inferences: (keep in mind this has all explicit premises and conclusions)

1. $P \rightarrow E$
2. $\sim E \rightarrow \sim D$
3. $P \rightarrow \sim D$ 1, 2 HS
4. D
5. $\sim P$ 3, 4 MT
6. $\sim P \rightarrow \sim C$
7. $\sim C$ 5, 6 MP
8. $C \vee G$
9. G 7, 8 DS

Part E:

Question 2

1. $M \rightarrow C$
2. $C \rightarrow B$
3. $\sim B$
4. $\sim C$ 2, 3 MT
5. $\sim M$ 1, 4 MT

Question 4

1. $\sim G \rightarrow (S \vee F)$

2. $\sim S$ and $\sim G$
3. $\sim S$ 2 *simp*
4. $\sim G$ 2 *simp*
5. $S \vee F$ 1, 4 *MP*
6. F 3, 5 *DS*

Chapter 5

Categorical Syllogism:

Syllogism (two premised argument) with each statement starting with “all” “some” “none” or “every”.

Ex: All humans are mortal. All greeks are human. Therefore, all greeks are mortal.

Categorical statements:

- claims that make simple assertions about categories or classes of things. **Ex:** All cows are herbivores. Some business people are cheaters.
- Contain 2 distinct categories: All humans are mortal.
 - Subject (humans)
 - Predicate (mortals)

CS consist of 3 parts:

- | | |
|-------------------------|-------------------------|
| 1. Major premise | All humans are mortals. |
| 2. Minor premise | All Greeks are human . |
| 3. Conclusion | All Greeks are mortal. |

Test their validity with venn diagrams!

Four standard (pure) forms:

1. **All** business people are cheaters.
2. **No** business people are cheaters.
3. **Some** business people are cheaters.
4. **Some** business people are **not** cheaters.

Symbolized as:

- | | |
|---------------------|-------------------------------|
| 1. All S are P | → Universal affirmation (UA) |
| 2. No S are P | → Universal negation (UN) |
| 3. Some S are P | → Particular affirmation (PA) |
| 4. Some S are not P | → Particular negation (PN) |

Variations of UA:

Every astronaut is an intelligent person.

Anyone who is an astronaut must be intelligent.

None but intelligent people are astronauts.

Only intelligent people are astronauts.

Variations of UN:

No astronauts are cowards.

No cowards are astronauts.

There was never a whale that could fly.

No one who is a coward can be an astronaut.

Variations of PA:

Some women are priests.

At least one woman is a priest.

A few women are priests.

Variations of PN:

Some women are not priests.

Many women are not priests.

Not all women are priests.

Venn diagram method:

Drawing a circle for each category or class in the argument, and diagramming the premises on these circles.

- If, after drawing the premises, the conclusion is already represented on the diagram, then the argument is deductively valid.
- Use asterisk for "some" statements and shade for "all" or "none"

Chapter 6

Causal claim: assertion about the cause of something

Causal arguments - justifies or supports such a claim

Reasons for being interested in causes and effects:

Explanation, curiosity: How? Why?

Assigning Responsibility: The person who caused something are responsible for it

Control: If we understand cause-effect connections and can control the causes, we can also control the effects

Prediction: If we know how things work, we can frequently tell in advance what is going to happen

What is causation? A causes B if the following conditions are met

1. If A is *contiguous* to B. related by time or space - spacial cont
2. If A is *prior* to B.
3. If A and B are *constantly conjoined*.

So, whenever A occurs, then B occurs, or event of A is always followed by event of B (*necessary connection*).

Causal argument - special case of inductive generalization

- move from a premise that two things are associated to a conclusion that the first is not merely correlated with, but **causes** the second.

Ex: Exposure to high levels of secondhand smoke is correlated with lung cancer. Further evidence shows that this is the case. Therefore, exposure to high levels of secondhand smoke causes lung cancer.

Four causes (Aristotle)

Final cause: “the end, that for the sake of which a thing is done”, ex: creating a beautiful statue is the end or goal (telos or teleology) of sculpturing

Efficient cause: “the primary source of the change or rest”, ex: the art of bronze-carving the statue, the father of the child.

Material cause: “that out of which” something is made, ex: bronze of a statue

Formal Cause: “the form” or “the account of what-it-is-to-be”, ex: the shape of a statue.

3 different meanings of causation

Cause and effect:

1. Cause as **sufficient** condition

If A is a sufficient cause of B, then the presence of A sufficiently implies the presence of B. therefore when A occurs, B must also occur

If $A \rightarrow B$

Ex: you flip the switch and light comes on - note that other conditions must be present!!

2. Cause as **necessary** condition

If A is a necessary cause of B, then the presence of B necessarily implies presence of A.

If $B \rightarrow A$ but not if $A \rightarrow B$

Ex: common cold is caused by a certain virus. The presence of the virus is necessary for having a cold, but not sufficient (you can carry the virus without having a cold)

Ex2: paying your tuition bill is necessary but not sufficient for graduation from OU.

3. Cause as **both sufficient and necessary** conditions

Most rigorous interpretation of a causal relationship

If $A \rightarrow B$, and if not $A \rightarrow$ not B

Ex: satisfying all the academic requirements and paying all your bills is both **necessary and sufficient** for being eligible to graduate.

Necessary: academic requirements

Sufficient: pay your bills and satisfy the academic requirements then you are eligible

Causal chains:

We say that Y caused Z, but know that Y also had a cause (X) and X had a cause and etc.

Ex: thus the patient lost consciousness because he was given an anesthetic, but he received the anesthetic because the container was open and gas flowed out, etc.

Simplifying cause and effect: don't do it

Assuming there is only one cause and one effect.

Contributing factors: each factor making up a set of factors

1. Triggering factor, proximate cause

Occurs last and completes causal chains

It is the sufficient condition for producing the event

2. Unusual factor

“The” cause of an event

Ex: the explosion happened because of the accumulation of methane gas in the room.

3. Controllable factor

Factor we can manipulate to control or prevent.

Ex: the SARS outbreak was caused by inadequate sanitation procedures in hospitals and other public places.

A correlation gives us some reason to look for a causal relationship, but there may not be any.

1. A causes B
2. B causes A
3. Some third thing C causes both A and B.
4. They occur together by pure chance.

Testing for causes

- 1. Method of agreement:** 2+ occurrences of some phenomenon have only one relevant factor in common, that factor is likely the cause.
 - a. Ex: Adam and John order different food but both order ice cream and they both got sick. Therefore, the cause is likely the ice cream they ate.
- 2. Method of difference:** comparing situation in which an event of interest occurs with similar situation in which it does not. The presence of a particular factor is the difference, the factor may be said to cause the event.
 - a. Ex: 6 players on the team are playing well; three are not.
- 3. Joint method of agreement and difference:** combining the two above
 - a. Ex: 3 students have lunch together and later 2 of them become ill. John and Jake eat chicken salad but Charlotte did not. (John and Jake is agreement, Charlotte is difference) Likely chicken salad is the cause of illness.
- 4. Method of concomitant variation:** involves varying a factor and determining whether a change in it is accompanied by variation in some other factor.
 - a. Ex: father eats 1 oyster (a bit ill), mother eats 5 oysters (really ill), you eat 25 (becomes extremely ill)

On midterm #2:

First part of chap 6 - Necessary conditions, sufficient conditions, both+

Second part - methods of agreement

Exercises pg. 104 1. Sufficient. B. c. sufficient. D. proximate E. Unusual factor. F. controllable factor. G. controllable h. Sufficient and necessary (mostly because 2 conditions)

Exercises pg. 105 1. Unusual factor 2. Necessary 3. Necessary 4. Necessary and sufficient 5. Controllable 6. Controllable / sufficient 7. Sufficient 8. Controllable 9. Controllable / background 10. Necessary 11. 13. Controllable 14. Sufficient or proximate 15.
Do question 3 a and b and 4 a and b.

Analogical Arguments can be regarded as enthymemes!!

Analogy: to claim that two distinct things are alike or similar in some respect.

Ex: capitalists are like vampires.

Point of analogy - the thing that relates the 2 things

2 kinds of analogy:

1. **Exact or perfect analogy:** used in math, proportions. 2:3 as 4:6
2. **Non-deductive analogies:** not based on exact analogies. successful/unsuccessful

Analogical argument: because 2 things are similar in several ways, they must be similar in some further way.

A and **B** share properties W, X, Y. A has property Z. Therefore, B has property Z.

A and B = subject of analogy

Non-deductive:

Factual Analogical Argument

Uses an analogy to establish a claim about some state of affairs or facts.

- Think of animal testing theory

Moral Analogical Argument

Arguing about what is morally right or wrong. The idea is that we should make similar claims about similar cases.

A and B are similar. A received treatment T. Therefore B should receive treatment T too.

Principle of equality: In moral analogical argument, there is an implicit premise that says similar cases should be treated in similar way.

Legal precedents: common law system, when a case comes before a court and no law specifically covers the issue raised, lawyers appeal to precedents. They then argue that the present case should be dealt with similarly.

Model:

In science and social science, analogical arguments come as **models**. Models are used to study systems that cannot be studied directly.

Ex: future behavior of climate, stock-markets, world population, scale models in engineering.

2 kinds of models:

1. **Formal models:** abstract system used to explain system.
2. **Material model:** physical system to represent another physical system

Evaluating Analogical Arguments

- No formal method
- But use **2 criteria:** 1. Degree of analogy must be high 2. The relevance of the analogy to the conclusion must be strong

Degree of analogy:

- Positive/negative analogy: resemblance
- When positive analogy is proportionally higher than the negative analogy, the degree of analogy is high.
- **Ex:** subject A and subject B has 10 positive point of analogy and 12 points of negative analogy. As a result, the degree of analogy is very low.

Relevance to conclusion:

Ex: john says he has spent the same amount of time studying philo as Sara, and she got a 90 on the final exam, then, he must get a 90 as well.

- Conclusion is not relevant. Study time does not mean same mark. Correct answers do.

Chapter 8 - Errors in Reasoning

Fallacy: a form of argument that should not convince anyone but which many people nevertheless find convincing

- Not all invalid and unsound arguments are fallacies
- Denying the antecedent and affirming the consequent were examples of fallacies

Appeal to ignorance:

A claim has not been demonstrated to be false, so it's true. Or vice versa.

- Ignorance: "lack of contrary evidence"

Since we have no compelling proof that some claim is false, we must therefore accept it as true.

We have no proof that P is false. Therefore P must be true.

We have no proof that P is true. Therefore P is false.

This fallacy wrongly shifts the burden of proof to someone else.

Appeal to Inappropriate Authority

When the authority cited is not an authority in the proper or related area.

- Bogus experts (unqualified)
- Experts cited on matters that lie outside their area of expertise
- The experts in a given field disagree

Five criteria to determine appropriate authority:

1. Authority must be identified
2. Authority must be generally recognized by other experts in the field
3. The matter discussed must lie within the expert's field

4. The field must be one in which there is genuine knowledge
5. There is a consensus among the experts in the field regarding the particular matter.

Appeal to general belief

If a lot of people believe it, it must be true.

Counterexample: women lack the intellectual capacity for university studies.

Appeal to popular attitudes and emotions

An appeal is made to widespread feelings - but these feelings give no support to the claim that is made.

- Sources: racial fears and prejudices, patriotic impulses,

Ex: how can you say we were wrong to go to Afghanistan? Don't you support the troops?

The gambler's fallacy

Also called Monte Carlo fallacy or maturity of chances.

Based upon temptation or tempting reasoning.

Ex: tossing a coin and heads has come up 10 times in a row. It's more likely that the next toss will be tails, isn't it?

No, the probability remains 50%. That's what it means to be a fair coin.

Post Hoc

A came before B, so A was the cause of B.

Ex: I wore this pair of socks to the last game and we won, so the socks must have given me good luck.

Example of the post hoc flaw is the evidence often given for the **efficacy of prayer**. When someone reasons that as they prayed for something and it then happened, it therefore must have happened because they prayed for it, they commit the post hoc fallacy. The correlation between the prayer and the event could result from **coincidence, rather than cause**, so it does not prove that prayer works.

Hasty Generalization

Generalizing on the basis of an inadequate set of cases. (recall that inductive generalizations are weak if based upon samples that are too small)

Ex: I've dated 6 women and they were only interested in my money. Women really only care about wealth.

Fallacies of false assumption:

- False dilemma
- Loaded question
- Begging the question
- Slippery slope

False Dilemma/Dichotomy

Announcing there are only two possible options when in fact there are more.

- Popular in politics
- Also claims that the 2 alternatives are exhaustive and exclusive, while they are not

Exhaustive: a woman is either pregnant or she is not. - there is no other possibility

- Being old and being young are not exhaustive bc middle age

Exclusive: two events or possibilities are **incompatible**

Ex: war and peace (can't exist at once), stay or leave

Ex: you're either with us or you're against us.

- Good students will study and learn if there are no examinations, and bad students won't study and will learn nothing even when there are examinations. So exams are useless.

Loaded question

Attempts to get an answer to a question that carries with it the truth of an unproved assumption.

Person A ask B: are you still stealing? - answering yes or no forces B to commit to the truth of the implicit assumption that he has been stealing. The correct response: i reject the premise of your question. I have never stolen.

Ex: when will the honorable member stop lying to the house, and tells us about the contracts?

Begging the question - also called Circular Reasoning

An argument begs the question when its premises presupposed the truth of its conclusion.

Ex: how do you know that God exists. Because the Bible says so.

Slippery Slope

Once you take one step you keep going and going....

Ex: if marijuana is legal, what's to stop other "soft" drugs from being made legal?

Fallacies of Criticism:

- Against the person
- You too
- Pooh-pooh
- Straw man
- Loaded words

Against the person

Directed towards the person and not the argument. The point is to transfer the disagreement from what the person says to the person themself.

- We care about claim not who made it

Ex: people that say war is wrong are just cowards. A flat tax can't possibly be the right thing to do - just look at who's in favor - a bunch of rich guys.

You too

Pointing out that others (most often the claimers) are guilty of the same transgressions.

Ex: Canada judged south Africa's apartheid system and Africa replied: Canada should mind its own business, and take a look at the way it treats its own indigenous people before us.

Pooh-pooh

Dismissing an argument by ridiculing it as not worthy of serious consideration.

- Rhetorical device in which the speaker ridicules an argument without responding to the substance of the argument

Ex: Jean Charest claims he has the numbers to prove that there is a financial imbalance between federal and provincial governments. It's the same old song. When will Quebec ever stop whining?

Straw Man Argument

When we refute someone; in responding to a claim, the claim itself is changed into something that is obviously unacceptable, and hence, easier to refute.

- Putting words into someone's mouth

Ex: the theory of evolution boils down to the idea that human beings are descended from apes

Loaded words

Using connotation of words. Using emotionally charged or judgemental language without providing reasons.

Ex: sleazeball, incompetent, idiot, morally corrupt.

Premier makes courageous decision to provide new funding for health care.

Fallacies of Defense:

- Definitional dodge
- Exception that proves the rule

Definitional Dodge

Redefining a crucial term in a claim to avoid acknowledging a counterexample.

Ex: A: all art is representational: it portrays something.

B: what about this painting? It is completely abstract and doesn't seem to portray anything.

A: well, that's not really art, is it?

Exception that proves the rule

Dismissing a counterexample. Prove = Test

Ex: a sign that says "parking is prohibited on Sundays" proves that parking *is* allowed on the other days. This is a valid claim.

Ex: A: All hockey players are uneducated. B: what about Ken Dryden? He has a law degree.

A: That's just an exception to the rule.

P. 146 Part 2: 1. Appeal to ignorance 2. Not an argument? I said loaded words. 3. Appeal to public emotions/ popular belief also an option. 4. Hasty generalization 5. Legitimate argument 6. Appeal to general belief 7. Appeal to ignorance 8. Appeal to inappropriate authority (has no

accurate concept of politics, isn't a government expert) 9. Appeal to ignorance - no proof to call today, so call today. 10. Post hoc 11. 12. Post hoc.

Part B: 1. Loaded question - accept truth of women being discouraged in sports 2. Slippery slope 3. Explained in slides 4. False dilemma (only 2 alternatives, exhaustive and exclusive) 5. Slippery slope 6. Begging the question premise and conclusion are saying the same thing 7. Loaded question 8. False dilemma 9. slippery slope 10. Begging the question 11. Slippery slope 12. False dilemma

Part C? 1. Gloria Grag - ad homonym/against the person 2. Pooh pooh 3. Definitional dodge 4. Loaded words 5. Straw man 6. Exception that proves the rule 7. You too 8. Straw man 9. Straw man, loaded words 10. You too

Part D: 1. Is violence in the NHL all that bad or is it the main reason people come to games? False Dilemma 2. No argument 3. Appeal to inappropriate authority 4. False dilemma 5. Appeal to ignorance (lack of evidence to the contrary) 6. False dilemma/dichotomy 7. Against the person 8. 9. Post hoc, false cause 10. Begging the question 11. 12. Loaded words (stealing)

Exam sample:

1. Many philosophers have tried to distinguish between what they called just and unjust wars. But all wars cause suffering of innocent people. So there can be no such thing as a just war. - argument, explanation, or neither. For arguments: identify the final conclusion. For those that are neither: state what kind of sentences they are.
2. Put the following arguments into standard form, then diagram them.
 - a. Laura gets pretty good grades, she is the best gymnast in the school, she has a lot of friends and she organized a campaign last year. I think she will probably win the election for the president of Stud Co.
3. Identify, then explain exactly why each of the following arguments is unconvincing.
 - a. Recently, the philo department surveyed all students registered in its intro courses. One of the questions asked students whether they expected that a uni education would improve communication skills and 88% answered yes. So 88% of uni students think that a uni education will improve communication skills.
4. Symbolize the following arguments using the letters provided and identify the form of inference used (modus ponens, tollens, etc) stating at the same time whether or not it is valid.
 - a. If Green had mastered calculus, she would have no difficulty with math in first year physics. But she's having difficulty so she didn't master calculus. (G, D)
 - b. $G \rightarrow \sim D$, D, $\sim G$ MT, Valid
5. Show that the following arguments forms are valid by constructing proofs of their conclusions from their premises using the rules of inference. (4/50)
 - a. $(C.\sim E) \rightarrow (E \vee T)$, C, $\sim E$, C. $\sim E$ 2, 3 conj. Missed the rest
6. Venn diagram for each of the following categorical statements (2/50)
7. Venn diagram for the categorical syllogisms then circle if **valid or invalid**. (4/50)
8. Discuss the use of Mill's methods in identifying the possible cause in the following schemes (4/50) on page 108

- a. $(A, B, C) \rightarrow \text{event}$ $(A, D, F) \rightarrow \text{event}$
- b. And one with situations, like a word problem
- 9. Identify the following arguments by analogy as factual or moral, specify the points of comparison between the 2 diff subjects in each case, evaluate the arguments **(6/50)**
- 10. Match the description on the left with the fallacy on the right (5/50)
 - a. Ex: lack of contrary evidence \rightarrow appeal to ignorance
- 11. Name the fallacy involved in the passage below (10/50)
 - a. Every society that has collapsed throughout history has done so because of rottenness within. The collapse has always been preceded and thus triggered by the slackening of the shame typified by widespread nudity. - post hoc
 - b. When can I make up the exam I missed? - loaded question

We get the rules of reference!! (modus tollens, ponens etc)