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These notes will review the main concepts, terms, and skills that students are expected to know, based on the class material from the listed day. They are not meant to be an alternative to the regular course activities of attending the lectures, doing the homework, and reviewing the assigned readings, but rather to supplement these activities by providing a useful reminder of the most important material.

- **Class One (Jan 12)**

N/A. [Introduction to the course]

- **Class Two (Jan 14)**

What is *reasoning*? When we give, receive, and consider reasons.

What is reasoning *about*? The truth of a thesis.

What are the *three steps* of reasoning? (1) Get a thesis. (2) Get a reason. (3) Assess the reason.

What is a *thesis*? A position we are entertaining on some matter.

What is a *reason*? What attempts to provide support for a thesis.

What is *support*? What provides a basis for believing that the thesis is true.

How do we *get* a thesis or a reason from someone? Ask!

Understand: *Coercion* and *reason* both seek to *compel* agreement, but the aim of reason is to follow a *cooperative* rather than an *autocratic* method.

Know *four situations where we might reason*: (i) to resolve disagreements, (ii) to investigate a matter of interest, (iii) to convince someone of some thesis, and (iv) to assess a case made for some thesis by someone else.

- **Class Three (Jan 19)**

What is a *claim*? An assertion of fact.

How can we *identify a claim*? It is capable of being true or false.

Understand: In logic we are interested in *translating* things we read or hear from *natural language* to a *clearer and more precise form*. We can call this sort of translation an *analysis*.

Understand: *Sentential form* (aka "symbolic" or "propositional" logic) results from an analysis that identifies *the general or abstract form* of a piece of natural language.

Learned skill: In an analysis, be able to *identify claims* (i.e. be able to distinguish claims from non-claims).

Learned skill: In an analysis, be able to *use variables and the negation sign* to begin

translating natural language into sentential form.

Learned skill: Be able to *construct or complete truth tables* for a small number of simple claims.

- **Class Four (Jan 21)**

Understand: *Accepted beliefs* and *granted claims* provide two ways people admit the truth of unsupported claims.

An **accepted belief** is a claim which we have a basis to admit as true without its having been supported by an argument. There are three kinds...

(i) ...*analytic statements*, which make claims whose truth value is a function merely (a) of their form or (b) of the definition of the words they use.

- Analytic statements are either necessarily true ("*tautologies*") or necessarily false ("*contradictions*").

(ii) ...*appeals to experience*, which make claims whose truth value is evident from some observation.

- Appeals to experience make claims that are *synthetic* (i.e. not analytic) and *fallible* (i.e. not certain).

(iii) ...*appeals to testimony*, which makes claims whose truth value is communicated by some other person.

- Testimony is only the basis for an accepted belief when it is *reliable*, i.e. when it comes from a person who is (a) in a position to know, (b) not biased, and (c) trustworthy.

A **granted claim** is a claim which is not an accepted belief, but which the people involved in an argument agree to admit as true without requiring it to be supported.

- Our *background beliefs* determine what premises we're likely to admit as granted claims.
- When new claims are relatively consistent with our background beliefs, we tend to require less evidence for them. When new claims are relatively inconsistent with our background beliefs, we tend to require more.

- **Class Five (Jan 26)**

What is an *argument*? A set of claims where one is meant to be supported by the others.

What are the *parts of an argument*? Premises, inferences, and conclusions.

What is a *premise*? A claim which is meant to give support (i.e. a reason).

What is a *conclusion*? A claim which is meant to be supported (i.e. a thesis).

What is an *inference*? The connection of attempted support we make between premises and conclusions.

Some common inference indicators: (adapted from the table on page 5 of your text)

Conclusion indicators: therefore, consequently, hence, so, then, ergo, it follows that, which shows that, this entails that...

Premise indicators: since, because, for, seeing as, the reason is that, on account of the fact that, is demonstrated by...

Understand: The purpose of an argument is to demonstrate that the conclusion is true.

Understand:

A good *premise* is a *true* premise.

A good *inference* is a *valid* inference. (NB: we will introduce some complications on this point later in the term)

A good *argument* is a *sound* argument.

What makes an argument *sound*? Having true premises and a valid inference.

What makes an argument *valid*? When the truth of its premises would guarantee the truth of its conclusion.

Learned skill: In an analysis, be able to identify premises and conclusions.

Learned skill: Begin making intuitive judgments about an argument's validity (see pages 31-33 of your text).

- **Class Six (Jan 28)**

In formulating a claim or argument in sentential form, be able to use: *variables*, *parentheses*, *negation*, and the following connectives: *disjunction* ("or"), *conjunction* ("and"), *implication* ("if"), and *double implication* ("iff").

negation	~
disjunction	∨
conjunction	•
implication	→
double implication	↔

What is a *conditional*? A claim which makes an implication.

What is a *biconditional*? A claim which makes a double implication.

What is an *antecedent*? The term in an implication which implies the consequent.

What is a *consequent*? The term in an implication which is implied by the antecedent.

I.e., in sentential form, the antecedent is the first term of an implication ($\underline{P} \rightarrow Q$) and the consequent is the second ($P \rightarrow \underline{Q}$).

NB: in an implication ($P \rightarrow Q$), if the antecedent is true (P) then the consequent is true (Q). So...

- "If P then Q" gets formulated $P \rightarrow Q$.
- "Then P if Q" gets formulated $Q \rightarrow P$. (Why? It's the previous claim written backwards.)
- "Then P only if Q" gets formulated $P \rightarrow Q$. (Why? Because, in this case, P being true means Q is true, see p. 63-64.)
- "Only if P then Q" gets formulated $Q \rightarrow P$. (Why? It's the previous claim written backwards.)
- "Then P if and only if Q" gets formulated $P \leftrightarrow Q$. (I.e. a double implication combines the "if..." and "only if..." forms of implication.) But it can also be formulated $Q \leftrightarrow P$ (since in double implication the implication works in both directions, it means the same thing regardless of which term is first).
- "If and only if P then Q" likewise can be formulated $P \leftrightarrow Q$ or $Q \leftrightarrow P$.

Learned skill: be able to formulate compound claims in sentential form.

Learned skill: be able to draw the truth tables for negation and the four connectives (disjunction, conjunction, implication, and double implication). **NB:** To review these truth tables, see the assigned readings for class six.

- **Class Seven (Feb 02)**

Understand: Compound claims using *disjunction* can be used to generate inferences when we add a second premise which affirms or negates one of the disjuncts (i.e. one of the two terms of the disjunction).

Valid Argument Form: Disjunctive Syllogism [DS] (when we negate a disjunct)

$P \vee Q$

$\sim P$

Q

Invalid Argument Form: Affirming a Disjunct [AD] (when we affirm a disjunct)

$P \vee Q$

\underline{P}

$\sim Q$

Learned skill: be able to *assess arguments for validity* by identifying them as disjunctive syllogism or affirming a disjunct.

Learned skill: be able to use the truth table for disjunction to *prove the validity* of disjunctive syllogism and the invalidity of affirming a disjunct.

- **Class Eight (Feb 04)**

Understand: Compound claims using *implication* can be used to generate inferences when we add a second premise which affirms or negatives the antecedent or consequent.

Valid Argument Form: *Modus Ponens* [MP] (when we affirm the antecedent)

$P \rightarrow Q$

P

Q

Valid Argument Form: *Modus Tollens* [MT] (when we deny the consequent)

$P \rightarrow Q$

$\sim Q$

$\sim P$

Invalid Argument Form: *Affirming the Consequent* [AC] (when we affirm the consequent)

$P \rightarrow Q$

Q

P

Invalid Argument Form: *Denying the Antecedent* [DA] (when we deny the antecedent)

$P \rightarrow Q$

$\sim P$

$\sim Q$

Learned Skill: be able to *assess arguments for validity* by identifying them as modus ponens, modus tollens, affirming the consequent, or denying the antecedent.

Learned Skill: be able to use the truth table for implication to *prove the validity* of modus ponens and modus tollens, and the invalidity of affirming the consequent and denying the antecedent

- **Class Nine (Feb 09)**

The Procedure for Analyzing an Argument:

1. *Put the argument in standard form.*

- Identify the claims.

- Identify the inference indicators.
- Use the inference indicators to identify which claims are premises and which are conclusions.
- Write the argument in standard form.

2. Assess the premises. (I.e., are the premises true?)

- Is the premise identifiable as true or false by virtue of being supported by an argument? (NB: For now we are only dealing with simple arguments, so we can assume our premises aren't supported by other arguments.)
- If not, is the premise identifiable as true or false by virtue of being an accepted belief?
- If not, is the premise identifiable as true or false by virtue of being a granted claim?
- Identify whether the premise is true or false, and give your reason. (I.e. from one of the above.)

3. Assess the inference. (I.e., is the inference valid?)

- Put the argument in sentential form.
- Identify the form of the argument.
- Identify whether this form is valid or invalid.

4. Assess the argument. (I.e., is the argument sound?)

- Are the premises true? (I.e., see step two)
- Is the premise valid? (I.e., see step three)
- Identify whether the argument is sound or unsound. (I.e., on the basis of the above.)

Understand: Why don't we have a separate step assessing the conclusion?

• Class Ten (Feb 11)

What is rhetoric? The art of persuasion.

What are the *three parts of rhetoric*?

- *Ethos*: persuasion by appealing to one's character
- *Pathos*: persuasion by appealing to the audience's passions
- *Logos*: persuasion by appealing to reasoning

What are the *two orientations of rhetorical practice*?

- *Adversarial*: aims to show that one position is right
- *Collaborative*: aims to discover the truth

What is the principle of charity? A rule for understanding someone's position by *picking between the different interpretations* that are suggested by what they say and the context of their statements.

- The principle of charity *obliges us to adopt the most charitable* of such interpretations.
- The most charitable interpretation is *the one which results in the person's position being the strongest*; i.e. being the most reasonable, persuasive, and defensible.

Three rules for employing the principle of charity:

- First focus on the *interpretation* of the person, rather than only trying to critique it.
- Adopt *neutrality* about relevant beliefs when interpreting their position, rather than assuming your own views.
- Formulate the most *charitable* interpretation of the person's position.

We should try to interpret the person as reasoning...


- ... validly and as not contradicting themselves. (*The principle of coherence*)
- ... about features of the world which we might be reasoning about in their position. (*The principle of correspondence*)
- ... in a way which we might reason were we in their position. (*The principle of humanity*)

Understand: Following the principle of charity, we should try to construct a clear argument out of what we have been given. This might involve doing things like *identifying non-obvious implications*.

What is an enthymeme? An argument with an *implicit premise or conclusion*.

- The principle of charity obliges us to try to *fill in the missing premises or conclusions* so as to render an enthymeme valid.

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