Unit 2: Structure of Sentential Logic

- ***The first 2/3 of the course will deal almost exclusively with propositional or sentential logic.***
- ***Sentential logic is concerned with the manner in which simple declarative sentences compounded with each other into more complex forms.***
- ***We will not be concerned with analyzing the parts of the simple sentences, i.e., the subjects and predicates.***

Simple Sentences

- ***Simple Sentences- a sentence is simple if and only if it is not complex***
- ***Example1: I hate logic.***
- ***Example2: Joe went to the store to get some milk for his cereal.***

Compound Sentences

- ***Compound Sentences- a sentence is compound if it contains another complete sentence as its component.(Klenk 23)***
- ***A sentence is said to logically contain another if it literally contains the other as a component, or if it can be paraphrased into an explicit compound sentence that contains the other as a component.***

Example of a Compound Sentence

- ***Jim Thome and Sandy Alomar have played for the Cleveland Indians.***
- ***Component 1: Jim Thome has played for the Cleveland Indians.***
- ***Component 2: Sandy Alomar has played for the Cleveland Indians.***

Negated Statements

- ***Statements which contain a negative are not considered simple sentences, even though they may appear to be so.***
- ***Example: Mark doesn't like cats.***
- ***Paraphrase: It is not the case that Mark likes cats.***
- ***Component 1: It is not the case.***
- ***Component 2: Mark likes cats.***

Sentential Operators

- ***Sentential logic is concerned with the ways simple sentences are combined by means of sentential operators.***
- ***"and"*** ***(_____·_____)*** ***(dot)***
- ***"or"*** ***(_____∨_____)*** ***(wedge)***
- ***"if, then"*** ***(_____⊃_____)*** ***(horseshoe)***
- ***"if and only if"(_____≡_____)*** ***(triple-bar)***
- ***"not"*** ***(~_____)*** ***(tilde)***

Structure and Symbolism of Sentential Logic

- ***Using the variables p and q (where p and q stand for sentences), each of the sentential operators can be represented as follows:***
- ***(p·q) [Read "p" and "q"] is a conjunction with major components termed "conjuncts".***
- ***(p∨q) [Read "p" or "q"] is a disjunction with major components termed "disjuncts".***

Structure (cont.)

- *(p⊃q) [Read if "p" then "q"] is a conditional with p being termed the "antecedent"*
- *and q the "consequent".*
- *(p≡q) [Read "p" if and only if "q"] There are no special names for the components.*
- *(~p) [Read not "p"] is termed a negation.*
- *We will use capital letters to represent particular non-compounded sentences.*