



# WEST FLORIDA THEOLOGICAL SEMINARY

Geisler and Brooks, *Come Let Us Reason*

## Notes on Logic

### Logic

- putting our thoughts in order
- The science of right reasoning
- Logic is a study, an ordering, of how to think rightly, or how to find truth.
- Constructing and evaluating arguments
- *Logic is a way to think so that we can come to correct conclusions by understanding implications and the mistakes people often make in thinking.*
- *Logic is the study of **right reason** or **valid inferences** and the **attending fallacies**, formal and informal.*

### Reason

Reasoning is the act by which the mind acquires new knowledge by means of what it already knows

- Is 1:18 “Come now, and let us **reason** together”— reason about their sin (clean inwardly) blessing and cursing
- Acts 17:2 “And Paul, as his manner was, went in unto them, and three sabbath days **reasoned** with them out of the scriptures,”
- Acts 18:4 “And he **reasoned** in the synagogue every sabbath, and persuaded the Jews and the Greeks.”
- Acts 18:19 “And he came to Ephesus, and left them there: but he himself entered into the synagogue, and **reasoned** with the Jews.”
- Acts 24:24-25 “And after certain days, when Felix came with his wife Drusilla, which was a Jewess, he sent for Paul, and heard him concerning the faith in Christ. And as he **reasoned** of righteousness, temperance, and judgment to come, Felix trembled, and answered, Go thy way for this time;”
- Heb 5:14 “But strong meat belongeth to them that are of full age, *even* those who by **reason of use** have their senses exercised to discern both good and evil.”
- **The two ways we reason are by deductive and inductive reasoning**

### Valid inference

- Implications
- What you are implying
- A implies B

### Fallacies

- Mistake
- A fallacy occurs when an argument contains a specific defect.
- A fallacy causes the argument to break down

- A fallacy makes an argument weak
- A severe fallacy can make an argument
  - false
  - have no relevance to reality
  - have no effect
  - self-defeating
  - irrational

### Two types of fallacies

1. Formal
  - An error in the way an argument is put together
2. Informal
  - Mistakes in the meaning of the terms
  - Errors in reasoning

### Four fundamental laws of logic

1. **Law of non-contradiction** (A is not non- A)
  - Something cannot both *be* and *not be* at the same time and same place
  - A statement cannot be both true and false at the same time and same place
2. **Law of excluded middle** (either A or non-A)
  - Something either is or it is not
  - A statement is either true or false
3. **Law of identity** (A is A)
  - A thing (person, event, judgment) is what it is
  - A true statement is true
4. **Law of rational inference**
  - Inferences can be made by reasoning from a series of premises to a conclusion.

### Argument

- It is not an emotional disagreement between two persons.
- It is: *the providing of reasons for the basis of a conclusion*

### Syllogism:

- Type of argument
- Deductive argument
- Made up of three sentences called propositions
- Two premises and a conclusion

## Proposition

- A proposition is what we call a sentence that affirms (or denies) something when we use it in a syllogism.
- Example:
  - Socrates is a man
  - All men are sinners
- Each proposition is made up of two terms, like a subject and a predicate in grammar.

The two ways we reason are by deductive and inductive reasoning

## Deductive logic

- starts with the cause and reasons to the effect
- If the premises are true, the conclusion is necessary
- Conclusion is certain (absolute)
- It involves deducing a conclusion from the general premise

## Inductive Logic

- starts with the effects and attempts to find the cause.
- inductive reasoning yields only probable conclusions.
- The conclusions might have a high degree of probability, but they are still not as certain as deductive conclusions.

## Valid

- The conclusion follows from the premises
- The form is correct
- Validity only means if the premises are true the conclusion follows

## Sound

- All premises are true and the conclusion follows
- In order for the argument to be sound, it must be both valid and true

Three kinds of statements that can be used in a syllogism:

1. **Hypothetical** – “if this, then that”
2. **Disjunctive** – “Either this or that”
3. **Categorical** – “This is that”
  - a. It either affirms or denies something
  - b. It says yes or no about something

There are four parts to a categorical proposition

1. **Subject term**- what the proposition is about
  - What you're talking about
2. **Predicate term** – says something about the subject
  - What you are saying about it
3. **Copula** – joins the subject and the predicate (is or is not)
  - Connecting the subject and predicate
  - Determines if the proposition is affirmative or negative
4. **Quantifier** – the extent or number of the subject (all, some, none)
  - How much of the subject you are talking about
  - Makes a proposition universal or particular
  - “all” or “no” – makes the proposition universal
  - “some” or “not all” – makes the proposition particular

#### **All men are sinners**

- “**All**” is the quantifier that tells us the quantity or how much of the subject
- “**Men**” is the subject, it is what we are talking about
- “**Are**” is the copula that joins the subject to the predicate
- “**Sinners**” is the predicate, it is what we are saying about the subject

**Quantity** – is determined by the quantifier (all, some, or none) changing the quantifier changes the quantity

**Quality** – is determined by the copula (is or is not) changing the copula changes the quality

#### **Quantifier**

- Makes a proposition either universal (all) or particular (some).
- only look at the quantifier on the subject; the predicate usually won't have one.
  - *If the proposition refers to all things that can be included in the subject, it is called **universal**. Universal propositions generally have the word All or No at the beginning. universal does not mean that it applies to the whole universe; it only means that it applies to all that is in the category defined by the subject.*
  - If the proposition refers to only part of the subject group, it is called **particular**. Propositions of this kind start with words like *some* and *not all*.
- **Note:** If no quantifier is given, then we assume that the proposition is universal.

Type A: Universal affirmative: All S is P

Type E: Universal negative: No S is P

Type I: Particular affirmative: Some S is P

Type O: Particular negative: Some S is not P