ব্যাপ্যতার নিয়ম ঃ Distribution of terms

১) সামান্য বচনে উদ্দেশ্য পদ ব্যাপ্য, বিশেষ বচনে উদ্দেশ্য পদ অব্যাপ্য

1) Subject term: distributed in universal propositions; undistributed in particular propositions.

২) নঞর্থক বচনে বিধেয় পদ ব্যাপ্য, সদর্থক বচনে বিধেয় পদ অব্যাপ্য

2) Predicate term: distributed in negative propositions; undistributed in universal propositions.

বচনের অস্তিত্বমূলক বা সাত্ত্বিক তাৎপর্য (Existential Import of Propositions)

বচনের উদ্দেশ্য পদের দ্বারা নির্দেশিত শ্রেণীর অন্তর্গত অন্ততপক্ষে একটি বস্তু বা ব্যক্তির বাস্তব অস্তিত্ব আছে, অর্থাৎ শূন্যগর্ভ নয়।

An attribute of those propositions that normally assert the existence of objects of

some specified kind.

Particular propositions (**I** and **O** propositions) always have existential import; thus the

proposition “Some dogs are obedient” asserts that there are dogs.

Whether universal propositions (**A** and **E** propositions) have existential import is an issue on which the Aristotelian and Boolean interpretations of propositions differ.

In modern logic it is not assumed that the classes to which categorical propositions refer always have members. The modern interpretation that explicitly rejects this assumption is called **Boolean**.

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Difference between Immediate and Mediate Inference

অমাধ্যম ও মাধ্যম অনুমান

১) যে অবরোহ অনুমানে একটি মাত্র হেতুবাক্য থেকে কোন সিদ্ধান্তে উপনীত হওয়া যায়, তাকে **'অমাধ্যম অনুমান'** বলে।

Immediate inference

An inference that is drawn directly from one premise without the mediation of any other premise.

ক) সকল কবি হয় মানুষ

∴ কোন কবি নয় অমানুষ

b) No man is a four-legged animal

∴ No four-legged animal is a man

Mediate Inference (মাধ্যম অনুমান)

All men are mortal

All poets are men

∴ All poets are mortal

২) অমাধ্যম অনুমানের হেতুবাক্যে যে সব পদ থাকে, সেই সব পদ অথবা তাদের বিরুদ্ধ পদ সিদ্ধান্তে উপস্থিত থাকে।

2) In immediate inference, all the terms of the premises (or their contradictory terms) are present in the conclusion. But this is not the case with mediate inference.

কিন্তু মাধ্যম অনুমানে হেতুবাক্যের সব পদ সিদ্ধান্তে উপস্থিত থাকে না, হেতুবাক্যের অন্তত একটি পদ সিদ্ধান্তে উপস্থিত থাকে না।

Two types of immediate inference: Conversion and Obversion.

Conversion: One standard-form categorical proposition is said to be the *converse* of another when we derive it by simply interchanging the subject and predicate terms of that other proposition. The proposition from which it is derived is called the *convertend*.

Thus, “No idealists are politicians” is the converse of “No politicians are idealists,” which is its convertend.

E propositions: Conversion is perfectly valid for all **E** propositions and for all **I** propositions.

O propositions: The conversion of an **O** proposition is not valid. The **O** proposition, “Some animals are not dogs,” is plainly true; its converse is the proposition, “Some dogs are not animals,” which is plainly false. An **O** proposition and its converse are not logically equivalent.

A proposition: From “All dogs are animals” we certainly may not infer that “All animals are dogs.”

Conversion by limitation: From All dogs are animals,” we infer that “Some animals are dogs.”

It proceeds by interchanging subject and predicate terms and changing the quantity of the proposition from universal to particular.

In all conversions, the converse of a given proposition contains exactly the same subject and predicate terms as the convertend, their order being reversed, and always has the same quality (of affirmation or denial).

Valid Conversions

Convertend	Converse
A: All *S* is *P*.	**I:** Some *P* is *S*. (by limitation)
E: No *S* is *P*.	**E:** No *P* is *S*.
I: Some *S* is *P*.	**I:** Some *P* is *S*.
O: Some *S* is not *P*.	(conversion not valid)

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Complement: Every class has, associated with it, a **complementary class**, or **complement**, which is the collection of all things that do not belong to the original class. The complement of the class of all people is the class of all things that are *not* people.

The class-defining characteristic of that complementary class is the (negative) attribute of not being a person. The complement of the class of all people contains no people, but it contains everything else: shoes and ships and sealing wax and cabbages—but no kings, because kings are people.

The complement of the class designated by the term *S* is then designated by the term *non-S*; we may speak of the term *non-S* as being the complement of the term *S*.

A class is the (class) complement of its own complement. Likewise, a term is the (term) complement of its own complement.

Obversion

A valid form of immediate inference for every standard-form categorical proposition.

To obvert a proposition, we change its quality (from affirmative to negative, or from

negative to affirmative) and replace the predicate term with its complement.

(Obvertend) “All dogs are mammals” → “No dogs are nonmammals” (Obverse)

The proposition serving as premise for the obversion is called the *obvertend*; the conclusion of the inference is called the *obverse*.

- The **E** proposition, “No umpires are partisans,” has as its obverse the logically equivalent **A** proposition, “All umpires are nonpartisans.”
- The **I** proposition, “Some metals are conductors,” has as its obverse the **O** proposition, “Some metals are not nonconductors.”
- The **O** proposition, “Some nations were not belligerents,” has as its obverse the **I** proposition, “Some nations were nonbelligerents.”

To obtain the obverse of any proposition, we leave the quantity (universal or particular) and the subject term unchanged; we change the quality of the proposition and replace the predicate term with its complement.

Valid Obversions

Obvertend	**Obverse**
A: All *S* is *P*.	**E:** No *S* is non-*P*.
E: No *S* is *P*.	**A:** All *S* is non-*P*.
I: Some *S* is *P*.	**O:** Some *S* is not non-*P*.
O: Some *S* is not *P*.	**I:** Some *S* is non-*P*.

State the converses of the following propositions, and indicate which of them are equivalent to the given propositions:

1. No people who are considerate of others are reckless drivers who pay no attention to traffic regulations.

2. All graduates of West Point are commissioned officers in the U.S. Army.

3. Some European cars are overpriced and underpowered automobiles.

4. No reptiles are warm-blooded animals.

5. Some professional wrestlers are elderly persons who are incapable of

doing an honest day’s work.

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State the obverses of the following propositions:

1. Some college athletes are professionals.

2. No organic compounds are metals.

3. Some clergy are not abstainers.

4. No geniuses are conformists.

5. All objects suitable for boat anchors are objects that weigh at least fifteen pounds.