

# Symbolic Logic Handout

## Introduction

Welcome to this introductory handout on symbolic logic, designed specifically for philosophy students. While you may not have prior experience with formal logic, this guide will equip you with the necessary tools to navigate philosophical texts that utilize symbolic notation, such as Nathan Salmon's paper on non-designating names and Kripke's theory of fiction.

## Section 1: Basic Logical Symbols

The following table presents some common logical symbols and their interpretations:

Symbol	English Interpretation	Example
$\neg$	Not	$\neg P$ : It is not the case that P
$\wedge$	And	$P \wedge Q$ : P and Q
$\vee$	Or	$P \vee Q$ : P or Q
$\rightarrow$	If...then	$P \rightarrow Q$ : If P, then Q
$\leftrightarrow$	If and only if	$P \leftrightarrow Q$ : P if and only if Q
$\forall$	For all	$\forall xPx$ : For all x, x is P
$\exists$	There exists	$\exists xPx$ : There exists an x such that x is P

These symbols are used to represent and analyze logical relationships between statements.

## Section 2: Understanding Quantifiers

Quantifiers are symbols that express the quantity of a statement. The two main quantifiers are:

- **Universal quantifier ( $\forall$ ):** This symbol means "for all" or "every." For example, " $\forall xPx$ " translates to "For all x, x is P."
- **Existential quantifier ( $\exists$ ):** This symbol means "there exists" or "some." For example, " $\exists xPx$ " translates to "There exists an x such that x is P."

## Section 3: Important Terms

In addition to the symbols, understanding the terminology used in symbolic logic is crucial. Here are some key terms:

- **Proposition:** A statement that can be either true or false.
- **Predicate:** A property or characteristic that can be attributed to an object.
- **Definite Description:** A phrase that refers to a specific object or individual.
- **Truth Value:** The truth or falsity of a proposition.
- **Modal Intension:** The way a sentence's truth value may vary across possible worlds.

## Section 4: Application in Salmon

- Salmon uses the symbols to present different interpretations of sentences involving non-designating names, such as 'Sherlock Holmes exists.' For example, he analyzes the sentence "Sherlock Holmes exists" in a few different ways, including:
  - Something is uniquely Holmesesque.
  - Something is the Holmesesque individual.
  - 'Sherlock Holmes' designates something.
  - ^Sherlock Holmes^ is a concept of something.
- Salmon uses quantifiers to express the quantity of a statement. For example, he uses the existential quantifier to say "There is only one world, the 'real' world."
- Salmon uses the terminology presented in Section 3 to discuss the use of names and descriptions. For example, he discusses the difference between a name's semantic content and what is pragmatically imparted. He also discusses the relationship between a singular term's designation and the truth value of the proposition expressed by that term.