Phil 445 Session 1

Parts of Speech

1. Nouns and **Noun phrases** (NPs)
    a. Proper Names like “Aristotle,” “Homer”
    b. Common nouns/general terms like “student(s),” “jewelry,” “parent of twins”

2. Common noun phrases combine with **Determiners**
    a. Articles (“the,” “a,” “some”)
    b. Quantifiers (“all,” “every,” “almost every,” “most,” “few,” “no,” “some”)
    c. “this,” “those,” “that” (as used in “that student,” not in “wasn’t that great” or “hope that she’ll come”)
    d. Possessives (“my,” “your”)

- Traditionally linguists counted Determiners as combining with NPs in the same way adjectives do, so that the result was a bigger NP. The dominant view nowadays (but not accepted by everyone) is that Determiners + NP produce a **Determiner Phrase** (DP). Russell calls these **denoting phrases.**
- Proper names like “Aristotle” are also sometimes counted as DPs; this is partly a matter of labeling and needn’t mean that proper names implicitly involve a kind of Determiner + NP, though as we’ll see that further claim is one that some linguists and philosophers do affirm.

3. Adjectives and **Adjectival phrases**
    - “tall,” “angry,” “lucky”

4. Verbs and **Verb phrases** (VPs)
    - More on these below
    - Philosophers and linguists sometimes talk of “predicates.” These are mostly exemplified by common noun phrases (usually without a determiner) and adjectival phrases. VPs have some similarities, and so are sometimes included, but also some important differences. (For example, VPs cannot occur as complements of copular verbs: OK to say “became angry” or “became students,” not OK to say “became swims/swimming/to swim” or anything like that.)

5. Other categories we won’t discuss much, such as:
    a. Prepositions and Prepositional phrases (“towards Sarah and her mother”)
    b. Adverbs (“slowly”)

The expressions of interest for us are:

- **Proper Names** like “Aristotle,” “Homer”

- Descriptions, including "**definite descriptions**" (the + NP, for example "the mean sailor who cursed you yesterday") and "**indefinite descriptions**" (a or some + NP, for example "an office in Caldwell," "some student(s)," "some jewelry").
    - Russell sometimes calls indefinite descriptions "ambiguous" descriptions, but contemporary theorists don't talk that way
    - Some theorists count possessive phrases like "my sister" as another kind of definite description. We could regard it as equivalent to "the sister of me."
- **Demonstratives** like "that sailor" (pointing) or "him" (pointing). Contrast to **anaphoric** or **bound** uses of pronouns. In "Almost every guy who talks to Charlotte is surprised when she mocks him," the "she" is anaphoric on and derives its reference from the phrase "Charlotte" earlier in the discourse. The "him" is bound by the quantifier phrase "Almost every guy" and its function is to stand for different guys as that quantifier ranges across the appropriate domain. In the same way that in formal logic some variables get bound by quantifiers.
- **Pure indexicals** like "I," "you," "today," "yesterday," "here"

Our seminar will start out focusing on (especially Definite) Descriptions and Names, and in the later parts will also talk about Demonstratives and Pure Indexicals.

Verbs and their Complements

- The grammar or syntax of some verbs requires a fixed number of **"arguments" or "complements"**; some verbs will tolerate a complement either being present or absent; some verbs don't accept any complements.
- Complements come from different grammatical categories, where the grammar or syntax of a verb also specifies which categories are allowed. For the moment, let's just focus on **complements that are DPs**.
- Some examples, with the complement(s) underlined.

1. Sue consumed <u>the cheese</u>. (Here a DP complement is required)
2. Sue ate <u>the cheese</u>. (Here a DP complement is allowed, but you can also leave it off and say "Sue ate." Perhaps that should be understood as "Sue ate [<u>something</u>]," but with the "something" left implicit/silent/unpronounced.)

The sentences 1 and 2 presumably mean more or less the same thing, but for some reason the two verbs have different syntactic constraints. You can't leave the complement off with "consumed." Though you can say, explicitly, "Sue consumed something."

3. Sue baked [[<u>me</u>] <u>a cake</u>]. (Here you can either make both complements explicit, or leave the "indirect object" complement unexpressed --- then perhaps it's understood as meaning she baked a cake for someone, perhaps herself --- or you can leave both complements unexpressed --- then perhaps it's understood as meaning she baked something for someone.)
4. Sue disappeared. (No complement allowed)

- Linguists distinguish the complements/arguments of a verb from other phrases that modify the verb, usually called "**adjuncts**." These tend to be supplemental and optional, and there aren't the same kind of strict rules about which kinds of such phrases are allowed. For example, although the verb in 4 doesn't permit a complement, it can still be modified by adjunct phrases, as in:
  5. Sue disappeared *on Sunday*.

  Adjuncts can appear together with complements, as in:

  6. Sue ate the cheese *with enthusiasm*.

- Complements/arguments can be of other syntactical categories than DPs. One interesting class of verbs, called "**copulas**," take *predicate phrases* (adjectival and noun phrases) as complements:
  7. They were delinquints. (The verb "to be" is the paradigm copula.)
  8. They became students.
  9. He looked taller than before.
  10. We felt happy.
  11. He made us happy.
- Example 11 is interesting because it takes both a DP complement "us" as well as predicative complement "happy."
- If a noun phrase is used after a copula, often no determiner accompanies it. And many determiners wouldn't be allowed to accompany it: not OK to say "He looked that student" or "He became most students." But it is OK to say "He became *a* student" or "He was *the* student of my colleague." We'll discuss this curious fact later in the seminar.
- In addition to its use where it takes a *predicative complement*, the verb "to be" (and maybe some others, too like "became") is thought by many theorists to have other uses too. For instance, its use in "That professor (pointing) is Sarah" and "What he wants is a pony." Exactly how these other uses work is contested. But if you see theorists opposing the "is of predication" to the "is of identity" or to "specificational" uses of "is," these are the kinds of contrasts they're relying on.

- Some verbs take ***clauses* as complements**. You're probably familiar with examples like these:
  12. He believes [that] she'll be back tomorrow. (The "that" is often optional.)
  13. He knows [that] she'll be back tomorrow.
- Some verbs accept either clauses or DPs as complements:
  14. He fears that she'll be back tomorrow.
  15. He fears her large dog.
- The clauses in 12, 13, and 14 are finite declarative clauses. Some verbs accept (and some require) other sorts of clauses, for example:
  16. I expect her to leave. (Infinitival clause with explicit subject "her")
  17. I expect to leave. (Infinitival clause with no explicit subject, here the person who's doing the expecting is understood to be who's expected to leave.)
  18. She asked why Kim left. (Interrogative clause)

- Some things you may encounter, but won't be central to our discussion:

  a. In sentences like:
     19. I want that sailor off my ship.
     20. I consider John my best friend.
     21. I heard him groan.
     Some theorists think of these examples as verbs taking two complements, like we described 11 before. Many other theorists think of the two underlined phrases in each of these examples as combining into another kind of syntactic unit, a clause with an implicit/unexpressed copular verb. (And they might count 11 as another example of this.) This kind of clause is called a "**small clause**."

  b. **Relative clauses** function in these sentences like the adjective "young" does:
     22. The young clerk [who] you fancy is looking at you. (Often, as here, the relative pronoun can be omitted.)
     23. The young clerk [who was] serving us fancies you. (When "who was" is omitted, this relative clause is called "reduced.")

More about Indefinite and Definite Descriptions

- With indefinite descriptions, like:
  24. a student who stays after class
  In some cases, (a) there may be a specific student I have in mind, but this sentence just refrains from explicitly identifying them. Cases (b) start to be a bit different, these are where there may be some specific student I believe myself or intend to be talking about, but I don't know who they are and couldn't identify them even if I wanted (neither by name nor with informatively different descriptions). There can also be cases (c) where there is no specific student I am or even think myself to be talking about. For instance, consider the occurrence of 24 in these sentences:
  25. If only there were a student who stays after class!
  26. I don't expect there to be a student who stays after class.
  Remember this: **sometimes** when a speaker uses a description (definite descriptions too) **there is an object that satisfies the description and that the speaker could identify if she wanted to; but other times there needn't be**.

- Why does our language have a contrast between definite and indefinite descriptions? What does it contribute when we use the former rather than the latter? Some theorists think that using a definite description in some way **adds a claim or presumption of "uniqueness."** That is, if you say:
  27. I met the mean sailor who cursed you yesterday.
  It's somehow conveyed that there was exactly one mean sailor who cursed you yesterday (no more, no less). Many (maybe all?) of the authors we'll be looking at agree with this; but they'll have different views about how a "claim or presumption of uniqueness" gets

contributed when we use "the." (Some other theorists think that definite descriptions contribute *something other than* uniqueness; and still others think *they don't* contribute anything that isn't also contributed by indefinite descriptions.)

- Sticking with this traditional idea that what definite descriptions contribute is uniqueness, we'll have to figure out what to say about 27 when ***there isn't*** **exactly one** mean sailor who cursed you yesterday. (Perhaps there were several such sailors, or perhaps there weren't any.) This is an issue different authors we read will handle differently.

Quantifiers

Quantifier phrases in English include phrases like these:

28. <u>Every student</u> passed the test.
29. <u>Most students</u> passed the test.
30. <u>At least two students</u> passed the test.
31. <u>Exactly two students</u> passed the test.
32. <u>Some student</u> (at least one) passed the test.
33. <u>Few students</u> passed the test.
34. <u>No student</u> passed the test.

You may have learned to write some of these in logic class like this. 28 would be formalized as:

28a. ∀x (x is a student ⊃ x passed the test).

There are a variety of logical notations. Here is another way to write the same thing:

28b. (x) (x is a student → x passed the test).

32 would be formalized like this:

32a. ∃x (x is a student & x passed the test).

Or:

32b. ∃x (x is a student ∧ x passed the test).

Using these formalisms, if a sentence has several quantifiers, as in:

35. ∀x (∃y (x loves y))

You get a lot of parentheses. So authors have conventions that enable them to omit parentheses in a systematic way. This would be confusing to start with, but making it worse is that there are different conventions. If you see something like this:

36. ∀x x failed the test ⊃ the test was unfair.

Then what's probably meant is this:

36a. (∀x (x failed the test)) ⊃ the test was unfair.

Rather than this:

36b. ∀x (x failed the test ⊃ the test was unfair).

36a says that if *all* the students failed, the test was unfair. 36b says that every student is such that if he or she failed, the test was unfair; that is, if *any* failed, the test was unfair.
On the other hand, if you see something like this:

37. ∀x. x failed the test ⊃ the test was unfair.

(Notice the period after “∀x”) what’s probably meant is instead 36b. The period notation usually means that what comes before the period applies to the longest possible expression after the period. Whereas in 36, without the period, the quantifier ∀x instead applies to the shortest possible following expression.
I prefer the period convention and may sometimes use it; but if it’s ever unclear what’s going on, we can be more explicit with additional parentheses.

You may have learned in your logic class how to use the quantifiers ∀ and ∃ to express other English sentences than just 28 and 32. For example, here are some translations:

34. No student passed the test.
34a. ~∃x. x is a student & x passed the test.
34b. ∀x. x is a student ⊃ ~(x passed the test).

30. At least two students passed the test.
30a. ∃x ∃y. x is a student & y is a student & x ≠ y
& x passed the test & y passed the test.

31. Exactly two students passed the test.
31a. ∃x ∃y. x is a student & y is a student & x ≠ y
& x passed the test & y passed the test
& ∀z. (z is a student & z ≠ x & z ≠ y) ⊃ ∼ (z passed the test).
31b. ∃x ∃y. x is a student & y is a student & x ≠ y
& x passed the test & y passed the test
& ∀z. (z is a student & z passed the test) ⊃ (z = x ∨ z = y).

There’s a different kind of notation for quantifiers, called the “binary” notation. Using this notation, 28 would be formalized in one of these ways:

28. Every student passed the test.
28a. ∀x: x is a student. x passed the test.
28b. [∀x: x is a student] (x passed the test).

And 32 would be formalized like this:

32. Some student passed the test.
32a. ∃x: x is a student. x passed the test.
32b. [∃x: x is a student] (x passed the test).

The binary quantifier notation is more general (both expressively and in terms of how it can be explained) than the more traditional notation, so that we could also have formalizations like this:

29. Most students passed the test.

29a. Most x: x is a student. x passed the test.
29b. [Most x: x is a student] (x passed the test).

33. Few students passed the test.
33a. Few x: x is a student. x passed the test.
33b. [Few x: x is a student] (x passed the test).

In all of the binary quantifier formalizations, as well as in the English sentences they're translating, the "student"/"x is a student" part is called the quantified sentence's **restrictor clause**, and the "passed the test" part is called the **main** or **matrix clause.**

Different kinds of Semantics

When you're working with a natural language or a formal language like some logic formalism or a programming language, one thing you can learn or establish is the language's SYNTAX.

With logic formalisms, you also learn or establish the language's PROOF THEORY, which has rules based on the syntax of starting sentences about which transitions are allowed to other conclusion sentences.

If you do any meta-logic (usually this doesn't happen in your first logic course), you may learn or establish a SEMANTICS for the language. Logicians often do this by positing what they call "models" for a language. These stipulate what all the non-logical expressions in the language (the P and Q sentence letters, the F and G predicates, the a and b constants, and so on) should stand for. Usually the logician doesn't care *what* a predicate like F stands for, so they'll work with not a single model but rather with a set of models, which vary in what they say about F and the other non-logical expressions. What will be fixed for the logician is how the *logical* expressions like ∀ and ∨ and ⊃ work. We'll call this project, where it's arbitrary what most of the expressions in the language stand for, LOGICAL SEMANTICS. (Metalogic involves doing that, explaining notions like "entailment" in terms of what's true in every model, and what the relation is between the notions so defined and the logician's favored Proof Theory.)

There's also a different kind of project, where you do care about and try to identify what non-logical expressions in the language, like "sailor" and "Jacob," really mean. There isn't a fixed label for this project, but it's sometimes called EMPIRICAL or DESCRIPTIVE SEMANTICS.

There's also a further kind of project. If you're engaged in Descriptive Semantics, you're just trying to say what meaning the words in fact have. You're not trying to figure out how they (historically) came to have those meanings; nor are you trying to figure out *in virtue of what* they have those meanings. That is, what facts about speakers of the language and the world *make* those words have the meanings they do? These last questions (not the historical one) we can call the project of METASEMANTICS.

A logician cares about SYNTAX and PROOF THEORY and LOGICAL SEMANTICS.

A linguist cares about SYNTAX and DESCRIPTIVE SEMANTICS.

In our class we're going to care about DESCRIPTIVE SEMANTICS and METASEMANTICS. We'll care about Syntax only in a subsidiary way, to help us with the other things we care about.

After class, I had the thought that you might argue there isn't such a sharp difference between the logician's semantics and the linguist's (Descriptive) semantics as I was making out. For no linguist is going to be able to give a Descriptive semantics for *all* of some natural language. They're going to have to approach things piecemeal. At one time they might work on words like "the," at another time on words like "my," at another time on words like "taller." There will always be other parts of the language they have to ignore and make somewhat arbitrary assumptions about. Maybe a logician can say, I'm doing the same thing, it's just that the words I'm focusing on are the logical words like ∀ and ∨ and ⊃.

Looked at in that light, perhaps the difference between LOGICAL SEMANTICS and DESCRIPTIVE SEMANTICS, where the latter is done piecemeal, is less clear than I made out. There's still an interesting difference between them though, namely this: often (though perhaps not always) the linguist will attempt to identify some THINGS --- usually something abstract like sets or complex functions --- and they'll treat meaning as a relation between the words they're interested and those things. They might say those things "are the meanings" of those words. I won't say linguists always do this; sometimes they may have reasons not to. But that's how many exercises of Descriptive Semantics look.

Whereas logicians (almost) *never* do this. They rarely identify some THING and say this is the meaning of ∨**.** Instead they specify the meaning of ∨ implicitly, by saying things like: if P has this truth-value and Q has that truth-value, then "P ∨ Q" has such-and-such truth-value.

This is an interesting difference, in part because we'll see Russell going in the logician's way here when he gives the meaning of "the F." He denies that there is any THING which is the meaning of that expression. Instead he tells us how to figure out the meaning of larger sentences, like "I saw the F," in which "the F" occurs.

Although it's an interesting difference, it may not be a deep difference. It may be a superficial or sociological difference. Perhaps the logicians *could* say the same kinds of things the linguists say. Perhaps they could say the meaning of ∨ is a certain kind of function from two truth-values to a third?

Free Logic and Fictional Objects

Recall:

28. Every student passed the test.
28a. ∀x: x is a student. x passed the test.

Most logics treat 28a as not being existentially committing. That is, it doesn't imply that there are any students. If there are no students, 28a would then count as "vacuously" true. It's not clear that English works the same way. If there are no students, would you count 28 as true? Some philosophers argue that 28 “presupposes” but does not “say” or “entail” that there are students. These are notions we’ll explore later in the term.

Consider:

38. Some student greeted Medusa.
38a. ∃x: x is a student. x greeted m.

Most logics treat 38a as being existentially committed both to some students, and also to m. If the constant “m” didn’t pick anything out, then 38a would be meaningless. And if there aren’t any students, then 38a couldn’t be true.

There are some logics called FREE LOGICS that follow the traditional logics in how they treat ∃ — that is, 38a would still imply that some student (at least one) exists — but that explore different options in the treatment of “m.” They allow that 38a could still be meaningful even if “m” doesn’t stand for anything, and so even if it could be truly said that “m doesn’t exist.” (There are various of these logics because they disagree about the details. For example, some of them would say that 38a has to be *false* because m doesn’t exist; others would say that it’s *neither true nor false*. But it’s still meaningful, and other sentences containing “m” like “m doesn’t exist” can be true.)

A more radical departure from traditional logics could challenge whether “some student” has to be translated using symbols like ∃ that are always existentially committing. In English we sometimes use such words without meaning to commit ourselves in that way. For example:

39. Some gods that people pray to don’t exist.

I mention these non-traditional views just so that we can set them aside. We’re going to follow the traditional logics in assuming that ∃ and any expressions in natural language that work like the constant “m” have to be existentially committing. As we’ll see though, it will be much disputed in our readings whether proper names in natural language, like “Medusa,” do In fact work like constants in a logic.

There are **three kinds of broad strategies** for how to treat names and/or definite descriptions in natural language. One kind of strategy treats them as working like constants in logic; another strategy treats them as working like a kind of quantifier expression; a third strategy treats them as working like a kind of predicate expression (like “student”). Frege treats names and definite descriptions somewhat on the model of constants; Strawson follows him for definite descriptions; and Kripke and Kaplan (in the later articles of his we read) pursue this strategy for names (and other expressions like “that student” and “I”). Russell, on the other hand, treats names and definite descriptions like a kind of quantifier expression. For Russell, we’ll see, a sentence like:

40. The mean student passed the test.

gets analyzed as:

41a. Exactly one thing x is a mean student, and x passed the test.

Or, following Russell's formalization:

41b. ∃x. x is a mean student & ∀y (y is a mean student ⊃ y = x) & x passed the test.

Or equivalently:

41c. ∃x. ∀y (y is a mean student ⊂⊃ y = x) & x passed the test.

The symbol ⊂⊃ means "if and only if" and can also be written as ≡ or ↔.
Kripke agrees with Russell that definite descriptions should be treated as this kind of quantifier expression, but as we said, he doesn't think so for names. (Although I've said Frege treats names and descriptions as working somewhat like constants, in some ways the fact that he treats names as working like descriptions makes him akin to Russell, even though they have different views about descriptions. So Kripke will take Frege and Russell as both being his opponents about names.)

The last strategy is to treat names and/or descriptions as predicates (like "student"), which may sound surprising at this point. We'll see Strawson arguing that at least some uses of definite descriptions are functioning that way. For names, we won't be looking at this view in the class. But you can get a feel for why someone might think it if you consider sentences like:

42. At the first party I met three students; at the second party there weren't so many students but I met three Jacobs.

Here the name "Jacob" seems to be working in the same kind of way the predicate "student" does.

Going back to:

38. Some student greeted Medusa.

There's an issue we should clarify about fictional names, like "Medusa" and "Hamlet" and "Sherlock Holmes." Sometimes we use the names like this, to express things that are (or at least are presented as being) true in the fictions:

43. Holmes lived at 221B Baker Street.
44. Holmes was born in 1854.

Other times we use the names like this, to express facts about the literary character or social artifact:

45. Holmes was created by Arthur Conan Doyle in 1887, with the publication of *A Study in Scarlet*.

Now I presume that sentences like 45 are true. There is a literary character called Holmes that exists and appears in *A Study in Scarlet* (and in other novels and stories). In the same way, there are also plots and motifs and other literary elements that exist in and because of these stories. But when we discuss what are supposed to be examples of non-referring names in this seminar, we'll instead always be thinking of their use in sentences like 43 and 44, where we purport not to be talking about a social artifact, but instead about a person. Yet there is no person who answers to those uses. This is a problem if names are to work like the constants "m" in a traditional (non-free) logic.

Useful History

Some facts it helps to be aware of in the examples our authors will be discussing:

- Sir Walter Scott (who was in fact Scottish) was the author of an immensely popular series of novels beginning with *Waverley*; but he kept this (somewhat) secret until near his death.

- France's last king was in 1848; when Russell was writing (early 1900s) there was no "present king of France."

- "Hesperus" or "the evening star" are expressions used for Venus when it appears as the first star-like light in the evening sky; "Phosphorus" or "the morning star" are expressions used for Venus when it appears as the last star-like light in the morning sky. At one point people didn't realize that Hesperus and Phosphorus were the same astronomical object.

Miscellaneous

- On the next line:

  My name is Jim. My name is Jim. I teach philosophy.

  There are three sentence **tokens** but only two sentence **types**. When I **utter** those sentences on a particular occasion (called the "context of utterance"), the words "my" and "I" stand for me; if they're uttered in other contexts, they may stand for other speakers. We take utterances of sentences to express **propositions**, which are something like the abstract meanings or contents of those sentences. The sentences in my examples belong to English; the propositions they express can also be expressed by utterances of German sentences; and those propositions don't themselves belong to any language.

  There are **three broad conceptions of propositions** in philosophy of language. One is Frege's (he calls propositions "thoughts"; but he means by this *what* people think, not the states or acts of thinking. It's important for Frege that the meanings of words not be anything in our individual psychologies). We'll talk about this next week. A second is that propositions are sets of possible worlds, or something like that. A third is that propositions are something like structures built out of the objects, properties and relations that correspond to the words in the sentences that express them. So for example, take the sentence:

46. Jim greeted Jessica.

The proposition this expressed would be a structure built out of Jim, Jessica, and the greeting relation. (A different structure than is expressed by "Jessica greeted Jim.") Russell has something akin to this last view of propositions. And he sometimes uses the word "proposition" to refer to them. But he also sometimes uses the word "proposition" to talk about linguistic entities, namely declarative sentences. (Strawson might do this too?) But contemporary theorists won't do that. They'll avoid using "proposition" to talk about sentences.

- Consider the predicates:
    a. Netflix subscribers in Carrboro
    b. lawyers in Carrboro
    c. attorneys in Carrboro

  Suppose it turns out that these predicates in fact apply to exactly the same group of people. It so happens that all and only lawyers in Carrboro are Netflix subscribers. Then we'd say that the predicates a and b have the same **extension**. The set of objects that satisfy these predicates are the same. But they don't have the same meaning. They have different **meanings or intensions**. On the other hand, perhaps b and c do have the same meaning or intension; maybe those predicates are perfect synonyms for each other.

  Some writers also talk about the "extensions" of expressions other than predicates, including names and sentences. Some also talk about the "intensions" of these expressions. There are different views about what the extensions of these other expressions might be. (Notably, Frege thinks that the extensions of sentences are truth-values.)

  Things get a bit more complicated when we consider predicates like:
    d. water
    e. H_2O

  Arguably, these predicates don't have the same meaning. At least, one can learn the competent use of both of these expressions without realizing they apply to the same liquid. On the other hand, as we'll see, nowadays many philosophers think that the essence of water turns out to be being made of H_2O. So necessarily, if something is water it's H_2O, and vice versa. How should we talk then?

The way the technical term “intension” used to be used, if d and e had different meanings then they’d have different intensions. But sometime between the 1940s and 1970s a newer usage evolved, so that a philosopher with the modern view of water/H_2O would say that “water” and “H_2O” have the same intension, after all, because in every possible situation where something is water, it’s also H_2O, and vice versa. Intensions were now understood to be just what extension the expression has with respect to different possible worlds. So in this newer usage, “water” and “H_2O” have the same intension. One is still allowed to think they have different meanings. If one thinks that, one will say that meanings are finer-grained than intensions.

Nowadays everyone uses “intension” in this newer sense. It’s unfortunate that the usage shifted like this. Wanted to warn you about it.

- In our readings we’ll encounter various terms like “content,” “meaning,” and “semantic value.” Some authors will use these interchangeably, as meaning the same things. Others will make distinctions, and use some of the words for one notion, and others for another. We’ll have to figure out each author’s usage as we proceed.

- Similarly we’ll encounter terms like “denote,” “refer to,” “designate,” and “stand for.” Some authors will use these interchangeably, as meaning the same things. Others will make distinctions. They might give a special meaning to “denote,” or a (different) special meaning to “refer.” Authors who use the terms “designate” and /or “stand for” tend to always use them in a more inclusive, general way. Here too we’ll have to figure out each author’s usage as we proceed.

- At the end of the seminar, we talked about scope differences. The sentence:

  47. Every child loves some clown.

  Could be interpreted like this:

  47a. ∀x. x is a child ⊃ ∃y. y is a clown & x loves y.
  47b. ∀x: x is a child. ∃y: y is a clown. x loves y.

  That just says that each child has a favorite clown; it’s allowed but not required that it sometimes (or always) be the same clown for different children. Or 47 could be interpreted like this:

  47c. ∃y. y is a clown & ∀x. x is a child ⊃ x loves y.
  47d. ∃y: y is a clown. ∀x: x is a child. x loves y.

  These formalizations do say that there’s a single clown that all children love. The difference between these interpretations is expressed by saying that in 47a/b, “every child” is given widest scope, whereas in 47c/d, it's the quantified expression "some clown" that has widest scope.

These scope relations can also exist between quantified expressions and other logical operations like negation. For instance, if I say "Surely some student passed the test?" You could reply:

48. No, some student didn't pass the test.

If you're being cooperative in your reply to me, you probably mean that all the students failed, that is:

48a. ~ ∃x: x is a student. x passed the test.

If you're being more of a jerk In our conversation (but a nicer test-giver), you might instead mean that some students failed, that is:

48b. ∃x: x is a student. ~ (x passed the test).

We describe interpretation 48a as one where the negation has wider scope than the quantified expression "some student"; and 48b as one where the negation has narrower scope.