Chapter Five:
Names, Predicates, and Quantifiers

5.1. Introduction: More Logical Form

We now propose to expand the formal language of Chapter Three – the language of "not," "and," "or," and "if". Our motive is the same as with the expansion at the beginning of Chapter Three: certain intuitively valid arguments are judged invalid by the formal tests of the previous chapter(s).

For instance, the following simple argument is intuitively invalid.

1. All surfers are thin.
2. Jack is a surfer.

∴ Jack is thin.

But since all of these sentences lack negation, conjunction, disjunction, and conditional phrases, each will be translated by a sentence letter – yielding a familiar **invalid** form.

VALID	**INVALID**
1. All surfers are thin.	**P**
2. Jack is a surfer.	**Q**
∴ Jack is thin.	∴ **R**

Here again we resolve the problem by proposing that existing translation methods are overlooking some **logical form** in English.

In isolating these new bits of form we're helped by the following clue: while the formal translation suggests no overlap among the three sentences, in English they share many common ingredients. For example, the **proper name** "Jack" appears in both the second premise and conclusion. And removing this overlap, by putting the name "Neko" in the conclusion, yields an invalid argument.

INVALID

1. All surfers are thin.
2. **Jack** is a surfer.

∴ **Neko** is thin.

The **predicate phrase** "is/are thin" likewise appears in both the first premise and conclusion. And once again the argument is invalid if the two sentences feature different predicate phrases.

INVALID

1. All surfers are **near-sighted**.
2. Jack is a surfer.

∴ Jack is **thin**.

Finally, the English **quantifier** "all" in the first premise is essential to the validity of the argument – since replacing it with the quantifier "some" results in an invalid argument.

INVALID

1. **Some** surfers are thin.
2. Jack is a surfer.

∴ Jack is thin.

(A situation where only half the surfers are thin, and Jack ranks among the chubbier ones, is a validity counterexample for this argument.)

Since our assumption throughout is that only logical form affects validity, we conclude that **proper names**, **predicates**, and **quantifiers** are three more examples of logical form in English. In order for the formal test of validity to take note of these further types of logical form, we expand the formal language to include each of these three new items.

(It's true that the examples we've just surveyed were touched on already in Chapter Four, as part of logic in the Aristotelean tradition. But as we noted there, that tradition forms something of an island in not combining easily with the sentence logic of earlier chapters. Our approach here will instead build the logic of the syllogism – and much more – directly on a foundation of sentence logic, yielding a unified logic that takes advantage of the logical theory already developed in Chapters Two and Three.)