Existential Import
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Here is an alternative exposition of the problem of existential import (together with its solution). The discussion in the book (Section 5.7) is fine, and nothing I say contradicts it. My aim is to get you to understand the problem and its various solutions one way or another. The more expositions you have, the greater the likelihood that you will grasp the underlying ideas and reasoning.

1. The problem. We defined the word "some" as "at least one." Thus, "Some S is P" means "At least one S is P." Another way to put this is that there is, or exists, at least one thing that is both an S and a P. This proposition clearly asserts the existence of something, so we say that it (the proposition) has *existential import*. But notice what happens to the traditional (Aristotelian) square of opposition when we are dealing with a subject class (such as unicorns) that has no members. The I proposition, "Some unicorns are fast runners," asserts that there is at least one unicorn, which is false. The O proposition, "Some unicorns are not fast runners," also asserts that there is at least one unicorn, which is false. So it is *possible*—we have just proved it—for both the I proposition and its corresponding O proposition to be false. This invalidates the rule of inference known as subcontraries, which asserts that while both I and O propositions can be true, they cannot both be false.

It gets worse. If both the I proposition and the O proposition can be false, then, by the rule of contradictories, both the A proposition and the E proposition can be true. But this invalidates the rule known as contraries, which asserts that while both A and the E propositions can be false, they cannot both be true. Moreover, if the A and the E propositions can be true while their corresponding I and O propositions are false, then the rule known as subalternation is invalid. Subalternation says that if an A proposition is true, then so is its corresponding I proposition. It also says that if an E proposition is true, then so is its corresponding O proposition. The only rule of inference left on the square of opposition is contradictories.

As if this weren't bad enough, there is also a problem with the rules known as conversion by limitation and contraposition by limitation.

The first of these rules allows “Some P is S” to be inferred from “All S is P.” As I explained in class, conversion by limitation is equivalent to (a) subalternation and (b) conversion. But we have just seen that subalternation is invalid given our assumption that I and O propositions have existential import. Contraposition by limitation allows “Some nonP is not nonS” to be inferred from “No S is P.” As I explained in class, contraposition by limitation is equivalent to (a) subalternation and (b) contraposition. But we have just seen that subalternation is invalid given our assumption that I and O propositions have existential import. It follows that conversion by limitation and contraposition by limitation are invalid.

2. Solutions. We have reached an impasse. The problem is this: We want “some” to mean “at least one,” but assigning this meaning to the quantifier entails that several immediate inferences (namely, contraries, subcontraries, subalternation, conversion by limitation, and contraposition by limitation) are invalid. There are three solutions, none of which is perfect. **One** solution is to assume that all four standard-form categorical propositions (A, E, I, and O) have existential import. The problem with this is that it invalidates *all* the rules of inference on the square of opposition, even contradictories. (Do you see why?) A **second** solution is to assume that *none* of the four standard-form categorical propositions has existential import. The problem with this is that it clashes with our interpretation of “some” as “at least one.” When we say that at least one S is P, we *seem* to be asserting the existence of an S. The **third** solution is to assume that only *some* of the propositions (i.e., one, two, or three of them) have existential import.

Each solution is costly, so we have to decide which is *least* costly, given our values or aims. George Boole (1815-1864), an English logician, proposed that we make the third assumption. This is known as “Boole’s solution of the problem of existential import.” The solution is this: I and O propositions are to be interpreted as having existential import. That is, they are to be interpreted as asserting (as they seem to) that at least one member of the subject class exists. If no member of this class exists, as in the case of unicorns, then the proposition is false. A and E propositions are to be interpreted as *not* having existential import, however odd this may sound. The proposition “All unicorns are fast runners,” for example, does not assert that there are unicorns, so the fact that there *aren’t* any unicorns doesn’t make it false. In general, "All S is P" is to be read as "*If* there is an S [and there may not be], it is a P." The E proposition, "No S is P," is to be read as "*If* there is an S, it is *not* a P." A and E propositions turn out to be disguised conditionals.

The cost of Boole's solution is that we can no longer use the following rules of inference: contraries, subcontraries, subalternation, conversion by limitation, and contraposition by limitation. All that remain are contradictories, conversion of E and I propositions, obversion, and contraposition of A and O propositions. The modern (Boolean) square of opposition contains only one valid rule of inference: contradictories.

Things aren't as bad as they seem, however. If we *know* (or explicitly *assume*) that there are members of the subject class of the propositions in question, then we can use the traditional (Aristotelian) square of opposition, with all its rules. It works fine for such propositions. If we do *not* know, or are *unprepared* to *assume,* that there are members of the subject class of the propositions in question, then we must use the modern (Boolean) square of opposition. Unless otherwise indicated, both the book and the classroom discussion will use Boole's interpretation and the modern square of opposition. For purposes of the exams, you must know (a) both squares of opposition (including all their rules of inference), (b) the problem of existential import, and (c) the various solutions of the problem (together with their respective costs).