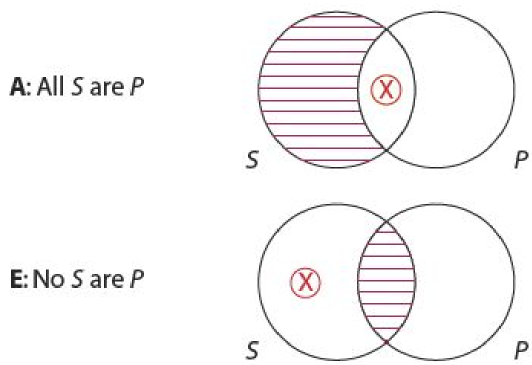
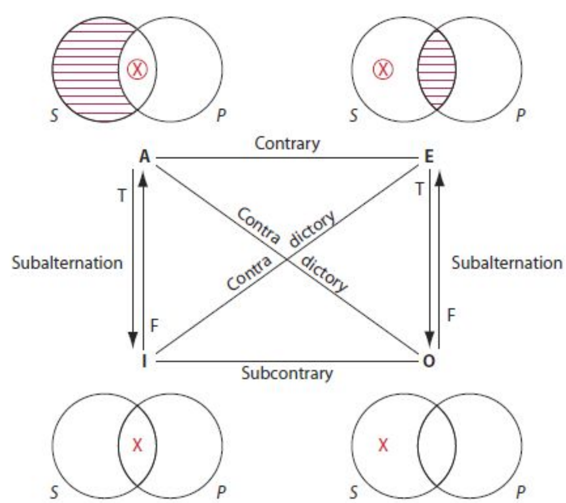
The Traditional Square and Venn Diagrams

We have begun our transition into Aristotelian logic. We can prove more things as valid in this system than we could in the Boolean system. Given this wrinkle, we must amend our way of diagramming inferences with Venn diagrams. We will introduce a new symbol for our diagrams which will be used when we validly infer the existence of an object from either an A or an E proposition. This new symbol will be: Ⓧ.

Like the X's that we have used up until now, this circled X signifies that something exists in the area in which it is placed. However, the two symbols **differ** in that the X represents the positive claim of existence made by particular (I and O) propositions, whereas Ⓧ represents an implication of existence made by universal propositions about actually existing things. For the purpose at hand, a circled X is placed inside the S circle as follows:



The I and O Venn diagrams are identical to the Boolean diagrams since they have identical existential import. This, of course, gives rise to new way to diagram the traditional square of opposition.



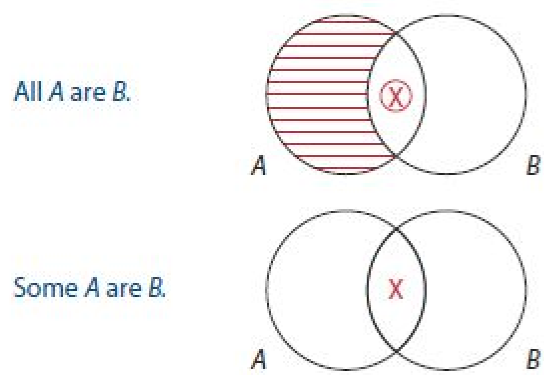
Immediate Inferences revisited:

Given that you are fairly familiar with testing immediate inferences now, I will not go over the basics (see the section 4.3 and 4.4 handouts for a refresher). Anything that was valid in the Boolean system is also valid in the Aristotelian system, so if you are testing whether a single-premise argument is valid, and you notice that it is Boolean valid, then you can automatically infer that it is also Aristotelian valid. However, some things that were invalid in the Boolean system are valid in the Aristotelian system. Since we can prove more things in the Aristotelian system, we need more tests for validity using A and E propositions.

Again, we create Venn diagrams for the premise and conclusion and compare the information contained. We will be doing this, in this section anyway, without worrying about conversion, obversion, and contraposition (i.e. we will be using *only* the square + Venn diagrams).

All dogs are able to be trained.
Therefore, some dogs are able to be trained.

This argument has an A premise and an I conclusion. The Venn's for each proposition are:



The Venn for the A proposition gets the Ⓧ in the overlapped region because dogs do, in fact, exist. Hence, the A proposition has existential import. The I diagram is as it was before, and so we note that the overlapped region gets a normal X. Since the A and I proposition make the same existential claim, the argument is Aristotelian valid.

If this is not clear, then simply look at the newly diagrammed square of opposition above. Note that the A - I relationship is one in which truth 'flows' down. Hence, given that we always treat our premise as true when we test for validity, a true A proposition entails the truth of the corresponding I proposition. Hence, as long as the premise/conclusion are talking about objects that actually exist, arguments which adhere to the patterns in the square will always be valid.