

### 8.1.3. Conversion

The restricted existential  $(\exists x: \rho x) \theta x$  asserts that the extension of  $\theta$  contains at least one member of the extension of  $\rho$ . This is to say that the two extensions overlap, that their intersection is non-empty. The overlapping of extensions is a symmetric relation; and, as this suggests,  $(\exists x: \rho x) \theta x$  and  $(\exists x: \theta x) \rho x$  are equivalent. This principle asserting this,

$$(\exists x: \rho x) \theta x \Leftrightarrow (\exists x: \theta x) \rho x$$

is known traditionally as **conversion**. Its truth can be confirmed by recalling that the two sentences it relates are equivalent to the unrestricted forms  $\exists x (\rho x \wedge \theta x)$  and  $\exists x (\theta x \wedge \rho x)$  and that the latter two are equivalent by the principle commutativity for conjunction.

Conversion indicates that the restricting and quantified predicates have a symmetric role in an existential claim. Since the function of the restricting predicate is served in English by a common noun phrase, to exhibit conversion in English we must move between a common noun phrase and a predicate, perhaps converting the common noun phrase to a predicate using the phrase *is a*, or converting the predicate to a common noun phrase using a device such as *thing that*. Thus *Some dog climbs trees* can be rephrased as *Something that climbs trees is a dog*. More natural examples of conversion are to be found in sentences that assert the overlapping of two classes: *Some mammal is an aquatic animal* is equivalent to *Some aquatic animal is a mammal*.

The symmetry between restricting and quantified predicates in existential claims suggests that we could consider an unrestricted existential equally well as an existential without a restricting predicate or as one with a restricting predicate but without a quantified predicate. Indeed, the latter provides a fair description of one sort of English existential. Sentences like *There is a problem* have a peculiar grammar that confounds the ways we have so far dealt with quantificational claims, for there is no natural way of analyzing it into a quantifier phrase and a quantified predicate. It could be held to contain the quantifier phrase *a problem*, but  $\lambda x$  (*There is x*) is not a genuine predicate and rephrasing it as  $\lambda x (x \text{ is there})$  is of little help. If we try to state its symbolic analysis directly, it clearly should be something like  $\exists x (x \text{ is a problem})$ , for it says that the predicate  $\lambda x (x \text{ is a problem})$  is exemplified. If we

put this symbolic form back into English, we get *Something is a problem*. And, in general, existential claims of the form *there is a C* can be treated symbolically by restating *there* as *something* (or perhaps *someone* or the like when a contextual bound on the intended sort of example is made explicit). More precisely, we take the class indicator of the *there-is* existential, add the phrase *is a* to make it into a predicate, and supply *something* (or *someone*) as the subject.

We can go a little way below the surface of the rule of thumb just stated (though we will still be naïve from a grammarian's point of view). If we are to find a quantified predicate in a sentence like *There is a problem*, it must be one that contributes nothing to the claim being made. That means it must be a predicate like  $\lambda x (x = x)$  or  $\lambda x \top$  that is universal as a matter of logic. Compare *There is a problem* to a sentence like *There ensued an argument*. Grammarian's tend to view the latter as a variant on *An argument ensued* so we might connect the former in a similar way to *A problem is*. And if we can make sense of  $\lambda x (x \text{ is})$  at all, we might end up regarding it as a universal predicate (though the discussion of existential commitment at the end of this section will suggest that there is room for controversy here). This approach would lead us to something like

$$(\exists x: x \text{ is a problem}) \top$$

as a first step in our analysis of the *there-is* existential. Applying conversion would then get us  $(\exists x: \top) x \text{ is a problem}$ , which can be restated as  $\exists x x \text{ is a problem}$  if we use an unrestricted existential quantifier.

In this sort of example, we have taken a roundabout way to the result we reached by the expedient of restating *there* as *something*. There are other cases, however, where the more complex approach is more helpful. For example, we would not want to simply replace *there* by *something* in *There are three things that you need to remember*, but rephrasing the latter as *Three things that you need to remember are*, however odd as English, would point us in the direction of the correct analysis. (In section [8.3.2](#), we will discuss the analysis of phrases, such as *three things that you need to remember*, that have the form *n Cs*.)

However peculiar they are in their logical grammar, *there-is*

existentials are not oddities. They are quite common, in part because they can help us to avoid the sort of ambiguities of quantifier scope noted in [7.1.1](#) (and to be discussed again in [8.2.1](#)).

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