

5.7. Translation Variations: Existential Sentences

1. Single-Predicate Sentences. Already in our earliest quantifier examples we saw how to translate English “something” and “nothing” sentences employing a single predicate.

G: ____ is a material object.

Something in the universe is a material object.

$\exists x Gx$

Nothing in the universe is a material object.

$\sim \exists x Gx$

Note that both these English quantifier phrases incorporate the word “**thing**” – not as a further predicate (“is a thing,” besides “is a material object”), but as part of an empty linguistic ‘pincushion’ to which predicates attach. An equally featureless English variation on “thing” is “**object**”. So instead of “something” we can say “**some object**”; and likewise for “**no object**”.

And because “thing” and “object” are so uninformative, we can leave off mention of “objects” (or “objects in the universe”) later, citing just the predicate:

“Everything is material,” “Some things are material,” and “Nothing is material”.¹

¹ That said, we see that the predicate at work in our earlier sentences was really just “is material” – not “is a material object”. For even there “object” served only as an empty ‘coat hook’ on which to hang the predicate, for purposes of English quantification. Of course placing “object” or “thing” in a predicate phrase does no harm – if only because, meaning-wise, the word makes no difference.

English also appeals to **existential** “**there,**” used not to refer to a spatial location (as it would in “The car is over there”), but simply to cite existence.

Some things are material objects.

There are material objects.

A variant on this places the predicate inside a relative clause.

There are objects [which are **material**]

There are objects [which **travel faster than light**]

And since **negative existential** claims such as “Nothing is a material object” serve to deny an existential, existential “there” appears in these constructions as well.

Nothing travels faster than light.

There are no objects [which travel faster than light]

Notice that in these sorts of sentences “**exist**” acts as a variant of the verb “be”.

There are material objects.

There **exist** material objects.

There **are no** unicorns

There **exist no** unicorns.

No unicorns **exist**.

Unicorns **don’t exist**.

Within the context of a larger negation, “any” also expresses an existential claim.²

Nothing is a unicorn.

There **aren’t any** unicorns.

There **isn’t any** object which is a unicorn.

² Other contexts where “any” acts as an existential phrase include the antecedent of a conditional (“If any customers show up, I’ll be surprised”) and questions (“Are there any questions?”). See (Larson 1995: XX) for further discussion.

2. Existential Sentences with Two Predicates. We've looked already at existential sentences with two different predicates – as in the following example.³

Something both is a cat and isn't a cat.

G: ____ is a cat

$\exists x (Gx \wedge \sim Gx)$

But less absurd sentences likewise attribute two different features to an object.

Some cats are black.

G: ____ is a cat

H: ____ is black

$\exists x (Gx \wedge Hx)$

As support for this translation, recall that 'stacked-up' predicates such as "Greek philosopher" or "green frog" were likewise treated as conjunctions. So "x is a black cat" translates as " $(Gx \wedge Hx)$ "; and the existential " $\exists x (Gx \wedge Hx)$ " says "There are black cats," or "There are cats that are black," or "Black cats exists".

But all those sentences stake the same claim as the original existential "Some cats are black".

Some cats are black.

There are black cats.

Black cats exist.

There are cats that are black.

Whenever one of these sentences is true, the other two will be as well.

³ In 5.4.

And recalling from Chapter Three that the order of parts in a conjunction doesn't affect truth or falsehood, our formal translation provides an easy explanation for why all the following sentences make the same claim.

Some doctors are men
Some men are doctors.

But caution is needed when adding a tilde to the mix – for different combinations of negation and quantification are possible. For example, we had better not confuse the following two sentences, as they clearly make different claims.

Some non-carnivores are cats	$\exists x (\sim Gx \wedge Hx)$
Some carnivores are non-cats	$\exists x (Gx \wedge \sim Hx)$

The first sentence is **false** in the actual world (since all cats are carnivorous), but the second is **true** (lions and tigers and bears all being carnivorous). The second sentence is in fact equivalent to the following.

Some carnivores are non-cats	$\exists x (Gx \wedge \sim Hx)$
Some carnivores are not cats	$\exists x (Gx \wedge \sim Hx)$

A third combination of tildes and existentials comes in negative existential claims; for the earlier single-predicate **negative existential** sentences such as “Nothing is a unicorn” can likewise be scaled up to two predicates. A sentence such as “No cats are lizards” is the denial that even one cat is a lizard.

G: is a cat **H:** likes baths

Some cats are lizards.

$\exists x (Gx \wedge Hx)$

No cats are lizards.

$\sim \exists x (Gx \wedge Hx)$

And here again the order of parts has no effect on the truth of a conjunction: whenever it's true that "No cats are lizards," it's true that "No lizards are cats". Our formal translation explains why.

No cats are lizards.

$\sim \exists x (Gx \wedge Hx)$

No lizards are cats.

$\sim \exists x (Hx \wedge Gx)$

Finally, the phrase "**only some**" means the same as "**some but not all**," and so can be translated via a combination of existential and universal sentences (discussed in a later reading). But restricting ourselves to just existentials, note that the same claim is stated by the sentence "Some doctors are male, but some are not" – which we already know how to translate.

Only some doctors are male.

("Some doctors are male, but some doctors are not male.")

K: is a doctor

L: is male

$(\exists x (Kx \wedge Lx) \wedge \exists x (Kx \wedge \sim Lx))$

Appeal to "**among**" offers an equivalent variation.

Only some doctors are male.

Among doctors, only some are male.

3. Existentials with Multiple Predicates. Scaling up to three or more predicates is easy with existentials: since an existential sentence uses conjunction to string together its little quasi-sentences, we can tack on as many more parts of a conjunction as we please.

K: is Greek **M:** is a philosopher
L: is male

Some Greek males are philosophers.

$\exists x ((Kx \wedge Lx) \wedge Mx)$

Again, because neither grouping nor order of parts affects the truth of a conjunction, formal translation suggests that all of the following sentences say basically the same thing – as indeed they do.

Some Greeks are male philosophers.

$\exists x (Kx \wedge (Lx \wedge Mx))$

Some Greek philosophers are male.

$\exists x ((Kx \wedge Mx) \wedge Lx)$

Some philosophers are Greek males.

$\exists x (Mx \wedge (Kx \wedge Lx))$

Some male philosophers are Greek.

$\exists x ((Lx \wedge Mx) \wedge Kx)$

Existential Translation Variations Summary Sheet

Something is G }
 There are G } $\exists x Gx$
 There exist G }

Nothing is G }
 There are no G } $\sim \exists x Gx$
 There aren't any Gs }

Some G are H }
 There are GH } $\exists x (Gx \wedge Hx)$
 There are G that are H }
 GHs exist }

Some non-G are H } $\exists x (\sim Gx \wedge Hx)$

Some G are non-H }
 Some G are not H } $\exists x (Gx \wedge \sim Hx)$
 There are G that aren't H }

No G are H }
 There are no GH } $\sim \exists x (Gx \wedge Hx)$

Only some G are H }
 Among G, only some are H } $(\exists x (Gx \wedge Hx) \wedge \exists x (Gx \wedge \sim Hx))$

Some G are HI }
 Some GH are I } $\exists x ((Gx \wedge Hx) \wedge Ix)$