

## “Unless” as a Disjunction

### Philosophy 3

Why on Earth do we translate “unless” into propositional logic as a disjunction? Why do we treat the following two sentences as synonymous:

- God is real unless there is more evil than good in the world.
- God is real or there is more evil than good in the world.

Intuitively, these sentences mean two different things, but we treat them as synonymous in propositional logic. Let’s see why.

First, I want you to look at this truth-table, which shows us the truth-conditions for a simple disjunction:

Table 1:  $(p \vee q)$

$p$	$q$	$(p \vee q)$
F	F	F
F	T	T
T	F	T
T	T	T

Next, I want you to look at the truth-table for the conditional  $(\neg q \rightarrow p)$ :

Table 2:  $(\neg q \rightarrow p)$

$q$	$p$	$\neg q$	$(\neg q \rightarrow p)$
F	F	T	F
F	T	T	T
T	F	F	T
T	T	F	T

These two sentences,  $(p \vee q)$  and  $(\neg q \rightarrow p)$ , are synonymous! Now let’s think about what it means to say “God is real unless there is more evil than good in the world.” Among other things, it means that *if there is not more evil than good in the world, then God exists*. If we take these two claims to be equivalent, then it is clear that our original sentence can perfectly sensibly be translated as a disjunction. For, if we translate the sentences like so:

- A: “God is real.”
- B: “There is more evil than good in the world.”

Then “If there is not more evil than good in the world, then God is real” translates to:

- $(\neg(B \rightarrow A))$

And if it is synonymous with “God is real unless there is more evil than good in the world,” then both are logically equivalent to “God is real or there is more evil than good in the world”.