

### 3.3. Translation Tables

Expanding on our loose survey of English-to-Formalese translation, we turn first to the simplest sentences: the subject matter sentences. These are linked to their formal counterparts, the sentence letters, via a **translation table**. And since translation tables serve as the initial bridge between English and the formal language, setting up a translation table is the first step in translating.

**1. Sentence Letters and Subject Matter.** In a translation table sentence letters are assigned to the (purely) **subject matter** sentences of English. A sentence qualifies as pure subject matter simply from its lack of form phrases. So “It’s raining” is a pure subject matter sentence of English, while “It’s not raining” isn’t; for that second sentence contains the form phrase “not”.

We can thus isolate the pure subject matter sentences of English by whittling away all form phrases. The following sentence has two form phrases: “either... or” and “not”.

Copyright Brian Beakley 2015  
(1) It’s sunny and it’s not warm

Setting these aside leaves ‘form-free’ sentences stating the subject matter: “It’s sunny” and “It’s warm”.

(1) It’s sunny ~~and~~ it’s ~~not~~ warm

Since these **mean different things**, a translation table assigns them **different sentence letters**.

**P:** It’s sunny

**Q:** It’s warm

Translating from English to Formalese always begins by replacing each subject matter sentence with its matching sentence letter (following the translation table).

(1) **It’s sunny** and **it’s not warm**

**P** and not **Q**

Only English form phrases then remain. “Not” is translated by the tilde.

P and  $\sim Q$

“And” is translated by the wedge (with matching outer parentheses).

P and  $\sim Q$

$(P \wedge \sim Q)$

Another example highlights the importance of sameness of meaning.

(2) Either Rex likes rodeos or Rex does not like rodeos.

Here the form phrases are “either... or” and “not”. Setting these aside leaves the ‘form-free’ sentences “Rex likes rodeos” and “Rex does like rodeos”.

(2) ~~Either~~ Rex likes rodeos ~~or~~ Rex does ~~not~~ like rodeos.

While the sentences are not word-for-word identical, they do **mean the same thing** – just phrasing the same point in slightly different ways. So we count them as the same subject matter twice over, not two different bits of subject matter. Meaning the same thing, the two sentences take the same sentence letter.

**P**: Rex likes rodeos

(2) Either **Rex likes rodeos** or **Rex does not like rodeos**.

Either **P** or not **P**.

Then the form phrase “not” is translated by tilde, “either... or” by the vel (with accompanying parentheses).

$(P \vee \sim P)$

**2. Avoiding Repetition: Pronouns and Proverbs.** Variation in phrasing also comes from our tendency to **avoid repeating material**. The following sentence, for instance, sounds awkward.

(3) Either Ace is at home, or Ace is at the game.

**P:** Ace is at home

**Q:** Ace is at the game

$(P \vee Q)$

A more natural phrasing avoids repeating “Ace” in the second subject matter sentence.

(4) Either Ace is home, or **he** is at the game.

The **pronoun** “he” stands in for “Ace,” satisfying our stylistic aversion to repeated phrases. Still, Sentence (4) translates just like Sentence (3) – “ $(P \vee Q)$ ” – and calls for the **same translation table** in doing so. Specifically: “Q” stands *not* for “He is at the game,” but “Ace is at the game”. Because pronouns ride on the coattails of another phrase for their meaning – typically one appearing earlier in the discussion – **in translation tables pronouns are replaced by the phrases they stand in for**.

To appreciate why that’s important, note that the pronoun “he” appears twice in the following sentence – but with *two different meanings*.<sup>1</sup>

(5) Either Ace won the prize and **he’s happy**,  
or Rex won the prize and **he’s happy**.

Certainly “He’s happy” means “Ace is happy” the first time, but “Rex is happy” the second. That’s because the pronoun “he” borrows its meaning from different earlier phrases in the two cases (“Ace” the first time, “Rex” the second).

---

<sup>1</sup> Following an observation from (Quine 1984: 56).

It would be a disaster to use the following translation table to translate (5).

- (5) Either Ace won the prize and he's happy,  
or Rex won the prize and he's happy.

### ☠ A Bad Translation Table ☠

**P:** Ace won the prize  
**Q:** He's happy  
**R:** Rex won the prize

Since the two instances of “He's happy” have different meanings in Sentence (5), they must be assigned different sentence letters. A proper translation table for (5) – with pronouns replaced – is as follows.

**P:** Ace won the prize  
**Q:** Ace is happy  
**R:** Rex won the prize  
**S:** Rex is happy

A similar ‘stand-in’ phrase is “**one**,” which allows us to avoid the repetitious “Neko has a red thermos and Jack has a blue thermos,” in favor of the more natural “Neko has a red thermos and Jack has a blue **one**.”

And just as pronouns stand in for noun phrases, **proverbs** such as “do,” “do so,” and “so do” stand in for verb phrases (or predicates) of sentences. The following conjunction sounds repetitive.

- (6) Kitty **likes chili peppers** and Dr. Slim **likes chili peppers**.

Using “so do” to avoid repetition, the following is more natural.

- (7) Kitty likes chili peppers and **so does** Dr. Slim.

Like pronouns, proverbs are replaced in a translation table.

**P:** Kitty likes chili peppers  
**Q:** Dr. Slim likes chili peppers

Naturally, both (6) and (7) then translate into the same formal sentence.

**P:** Kitty likes chili peppers

**Q:** Dr. Slim likes chili peppers

(6) Kitty **likes chili peppers** and Dr. Slim **likes chili peppers**.

(7) Kitty likes chili peppers and **so does** Dr. Slim.

$(P \wedge Q)$

**3. Avoiding Repetition: Deletion.** An even simpler way of avoiding repeated words in English is to **delete** them outright. With “be at the meeting” appearing twice, Sentence (8) sounds unnatural.

(8) Nick will **be at the meeting**, and Nora will **be at the meeting** too.

With the second copy of these words deleted, the sentence reads more naturally.

(9) Nick will be at the meeting, and Nora will \_\_\_\_\_ too.

But here again **the original material must be restored in the translation table**.

**P:** Nick will be at the meeting

**Q:** Nora will be at the meeting

And the reason is the same: the words deleted are repeated from earlier sentences, so with different previous sentences the same string of words can mean different things – as in the following example.

(10) Either Ace is skipping class and **Rex is** too,  
or Ace is sick and **Rex is** too.

Translating (10) via the following translation table certainly gets things wrong.

(10) Either Ace is skipping class and **Rex is** too,  
or Ace is sick and **Rex is** too.

### ☠ Another Bad Translation Table ☠

**P:** Ace is skipping class

**Q:** Rex is

**R:** Ace is sick

“Rex is” means “Rex is skipping class” in the first instance, but “Rex is sick” in the second. So the two sentences must be translated by different sentence letters.

Restoring the deleted repetition in each case yields a proper translation table.

**P:** Ace is skipping class

**Q:** Rex is *skipping class*

**R:** Ace is sick

**S:** Rex is *sick*

Of course this is all quite natural to an English speaker. The main point in all these cases was just the role **sameness of meaning** plays in assigning sentence letters: different sentence letters are called for just when subject matter sentences have different meanings. As we will see, the appeal to meaning applied to subject matter sentences stands in stark contrast to the mechanical “x-ray” policy we’ll follow when translating **form phrases** of English.