2.5. Inversion: An English Oddity

To our list of translation variations we append a final bit of English oddness.

Translating Sentence (1) into the formal language is simple enough: with "although" the only form phrase, this sentence is a simple conjunction, taking formal conjunction (F1) as its translation.

(1) Jake was cut from the team, **although** he tried his best.

P: Jake was cut from made the team **Q**: Jake tried his best

(F1) $(\mathbf{P} \wedge \mathbf{Q})$

Sentence (2) seems to make the same claim as (1) – even using the same words to do so.

(2) **Although** he tried his best, Jake was cut from the team.

Yet for all its simplicity, (2) puzzles us in two ways. **First**, "although," as a conjunction phrase, connects left and right parts. But note that there's nothing to the left of "although" getting connected to what follows. **Second**, between the subject matter sentences "[Jake] tried his best" and "Jake was cut from the team," there's no form phrase gluing the two sentences together.

But those two bits of oddness are just two sides of the same coin: a left-right form phrase without the usual left and right parts, and two parts lacking a left-right form phrase to unite them. Intuitively, English starts with Sentence (1), and yields (2) by shifting "although," and the sentence that follows, to the front of the sentence.

(2) <u>**Although** he tried his best</u>, Jake was cut from the team __________.

We'll say that Sentence (2) is an **inverted** version of Sentence (1), and that Sentence (1) is a **standard** (meaning: non-inverted) "although" sentence.

(1) Jake was cut from the team, **although** he tried his best.

(2) **Although** he tried his best, Jake was cut from the team.

Other 'left-right' form phrases of English, such as "even though" and "unless," also allow inversion.

(3) Letitia's not upset, **even though** the wireless is out.

(4) **Even though** the wireless is out, Letitia's not upset ________.

(5) Trixie will fail the exam unless she studied.

(6) **Unless s**he studied, Trixie will fail the exam ________.

But beware this seemingly trivial stylistic variation of English – for no such option is permitted in the formal language. The following 'inverted' formal translation of (2) is **gibberish**.

P: Jake was cut from made the team **Q**: Jake tried his best

(2) **Although** he tried his best, Jake was cut from the team.

☠ Some Formal Gibberish ☠

$$\mathbf{(\wedge\ Q\ P\ )}$$

A wedge must always appear **between** the left and right parts it connects.

There are no inverted sentences in the formal language.

How, then, to translate an inverted English sentence such as (2)? Two options are equally acceptable.

We could **undo** the inversion in Sentence (2), then translate the standard (uninverted) conjunction that results. On this approach Sentence (2) is translated, like Sentence (1), into the formal sentence “**(P ∧ Q)**”.

P: Jake was cut from made the team **Q**: Jake tried his best

(2) _______ Jake was cut from the team, **although** he tried his best

(P ∧ Q)

Or we could leave the two parts of Sentence (2) where they lie – “**Q**” first, “**P**” second – so long as the formal translation recognizes that these two parts are being *conjoined* together. On this approach, Sentence (2) translates as “**(Q ∧ P)**”.

(2) **Although** he tried his best, Jake was cut from the team.

(Q ∧ P)

We can afford to be casual about which option to follow because **in conjunctions, order of parts makes no difference to truth**. Whenever it’s true that “We’re having *both* funnel cakes *and* ice cream cones” it’s true that “We’re having *both* ice cream cones *and* funnel cakes” (and vice versa).

The same holds for **disjunctions**: whenever it’s true that “We’re having *either* funnel cakes *or* ice cream cones,” it’s true that “We’re having ice cream cones *or* funnel cakes” (and vice versa).

In technical jargon, this is called the **commutativity** of conjunctions and disjunctions. But it's easier to remember it as the 'irrelevance of order' for these sentences.

Commutativity

(Irrelevance of Order)

$(P \vee Q)$ is equivalent to $(Q \vee P)$

$(P \wedge Q)$ is equivalent to $(Q \wedge P)$

And since validity depends solely on matters of truth (and falsehood), the **validity of an argument is likewise indifferent to the order of parts** in a conjunction or disjunction.