

Chapter Three Translation Problems Set 5 #2: Discussion

Problem: Translate each of the following English sentences into the formal language; then build a construction tree for the formal sentence, showing which is the *main* connective of the sentence.

2. Either the exam will be easy and Rex will pass the class, or the exam won't be easy and Rex won't pass the class.

(**P**: The exam will be easy. **Q**: Rex will pass the class.)

Discussion: This sentence has the form phrases “*either... or*,” “*and*” (twice), and “*n't*” (twice).

Either **P** and **Q**, or n't **P** and n't **Q**

The competition between the form phrases is settle by the comma clue: since “*or*” falls right by the comma, we conclude that it (along with accompanying “*either*”) is the main form phrase. “*Either... or*” is translated by the vel (with parentheses).

(**P** and **Q** \vee n't **P** and n't **Q**)

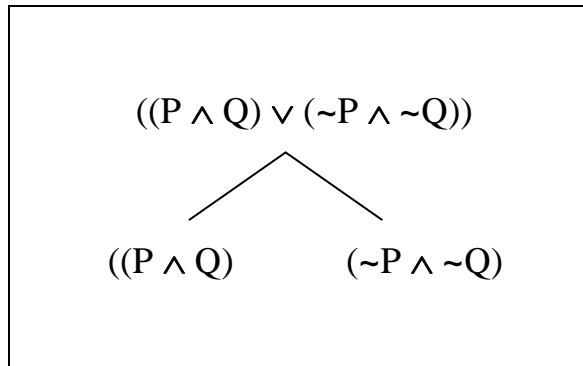
Each “*and*” is translated by a wedge (with parentheses).

((**P** \wedge **Q**) \vee (n't **P** \wedge n't **Q**))

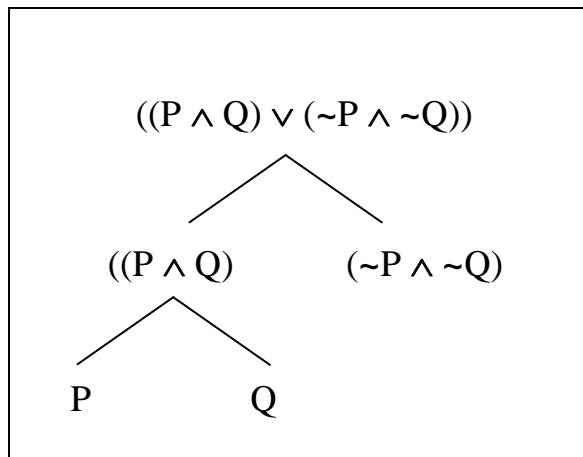
Each “*n't*” is translated by the tilde.

((**P** \wedge **Q**) \vee (\sim **P** \wedge \sim **Q**))

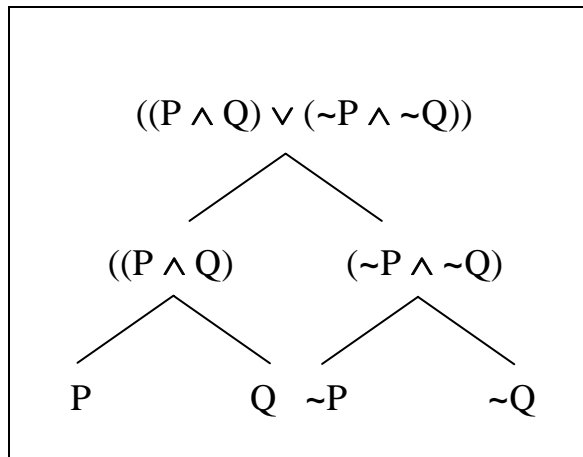
Since the vel is the main connective of the sentence, the construction tree starts with the vel: using Construction Rule 4 to remove a vel and outer parentheses.



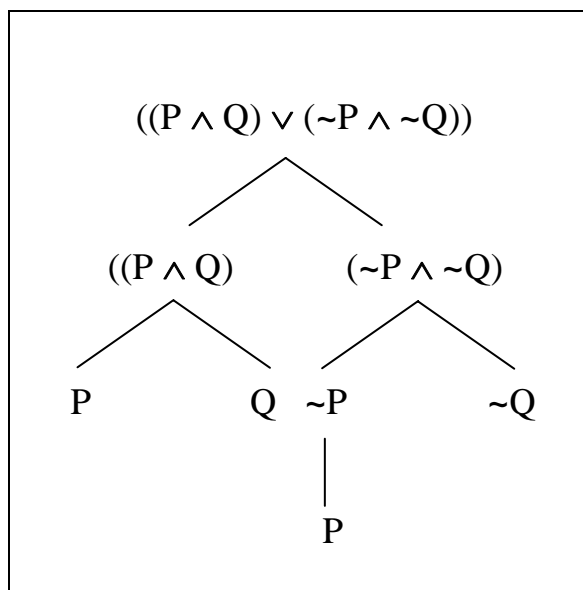
“(P ∧ Q)” is unbuilt by Construction Rule 3 in reverse, removing a wedge and parentheses.



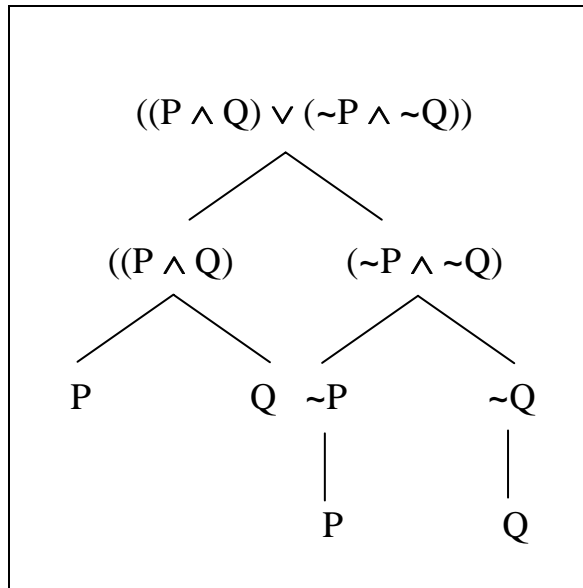
“ $(\sim P \wedge \sim Q)$ ” is likewise unbuilt by Construction Rule 3 in reverse, removing a wedge and parentheses.



“ $\sim P$ ” is unbuilt by Construction Rule 2 in reverse, removing a tilde from the left.



“ $\sim Q$ ” is likewise unbuilt by Construction Rule 2 in reverse, removing a tilde from the left.



That completes the tree.