

Translating English sentences with logical ambiguity / Sept 12, 2017

1. Pigs can fly and the grass is red or the sky is blue.

p : Pigs can fly. g : the grass is red.
 s : the sky is blue.

2 possible translations:

$$((p \wedge g) \vee s)$$

$$(p \wedge (g \vee s))$$

These two formulas are not logically equivalent.
Assume that $p \equiv F$, $g \equiv F$, and $s \equiv T$.

$$((p \wedge g) \vee s) \equiv ((p \wedge g) \vee T) \equiv T$$

$$(p \wedge (g \vee s)) \equiv (F \wedge (g \vee s)) \equiv F$$

2. If it is sunny tomorrow, then I will play golf, provided that I do not feel stressed.

s : It is sunny tomorrow.

g : I will play golf

f : I feel stressed.

2 possible translations:

$$(s \rightarrow ((\neg f) \rightarrow g))$$

$$((\neg f) \rightarrow (s \rightarrow g))$$

These two formulas are logically equivalent,
but syntactically different.