

You do what you gotta do, or why ‘must’ implies ‘will’.

Tom Werner

twerner@andrew.cmu.edu

In this talk I present a theory to explain similarities and differences in meaning between certain modals in English. I start with the observation that sentences such as the following are extremely common,

(1) I can and I will.

(2) We must and we will.

and then note that other modal combinations are impossible, resulting in – as they apparently do – contradictions. That is shown here.

(3) #I can’t but I will.

(4) #We must but we won’t.

The explanation of why sentences of the first kind are acceptable and sentences of the second kind are not will be through a theory in which the meanings of some modals are interdependent. Specifically I claim that – assuming the meaning of a modal involves an ordering of accessible possible worlds – the orderings for certain modals involve refinement of the orderings for other modals rather than orderings that are altogether independent.

My starting point will be a Kratzerian theory by which the meaning of a modal is contextually dependent and constituted by three things: a modal base, an ordering source, and a particular quantificational force. I follow Werner 2002 in assuming that modals with the same temporal interpretation have the same modal base. By that assumption, the stereotypic, deontic, and circumstantial readings that I consider in this talk – because they all are future – involve the same modal base but different ordering sources.

The theory is motivated by entailments that I assume underlie the kind of judgments indicated earlier. These entailments include the following: ‘can’t’ implies ‘won’t’; ‘won’t’ implies ‘need not’ (the relevant negated form of ‘must’); ‘will’ implies ‘can’, and somewhat surprisingly, ‘must’ implies ‘will’. (I discuss this controversial result below when I talk about the different senses of ‘must’.)

The gist of the theory is that some orderings are parasitic on others. As in Kratzer 1991, I take an ordering source to be a set of propositions by which worlds in the modal base are ordered with respect to each another. In the framework I adopt, however, any ordering typically leaves certain worlds in the modal base as ties, and also results in a set of closest worlds. In my theory, for two ordering sources standing in the right relation, the first orders the worlds left as ties by the second, leaving the ordering imposed by the second otherwise in tact. For example, a stereotypical ordering will be parasitic upon a deontic ordering. That means that a stereotypical ordering source imposes a further ordering only on worlds left as ties by the deontic ordering source, otherwise leaving the original ordering in tact. A deontic ordering is in turn parasitic upon a circumstantial ordering. A deontic ordering source imposes a further ordering only on worlds left as ties by the circumstantial source, otherwise leaving that ordering in tact.

The intuition behind the theory is as follows. A set of moral commandments should not rearrange an ordering imposed by the laws of physics, but should only arrange worlds which obey physical laws in equal degrees. Neither should a set of generalizations describing a person’s psychological inclinations rearrange orderings based either on physical law or on absolute moral imperative, but should only arrange worlds obeying physical law or the moral imperative in equal

degrees.

Now the entailments mentioned earlier follow. Take, for example, that ‘will’ implies ‘can’. The ordering source for ‘will’ is stereotypical and the quantificational force is universal. The ordering source for ‘can’ is circumstantial and the quantificational force is existential. By the theory I propose, the stereotypical ordering presupposes the circumstantial ordering but also involves further ordering on the worlds left as ties by the circumstantial ordering. This makes the stereotypical ordering stricter than the circumstantial. But if something is true in all closest worlds by a stricter ordering, it will be true in some closest worlds by a more permissive ordering. Conversely – going from ‘can’t’ to ‘won’t’ – if something is not true in any closest worlds by a permissive ordering, it will also be untrue in any or all closest worlds by the stricter ordering. Taking a deontic ordering as a restriction of a circumstantial ordering, we can also explain why ‘must’ implies ‘can’ and ‘can’t’ implies ‘need not’.

Stereotypical orderings are then refinements of deontic orderings which are in turn refinements of circumstantial orderings. Empirically, this would mean not only that ‘must’ implies ‘can’ and that ‘will’ implies ‘can’, but that ‘must’ implies ‘will’, and this last claim seems strange. However, I will argue that the strangeness goes away once we look at a fuller set of judgments. For one thing, it is common not to accept ‘must’ sentences as true, as illustrated in the following dialogue.

(5) Speaker A: You must.

Speaker B: But I’m not going to.

I interpret Speaker B’s response as a denial of Speaker A’s statement, and this works by denying an entailment of that statement. What we never find is sentences such as the following.

(6) ??I know I must but I’m not going to.

In this case, the same person who asserts the ‘must’ statement denies its consequence and this is a contradiction.

An additional factor hiding the entailment from ‘must’ to ‘will’ is that ‘must’ has both a deontic and a circumstantial sense and my claim only holds for deontic ‘must’. The circumstantial sense of ‘must’ is often found in disjunctions, as in (7), or with an additional disjunct implied, as in (8).

(7) We must call the plumber or the pipes will burst.

(8) We must call the plumber.

Here, there is no moral imperative to call the plumber. Rather, present circumstances dictate that we do, or face the consequences. The implication from the disjunction in (7) is to another disjunction, such as (9).

(9) We will call the plumber or the pipes will burst.

For a full account of these sentences we need a story about the interaction of modals and disjunction, but for now we simply observe that the disjunction, explicit or implied, means that circumstantial ‘must’ entails a disjunction and not a simple ‘will’ sentence.

Note that deontic ‘should’ is not like ‘must’ in that there is nothing odd about (10), in contrast to (6).

(10) I know I should, but I’m not going to.

This sentence shows that while orderings for ‘will’ may be parasitic on orderings for ‘must’, they are not parasitic on orderings for ‘should’. The status of ‘should’ with respect to the other modals under discussion is the final point I wish to explore in my talk.