Graded Modality Comparison: A Modified Approach

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Talk Outline

• Graded Modal Operators
  – Five unary, one binary (comparative probability)
• Kratzer’s (1981) formal definitions of these operators
• Problem: an empirical flaw
  – Two very probable propositions are impossible to compare
• My proposed solution to Kratzer’s definitions
• Discussion of our new definition of “comparison”:
  – Earlier predictions maintained and problem solved
  – Notion of “comparison” is better served

Model and Definitions

• The underlying model is world-based
  – worlds are priors
  – propositions are defined by their verifying worlds
• The Modal Base is the set of worlds where all known facts are true. Label it $F$.
• The Ordering Source is a prior (given) partial order “≤” between worlds:
  – Some world is ideal to us: denote it by $ι$, and call it “the ideal”
  – If a world $v$ is at least as close to the ideal as a world $u$, we write $v ≤ u$.
• A set of worlds that are close to the ideal may be contextually selected, and labeled $G$. 
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Grades of Modality
(Kratzer, 1981)

• Main Claim: there are more than just two modal degrees. Consider the following sentences:
  – A living human being necessarily has two lungs.
  – That conceited kid is probably an only child.
  – It can well be that the ocean water isn’t too cold for a swim.
  – Psycho was possibly the best suspense movie ever made.
  – I got up at 7:15, but there’s still a slight chance of me making it to my 8:00 class on time.
  – It is more likely that Eve will eat her artichoke than Adam will eat his.

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It can well be that the ocean water isn't too cold for a swim.

In at least one $F \cap G$ world, the water isn't too cold (and we don't know about the rest).

**Grades of Modality**

Psycho was possibly the best suspense movie ever made.

In at least one $F$ world, Psycho was the best suspense movie ever made (and we don't know if this world is in $G$ or not).

**Grades of Modality**

I got up at 7:15, but there's still a slight chance of me making it to my 8:00 class on time.

In at least one $F$ world which is not in $G$, I'll make it to my class on time.
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Grades of Modality

It is more likely that Eve will eat her artichoke than Adam will eat his.

Two conditions:
1. If Adam eats his artichoke in some world... then Eve eats hers in a world at least as close.
2. There's a world where Eve eats her artichoke... such that in no world at least as close does Adam eat his.

Predictions

• Some correct predictions:
  – A _Human Necessity_ is more probable than a _Human Possibility_
  – So is a _Human Necessity_
  – All are more probable than a _Possibility_
  – Which is more probable than a _Slight Possibility_
  – If a statement is a _Slight Possibility_, its negation is a _Human Necessity_
  – Both a statement and its negation may be simultaneously _Human Possibilities_

Predictions – the Flaw

• Consider the following sentences:
  – Paul will _probably_ dance tonight.
  – Quentin will _probably_ dance tonight.
  – It is _more likely that_ Paul will dance tonight _than_ Quentin will.

• These three are fine together
• But Kratzer’s analysis excludes them
  – In all “close” worlds both dance,
  – Failing Kratzer’s second condition!
My Modification

• A change of perspective for Comparison
• Now we look only at the worlds where the two propositions have different truth values
• Whichever is closest to the ideal determines the more probable of the two
• So now, the \( F \cap G \) worlds where both Quentin and Paul dance are irrelevant!

My Modified Conditions (I)

It is more likely that Eve will eat her artichoke than Adam will eat his.

1. There’s a world where Eve eats her artichoke and Adam doesn’t.
2. If Adam eats his artichoke in some world and Eve doesn’t… then Eve eats hers in a world at least as close where Adam doesn’t.
   (and we don’t care at all about worlds where both eat their artichokes or neither eat them)

Observations

• All other (correct) predictions still hold
• Any two statements which are both ideally true may now be compared
  – And not so with the original analysis
• But wait! What if the closest worlds of each exclusive artichoke-eater are as close as each other to the ideal?
  – Introducing: “closer”, or “\(<\)”
My Modified Conditions (II)

It is more likely that Eve will eat her artichoke than Adam will eat his.

1. There's a world where Eve eats her artichoke and Adam doesn’t.
2. If Adam eats his artichoke in some world and Eve doesn’t, then Eve eats hers in a closer world at least as close as where Adam doesn’t.

(and we don’t care at all about worlds where both eat their artichokes or neither eat them)

Discussion

- No world can simultaneously satisfy both condition 2’s antecedent and consequence
  - So using the strong “<” has no downside
- Also, we’re defining “more likely than”, and not the weaker “at least as likely as”, so using a strong order seems better
  - Note that defining “at least as likely as” and “as likely as” is now trivial: substitute “≤” and “=” for “<”
- All in all: I believe the notion of “comparison” is handled more naturally and economically
  - The approach is now: observing differences
  - Verifying the conditions requires much less work

Reference


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