

### Talk Outline

- Current treatment of *before*: Condoravdi & followers
- A counterfactual counterargument
- Truth conditions derived from possible futures
- A scale of modal hypotheticals
- A modal constraint on felicity of nonveridicals
- Veridicality coercion

### Modal Aspects of *Before*: Semantics and Pragmatics of Nonveridicals

Yuval Pinter



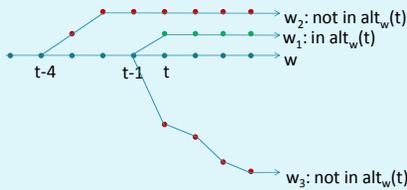
yuvalpin@post.tau.ac.il

IGDAL  
October 2011

התוכנית לתואר ראשון  
The Hebrew University of Jerusalem

### Condoravdi & Followers:

- Assume time is discrete, let  $t-1$  denote the last moment preceding  $t$  that is contextually relevant, define  $alt_w(t)$  to be the set of worlds which branch off from  $w$  only at  $t-1$ , and in a reasonable manner.



### *Before*: Nonveridicality

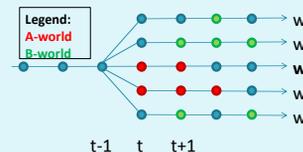
- *A Before B* is nonveridical: B may not have happened, and the sentence is still fine:
  - The police caught the robber *before* he crossed the border.
- But then again, not every false *B* promises a felicitous *before*-sentence
  - # David ate lots of ketchup *before* he won all the gold medals in the Sydney Olympics. (Beaver & Condoravdi, 2003)

### A Problem

- Introducing my class of morbid examples. We'll start with Mozart: (background...)
  - Mozart died *before* he finished writing the Requiem.
- I argue C & followers' truth conditions entail the following counterfactual:
  - Mozart couldn't have finished the Requiem before the actual date of his death (Dec 5, 1791).
- But this is not necessarily the case.

### Condoravdi & Followers:

- Define  $earliest_w(X)$  to be the earliest time where  $X$  occurs in any of the worlds in  $W$  (if at all). Then:
- *A before B* is true in a world  $w$  iff there is a time  $t$  where  $A$  is true, and  $t$  precedes  $earliest_{alt_w(t)}(B)$  (meaning the earliest time, if at all, where  $B$  is true in any world branching from  $w$  no earlier than  $t-1$ , and in a reasonable manner).



### The Morbid Scale (I)

- Three dead artists:
  - Kafka, who may or may not have wanted to finish writing *The Castle*
  - Schoenberg, who wanted to finish *Moses und Aron* but had writers' block
  - Schubert, who left the 7<sup>th</sup> symphony unfinished, never intending to complete it
- And sentences of the form
  - <ARTIST> died before he finished <PIECE>
  - <ARTIST> died before he could finish <PIECE>

### My Suggestion

- Pushing back  $t-1$  doesn't work
- Calculating *earliest* relative to all possible worlds doesn't work
- I propose: take the last time where the following was true in our world, and see whether or not it is relevant in the context of conversation.
  - $\diamond_h F(A) \wedge \diamond_h F(B)$
- The rest of the truth conditions go back to Heinämäki, 1974: an  $A$  moment must precede all  $B$  moments (in our world alone)
- No new notions, just different use of them

### The Morbid Scale (III)

- And one last body:
  - John's 70<sup>th</sup> birthday is today, but he passed away last night.
- Consider
  - John died before he turned 70
  - (odd) John died before he could turn 70

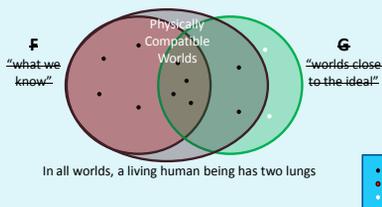
### The Morbid Scale (II)

- Three dead mathematicians:
  - Scheuler, who attempted to prove Fermat's last theorem but died in 1990 (it was proven in 1996)
  - Chalois, who attempted to prove the consistency of Peano arithmetic but died in 1918 (this was proven to be unprovable in the 1930's)
  - Scernoulli, who attempted to prove Riemann's hypothesis but died in 1956 (its provability is still unknown)
- And sentences of the form
  - <MATHEMATICIAN> died before he proved <CLAIM>
  - <MATHEMATICIAN> died before he could prove <CLAIM>

### Grades of Modality

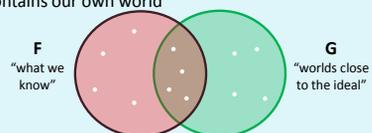
**Physical Necessity** (Not in Kratzer '81)

A living human being *necessarily* has two lungs



### Grades of Modality (based on Kratzer, 1981)

- There are more than just two modal degrees
- Two constructs (in a world-based account) are needed:
  - F, "the modal base" or "what we know": a set of worlds that comply with what is known in our world
  - G: a set of worlds that are "close to an ideal", and which contains our own world



### Grades of Modality

**Human Necessity**

That conceived kid is **probably** an only child

In all black worlds, the kid is an only child (and we don't care about the rest)

- True here
- False here
- Don't know

### Grades of Modality

**Necessity**

Reading *The Odyssey* **must** take more than a day

In all black worlds, reading *The Odyssey* takes more than a day (and we don't care about the rest)

- True here
- False here
- Don't know

### Grades of Modality

**Possibility**

*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)

- True here
- False here
- Don't know

### Grades of Modality

**Human Possibility**

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

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

- True here
- False here
- Don't know

### Implications

- Some relations between the degrees hold:
  - A **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**

### Grades of Modality

**Slight Possibility**

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.

- True here
- False here
- Don't know

### Some Observations

- **The Modal Condition on Nonveridical *before* Felicity:**  
The more probable *B had A not happened* is, the more indicatively acceptable *A before B* is.
- **The Modal Requirement for Indicative Nonveridical *before* Felicity:**  
For nonveridical *A before B*, in the indicative form, to be felicitous, *A had B not happened* should be at least **slightly possible** ( $\diamond_s$ ).

### Back to Our Deceased

Example	If A had not happened	Judgments	
		Indicative form	Subjunctive form
Turn 70	$\Box_p B$	✓✓ (preferred)	✓? (odd)
Mozart	$\Box_h B$	✓✓	✓
Kafka	$\diamond_h B$	✓	✓?
Fermat's LT	$\diamond B$	✓	✓
Schoenberg	$\Box B (\Leftrightarrow \Box_h \neg B)$	✓?	✓ (preferred)
Shubert	$\Box \neg B$	#	False
Peano consistency	$\Box_p \neg B$	#	#

↓ Counterfactual probability      ↓ Indicative acceptability

### Veridicality Coercion

- Luigi owes my respectable organization money. I'm going to beat him up
  - Luigi gave me a check before I could beat him up
  - Luigi gave me a check before I beat him up
- His friend is sitting with him, he knows what I'm there for, so he shouts as I walk in:
  - Give him the check!

### Focusing on the Riemann Example

- Is there a process being interrupted?
- Are the different **modal bases** at play here?
- Is the Riemann example a noncommittal?
  - Maybe a new meta-class: **a nonveridical noncommittal**
- **The Infelicity Limit Hypothesis:**  
All infelicitous nonveridical *A before B* sentences where *A had not B* has physical certainty sound worse than ones where it has none.

### Questions?

yuvalpin@post.tau.ac.il  
Facebook/LinkedIn: Yuval Pinter

### Some References

- GEM Anscombe. 1964. *Before and After*. In *The Philosophical Review*, Vol. 73, No. 1, pp. 3-24.
- David Beaver and Cleo Condoravdi. 2003. *A Uniform Analysis of Before and After*. *Proceedings of SALT XIII*.
- Cleo Condoravdi, 2007. *NPI Licensing in Temporal Clauses*. *Proceedings of the Workshop on Negation and Polarity*, Universität Tübingen.
- David R. Dowty, 1979. *Word Meaning and Montague Grammar* (pp. 98-110)
- O. Heinämäki, 1974. *Semantics of English Temporal Connectives*. PhD thesis, University of Indiana at Bloomington.
- Angelika Kratzer, 1981. *The Notional Category of Modality*. In *Words, Worlds and Contexts: New Approaches in Word Semantics*. Eikmeyer and Rieser, Eds.
- David K. Lewis, 1973. *Counterfactuals*.
- Francesca Panzeri, 2005. *Forking Paths and Polarity Items Licensing*. *Proceedings of the Sinn und Bedeutung* 10 (pp. 265-274)
- Margaux Smets, 2009. *After and Before*. Internal report, Centre for Computational Linguistics, University of Leuven, Belgium.