

# Formale Semantik

## 09. Tempus und Modalität

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Folien in Überarbeitung. Englische Teile (ab Woche 8) sind noch von 2007!  
Stets aktuelle Fassungen: <https://github.com/rsling/VL-Semantik>

1

## Tense

- Priorian operators
- Tense raising
- Interpretation
- Some problems

2

## Modality

- Realizations of modality

- Types of modality

- Modeling the background

3

## Embedding

- Syntax
- Believe semantics
- Ambiguities
- Infinitives and gerunds

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- See how we restrict (different types of) propositional backgrounds.
- Understand how opaque contexts affect meaning (incl. *believe* type verbs).
- Get a first idea of why we need the *up* operator  $\hat{\cdot}$ .



Tense

- **present:** no operator ( $\phi$  'it is the case that  $\phi$ ')

# Will, was... and always

- **present**: no operator ( $\phi$  'it is the case that  $\phi$ ')  
• **past**:  $P$  ( $P\phi$  'it was the case that  $\phi$ ')  
• **always**:  $A$  ( $A\phi$  'it is always the case that  $\phi$ ')  
• **never**:  $N$  ( $N\phi$  'it is never the case that  $\phi$ ')  
• **possibly**:  $P$  ( $P\phi$  'it is possible that  $\phi$ ')  
• **impossibly**:  $N$  ( $N\phi$  'it is impossible that  $\phi$ ')  
• **must**:  $A$  ( $A\phi$  'it is necessary that  $\phi$ ')  
• **may**:  $P$  ( $P\phi$  'it is possible that  $\phi$ ')  
• **must not**:  $N$  ( $N\phi$  'it is necessary that not  $\phi$ ')  
• **may not**:  $P$  ( $P\phi$  'it is possible that not  $\phi$ ')  
• **must have**:  $A$  ( $A\phi$  'it is necessary that  $\phi$  has been the case')  
• **may have**:  $P$  ( $P\phi$  'it is possible that  $\phi$  has been the case')  
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- $\llbracket PD(a) \rrbracket^{\mathcal{M}, w, i', g} = 1$

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- *What<sub>i</sub> **did** you expect t<sub>i</sub>?* vs. *Nani-o yokishi-ta-ka.*



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- $[_{TP} NP T VP] \Rightarrow [_{TP} T NP VP]$  (T raising)

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- $U$ : domain of quantification

# Valuations as in Chierchia's $M_3$

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- $V(\beta)$ : non-relativized function for all  $\beta$  which are not a proper name
- $V(\beta)(\langle w, i \rangle)$ :  $V$  evaluates  $\beta$  to a function from world-time pairs to the denotata of the predicate (sets of individuals, tuples of them, etc.)

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- shifts of evaluation time

	past ( $R < S$ )	present ( $R, S$ )	future ( $S < R$ )
anterior ( $E < R$ )	$E < R < S$ <i>er war gegangen</i>	$E < R, S$ <i>er ist gegangen</i>	$S < E < R$ $S, E < R$ $E < S < R$ <i>er wird gegangen sein</i>
simple ( $E, R$ )	$E, R < S$ <i>er ging</i>	$E, R, S$ <i>er geht</i>	$S < E, R$ <i>er wird gehen</i>
posterior ( $R < E$ )	$R < E < S$ $R < S, E$ $R < S, E$ $R < S < E$ <i>*er würde gehen</i>	$R, S < E$ <i>er wird gehen</i>	$S < R < E$ <i>*er wird gehen werden</i>



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- affixes: *Frau Eckardt is recognizable.*

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- modal *Aux* in English is tense-insensitive (evidence for *Infl*)
- $\Box$  and  $\Diamond$  in intensional predicate calculi (IPC): exploit the full set of possible worlds
- in NL: evaluation of modal expressions against restricted **conversational backgrounds**

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- different types of modality: different sets of admitted possible worlds
- we call the conversationally relevant background the set of  $\langle w, i \rangle$  pairs relevant to the interpretation of the sentence

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- known facts narrow down the root background



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- Deontic backgrounds are narrowed down by **normative rules** and **moral ideals**.
- statable in propositional form (ten commandments, law, ...)

- specify the kind of background against which you evaluate under the given situation



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- such that all possible worlds are:  $\bigcap g(\langle w, i \rangle)$

Embedding

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- CP (fully fledged sentence) receives theta role by *believe* under government.



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- belief:  $\langle w, i \rangle$  is an element of the proposition of CP

- value of propositional attitude (PA) verbs: functions  $[\langle w, i \rangle \rightarrow \langle u_n, p \rangle]$  with  $u_n \in U$ ,  $p$  a proposition (set of  $\langle w_n, i_m \rangle$ ) and compatible to  $u_n$ 's background

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- the full logic of  $\hat{\phantom{x}}$  and  $\sim$  as designed by Montague next week
- $\hat{\phantom{x}}$  rids us of the problem that the belief content looks truth-conditional (a sentence) but doesn't contribute to the embedding sentence's truth-value. PA verbs take intensions as arguments.

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- Only Ralph doesn't know.

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- What's the truth value of...
- *Ralph believes that the guy from the beach is a spy.*
- true: since Ortcutt and the guy in the hat are one individual
- false: since Ralph doesn't know that and in a way 'doesn't believe it'

- the Russelian interpretation for *the* like  $\exists$  with a uniqueness condition (as a GQ):  
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  - Names are rigid designators across world-time-pairs, definite descriptions aren't.

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- *John tries to sing.*
- *try(j,  $\hat{swim}$ )*



## Kontakt

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