Overview

- universals and variation
- the role of functional categories
- the role of pragmatics
- impediments to further exploration
- the final frontier: mood (and modality)
- final thoughts

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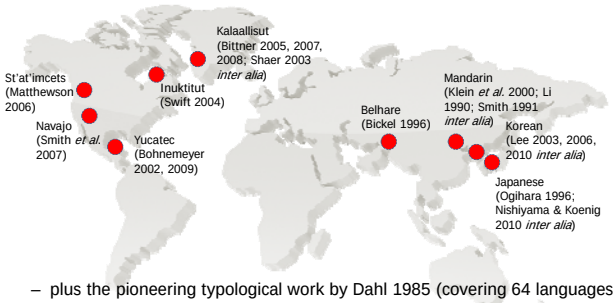
Universals and variation

- a non-exhaustive survey of in-depth studies
  - ignoring the usual suspects (English, French, German, Italian, Russian…)



  - plus the pioneering typological work by Dahl 1985 (covering 64 languages based on responses to an extensive questionnaire) and follow-ups

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- an emerging picture consistent with the findings and, *mutatis mutandis*, with Klein 1994
  - across languages, the contextual interpretation of finite eventuality descriptions involves determining
    - the values of 3+ variables:
  - **situation time** t_{sit} - the runtime of the described eventuality
  - **coding time** t_u – the time of utterance/processing
    - more generally, the time of the deictic center
  - **topic time** t_{top} – the time the utterance makes an assertion or asks a question about
  - **reference times** t_{r1}, t_{r2}, t_{r3}, … – times given in context that may constrain t_{top}
    - reference time variables may be present in the semantics of the utterance due to, e.g., true relative tenses

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- an example

(1.1) [*When I arrived in Nijmegen*]$_{S1}$, [*Wolfgang's book had just been published*]$_{S2}$

i. $t_{sit}(S_1)$ = the time of the publication of Wolfgang's book
ii. $t_{sit}(S_2)$ = the time of the speaker's arrival
iii. $t_{top}(S_1) < t_u$ by simple past tense
iv. $t_{sit}(S_1) \subseteq t_{top}(S_1)$ by perfective aspect value of the simple past
v. $t_{sit}(S_2) \subseteq t_{top}(S_2)$ by perfective aspect value of the pluperfect under a past-in-the-past interpretation
vi. $t_r(S_2) = t_{sit}(S_1)$ by the *when*-clause construction
vii. $t_r(S_2) < t_u$ by past tense value of the pluperfect
viii. $t_{top}(S_2) < t_r(S_2)$ by anterior past value of the pluperfect

- v – viii diverge from Klein 1994 in view of the perfectivity of the pluperfect under the past-in-the past interpretation
  - cf. Bohnemeyer 2003

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- possible relations to be determined
  - t_{sit} may be related to t_{top}
    - via semantic viewpoint aspect relations
  - t_{top} may be related to t_u or t_r
    - via semantic tense relations

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Universals and variation (cont.)

- how the values of the variables are determined
  - t_u is always present as part of the deictic center
  - all values may *in principle* be specified or constrained by adverbials, temporal clauses, etc.
  - t_{sit} may be constrained vis-à-vis t_{top} by aspect markers and pragmatic inferences
  - t_{top} may be constrained vis-à-vis t_u/ t_r by tense markers and pragmatic inferences

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Universals and variation (cont.)

- where languages vary
  - the lexicalization of eventuality descriptors
    - that introduce entailments about realization conditions
  - the grammaticalization of *aktionsart* operators
    - that map descriptors to eventuality/situation classes
  - the grammaticalization of functional categories of viewpoint aspect and tense
  - the grammaticalization of constructions of adverbial modification, temporal subordination, etc.
  - the conflation of other meanings in such functional categories and constructions
    - especially mood, modality, evidentiality

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Universals and variation (cont.)

- universal, as far as we know
  - the concept of time
    - although spatial metaphors for time are language-specific and may influence reasoning about time
      - e.g., Bohnemeyer 2010; Boroditsky, Fuhrman, & McCormick 2010; Boroditsky & Gaby 2010
  - the pragmatic inferences involved in determining the values of the four variables

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The role of functional categories

- the relations $R(t_{sit}, t_{top})$, $R(t_{top}, t_u)$, $R(t_{top}, t_r)$ may be constrained by functional categories
- the grammaticalization of such categories varies across languages

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The role of functional categories (cont.)

- Standard German
  - $R(t_{top}, t_u)$ is constrained in terms of
    - an obligatory distinction b/w $t_{top} < t_u$ and $\sim(t_{top} < t_u)$
    - an optionally marked distinction b/w $t_u < t_{top}$ and $t_u \subseteq t_{top}$
  - $R(t_{sit}, t_{top})$ is constrained in terms of
    - a distinction b/w $t_{sit} < t_{top}$ and $\sim(t_{sit} < t_{top})$ marked obligatorily in non-narrative discourse
    - a distinction b/w $t_{top} \subset t_{sit}$ and $\sim(t_{top} \subset t_{sit})$ expressed through weakly grammaticalized, colloquial constructions
      - or lexical periphrases
    - optional lexical periphrases for $t_{top} < t_{sit}$

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(2.1) Als ich Wolfgang-s Büro betrat,
when I(NOM) Wolfgang-GEN.SG office(ACC.SG) enter:PRT3SG

schrieb er einen Brief
wrote:PRT3SG he(NOM) INDEF:SG.ACC.M letter(ACC.SG)

'When I entered Wolfgang's office,
he wrote / was writing a letter'

- Japanese
  - $R(t_{sit}, t_{top})$ is constrained
    - in terms of an obligatory distinction between $t_{sit} \subseteq t_{top}$ and $t_{top} \subset t_{sit} / t_{sit} < t_{top}$
      - or between event reference and reference to a 'related state'; cf. Nishiyama & Koenig 2010
  - $R(t_{top}, t_r)$ is constrained in terms of an obligatory(?) distinction b/w $t_{top} < t_r$ and $\sim(t_{top} < t_r)$
    - cf. Ogihara 1996
  - $R(t_{top}, t_u)$ is not grammatically constrained
  - in conversation, $t_r = t_u$ by stereotype implicature

(2.2) Taroo-wa [terebi-o mi-ta ato-de] benkyoo-suru
Taro-TOP TV-ACC watch-ANT after-LOC study-NONPST
'Taro will study after watching TV.'
(Ogihara 1999: 329)

(2.3) Taroo-wa kinoo hon-o yon-da
Taro-TOP yesterday book-ACC read-ANT
'Taro (had) read the book yesterday.'
NOT: 'As of yesterday, Taro had read the book.'
(Ogihara 1999: 330)

- Yucatec
  - in main clauses
    - if $t_{sit} \subseteq t_{top}$, then $t_u / t_r < t_{top}$ requires marking of modality or degree of distance b/w t_u / t_r and t_{top}
    - if $\sim(t_{sit} \subseteq t_{top})$, no grammatical constraints obtain on either $R(t_{top}, t_u)$ or $R(t_{top}, t_r)$
  - in certain finite subordinate clauses, $t_u / t_r < t_{top}$ requires irrealis mood marking
  - $R(t_{sit}, t_{top})$ is heavily constrained
    - $t_{sit} < t_{top}$, $t_{top} < t_{sit}$, $t_{sit} \subseteq t_{top}$, $t_{top} \subset t_{sit}$ all require separate forms

(2.4) Ts'o'k in=mèet-ik le=nah=o'
TERM A1SG=do:APP-INC(B3SG) DET=house=D2
'I (will) have/had built the house'

(2.5) Táan in=mèet-ik le=nah=o'
PROG A1SG=do:APP-INC(B3SG) DET=house=D2
'I am/was/will be building the house'

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The role of pragmatics

- $R(t_{sit}, t_{top})$, $R(t_{top}, t_u)$, and $R(t_{top}, t_r)$ are partially complementary
- if one is specified or constrained, the others may be inferred via Gricean implicatures

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The role of pragmatics (cont.)

- Standard German
  - telicity-based viewpoint implicatures
    - telic descriptions trigger stereotype implicatures to $t_{sit} \subseteq t_{top}$
    - atelic descriptions trigger scalar implicatures to $t_{top} \subset t_{sit}$
      - cf. Bohnemeyer & Swift 2004
  - viewpoint-based tense implicatures with non-past tense forms
    - $t_{sit} \subseteq t_{top}$ +> $(t_u < t_{top}) \vee (t_u \subset t_{top})$
    - $t_{top} \subset t_{sit}$ +> $t_u \subset t_{top}$
      - cf. Ehrich 1992; Leiss 1992

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The role of pragmatics (cont.)

(3.1) Es schnei-t
it(NOM) snow-NONPST3SG
'It is snowing'

(3.2) Der Zug fährt ab
DEF3SG.M.NOM train(NOM.SG) drive:NONPST3SG off
'The train is leaving/is going to leave/will leave'

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The role of pragmatics (cont.)

- Yucatec
  - in conversation, $t_u \subset t_{top}$ by stereotype implicature
  - in narratives, t_{top} is inferred to be the t_{sit} of a suitable clause in preceding discourse
    - resulting in temporal anaphora interpretations; cf. Bohnemeyer 2010

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The role of pragmatics (cont.)

(3.3) Táan in=mèet-ik le=nah=o'
PROG A1SG=do:APP-INC(B3SG) DET=house=D2
'I am/was/will be building the house'

(3.4) Káa=h-tàal-ech way
CON=PRV-come-B2SG here
h-ts'o'k ka'=p'éel ha'b=e',
PRV-end(B3SG) two=CL.IN year=D3
táan in=mèet-ik le=nah=o'.
PROG A1SG=do:APP-INC(B3SG) DET=house=D2
'When you came here two years ago,
I was building the house'

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Impediments to further exploration

- two major obstacles slowing down the crosslinguistic study of semantics
  - 'interface uniformity'
    - a widespread assumption in mainstream Generative Grammar

> "The syntax-semantics interface is maximally simple, in that meaning maps transparently into syntactic structure; and it is maximally uniform, so that the same meaning always maps onto the same syntactic structure."
> (Culicover & Jackendoff 2005: 47)

    - entails
      - since $R(t_{sit}, t_{top})$, $R(t_{top}, t_u)$, and $R(t_{top}, t_r)$ are constrained by functional categories in *some* languages
      - they must be so constrained in *all* languages

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  - relativist agnosticism
    - the assumption that it is impossible to study meaning without native speaker intuitions
      - cf., e.g., Matthewson 2004
    - a widespread attitude especially among functionalists
      - often coupled with a reflexive, Luddite anti-formalism

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The final frontier: mood (and modality)

- the greatest theoretical desideratum currently
  - a "unified field theory" of temporality in language
  - a three-step program
    - develop a theory of mood
      - a complex family of functional categories that have to do with the relation between topic worlds and utterance worlds
    - integrate this with theories of modality and evidentiality
    - integrate the result into the theory of temporality

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Final thoughts

> "Learning a language, then, is simply a matter of finding out what the local clothing is for universal concepts we already have (Li & Gleitman 2002). The problem with this view is that languages differ enormously in the concepts that they provide ready-coded in grammar and lexicon." (Evans & Levinson 2009: 435)

- agreed!
- however
  - the conceptual elements of temporal interpretation do appear to be strikingly similar across languages
  - we still need to explain how this is possible

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