Semantic Theory
week 13 – Current issues in semantic theory

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Semantic Theory

Topics covered in this course:

Predicate logic - Type Theory - Lambda Calculus - Generalised Quantifiers - Event Semantics - Dynamic Semantics - Discourse Representation Theory - Presuppositions - Distributed Situation-State Space

formal semantics

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Open questions

I. What is meaning?
Truth-conditions vs. context-change potential
vs. answering the Question Under Discussion

II. Which phenomena should be captured
     by a semantic formalism?
Syntax vs. Semantics vs. Pragmatics

III. How to validate predictions from formal
      semantic theories?
Experimental approaches, Computational Semantics

Communication as question-answering

The Goal of communication: to determine what the world is like.

But: an exhaustive characterisation of the current state of the world – "The Big Question" (Roberts, 1996) – is too big a task

- What makes certain issues more important to us than others has to do with our goals

- Therefore, we establish certain subgoals, which take the form of issues to be resolved or Questions Under Discussion (QUDs)

- Content that addresses the QUD is called *at-issue* content; all other content is *not at-issue*

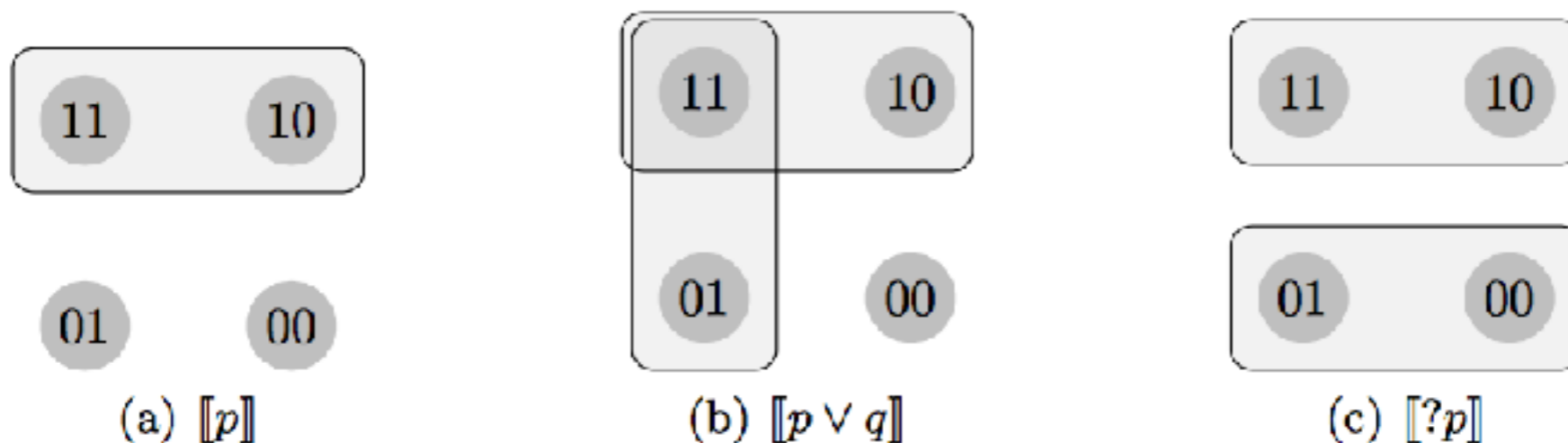Roberts, 1996; 2012; Simons et al. 2010; Tonhauser et al. 2013

Inquisitive semantics

"Meaning is Information EXchange Potential"

(1) ⟦John plays⟧^{M,w,g} := {$\lambda v.play(John)(v)$} :: ⟨s, t⟩

(2) ⟦John or Bill plays⟧^{M,w,g} := {$\lambda v.play(John)(v)$, $\lambda v.play(Bill)(v)$}

(3) ⟦Does John play?⟧^{M,w,g} := {$\lambda v.play(John)(v)$, $\lambda v.\neg play(John)(v)$}

(a) ⟦p⟧   (b) ⟦$p \vee q$⟧   (c) ⟦$?p$⟧

(Groenendijk, 2009; Groenendijk & Roelofsen, 2009)

Defining the playing field of semantic theory

What can/should be captured in a semantic formalism?

The syntax-semantics interface:

- quantification, anaphora, tense and aspect, thematic roles, …

The semantics-pragmatics interface:

- rhetorical structure, implicature, presuppositions, information structure, …

Beyond truth-conditional meaning: Rhetorical Structure

(1) John had a great evening last night. He had a great meal. He ate salmon. He devoured lots of cheese. He won a dancing competition. ??It was a beautiful pink.
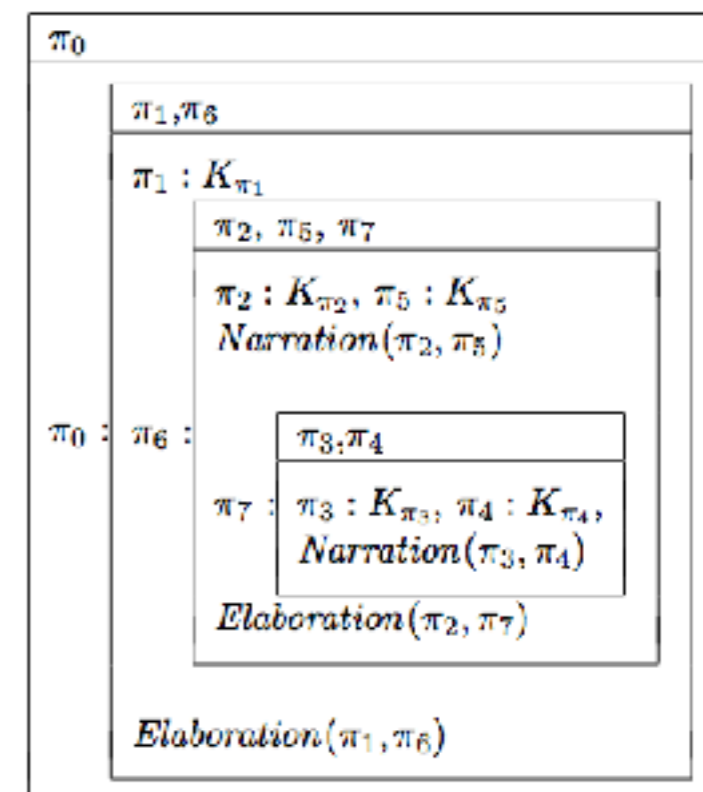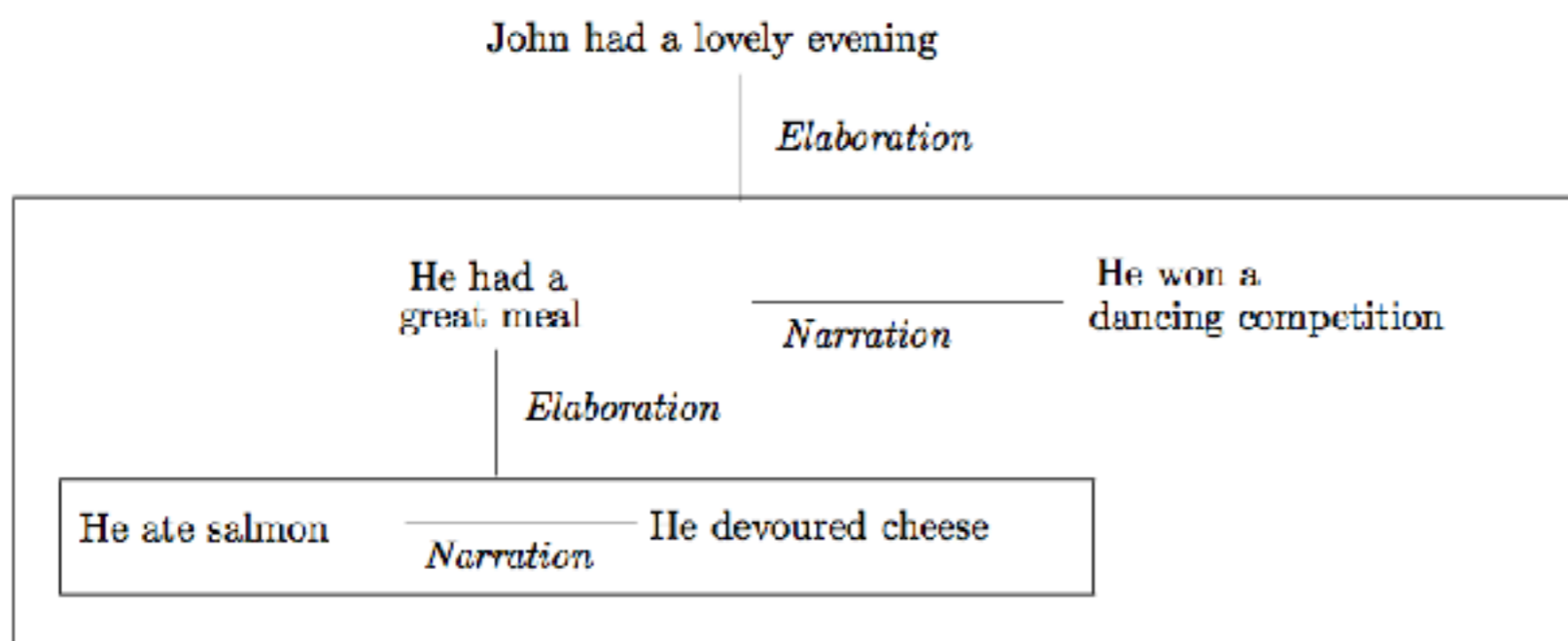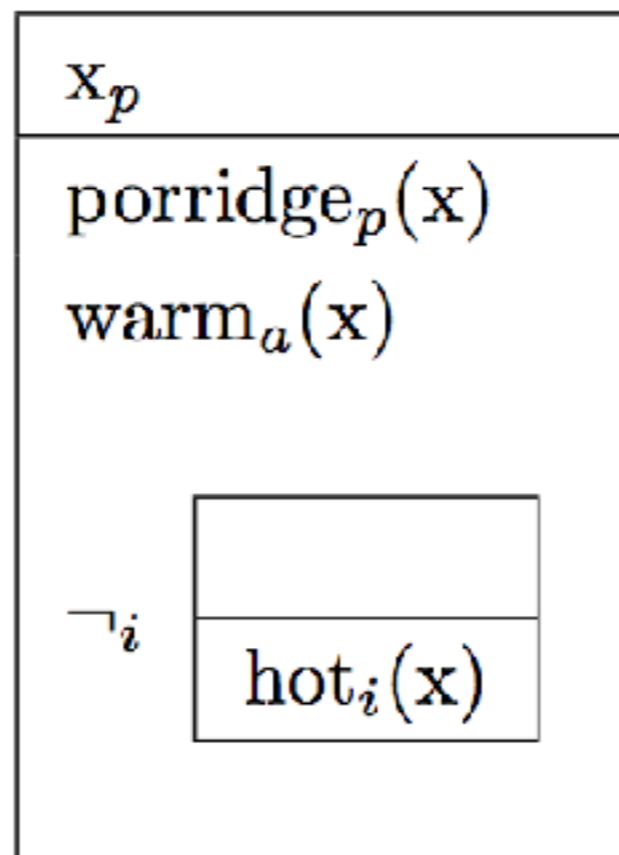

Segmented DRT: DRT with discourse relations

(Asher, 1992; Asher & Lascarides, 2003)

Beyond truth-conditional meaning: Implicature

(1) a. The porridge is warm. As a matter of fact, it is hot.
   b. ?The porridge is warm. As a matter of fact, it is cold.

Layered DRT: DRT with multiple layers of meaning

$$
\begin{array}{|l|}
\hline
x_p \\
\hline
\mathrm{porridge}_p(x) \\
\mathrm{warm}_a(x) \\
\\
\neg_i \boxed{\begin{array}{|l|} \hline \\ \hline \mathrm{hot}_i(x) \\ \hline \end{array}} \\
\\
\hline
\end{array}
$$

Geurts & Maier 2003; 2013

Beyond truth-conditional meaning: Information structure

(1) John <u>has a sister</u>. He visits her every week. → assertion

(2) John visits <u>his sister</u> every week. → presupposition

(3) John, <u>who has a sister</u>, visits her every week → conventional implicature

Projective Discourse Representation Theory (PDRT): DRT with information structure

PDRT provides a unified, unidimensional treatment of asserted and projected content (including: presuppositions, anaphora, and *conventional implicatures*)

Venhuizen, 2015; Venhuizen et al. To appear

Formal semantics in the real world

How to apply and evaluate formal linguistic theories?

⇒ Testing predictions from formal semantic theories using psycholinguistic methods (questionnaires, eye-tracking, EEG)

- Geurts et al. (2010); Chemla et al. (2011); Florian Schwarz (ed., 2015), …

⇐ Using implementations of semantic formalisms to perform large-scale computational semantic analyses

- PDRT-Sandbox (Brouwer & Venhuizen, 2013)

- Boxer (Bos, 2008)

- The Groningen Meaning Bank (Basile et al., 2013; Bos et al., 2015)

Groningen Meaning Bank

Corpus of semantically annotated texts – with (P)DRSs!

Semantic Theory: from past to present (and future?)

1900   1960   1970   1980   1990   2017   2022?
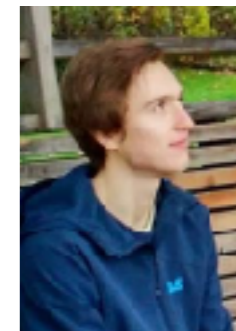
But first… the exam!

- The date for the final exam is: **Thursday July 27, 10am (sharp!)**

- You can (have to!) register for the exam: until <u>tomorrow</u> (12.07)

- You can find a practice exam at:
  http://noortjejoost.github.io/teaching/ST17/practice_exam.pdf

- An example of the supplementary materials is given at:
  http://noortjejoost.github.io/teaching/ST17/exam_materials.pdf

- Next Thursday: Q&A. Take a look at the practice exam, previous exercises, and the slides — Prepare questions!

Links

- Groningen Meaning Bank:
http://gmb.let.rug.nl

- Groningen Meaning Bank Web Demo:
http://gmb.let.rug.nl/webdemo/demo.php