Frame-setting modifiers and situation binding

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1 Introduction

- The problem: how to account for the semantic contribution of what are called *frame-setting modifiers*.
- **Roadmap**
  - What is a frame-setting modifier?
  - Give an account for them in terms of semantic binding.
  - Particularly, semantic binding of situation variables within a clause.
  - Data that's still puzzling.

2 What is a frame-setting modifier?

- Examples:

  (1) In Boliva, Mary is blonde.
  (2) In Chile, Pinochet enjoyed diplomatic immunity.
  (3) In Argentina, Eva still is very popular.

- Intuitively, they restrict the domain of relevance for some proposition.
- Not truth preserving. Compare to event locative modifiers.

  (4) a. Mary kicked the ball in the park.
      b. (**entails**) Mary kicked the ball.
  (5) a. In Argentina, Eva still is very popular.
      b. (**does not entail**) Eva still is very popular.

- Left-periphery. Occur high in the structure.
- But not clearly completely locative. Frame-setting modifiers seem to be able to set a possible world as a frame (for example, dream worlds).

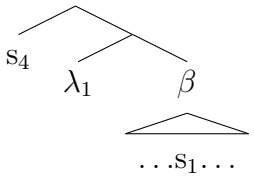
  (6) In his dreams, Bill lunches with ducks.

3 Binding mechanics

- Situation pronouns are syntactically present. In an intuitive sense, situations are slices of possible worlds.
- Binding mechanism similar to that of Heim and Kratzer (1998) (also see Percus, 2000).

- A lambda may bind a c-commanded and coindexed situation pronoun. β is a node of type σ, then the effect of the lambda is to lift the type to $\langle s, \sigma \rangle$. The situation variables coindexed with the lambda are replaced by that lambda's argument, an example of which is in (8).

(7) Schematic of variable binding



(8) $\lambda_1[\ldots f(s_1) \ldots](s_4)$
$= [\ldots f(s_4) \ldots]$

4 Explaining frame-setters

4.1 Maienborn (2001)

- Maienborn (2001): "a frame-setting modifier can also be used to single out a topic time in the sense of Klein (1994)."

- Klein's notion of *topic time* is the time for which a speaker wants to make a claim. In the Reichenbachian tense system, it roughly corresponds to reference time.

- More Maienborn: "Frame-setting modifiers are semantically underspecified devices for restricting the application of the comment to the topic of a sentence." Frame-setting modifiers set a topic while the rest of the sentence provides a comment on that topic.

- It's not all that clear how she intends to do this stuff, or even why her solution would work.
But... I think her intuition is right that these constrain the interpretation by setting up a topic situation.

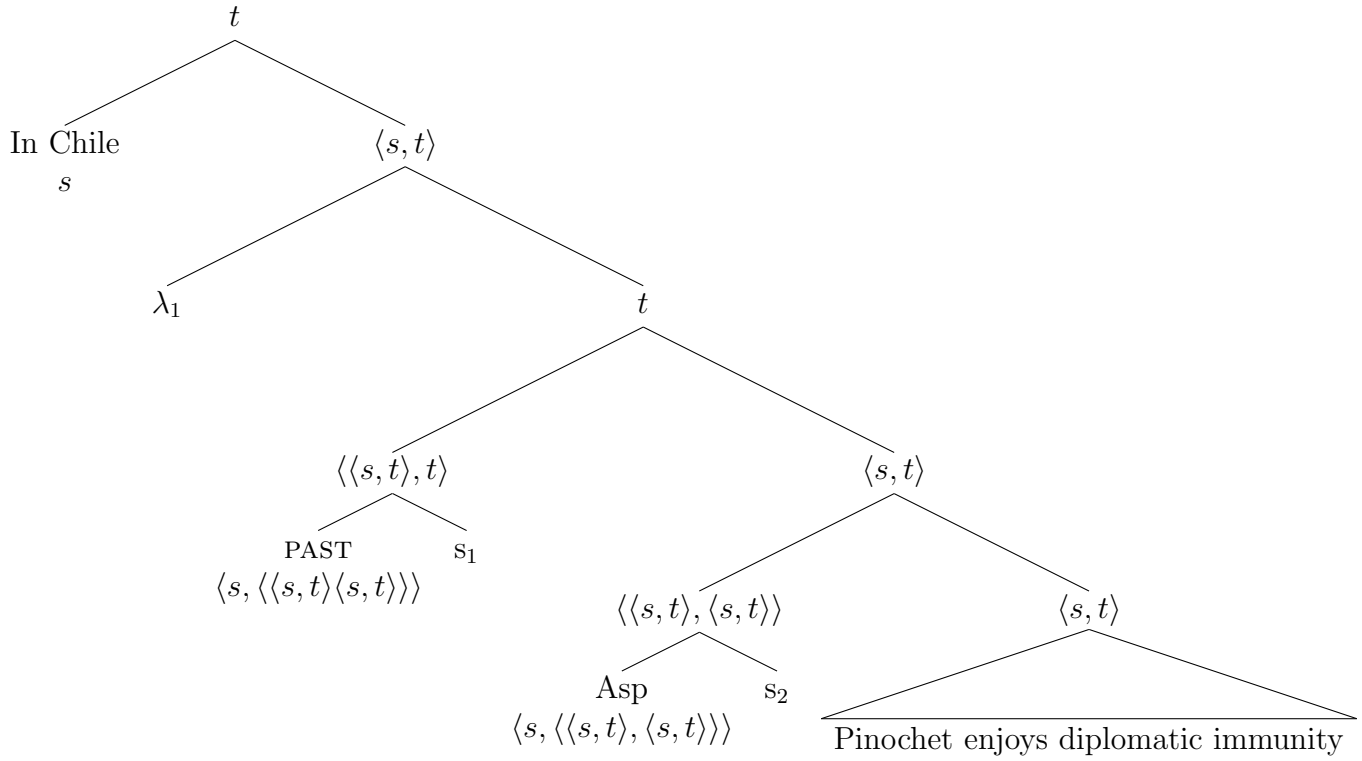
4.2 Proposal

- Situation pronouns represented in the syntax. Can be bound by higher operators. (Percus, 2000)

- Frame-setting modifiers denote situations. They overtly signal what situation is relevant for the truth of the proposition expressed by the rest of the sentence.

- Topic time in the Kleinian sense corresponds roughly to tense, which should be in T^0 in the syntax (presumably). Merging a frame-setting modifier simultaneously merges a lambda, which can bind a nearby situation variable — the one in T^0.

- Type annotated semantic parse tree :



- Some denotations:

(9) a. $[\![\text{in chile}]\!] = s_4$

b. $[\![\text{Pinochet enjoy diplomatic immunity}]\!] = \lambda s[\text{Pinochet enjoys dip. imm. in } s]$

c. $[\![\text{Asp}]\!] = \lambda s \lambda P_{\langle s,t\rangle} \lambda s'[P(s) \wedge R(s, s')]$ where R is an aspectual relation between topic time and situation time (either $\subseteq$, $\supset$, or $<_t$ (temporally precedes)).

d. $[\![\textsc{past}]\!] = \lambda s'' \lambda P_{\langle s,t\rangle}[P(s'') \wedge s'' < s_0]$, where s_0 is the utterance situation.

- Final representation after semantic composition:

(10) $[\![(2)]\!] = [\![\text{Pinochet enjoy diplomatic immunity}]\!](s_2) \wedge s_2 \subseteq s_4 \wedge s_4 < s_0$

- The lambda operator bound the nearest situation variable s_1, essentially opening the tree back up to type $\langle s, t\rangle$ for further composition. Because the frame-setter denotes a situation s_4, it can be an argument to this function and replace s_1.

4.3 Things about this

- This captures the fact that frame-setting modifiers only occur high. As tense is expressed through topic time, and T^0 expresses tense, frame-setting modifiers must be high in order to bind the topic situation variable.

- I stipulate that the lambda can only bind the next situation down, but this has a consequence: a frame-setting modifier shouldn't be able to set a frame for an embedded clause. This seems to be true.

(11) In her dreams, John thinks that Mary is a duck.

This sentence can't mean that John has thoughts about Mary being a duck while she is dreaming; it has to mean that Mary has dreams where John thinks that she is a duck.

- Being parts of possible worlds, situations give us the ability to talk about worlds other than the actual world (useful for dream world cases).
- Probably possible to do this another way, but binding gives us a nice way of doing this without leaving the topic situation variable unsaturated up the tree.
- The situation variable binding was developing from analogy with tenses as pronouns, meant to account for sequence of tense effects. Might be possible to look for "sequence of topic" effects, or places where we can do funny binding things that we might not normally get just from function application.

5 Problem data

- Binding into the modifier:

(12) In conversations with himself, John is always right.

Syntactically, the modifier has to start low in order for the subject to bind it. Objects do not bind the modifer, so it has to be "high enough," wherever that will be.

(13) *In conversations with himself, Mary belittles John.

- No coreference with indefinites (on object reading):

(14) In conversations with himself$_1$, a man$_1$ is always right.

References

Heim, I., & Kratzer, A. (1998). *Semantics in generative grammar*. Wiley-Blackwell.

Klein, W. (1994). *Time in language*. Psychology Press.

Maienborn, C. (2001). On the position and interpretation of locative modifiers. *Natural Language Semantics*, *9*(2), 191–240.

Percus, O. (2000). Constraints on some other variables in syntax. *Natural Language Semantics*, *8*(3), 173–229.