

Copy raising and perception: A fine-grained semantics for raising and control

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Copy raising

1. Louise seems like she's had a rough day.
 2. The lawyer appeared as if she had won the case.
- The English copy raising (CR) verbs are *seem* and *appear*.
 - The complement contains a finite verb.
 - The complement is introduced by *like*, *as if*, *as though*.
 - The complement contains a pronominal copy of the matrix subject (non-expletive copy-raising).

Pronominal copy

1. You seem like you're exhausted.
2. * You seem like Mike's exhausted.

Expletive subjects

- CR verbs can occur with expletive subjects
 1. It seems like John is tired.
 2. It seems like there is a problem.
 3. It seems like it's impossible.
 4. There seems like there's a problem.
 5. * There seems like John is tired.
 6. * There seems like it's impossible.

The data

- Some native speakers don't feel comfortable with (some) copy raising examples.
 - The examples presented here as grammatical are structurally identical to examples that can readily be found in corpora and on the web.
1. Sometimes co-workers seem like they're just asking for rage.
(Duluth News Tribune, August 14, 2007)
 2. He seemed like he didn't want to be there.
(www.darrenbarefoot.com)
 3. In this world of digital photography there seems like there is no room for film anymore.
(www.flickr.com/photos/samtheman/page6)

The data

- The grammaticality judgements indicated here conform with the majority view in a questionnaire study (110 native speaker participants).
- The questionnaire study shows that there is dialectal variation.

Infinitival raising and copy raising

1. You seem like you are exhausted. (copy raising)
2. You seem to be exhausted. (infinitival raising)

Infinitival raising and copy raising

- Infinitival raising and copy raising are clearly related.
 - *seem, appear* are the only true copy raising verbs, and they are also members of the (much larger) class of infinitival raising verbs.
 - obligatory relationship between the matrix subject and the pronominal copy (CR)/infinitival subject (IR)

Infinitival raising and copy raising

- Infinitival raising verbs and CR verbs both have an *it*-expletive alternant:
 1. a. Jane seems to be tired.
b. It seems that Jane is tired.
 2. a. Jane seems like she's tired.
b. It seems like Jane is tired.

Infinitival raising and copy raising

- For both infinitival raising and copy raising, a *there*-expletive subject is licensed only if a *there*-expletive is licensed in the complement.
 1. a. It seems that there's a stranger in the garden.
b. There seems to be a stranger in the garden.
 2. a. It seems like there's a stranger in the garden.
b. There seems like there's a stranger in the garden.

Perceptual Resemblance Verbs

- *look, sound, feel, smell, taste*
1. The cake looks/sounds/feels/smells/tastes like/as if/as though it was baked a long time ago.
 2. It looks/sounds/feels/smells/tastes like/as if/as though the cake was baked a long time ago.

Perceptual Resemblance Verbs

- PRVs are not copy raising verbs.
 1. It seems/looks like Jane is happy today.
 2. Jane seems like she's happy today.
 3. Jane looks like she's happy today.
 4. * Jane seems like everything has gone wrong.
 5. Jane looks like everything has gone wrong.
- *Seem* and *appear* require a pronominal copy.
- *Look, sound, feel, taste, smell* do not require a pronominal copy.

CRVs and PRVs

- PRVs are not CRVs, but they are clearly very similar.

Absent cook, scenario 1

- A and B walk into Tom's kitchen. Tom is at the stove noisily doing something, but exactly what is unclear.
 1. A: Tom seems to be cooking.
 2. A: It seems/looks/sounds like Tom is cooking.
 3. A: Tom seems/looks/sounds like he's cooking.

Absent cook, scenario 2

- A and B walk into Tom's kitchen. Ingredients and cooking implements abound, it smells like food, but Tom is not around.
 1. A: Tom seems to be cooking.
 2. A: It seems/looks/smells like Tom is cooking.
 3. A: * Tom seems/looks/smells like he's cooking.
 4. A: * Tom seems/looks/smells like he's been cooking.

Perceptual sources

- Based on the absent cook data, we propose that PRV and CRV subjects are *perceptual sources* - the source of information in some kind of perceptual report.
1. Sara seems/looks/smells like she's been out drinking.
 2. Sara seems to have been out drinking.
- In (1), the evidence for the claim is some aspect of Sara.
 - In (2), the evidence may come from some source other than Sara.

Perceptual sources and non-synonymy of passives

1. Bo seems to have been drenched by Tom. \equiv
Tom seems to have drenched Bo.
2. Bo seems/looks like she was drenched by Tom. \neq
Tom seems/looks like he drenched Bo.

Swedish

- The data presented so far are paralleled in Swedish.
 1. Johan verkar ha ätit förgiftad mat.
J. seems have eaten poisoned food.
'Johan seems to have eaten poisoned food.'
 2. Johan verkar som om han har ätit förgiftad mat.
J. seems as if he has eaten poisoned food.
'Johan seems as if he has eaten poisoned food.'
 3. * Johan verkar som om Katja har ätit förgiftad mat.
J. seems as if K. has eaten poisoned food

Swedish

- Swedish *verka* behaves like English *seem, appear* with respect to the absent cook phenomenon
- PRVs and CRVS display the same similarities and differences in Swedish as in English.
- Like in English, there is dialectal variation.

Swedish *på*

- Swedish provides an extra piece of evidence for the claim that CRV (and PRV) subjects are perceptual sources.
- In expletive *verka* clauses, the perceptual source is optionally given as a *på*-PP adjunct.
 1. Det verkar som om Pelle tänker sluta.
it seems as if P intends quit
'It seems like Pelle is going to quit.'
 2. Det verkar på Pelle som om han/Sara tänker sluta.
it seems on P. as if he/Sara intends quit
~'Pelle gives the impression that it seems like he's/Sara's going to quit.'

Swedish *på*

- The *på*-PP cannot appear in CR examples (*verka som*) with a non-expletive subject.
 1. Pelle verkar som om han tänker sluta.
P. seems as if he intends quit.
'Pelle seems like he's going to quit.'
 2. * Pelle verkar på Sara som om han tänker sluta.
P. seems on S. as if he intends quit
(intended: 'Sara gives the impression that Pelle seems like he's going to quit.')
- (2) is ungrammatical because the perceptual source must be uniquely expressed.

Thematic role?

- Is the perceptual source a thematic role?
- If so, the Swedish *på*-data can be explained by the Theta Criterion (or Full Interpretation, Coherence, ...)

Thematic role?

- In many theories, only arguments are assumed to carry thematic roles.
- The Swedish *på*-PP is an adjunct.
- The CR subject is a syntactic argument, but it crucially does not bear a thematic role.
- The CR subject is not a thematic argument, according to various standard tests (Potsdam and Runner 2001, Asudeh and Toivonen 2007, and others).

The *på*-PP adjunct

- The *på*-PP is optional.
 1. Det verkar (på Jonatan) som om det regnar ute.
it seems on J. as if it rains outside
'(Jonatan gives the impression that) it seems to be raining outside.'
- It's hard to extract out of the PP.
 2. Det verkar på Sixten som om han är lite tokig.
it seems on S as if he is a.bit crazy
 3. * Vem verkar det på som om han är lite tokig?
who seems it on as if he is a.bit crazy

The CR subject

- The CR subject is athematic — like infinitival raising subjects.
 1. Linda seems to be angry.
 2. Linda seems like she's angry.
- The athematic status of the CR subject has been argued for carefully by Potsdam and Runner (2001), Asudeh (2002, 2004), Asudeh and Toivonen (2007) and others.

The CR subject is not thematic

- The CR subject alternates with an expletive:
 1. It seems like John has lost his marbles.
 2. John seems like he's lost his marbles.
- Expletives and idiom chunks can be CR subjects:
 3. There seems like there's a lot of garbage in the river.
 4. The cat seems like it's out of the bag.

The CR subject is not thematic

- If the CR subject receives its own thematic role, it's difficult to explain why a copy pronoun is necessary.
 1. Sara seems like she's not sleeping much.
 2. * Sara seems like the baby is not sleeping much.

Perceptual source

- If the perceptual source is not a thematic role, then what is it?
- We propose that it is a more general type of semantic role, similar to Parsons's thematic relations.
- Cf. instruments (1), *with*-themes (2), maybe the passive *by*-phrase (3).
 1. Jane cut the bread with a knife.
 2. They loaded the trailer with onions.
 3. That house was painted by the other guys.
- Slightly different from general time, place, manner adjuncts in being lexically governed/limited to a subset of predicates

Formal Analysis

Formal analysis

- Asudeh and Toivonen (2007):
 - Glue Semantics (Dalrymple 1999, 2001, Asudeh 2004, Lev 2007, Kokkonidis in press)
 - Glue *meaning constructor* :=
Meaning language term : Composition language term
 - Meaning language := some lambda calculus
 - Asudeh and Toivonen (2007): event semantics
 - Model-theoretic
 - Composition language := linear logic
 - Proof-theoretic
 - Curry Howard Isomorphism between formulas (meanings) and types (proof terms)

Formal analysis of standard raising

1. Kim seems/appears to have won.
2. It seems/appears to have rained.
3. There seems/appears to be a problem.
4. The cat seems/appears to be out of the bag.
5. Kim seems/appears upset.
6. Kim seems/appears under the weather.
7. It seems rainy.
8. It seems/appears (that) Kim has won.
9. It seems/appears (that) Kim is upset.
10. It seems/appears (that) it rained.
11. It seems/appears (that) the cat is out of the bag.

- Core semantics (event semantics):

$$\lambda p \lambda s . seem(s, p)$$

Proposition, t

State, s

Formal analysis of copy raising: Expletive subject

1. It seem/appears like/as if/as though Kim has won.
2. It seems/appears like/as if/as though there is a problem.
3. There seems/appears like/as if/as though there is a problem.
4. The cat seems/appears like/as if/as though it is out of the bag.

- Core semantics (event semantics):

$$\lambda p \lambda s . \textit{seem}(s, p)$$

Proposition, t

State, s

- With Psource:

$$\lambda p \lambda s . \exists v_{\epsilon} [\textit{seem}(s, p) \wedge \text{PSOURCE}(s) = v_{\epsilon}]$$

Eventuality variable, ϵ

Existential closure of Psource

An eventuality is an event (type ϵ) or state (type s) (Bach 1981).

Formal analysis of copy raising: Non-expletive subject

1. Fido seems/appears like/as if/as though he has been pricked by that porcupine again.
2. Fido seems/appears like/as if/as though that porcupine's pricked him again.

- Core semantics (event semantics):

$$\lambda x \lambda P \lambda s . seem(s, P(x))$$

Individual, e
Property, $\langle e, t \rangle$

Note that $Type(P(x)) = Apply(\langle e, t \rangle, e) = t$ (proposition type)

State, s

- With Psource:

$$\lambda x \lambda P \lambda s . seem(s, P(x)) \wedge \mathbf{PSOURCE}(s) = x$$

Function from eventualities to
eventualities or individuals

Formal analysis of control

- Based on Asudeh (2005), adapted to event semantics:

$$\lambda x \lambda P \lambda e. \text{try}(\textcircled{e}, \textcircled{x}, \textcircled{P}(\textcircled{x}))$$

Individual, e

Property, $\langle e, t \rangle$

Event, ϵ

- The subject of the control verb is an argument of the verb.
- The control verb applies the property corresponding to its complement to its subject.
 - The control verb composes with a property (Chierchia 1984).
 - The clausal complement of the control verb denotes a proposition (Higginbotham 1989, 1992).

Formal analysis of perceptual resemblance verbs: Non-expletive subject

1. Tina sounds/smells/looks/feels/tastes like/as if/as though Chris has baked sticky buns.

- Core semantics (event semantics):

$$\lambda x \lambda p \lambda s . sound(s, aural(x), p)$$

Individual, e

Proposition, t

State, s

- *aural* is a partial function on eventualities or individuals that returns the aural aspect of its argument (i.e., the argument's sound), an individual.
- It is contributed as part of the PRV *sound*'s lexical meaning.
- Related functions are *visual* (*look*), *olfactory* (*smell*), *tactile* (*feel*), and *gustatory* (*taste*).

Formal analysis of perceptual resemblance verbs: Non-expletive subject

1. Tina sounds/smells/looks/feels/tastes like/as if/as though Chris has baked sticky buns.

- Core semantics (event semantics):

$$\lambda x \lambda p \lambda s. sound(s, aural(x), p)$$

- With Psource:

$$\lambda x \lambda p \lambda s. sound(s, aural(x), p) \wedge \mathbf{P}\mathbf{SOURCE}(s) = x$$

Formal analysis of perceptual resemblance verbs: Expletive subject

1. It sounds/smells/looks/feels/tastes like Chris has been baking sticky buns.

- Core semantics (event semantics):

$$\lambda p \lambda s. sound(s, aural(\mathbf{PSOURCE}(s)), p)$$

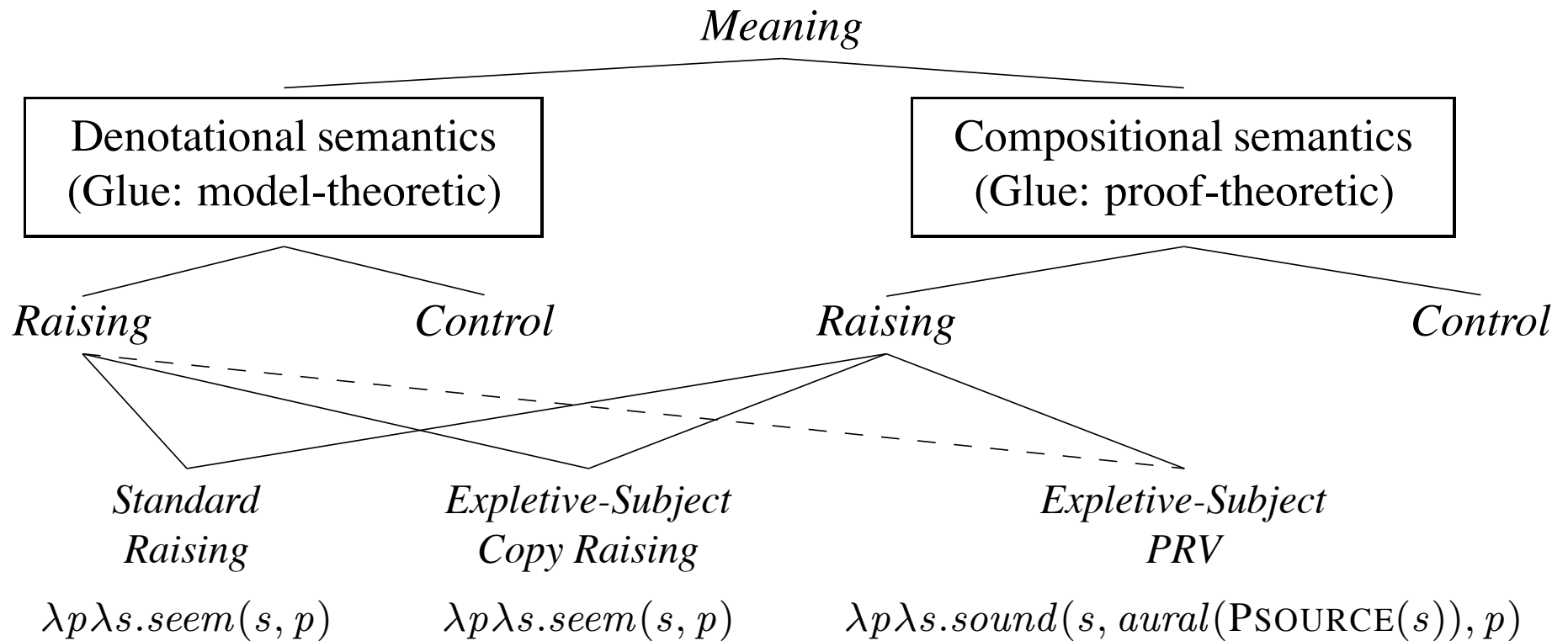
Individual, e
Proposition, t
State, s

- With Psource:

$$\lambda p \lambda s. \exists v_{\epsilon} [sound(s, aural(\mathbf{PSOURCE}(s)), p) \wedge \mathbf{PSOURCE}(s) = v_{\epsilon}]$$

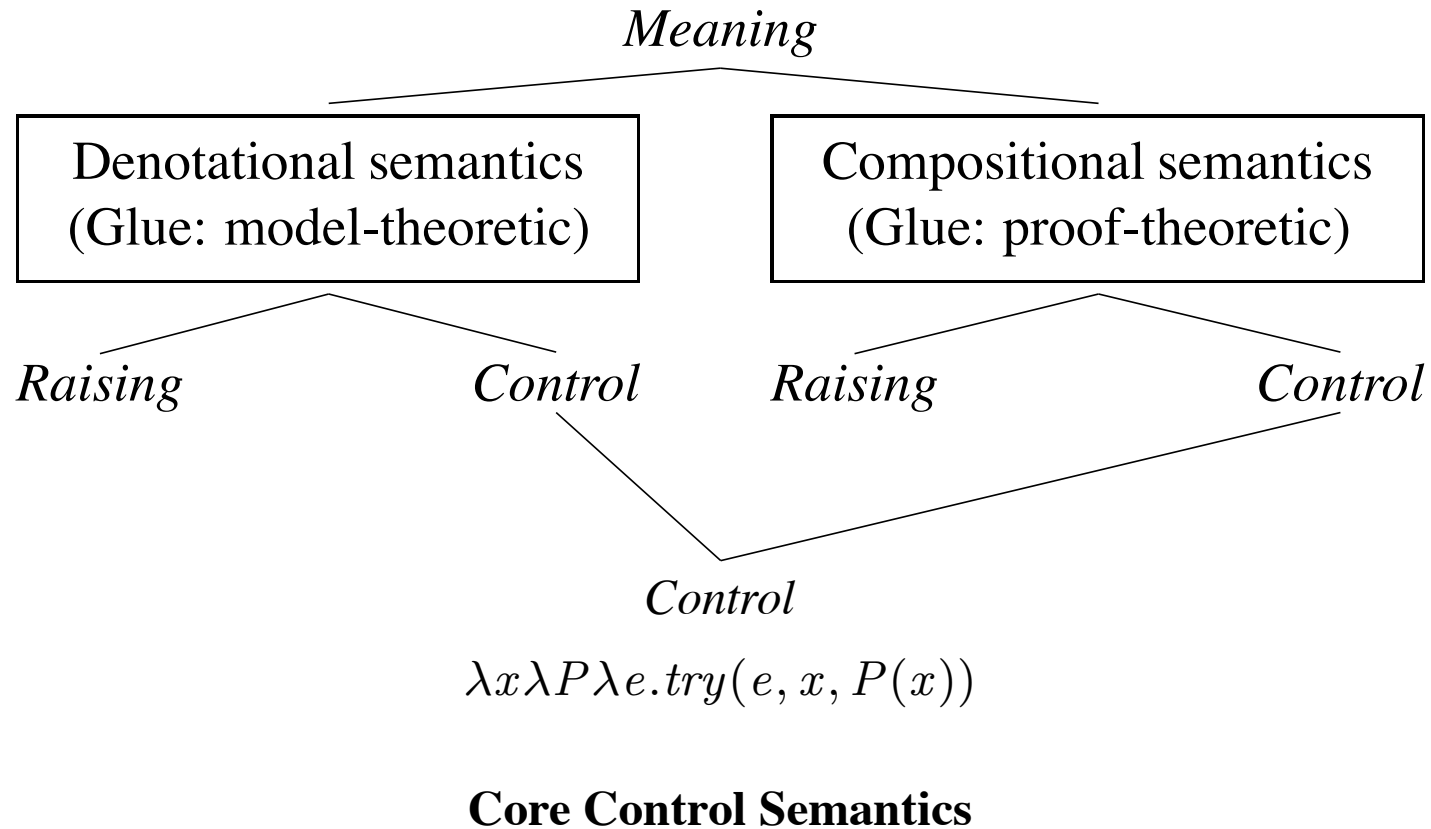
Eventuality variable, ϵ Existential closure of Psource

Raising Semantics

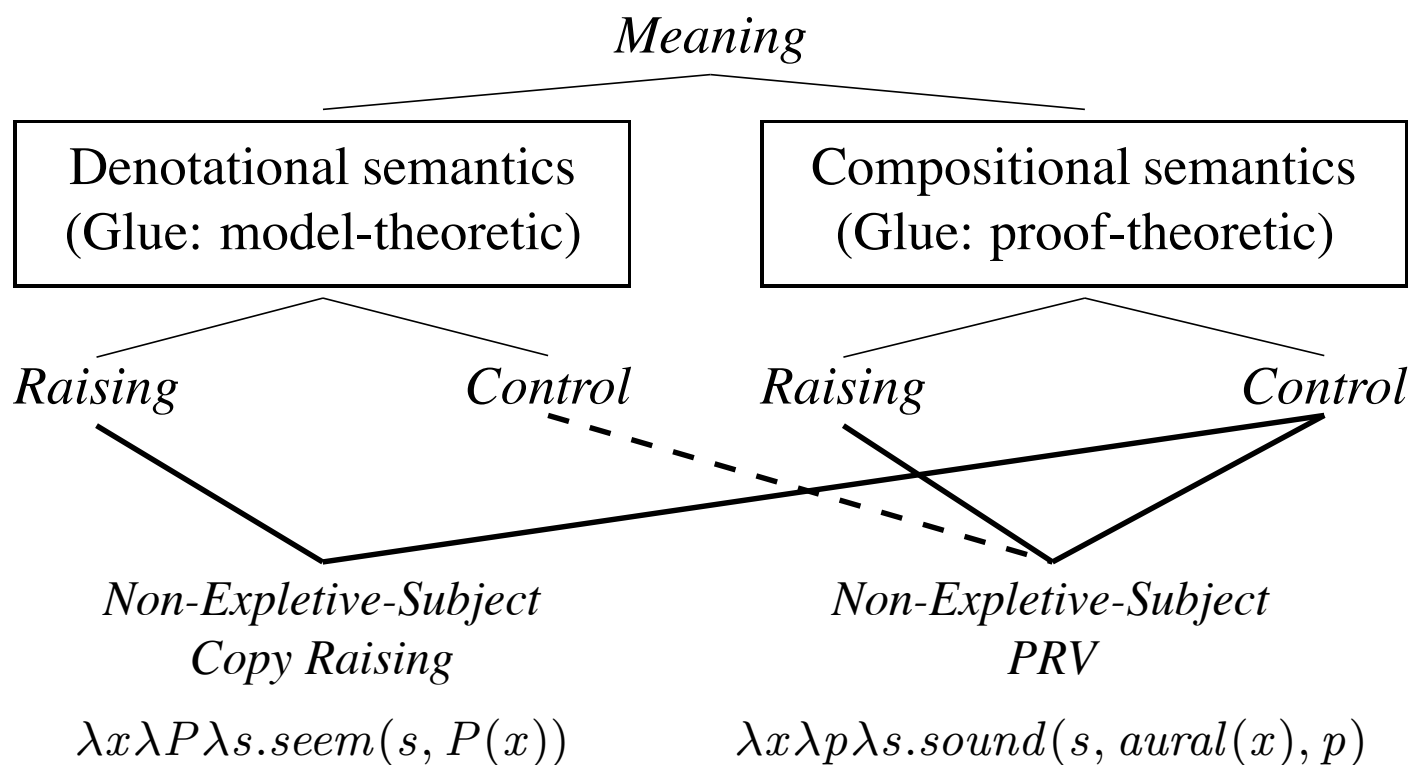


Core Raising Semantics

Control Semantics

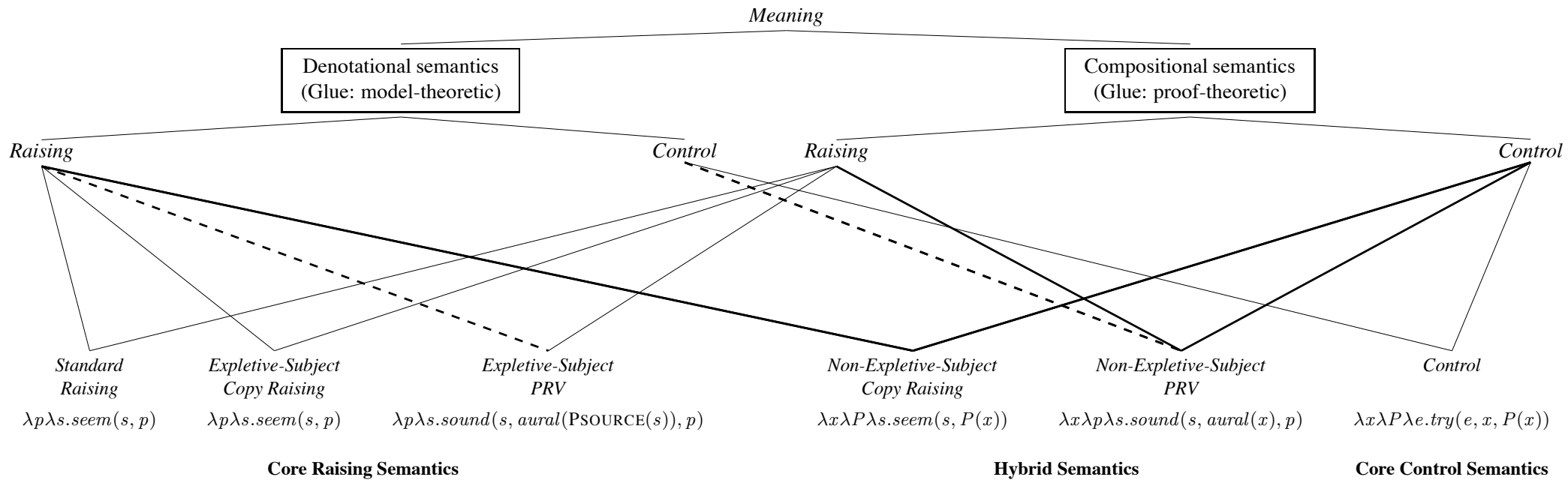


Hybrid Semantics



Hybrid Semantics

A fine-grained semantics for raising and control



Conclusion

- Copy raising can be analyzed using a hybrid semantic term that is compositionally like (subject) control and denotationally like raising.
 - Finer-grained understanding of the semantics of raising and control
 - Perceptual resemblance verbs are another aspect of the picture, but one whose fit is somewhat less certain (more research required).
- Demonstrates need for a lexicalist analysis with careful investigation of the items involved:
 - Distinctions between copy raising and standard raising
 - Distinctions between copy raising and perceptual resemblance
 - Distinctions and similarities between both and control
- Can account for variation in judgements within resulting space.

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<http://www.carleton.ca/~asudeh/>

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