Multi- vs. Unidimensional Semantics for Discourse Asymmetry in Constructions with Propositional Verbs

Formal Philosophy 2025

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The Roadmap

(1) A: *Who said that Dean has left town?*

B: *#Dean has left town, Sam said. / Sam said that Dean has left town.*

- What is the multidimensional and the unidimensional approach to discourse asymmetry?
- Are the two approaches juxtaposed or are they complementary?

- First, we will introduce the multidimensional approach in terms of conventional implicatures
- Second, we will introduce the unidimensional approach in terms of discourse updates
- Third, we will introduce the multidimensional approach in terms of monads
- We will apply the unidimensional approach in terms of discourse updates and the multidimensional approach in terms of monads to constructions with propositional verbs like in (1)
- We will conclude by introducing the idea that the two approaches might be complementary

Conventional implicature dimension

(1) A: Meghan Markle, the actress from Canada, married Prince Harry.

B: No, that's not true.

⇒ No, Meghan Markle did not marry Prince Harry.

↠ No, Meghan Markle is not from Canada.

B: True, but actually Meghan Markle was born in California

Potts (2005) introduces two types of dimensions:

- an at-issue dimension that is under discussion
- a not-at-issue, or conventional implicature, dimension that contributes additional information that is speaker-oriented and non-backgrounded
- two dimensions are logically independent from each other
- semantic content can flow from the at-issue dimension to the not-at-issue dimension but not vice versa

Dynamic semantics: two types of context updates

(1) John$_x$, who$_x$ nearly killed a$_y$ woman with his$_x$ car, visited her$_y$ in the hospital. (AnderBois et al. 2010)

Two types of context updates:

imposition (AnderBois et al. 2010): an informative non-negotiable update of the common ground

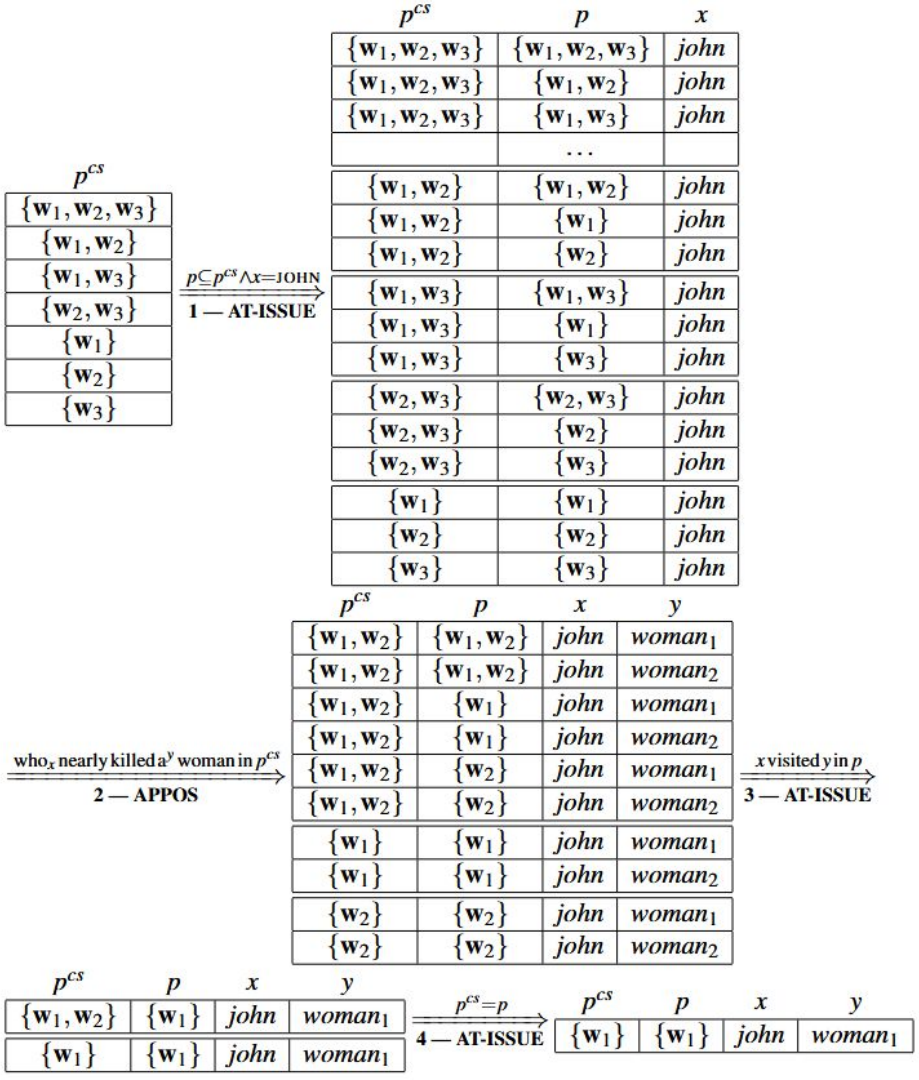
proposal (Farkas and Bruce 2010): an informative negotiable update of the common ground

(1) John$_x$,

who$_x$ nearly killed a$_y$ woman,

visited her$_y$ in the hospital.

(AnderBois et al. 2010)



Multidimensional approach: monads

- M – is a type constructor if it takes any type and returns a new type
- for example, we can think of {} as a type constructor which takes a type α and returns a new type {α}, i.e. a type contains a set of values of type α
- Any type constructor M that has functions return and bind of the following type is a monad:
  - return :: $\alpha \rightarrow M\ \alpha$
  - bind :: $M\ \alpha \rightarrow (\alpha \rightarrow M\ \beta) \rightarrow M\ \beta$
- on the compositional level, monads preserve the idea of two independent dimensions, in the post-compositional phase the dimensions can interact

(Shan 2002; Giorgolo and Asudeh 2012, 2014; Charlow 2014)

Monads

(Shan 2002; Giorgolo and Asudeh 2012, 2014; Charlow 2014; Cohn-Gordon):

1) Quantifier Scope: the Continuation Monad: $(\alpha \rightarrow M\ t) \rightarrow M\ t$: Someone loved everyone.
2) Conventional Implicature: the Writer Monad: M (α, (List t)): Lupin, a werewolf, left Hogwarts.
3) Presupposition Failure: the Exception Monad: M (Either String α): Dasha met the King of France.
4) Anaphora: the State (and Set) Monad: (List e) → [M (α, (List e)]: Lupin walked in. He likes Harry.
5) Intensionality: the Reader Monad: $s \rightarrow M\ \alpha$: Dumbledore believes Barty Crouch Jr is Alastor Moody.
6) Focus: the Pointed Set Monad: M [α]: Dasha loves linguistics$_{FOC}$.

Monads

(Shan 2002; Giorgolo and Asudeh 2012, 2014; Charlow 2014; Cohn-Gordon):

1) Conventional Implicature: the Writer Monad: *Lupin, a werewolf, left Hogwarts*.

   (Writer α) is synonymous to (α, (List t)), pair of values, where the first value is of type α and the second value is of type (List t), a list of truth values

2) Intensionality: the Reader Monad: *Dumbledore believes Barty Crouch Jr is Alastor Moody*.

   (Reader α) is a synonym for (s → α), where s is the type for worlds.

   Reader takes a type α and returns the type of a function from worlds to α.

Constructions with propositional verbs: discourse asymmetry

Constructions with evidential meaning:

(1) A: *Who has left town?*

B: *Dean has left town, Sam said. / Sam said that Dean has left town.*

(2) A: *Dean has left town, Sam said.*

B: *No (Dean has not left town/#Sam did not say that).*

(3) A: *Sam said that Dean has left town.*

B: *No (Dean has not left town /#Sam did not say that).*

Intensional constructions:

(1) A: *Who said that Dean has left town?*

B: *#Dean has left town, Sam said. / Sam said that Dean has left town.*

(2) A: *Sam said that Dean has left town.*

B: *No (Sam did not say that).*

Constructions with propositional verbs: dynamic semantics

Two types of context updates:

imposition (AnderBois et al. 2010): an informative non-negotiable update of the common ground

proposal (Farkas and Bruce 2010): an informative negotiable update of the common ground

(a) *Sam said that Dean has left town*

Dean has left town – PROPOSAL
Sam said that Dean has left town – IMPOSITION
EVIDENTIAL MEANING

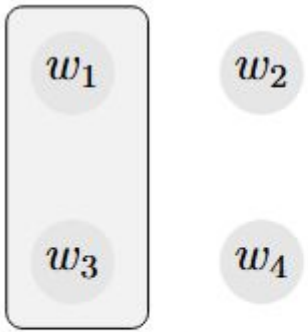
OR
Sam said that Dean has left town – PROPOSAL
INTENSIONAL MEANING

(b) *Dean has left town, Sam said*

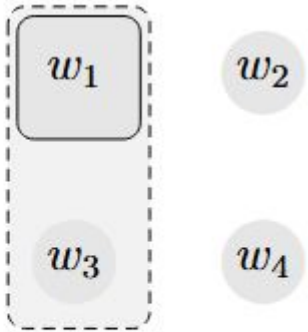
Dean has left town – PROPOSAL
Sam said that Dean has left town – IMPOSITION
EVIDENTIAL MEANING

Intensional construction vs evidential construction update

Context Set: $\{w_1, w_2, w_3, w_4\}$
[[Bella is a vampire]] = $\{w_1, w_2\}$
[[Jacob said that Bella is a vampire]] = $\{w_1, w_3\}$



(a) *Jacob said that Bella is a vampire.*



(b) *Bella is a vampire, Jacob said.*

Constructions with propositional verbs: monads

1) Conventional Implicature: the Writer Monad: *Lupin, a werewolf, left Hogwarts*.

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2) Intensionality: the Reader Monad: *Dumbledore believes Barty Crouch Jr is Alastor Moody*.

(Reader α) is a synonym for (s → α), where s is the type for worlds. Reader takes a type α and returns the type of a function from worlds to α.

(a) *Sam said that Dean has left town*
the Writer Monad – EVIDENTIAL MEANING
OR
the Reader Monad – INTENSIONAL MEANING

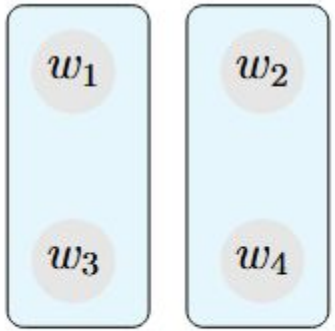
(b) *Dean has left town, Sam said*

the Writer Monad – EVIDENTIAL MEANING

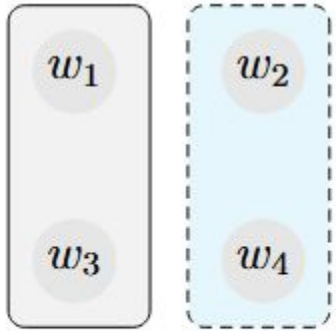
Multidimensional vs. unidimensional approach

- the two approaches are traditionally juxtaposed
- monads: multidimensionality of the semantic representation with the necessary post-compositional interdimensional interaction
- monads: logical independence, speaker-orientation unless embedded
- monads: pragmatics and discourse behavior are (not) encoded in the semantic representation, which might be problematic for modelling the interplay between context and speaker-orientation (Harris and Potts 2009) or the interaction with focus and the question under discussion
- imposition and proposal: unidimensional semantic representation, two types of updates, logical independence, speaker-orientation, dynamics inside the imposition-proposal pair and competition between the imposition-proposal and proposal-proposal pairs
- imposition and proposal: where are the labels introduced and what is their semantic status?
- Proposal: the two approaches might be complementary in a sense that we need to know how semantic content enters the context set even if it is modelled in terms of monads

A: Who said that Bella is a vampire?
B: JACOB$_{FOC}$ said that Bella is a vampire.

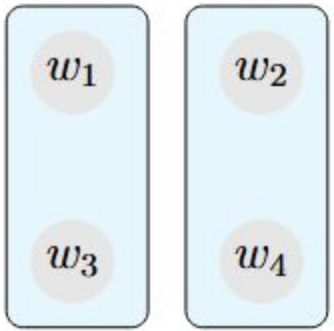


(a) *A: Who said that Bella is a vampire?*



(b) *B: Jacob$_{FOC}$ said that Bella is a vampire.*

A: Who said that Bella is a vampire?
B: #Bella, JACOB$_{FOC}$ said, is a vampire.



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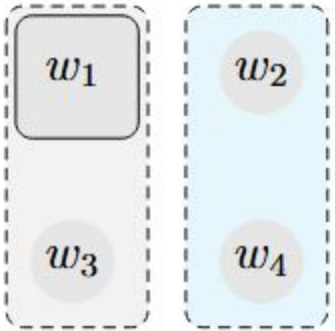

(b) *B: #Bella, Jacob$_{FOC}$ said, is a vampire.*

Thank you!

References

AnderBois et al. (2010). Crossing the Appositive/At-issue Meaning Boundary. In Proceedings of Semantics and Linguistic Theory 20.

Barker, Chris (2002). “Continuations and the nature of quantification”. In: Natural language semantics 10.3, pp. 211–242.

Charlow, Simon (2014). “On the semantics of exceptional scope”. PhD thesis. New York University.

Cohn-Gordon, Reuben. “Monad Transformers for Natural Language: Combining Monads to Model Effect Interaction”.

Farkas and Bruce 2010. On Reacting to Assertions and Polar Questions. Journal of Semantics 27:81–118.

Giorgolo, Gianluca and Ash Asudeh (2012). “<M, η,*> Monads for conventional implicatures”. In: Proceedings of Sinn und Bedeutung. Vol. 16, pp. 265–278.

— (2014). “Monads as a solution for generalized opacity”. In: EACL 2014, p. 19.

Harris, Jesse A and Christopher Potts (2009). “Perspective-shifting with appositives and expressives”. In: Linguistics and Philosophy 32.6, pp. 523–552.

Potts, Christopher (2005). The logic of conventional implicatures. Vol. 7. Oxford University Press Oxford.

Shan, Chung-chieh (2002). “Monads for natural language semantics”. In: arXiv preprint cs/0205026.