A Unidimensional Syntax-Semantics Interface for Supplements

Scott Martin
http://coffeeblack.org/

Natural Language Understanding and Artificial Intelligence Laboratory
Nuance Communications

Workshop on Empirical Advances in Categorial Grammar
ESSLLI, Barcelona
August 12, 2015

The conventional wisdom about conventional implicature

- Since Potts (2005), the predominant trend in analyzing *supplements* (nominal appositives, nonrestrictive relatives, and certain parentheticals), has characterized them as
  - Not *at-issue*, and therefore difficult to directly deny or to address the *question under discussion* with
  - Inherently *projective*, that is, inert with respect to surrounding semantic content
- Corollary to this line of analysis: an account of supplements must be *multidimensional*, with supplement content segregated off into its own area

A novel account from a new perspective

In this talk:

- I'll suggest that the multidimensional trend misses some important empirical facts about supplements
- I'll show data that demonstrate several ways in which supplements interact with surrounding content, just like normal, nonsupplement content
- I'll argue that the data strongly undermine the motivation for a multidimensional treatment of supplements
- Then, I'll present a syntax/semantics interface for supplements, in a two-component categorial syntax with a dynamic semantics, that
  - Uses only a single meaning dimension
  - Requires only a couple of extra lexical entries

Talk outline

(Re)characterizing supplements
- A fresh look at the data
- A new approach

The syntax/semantics interface
- The formalism
- Generalized quantifiers and supplements
- Supplement (non)projection
- Finer points

Comparison with other accounts

Wrapping up

The conventional (implicature) view

Potts claimed that supplements are never *at-issue*, and so they are

Scopeless They can never be targeted by semantic operators, and so their associated implications always *project*, for example:

(1) Kim didn't meet Lance, who was vacated of his race wins.

Here, the implication that Lance's wins were taken away escapes negation

The conventional (implicature) view

Potts claimed that supplements are never *at-issue*, and so they are

Scopeless They can never be targeted by semantic operators, and so their associated implications always *project*, for example:

(1) Kim didn't meet Lance, who was vacated of his race wins.

Here, the implication that Lance's wins were taken away escapes negation

Nondeniable They cannot be targeted by negative follow-ups, as in the denial below, which is interpreted as targeting the implication that Edna started the descent:

(2) a. Edna, a fearless leader, started the descent.

b. No, that's not true.

(Amaral et al., 2007)

Is anaphora evidence against multidimensionality?

- The possibility for anaphoric links out of and into supplements gives a hint that they are not as separate as Potts claimed

(3) Kim$_i$s bike$_j$, which used to have reflectors$_k$ on it$_j$, was pretty safe to ride at night until she$_i$ decided to take them$_k$ off. (Martin, in press)

Is anaphora evidence against multidimensionality?

- The possibility for anaphoric links out of and into supplements gives a hint that they are not as separate as Potts claimed

  (3) Kim$_i$s bike$_j$, which used to have reflectors$_k$ on it$_j$, was pretty safe to ride at night until she$_i$ decided to take them$_k$ off. (Martin, in press)

- In my 2013 dissertation, I tried to reconcile a two-dimensional semantics with these anaphoric possibilities, as do AnderBois et al. (2010, 2015), Giorgolo and Asudeh (2012), and Bekki and McCready (2014)
- But I soon realized the case was hopeless on other grounds

Evidence against multidimensionality

Some of the best evidence that supplements interact with other content comes from their ability to scope narrow. From Nouwen (2014):

(4) Its not the case that a boxer, a famous one, lives in this street.

(5) Every boxer has a coach, a famous one.

AnderBois et al. (2015) claim that "*one*-asides" aren't really supplements.

Evidence against multidimensionality

Some of the best evidence that supplements interact with other content comes from their ability to scope narrow. From Nouwen (2014):

(4) Its not the case that a boxer, a famous one, lives in this street.

(5) Every boxer has a coach, a famous one.

AnderBois et al. (2015) claim that "*one*-asides" aren't really supplements. But then what about these (from Amaral et al. 2007)?

(6) Every professional man I polled$_i$ said that while his$_i$ wife, who had earned a bachelor's degree, nevertheless had no work experience, he thought she could use it to get a good job if she needed one.

(7) In each class, several students$_i$ failed the midterm exam, which they$_i$ had to retake later.

(8) It seems like every time I turn around, my neighbor with a motorcycle is dating a different woman, who always has one too.

More evidence against multidimensionality

And what about these (from Martin in press)?

(9) Every famous boxer I know$_i$ has a devoted brother, who he$_i$ completely relied on back when he$_i$ was just an amateur.

(10) But there would always be some student, a photographer or a glassblower, who would simply have taken a piece of newspaper and folded it once and propped it up like a tent and let it go at that.

More evidence against multidimensionality

And what about these (from Martin in press)?

(9) Every famous boxer I know$_i$ has a devoted brother, who he$_i$ completely relied on back when he$_i$ was just an amateur.

(10) But there would always be some student, a photographer or a glassblower, who would simply have taken a piece of newspaper and folded it once and propped it up like a tent and let it go at that.

The effect also extends to conditionals, as Schlenker (ms) points out:

(11) If tomorrow I call the chair, who in turn calls the dean, we'll be in deep trouble.

Even more evidence against multidimensionality

Utterance-final supplements seem to be deniable (from AnderBois et al. 2010):

(12) a. He told her about Luke, who loved to have his picture taken.

b. No, he didn't like that at all.

c. No, he told her about Noah.

Even more evidence against multidimensionality

Utterance-final supplements seem to be deniable (from AnderBois et al. 2010):

(12) a. He told her about Luke, who loved to have his picture taken.

b. No, he didn't like that at all.

c. No, he told her about Noah.

They also take on a nonspeaker orientation in the right context (from Amaral et al. 2007):

Context

Joan is delusional, believing that a chip has been installed in her brain allowing her to speak multiple languages.

(13) Joan believes that her chip, which she had installed last month, has a twelve year guarantee.

Still more evidence against multidimensionality

There are even cases where content in a supplement appears to be at-issue after all (adapted from Pollard and Smith 2011):

Context

The interlocutors are participants at a math conference.

(14) a. Do you know whether the axiom of Choice is independent of ZF?

b. Well, Paul Cohen, who proved it is back in 1963, is sitting in the back row. So you can go ask him.

Here, the supplement *who proved it is back in 1963* is directly addressing the question raised in the immediately preceding utterance.

Back to the drawing board

So an account of supplements has to allow them to both

1. Scope narrow with respect to operators sometimes, but also
2. Project sometimes, escaping the effects of all operators

Back to the drawing board

So an account of supplements has to allow them to both

1. Scope narrow with respect to operators sometimes, but also
2. Project sometimes, escaping the effects of all operators

- Seeing projection as obligatory widest scope, the problem comes down to saying when a supplement is allowed to scope narrow and when it must scope widest (i.e., project)

Back to the drawing board

So an account of supplements has to allow them to both

1. Scope narrow with respect to operators sometimes, but also
2. Project sometimes, escaping the effects of all operators

- Seeing projection as obligatory widest scope, the problem comes down to saying when a supplement is allowed to scope narrow and when it must scope widest (i.e., project)
- Pretheoretically, the account goes like this:
  - A supplement's content is directly integrated into its generalized quantifier (GQ) anchor, giving it all the scope possibilities of the anchor
  - Whether a supplement must scope wide or may scope narrow derives from independent processes that impact its anchor

The comma intonation

The good news is that all the semantic work can be done by a single definition. Here it is:

$$\textsc{comma} =_{\text{def}} \lambda_{QDE}.(Q\,D)\ \textsc{and}\ (\textsc{the}\,D\,E)$$

The comma intonation

The good news is that all the semantic work can be done by a single definition. Here it is:

$$\textsc{comma} =_{\text{def}} \lambda_{QDE}.(Q\,D)\ \textsc{and}\ (\textsc{the}\,D\,E)$$

1. A dynamic GQ Q is applied to the supplement denotation D

The comma intonation

The good news is that all the semantic work can be done by a single definition. Here it is:

$$\text{COMMA} =_{\text{def}} \lambda_{QDE}.(Q\,D)\ \text{AND}\ (\text{THE}\,D\,E)$$

1. A dynamic GQ Q is applied to the supplement denotation D
2. The result is then conjoined via dynamic conjunction

The comma intonation

The good news is that all the semantic work can be done by a single definition. Here it is:

$$\textsc{comma} =_{\text{def}} \lambda_{QDE}.(Q\,D)\ \textsc{and}\ (\textsc{the}\,D\,E)$$

1. A dynamic GQ Q is applied to the supplement denotation D
2. The result is then conjoined via dynamic conjunction
3. to the result of passing the most salient referent with the property D to the scope E

The comma intonation

The good news is that all the semantic work can be done by a single definition. Here it is:

$$\text{COMMA} =_{\text{def}} \lambda_{QDE}.(Q\,D)\ \text{AND}\ (\text{THE}\,D\,E)$$

1. A dynamic GQ Q is applied to the supplement denotation D
2. The result is then conjoined via dynamic conjunction
3. to the result of passing the most salient referent with the property D to the scope E

The effects of this definition are that

- Supplements can participate in scope interactions along with their anchors
- Whatever scope preferences apply to their anchors apply to supplements as well
- Via a formal theorem linking dynamic conjunction to parataxis, a widest-scoping supplement generates a separate update, i.e., proposal

Projection I

The following example has two readings under this semantics.

(15) Lance, a doper, didn't win the Tour de France last year.

Projection I

The following example has two readings under this semantics.

(15) Lance, a doper, didn't win the Tour de France last year.

They are:

$$\textsc{not}\,(\textsc{comma lance}\,(\textsc{pred a doper})\,\textsc{win})$$
$$= \textsc{not}\,(\textsc{lance}\,(\textsc{pred a doper})\,\textsc{and the}\,(\textsc{pred a doper})\,\textsc{win})$$

and

$$\textsc{comma lance}\,(\textsc{pred a doper})\,\lambda_n.\textsc{not}\,(\textsc{win}\,n))$$
$$= \textsc{lance}\,(\textsc{pred a doper})\,\textsc{and the}\,(\textsc{pred a doper})\,\lambda_n.\textsc{not}\,(\textsc{win}\,n)$$

Projection I

The following example has two readings under this semantics.

(15) Lance, a doper, didn't win the Tour de France last year.

They are:

$$\begin{aligned}&\textsc{not}\,(\textsc{comma lance}\,(\textsc{pred a doper})\,\textsc{win})\\&=\textsc{not}\,(\textsc{lance}\,(\textsc{pred a doper})\,\textsc{and the}\,(\textsc{pred a doper})\,\textsc{win})\end{aligned}$$

and

$$\begin{aligned}&\textsc{comma lance}\,(\textsc{pred a doper})\,\lambda_n.\textsc{not}\,(\textsc{win}\,n))\\&=\textsc{lance}\,(\textsc{pred a doper})\,\textsc{and the}\,(\textsc{pred a doper})\,\lambda_n.\textsc{not}\,(\textsc{win}\,n)\end{aligned}$$

The second of these is the projective reading, because it separates the implication of doping from the implication of not winning.

Projection II

- The projective reading for (15) is preferred because its proper name anchor *Lance*, like all definites, prefers to scope as wide as possible, following Kamp and Reyle (1993), Bos (2003), and Roberts (2005)

Projection II

- The projective reading for (15) is preferred because its proper name anchor *Lance*, like all definites, prefers to scope as wide as possible, following Kamp and Reyle (1993), Bos (2003), and Roberts (2005)
- As for examples like

  (5) Every boxer has a coach, a famous one,
  (Nouwen, 2014)

  the narrow-scope reading is preferred because of the general preference for surface over inverse scope

Talk outline

(Re)characterizing supplements
- A fresh look at the data
- A new approach

The syntax/semantics interface
- The formalism
- Generalized quantifiers and supplements
- Supplement (non)projection
- Finer points

Comparison with other accounts

Wrapping up

Dynamic Categorial Grammar

- The analysis is built in *Dynamic Categorial Grammar* (Martin and Pollard, 2014)
- This grammar formalism follows the thread of multi-component categorial syntax, in the tradition of Oehrle (1994), de Groote (2001), Muskens (2007), Mihaliček (2012), and Worth (2014)
- Signs are derived as triples

$$\varphi \; ; \; \tau \; ; \; \sigma \; ,$$

Dynamic Categorial Grammar

- The analysis is built in *Dynamic Categorial Grammar* (Martin and Pollard, 2014)
- This grammar formalism follows the thread of multi-component categorial syntax, in the tradition of Oehrle (1994), de Groote (2001), Muskens (2007), Mihaliček (2012), and Worth (2014)
- Signs are derived as triples

$$\varphi \; ; \tau \; ; \sigma \; ,$$

where

- φ represents the *phenogrammar*, or surface form in simple type theory

Dynamic Categorial Grammar

- The analysis is built in *Dynamic Categorial Grammar* (Martin and Pollard, 2014)
- This grammar formalism follows the thread of multi-component categorial syntax, in the tradition of Oehrle (1994), de Groote (2001), Muskens (2007), Mihaliček (2012), and Worth (2014)
- Signs are derived as triples

$$\varphi \; ; \; \tau \; ; \; \sigma \; ,$$

where

  - φ represents the *phenogrammar*, or surface form in simple type theory
  - τ encodes the underlying combinatorics (*tectogrammar*) in linear logic

Dynamic Categorial Grammar

- The analysis is built in *Dynamic Categorial Grammar* (Martin and Pollard, 2014)
- This grammar formalism follows the thread of multi-component categorial syntax, in the tradition of Oehrle (1994), de Groote (2001), Muskens (2007), Mihaliček (2012), and Worth (2014)
- Signs are derived as triples

$$\varphi \; ; \tau \; ; \sigma \; ,$$

where

- φ represents the *phenogrammar*, or surface form in simple type theory
- τ encodes the underlying combinatorics (*tectogrammar*) in linear logic
- σ models the semantics in a dependent type theory

Dynamic Categorial Grammar

- The analysis is built in *Dynamic Categorial Grammar* (Martin and Pollard, 2014)
- This grammar formalism follows the thread of multi-component categorial syntax, in the tradition of Oehrle (1994), de Groote (2001), Muskens (2007), Mihaliček (2012), and Worth (2014)
- Signs are derived as triples

$$\varphi \; ; \tau \; ; \sigma \; ,$$

  where
  - φ represents the *phenogrammar*, or surface form in simple type theory
  - τ encodes the underlying combinatorics (*tectogrammar*) in linear logic
  - σ models the semantics in a dependent type theory
- The semantics is the compositional dynamic semantics of Martin and Pollard (2012a,b, 2014) and Martin (2013, in press)

Grammar rules

$$\vdash a \,;\, B \,;\, c \quad \text{(Lexical Entry)}$$

$$x \,;\, A \,;\, y \vdash x \,;\, A \,;\, y \quad \text{(Trace)}$$

$$\frac{\Gamma, x \,;\, A \,;\, y \vdash a \,;\, B \,;\, c}{\Gamma \vdash (\lambda_x a) \,;\, A \multimap B \,;\, (\lambda_y c)} \text{ (Hypothetical Proof)}$$

$$\frac{\Gamma \vdash f \,;\, B \multimap C \,;\, g \qquad \Delta \vdash a \,;\, B \,;\, c}{\Gamma, \Delta \vdash (f\, a) \,;\, C \,;\, (g\, c)} \text{ (Modus Ponens)}$$

The core rules of the grammar are very simple, allowing the introduction of constants (lexical entries) and variables (traces), variable binding and application.

GQ phenogrammar

Generalized quantifiers like *Some cyclist* in (16) lower their phenogrammar into position.

(16) Some cyclist won the Tour de France.

The analysis of (16) uses the following lexical entries:

$$\vdash \lambda_{sf}.f\ (\text{some} \cdot s)\ ;\ \text{N} \multimap (\text{NP} \multimap \text{S}) \multimap \text{S}\ ;\ \text{A}$$

$$\vdash \text{cyclist}\ ;\ \text{N}\ ;\ \textsc{cyclist}$$

$$\vdash \lambda_{s}.s \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\ ;\ \text{NP} \multimap \text{S}\ ;\ \textsc{win-tdf}$$

GQ phenogrammar

Generalized quantifiers like *Some cyclist* in (16) lower their phenogrammar into position.

(16) Some cyclist won the Tour de France.

The analysis of (16) uses the following lexical entries:

$$\vdash \lambda_{sf}.f\ (\text{some} \cdot s)\ ;\ \text{N} \multimap (\text{NP} \multimap \text{S}) \multimap \text{S}\ ;\ \textsc{a}$$

$$\vdash \text{cyclist}\ ;\ \text{N}\ ;\ \textsc{cyclist}$$

$$\vdash \lambda_{s}.s \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\ ;\ \text{NP} \multimap \text{S}\ ;\ \textsc{win-tdf}$$

Together, these can be used to derive the sign

$$\vdash \text{some} \cdot \text{cyclist} \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\ ;\ \text{S}\ ;\ \textsc{a cyclist win-tdf}$$

Lexical entry for utterance-medial supplements

The comma intonation surrounding a mid-utterance supplement is lexically specified as

$$\vdash \lambda_{fsg}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\;;\mathrm{QP} \multimap \mathrm{Pred} \multimap \mathrm{QP}\;;\textsc{comma}$$

where QP abbreviates $(\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{S}$.

Lexical entry for utterance-medial supplements

The comma intonation surrounding a mid-utterance supplement is lexically specified as

$$\vdash \lambda_{fsg}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\,;\,\mathrm{QP} \multimap \mathrm{Pred} \multimap \mathrm{QP}\,;\,\textsc{comma}$$

where QP abbreviates $(\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{S}$. This lexical entry

1. Injects into a GQ f the result of

Lexical entry for utterance-medial supplements

The comma intonation surrounding a mid-utterance supplement is lexically specified as

$$\vdash \lambda_{f\,s\,g}.g\,(f\,\lambda_t.t \cdot (\text{comma}\,s))\,;\,\text{QP} \multimap \text{Pred} \multimap \text{QP}\,;\,\textsc{comma}$$

where QP abbreviates $(\text{NP} \multimap \text{S}) \multimap \text{S}$. This lexical entry

1. Injects into a GQ f the result of
2. Wrapping the apposition s in the comma intonation,

Lexical entry for utterance-medial supplements

The comma intonation surrounding a mid-utterance supplement is lexically specified as

$$\vdash \lambda_{fsg}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\;;\mathrm{QP} \multimap \mathrm{Pred} \multimap \mathrm{QP}\;;\textsc{comma}$$

where QP abbreviates $(\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{S}$. This lexical entry

1. Injects into a GQ f the result of
2. Wrapping the apposition s in the comma intonation,
3. Applying the verb phrase g to the new GQ

Lexical entry for utterance-medial supplements

The comma intonation surrounding a mid-utterance supplement is lexically specified as

$$\vdash \lambda_{fsg}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\,;\,\mathrm{QP} \multimap \mathrm{Pred} \multimap \mathrm{QP}\,;\,\textsc{comma}$$

where QP abbreviates $(\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{S}$. This lexical entry

1. Injects into a GQ f the result of
2. Wrapping the apposition s in the comma intonation,
3. Applying the verb phrase g to the new GQ

The tecto type Pred is derived by applying the *predicativizer* to a GQ:

$$\vdash \lambda_f.f\,\lambda_s.s\,;\,\mathrm{QP} \multimap \mathrm{Pred}\,;\,\textsc{pred}$$

Here, $\textsc{pred} =_{\text{def}} \lambda_{Qn}.Q_m.m\ \textsc{equals}\ n$.

Simple example I

To model

(17) Some cyclist, a doper, won the Tour de France,

we just need to add the lexical entry

$$\vdash \text{doper} ; \text{N} ; \text{DOPER} .$$

Simple example II

We derive

- The GQ with a slot for the apposition, as

$$\vdash \lambda_{sg}.g\,(\text{some} \cdot \text{cyclist} \cdot (\mathsf{comma}\, s)); \text{Pred} \multimap \text{QP}; \textsc{comma}\ (\textsc{a cyclist})$$

Simple example II

We derive

- The GQ with a slot for the apposition, as

$$\vdash \lambda_{sg}.g\,(\text{some} \cdot \text{cyclist} \cdot (\mathsf{comma}\, s)); \text{Pred} \multimap \text{QP}; \textsc{comma}\ (\textsc{a cyclist})$$

- The apposition itself, as

$$\vdash \text{a} \cdot \text{doper} \ ; \ \text{Pred} \ ; \ \textsc{pred a doper}$$

Simple example II

We derive

- The GQ with a slot for the apposition, as

$$\vdash \lambda_{sg}.g\,(\text{some} \cdot \text{cyclist} \cdot (\mathsf{comma}\, s)); \text{Pred} \multimap \text{QP}; \textsc{comma}\ (\textsc{a cyclist})$$

- The apposition itself, as

$$\vdash \text{a} \cdot \text{doper} \ ; \ \text{Pred} \ ; \ \textsc{pred a doper}$$

- A new GQ with the apposition integrated, as

$$\vdash \lambda_g.g\,(\text{some} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper})) \ ; \ \text{QP} \ ; \ \textsc{comma}\ (\textsc{a cyclist})\ (\textsc{pred a doper})$$

Simple example II

We derive

- The GQ with a slot for the apposition, as

$$\vdash \lambda_{sg}.g\,(\text{some} \cdot \text{cyclist} \cdot (\mathsf{comma}\, s)); \text{Pred} \multimap \text{QP}; \textsc{comma}\ (\textsc{a cyclist})$$

- The apposition itself, as

$$\vdash \text{a} \cdot \text{doper}\ ;\ \text{Pred}\ ;\ \textsc{pred a doper}$$

- A new GQ with the apposition integrated, as

$$\vdash \lambda_g.g\,(\text{some} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}))\ ;\ \text{QP}\ ;\ \textsc{comma}\ (\textsc{a cyclist})\ (\textsc{pred a doper})$$

- A sign representing the entire utterance (17), as

$$\vdash \text{some} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}) \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\ ;\ \text{S}\ ;\ \textsc{comma}\ (\textsc{a cyclist})\ (\textsc{pred a doper})\ \textsc{win-tdf}$$

Ruling out quantificational anchors

(18) # Every cyclist, a doper, won the Tour de France.

can be modeled by adding a lexical entry for the determiner *Every*:

$$\vdash \lambda_{sf}.f\,(\text{every} \cdot s)\,;\,\text{N} \multimap \text{QP}\,;\,\textsc{every}$$

Ruling out quantificational anchors

(18) # Every cyclist, a doper, won the Tour de France.

can be modeled by adding a lexical entry for the determiner *Every*:

$$\vdash \lambda_{sf}.f\,(\text{every} \cdot s)\,;\,\text{N} \multimap \text{QP}\,;\,\textsc{every}$$

This allows a derivation for (18) as

$$\vdash \text{every} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}) \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\,;\,\text{S}\,;$$
$$\textsc{comma}\,(\textsc{every cyclist})\,(\textsc{pred a doper})\,\textsc{win-tdf}$$

Ruling out quantificational anchors

(18) # Every cyclist, a doper, won the Tour de France.

can be modeled by adding a lexical entry for the determiner *Every*:

$$\vdash \lambda_{sf}.f\,(\text{every} \cdot s)\,;\,\text{N} \multimap \text{QP}\,;\,\textsc{every}$$

This allows a derivation for (18) as

$$\vdash \text{every} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}) \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\,;\,\text{S}\,;$$
$$\textsc{comma}\,(\textsc{every cyclist})\,(\textsc{pred a doper})\,\textsc{win-tdf}$$

But this semantics is infelicitous, as desired, since it reduces to

$$(\textsc{every cyclist}\,(\textsc{pred a doper}))\textsc{and}(\textsc{the}\,(\textsc{pred a doper})\,\textsc{win-tdf}).$$

The cyclist referent gets trapped in the scope of EVERY, unavailable for later anaphora via THE.

Predicative supplements I

Some supplements have a predicative component, as in

(19) a. Lance, { as / who is } a doper, got sanctioned by the UCI.

b. Lance, who is famous, got sanctioned by the UCI.

Predicative supplements I

Some supplements have a predicative component, as in

(19) a. Lance, { as / who is } a doper, got sanctioned by the UCI.

b. Lance, who is famous, got sanctioned by the UCI.

To model these, we add the following lexical entries:

$$\vdash \lambda_f.\text{as} \cdot (f\ \lambda_s.s)\ ;\ \text{QP} \multimap \text{Pred}\ ;\ \text{PRED}$$

$$\vdash \lambda_f.\text{is} \cdot (f\ \lambda_s.s)\ ;\ \text{QP} \multimap \text{Be}_{\text{pred}}\ ;\ \text{PRED}$$

$$\vdash \lambda_s.\text{is} \cdot s\ ;\ \text{AdjP} \multimap \text{Be}_{\text{pred}}\ ;\ \lambda_D.D$$

$$\vdash \lambda_s.\text{who} \cdot s\ ;\ \text{Be}_{\text{pred}} \multimap \text{Pred}\ ;\ \lambda_D.D$$

(Here Be_{pred} is the type of copular predicatives.)

Predicative supplements II

These lexical entries let us derive the following for examples like (19):

$$\vdash \text{as} \cdot \text{a} \cdot \text{doper} \; ; \; \text{Pred} \; ; \; (\textsc{pred a doper})$$

$$\vdash \text{who} \cdot \text{is} \cdot \text{a} \cdot \text{doper} \; ; \; \text{Pred} \; ; \; (\textsc{pred a doper})$$

$$\vdash \text{who} \cdot \text{is} \cdot \text{famous} \; ; \; \text{Pred} \; ; \; \textsc{famous}$$

Predicative supplements II

These lexical entries let us derive the following for examples like (19):

$$\vdash \text{as} \cdot \text{a} \cdot \text{doper} \; ; \; \text{Pred} \; ; \; (\textsc{pred a doper})$$
$$\vdash \text{who} \cdot \text{is} \cdot \text{a} \cdot \text{doper} \; ; \; \text{Pred} \; ; \; (\textsc{pred a doper})$$
$$\vdash \text{who} \cdot \text{is} \cdot \text{famous} \; ; \; \text{Pred} \; ; \; \textsc{famous}$$

But no proof is available for any of these:

* as who is a doper
* as as as a doper
* (who) as famous
* who is as a doper
* who as a doper
* who a doper
* who famous
* who who who is a doper

Nonpredicative supplements

The nonrestrictive relativizers have straightforward lexical entries.

$$\vdash \lambda_f.\text{who} \cdot (f\ \mathbf{e})\ ;\ (\text{NP} \multimap \text{S}) \multimap \text{Pred}\ ;\ \lambda_D.D$$

$$\vdash \lambda_f.\text{which} \cdot (f\ \mathbf{e})\ ;\ (\text{NP} \multimap \text{S}) \multimap \text{Pred}\ ;\ \lambda_D.D$$

Nonpredicative supplements

The nonrestrictive relativizers have straightforward lexical entries.

$$\vdash \lambda_f.\text{who} \cdot (f\ \mathbf{e})\ ;\ (\text{NP} \multimap \text{S}) \multimap \text{Pred}\ ;\ \lambda_D.D$$
$$\vdash \lambda_f.\text{which} \cdot (f\ \mathbf{e})\ ;\ (\text{NP} \multimap \text{S}) \multimap \text{Pred}\ ;\ \lambda_D.D$$

For

(20) Lance, who won the Tour de France, is from Texas.

these lexical entries allow us to derive

$$\vdash \text{who} \cdot \mathbf{e} \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\ ;\ \text{Pred}\ ;\ \textsc{win-tdf}$$

The pheno term **e** is the empty string, so the surface form is equivalent to who · won · the · TdF.

Utterance-final supplements I

Getting supplements like

(21) Some cyclist met Lance, a doper.

requires a modified lexical entry for the comma:

$$\vdash \lambda_{fgs}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\,;\,\mathrm{QP} \multimap (\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{Pred} \multimap \mathrm{S}\,;\,\textsc{comma}$$

The difference between this entry and the one for utterance-medial supplements is just argument order.

Utterance-final supplements I

Getting supplements like

(21) Some cyclist met Lance, a doper.

requires a modified lexical entry for the comma:

$$\vdash \lambda_{fgs}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\,;\,\mathrm{QP} \multimap (\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{Pred} \multimap \mathrm{S}\,;\,\textsc{comma}$$

The difference between this entry and the one for utterance-medial supplements is just argument order.

- The anchor is still taken as the first argument, but here

Utterance-final supplements I

Getting supplements like

(21) Some cyclist met Lance, a doper.

requires a modified lexical entry for the comma:

$$\vdash \lambda_{fgs}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\,;\,\mathrm{QP} \multimap (\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{Pred} \multimap \mathrm{S}\,;\,\textsc{comma}$$

The difference between this entry and the one for utterance-medial supplements is just argument order.

- The anchor is still taken as the first argument, but here
- The scope VP is taken second, while

Utterance-final supplements I

Getting supplements like

(21) Some cyclist met Lance, a doper.

requires a modified lexical entry for the comma:

$$\vdash \lambda_{fgs}.g\,(f\,\lambda_t.t \cdot (\mathsf{comma}\,s))\,;\,\mathrm{QP} \multimap (\mathrm{NP} \multimap \mathrm{S}) \multimap \mathrm{Pred} \multimap \mathrm{S}\,;\,\textsc{comma}$$

The difference between this entry and the one for utterance-medial supplements is just argument order.

- The anchor is still taken as the first argument, but here
- The scope VP is taken second, while
- The apposition is taken last

Utterance-final supplements II

After adding a lexical entry corresponding to *Lance*,

$$\vdash \lambda_f.f\ \text{lance}\ ;\ \text{QP}\ ;\ \textsc{lance}\ ,$$

we can now derive the following for (21):

$$\vdash \text{some} \cdot \text{cyclist} \cdot \text{met} \cdot \text{lance} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper})\ ;\ \text{S}\ ;$$
$$\textsc{comma lance}\ \lambda_m.(\textsc{a cyclist})_n.(\textsc{met}\ m\ n)\ (\textsc{pred a doper})$$

Utterance-final supplements II

After adding a lexical entry corresponding to *Lance*,

$$\vdash \lambda_f.f\ \text{lance}\ ;\ \text{QP}\ ;\ \textsc{lance}\ ,$$

we can now derive the following for (21):

$$\vdash \text{some} \cdot \text{cyclist} \cdot \text{met} \cdot \text{lance} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper})\ ;\ \text{S}\ ;$$
$$\textsc{comma lance}\ \lambda_m.(\textsc{a cyclist})_n.(\textsc{met}\ m\ n)\ (\textsc{pred a doper})$$

- Following the model of more recent proposals being more deniable due to salience effects (Koev, 2012; Ginzburg, 2012; Martin, in press), the semantics predicts that utterance-final supplements are easier to deny

Utterance-final supplements II

After adding a lexical entry corresponding to *Lance*,

$$\vdash \lambda_f.f\ \text{lance}\ ;\ \text{QP}\ ;\ \textsc{lance}\ ,$$

we can now derive the following for (21):

$$\vdash \text{some} \cdot \text{cyclist} \cdot \text{met} \cdot \text{lance} \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper})\ ;\ \text{S}\ ;$$
$$\textsc{comma lance}\ \lambda_m.(\textsc{a cyclist})_n.(\textsc{met}\ m\ n)\ (\textsc{pred a doper})$$

- Following the model of more recent proposals being more deniable due to salience effects (Koev, 2012; Ginzburg, 2012; Martin, in press), the semantics predicts that utterance-final supplements are easier to deny
- This effect arises for (21) because its semantics reduces to

$$(\textsc{lance}_m.(\textsc{a cyclist})_n.\textsc{met}\ m\ n)\ \textsc{and}$$
$$\textsc{the}\ (\lambda_m(\textsc{a cyclist})_n.\textsc{met}\ m\ n)\ (\textsc{pred a doper})$$

A projecting supplement

The variant of (15) in

(15′) It's not true that Lance, a doper, won the Tour de France.

requires extensions to the lexicon for negation.

$$\vdash \lambda_s.\text{it}'\text{s} \cdot \text{not} \cdot \text{true} \cdot \text{that} \cdot s \; ; \; \text{S} \multimap \text{S} \; ; \; \text{NOT}$$

A projecting supplement

The variant of (15) in

(15′) It's not true that Lance, a doper, won the Tour de France.

requires extensions to the lexicon for negation.

$$\vdash \lambda_s.\text{it}'\text{s} \cdot \text{not} \cdot \text{true} \cdot \text{that} \cdot s \; ; \; \text{S} \multimap \text{S} \; ; \; \text{NOT}$$

We then derive the two readings of (15′), both with identical syntax:

$\vdash$ it · is · not · true · that · lance · comma (a · doper) · won · the · TdF ; S ;
NOT (COMMA LANCE (PRED A DOPER) WIN-TDF)

$\vdash$ it · is · not · true · that · lance · comma (a · doper) · won · the · TdF ; S ;
(COMMA LANCE (PRED A DOPER))$_n$.NOT (WIN-TDF n)

The second, preferred reading is the projective one.

A nonprojecting supplement

As for

(5′) Every boxer has a coach, who is famous,

we derive both of the following:

$\vdash$ every · boxer · has · a · coach · comma(who · is · famous) ; S ;
$(\text{EVERY BOXER})_n.\text{COMMA}\ (\text{A COACH})\ \lambda_m.(\text{HAVE}\ m\ n)\ \text{FAMOUS}$

$\vdash$ every · boxer · has · a · coach · comma(who · is · famous) ; S ;
$\text{COMMA}\ (\text{A COACH})\ \lambda_m.(\text{EVERY BOXER})_n.(\text{HAVE}\ m\ n)\ \text{FAMOUS}$

The first of these is the preferred reading because it corresponds to the surface scoping.

A nonprojecting supplement

As for

(5′) Every boxer has a coach, who is famous,

we derive both of the following:

$$\vdash \text{every} \cdot \text{boxer} \cdot \text{has} \cdot \text{a} \cdot \text{coach} \cdot \mathsf{comma}(\text{who} \cdot \text{is} \cdot \text{famous}) \,;\, \mathrm{S} \,;$$
$$(\textsc{every boxer})_n.\textsc{comma}\ (\textsc{a coach})\ \lambda_m.(\textsc{have}\ m\ n)\ \textsc{famous}$$
$$\vdash \text{every} \cdot \text{boxer} \cdot \text{has} \cdot \text{a} \cdot \text{coach} \cdot \mathsf{comma}(\text{who} \cdot \text{is} \cdot \text{famous}) \,;\, \mathrm{S} \,;$$
$$\textsc{comma}\ (\textsc{a coach})\ \lambda_m.(\textsc{every boxer})_n.(\textsc{have}\ m\ n)\ \textsc{famous}$$

The first of these is the preferred reading because it corresponds to the surface scoping. Expanding its semantics shows why the supplement doesn't project:

$$(\textsc{every boxer})_n.(\textsc{a coach})_m.(\textsc{have}\ m\ n)\ \textsc{and}$$
$$\textsc{the}\ \lambda_m.(\textsc{have}\ m\ n)\ \textsc{famous}$$

Stacking

Supplements can also be stacked, as in

(22) Lance, a cyclist, a doper, won the Tour de France,

which is modeled by

$$\vdash \text{lance} \cdot \mathsf{comma}\,(\text{a} \cdot \text{cyclist}) \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}) \cdot \text{won} \cdot \text{the} \cdot \text{TdF} \,;\, \text{S} \,;$$

$$\textsc{comma}\,(\textsc{comma}\ \textsc{lance}\,(\textsc{pred}\ \textsc{a}\ \textsc{cyclist}))\,(\textsc{pred}\ \textsc{a}\ \textsc{doper})\ \textsc{win-tdf}$$

Stacking

Supplements can also be stacked, as in

(22) Lance, a cyclist, a doper, won the Tour de France,

which is modeled by

$$\vdash \text{lance} \cdot \mathsf{comma}\,(\text{a} \cdot \text{cyclist}) \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}) \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\,;\,\mathrm{S}\,;$$

$$\textsc{comma}\,(\textsc{comma}\ \textsc{lance}\,(\textsc{pred}\ \textsc{a}\ \textsc{cyclist}))\,(\textsc{pred}\ \textsc{a}\ \textsc{doper})\ \textsc{win-tdf}$$

The semantics simply chains together the supplements by dynamic conjunction:

$$\begin{aligned}&(\textsc{lance}\,(\textsc{pred}\ \textsc{a}\ \textsc{cyclist}))\ \textsc{and}\\ &\quad(\textsc{the}\,(\textsc{pred}\ \textsc{a}\ \textsc{cyclist})\,(\textsc{pred}\ \textsc{a}\ \textsc{doper}))\ \textsc{and}\\ &\quad(\textsc{the}\,(\textsc{pred}\ \textsc{a}\ \textsc{doper})\ \textsc{win-tdf})\end{aligned}$$

Stacking

Supplements can also be stacked, as in

(22) Lance, a cyclist, a doper, won the Tour de France,

which is modeled by

$$\vdash \text{lance} \cdot \mathsf{comma}\,(\text{a} \cdot \text{cyclist}) \cdot \mathsf{comma}\,(\text{a} \cdot \text{doper}) \cdot \text{won} \cdot \text{the} \cdot \text{TdF}\,;\, \mathrm{S}\,;$$
$$\textsc{comma}\,(\textsc{comma lance}\,(\textsc{pred a cyclist}))\,(\textsc{pred a doper})\,\textsc{win-tdf}$$

The semantics simply chains together the supplements by dynamic conjunction:

$$\begin{aligned}&(\textsc{lance}\,(\textsc{pred a cyclist}))\ \textsc{and}\\ &\quad(\textsc{the}\,(\textsc{pred a cyclist})\,(\textsc{pred a doper}))\ \textsc{and}\\ &\quad(\textsc{the}\,(\textsc{pred a doper})\,\textsc{win-tdf})\end{aligned}$$

Stacking utterance-final supplements is slightly more complicated, because hypothetical proof is required.

Anaphora between supplements and other content

Because the semantics is dynamic, anaphora works as expected. For example,

(23) Melanie$_i$, who bought herself$_i$ a car$_j$, met some cyclist, its$_j$ former owner.

gets the desired phenogrammar, namely

$$\begin{aligned}&\text{melanie} \cdot \mathsf{comma}\,(\text{who} \cdot \mathbf{e} \cdot \text{bought} \cdot \text{herself} \cdot \text{a} \cdot \text{car}) \cdot \\ &\quad \text{met} \cdot \text{some} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{its} \cdot \text{former} \cdot \text{owner})\end{aligned}$$

Anaphora between supplements and other content

Because the semantics is dynamic, anaphora works as expected. For example,

(23) Melanie$_i$, who bought herself$_i$ a car$_j$, met some cyclist, its$_j$ former owner.

gets the desired phenogrammar, namely

$$\text{melanie} \cdot \mathsf{comma}\,(\text{who} \cdot \mathbf{e} \cdot \text{bought} \cdot \text{herself} \cdot \text{a} \cdot \text{car}) \cdot$$
$$\text{met} \cdot \text{some} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{its} \cdot \text{former} \cdot \text{owner})$$

Its semantics shows how the anaphoric links are established

$$\textsc{comma}\ \textsc{melanie}\ (\textsc{pred}\ \lambda_n.\textsc{herself}_m.(\textsc{a}\ \textsc{car})_k.\textsc{buy}\ k\ m\ n)$$
$$\lambda_n.\textsc{comma}\ (\textsc{a}\ \textsc{cyclist})\ (\lambda_m(\textsc{met}\ m\ n))\ (\textsc{pred}\ \textsc{its}\ \textsc{owner})$$

- The reflexive *herself* is interpreted in a context containing *Melanie*

Anaphora between supplements and other content

Because the semantics is dynamic, anaphora works as expected. For example,

(23) Melanie$_i$, who bought herself$_i$ a car$_j$, met some cyclist, its$_j$ former owner.

gets the desired phenogrammar, namely

$$\begin{aligned}&\text{melanie} \cdot \mathsf{comma}\,(\text{who} \cdot \mathbf{e} \cdot \text{bought} \cdot \text{herself} \cdot \text{a} \cdot \text{car}) \cdot \\ &\quad \text{met} \cdot \text{some} \cdot \text{cyclist} \cdot \mathsf{comma}\,(\text{its} \cdot \text{former} \cdot \text{owner})\end{aligned}$$

Its semantics shows how the anaphoric links are established

$$\begin{aligned}&\textsc{comma melanie}\,(\textsc{pred}\,\lambda_n.\textsc{herself}_m.(\textsc{a car})_k.\textsc{buy}\,k\,m\,n) \\ &\quad \lambda_n.\textsc{comma}\,(\textsc{a cyclist})\,(\lambda_m(\textsc{met}\,m\,n))\,(\textsc{pred its owner})\end{aligned}$$

- The reflexive *herself* is interpreted in a context containing *Melanie*
- The context passed to the pronoun *its* contains a referent for *a car*

Talk outline

(Re)characterizing supplements
- A fresh look at the data
- A new approach

The syntax/semantics interface
- The formalism
- Generalized quantifiers and supplements
- Supplement (non)projection
- Finer points

Comparison with other accounts

Wrapping up

Empirical adequacy

Features of various accounts of supplements on the market:

Anaphora	AnderBois et al. (2010, 2015), Giorgolo and Asudeh (2012), Bekki and McCready (2014), this one
Deniability	AnderBois et al. (2010, 2015), Koev (2012), this one
Projection	Potts (2005), AnderBois et al. (2010, 2015), Kubota and Uegaki (2009), Giorgolo and Asudeh (2012), Koev (2012, 2014), Bekki and McCready (2014), Schlenker (ms), this one
Scope	Schlenker (ms), this one

Empirical adequacy

Features of various accounts of supplements on the market:

Anaphora	AnderBois et al. (2010, 2015), Giorgolo and Asudeh (2012), Bekki and McCready (2014), this one
Deniability	AnderBois et al. (2010, 2015), Koev (2012), this one
Projection	Potts (2005), AnderBois et al. (2010, 2015), Kubota and Uegaki (2009), Giorgolo and Asudeh (2012), Koev (2012, 2014), Bekki and McCready (2014), Schlenker (ms), this one
Scope	Schlenker (ms), this one
All of the above	(only) this one

Dedicated machinery required

What's needed to get the empirical coverage?
Other accounts:

- Complex transformations (McCawley, 1998; del Gobbo, 2007; Schlenker, ms) that have some undesirable implications
- *E-type pronouns* (del Gobbo, 2007)
- Special combinatory modes (Potts, 2005; AnderBois et al., 2010, 2015; Koev, 2012, 2014)
- Additional interpretation procedures (Potts's (2005) "parsetree interpretation")
- Continuation passing (Kubota and Uegaki, 2009)
- Monads (Giorgolo and Asudeh, 2012)
- Special-purpose operators (Bekki and McCready, 2014)

Dedicated machinery required

What's needed to get the empirical coverage?
Other accounts:

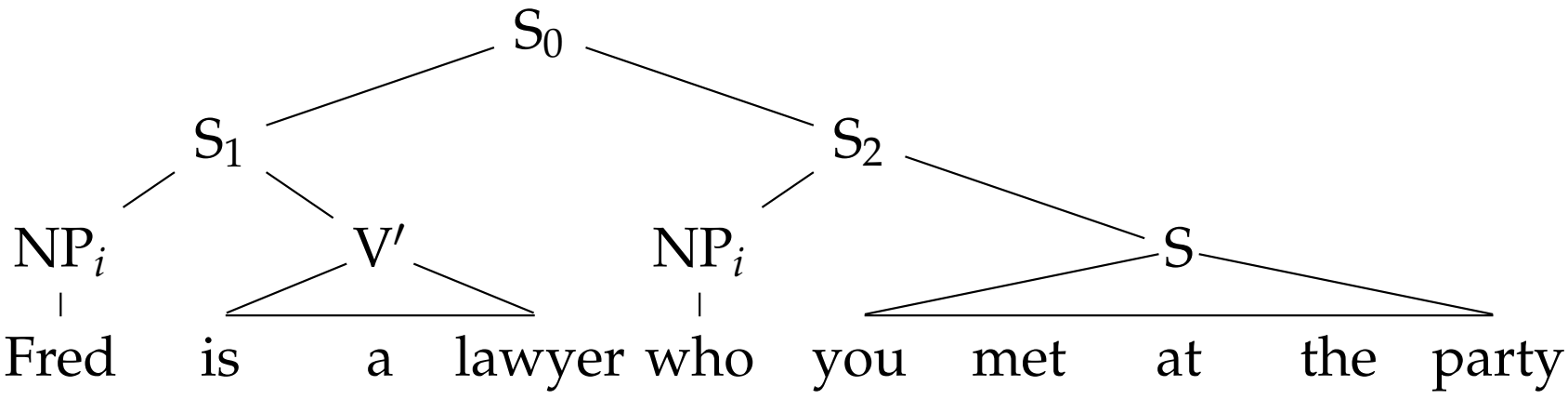
- Complex transformations (McCawley, 1998; del Gobbo, 2007; Schlenker, ms) that have some undesirable implications
- *E-type pronouns* (del Gobbo, 2007)
- Special combinatory modes (Potts, 2005; AnderBois et al., 2010, 2015; Koev, 2012, 2014)
- Additional interpretation procedures (Potts's (2005) "parsetree interpretation")
- Continuation passing (Kubota and Uegaki, 2009)
- Monads (Giorgolo and Asudeh, 2012)
- Special-purpose operators (Bekki and McCready, 2014)

This account:

- Just two lexical entries (!)

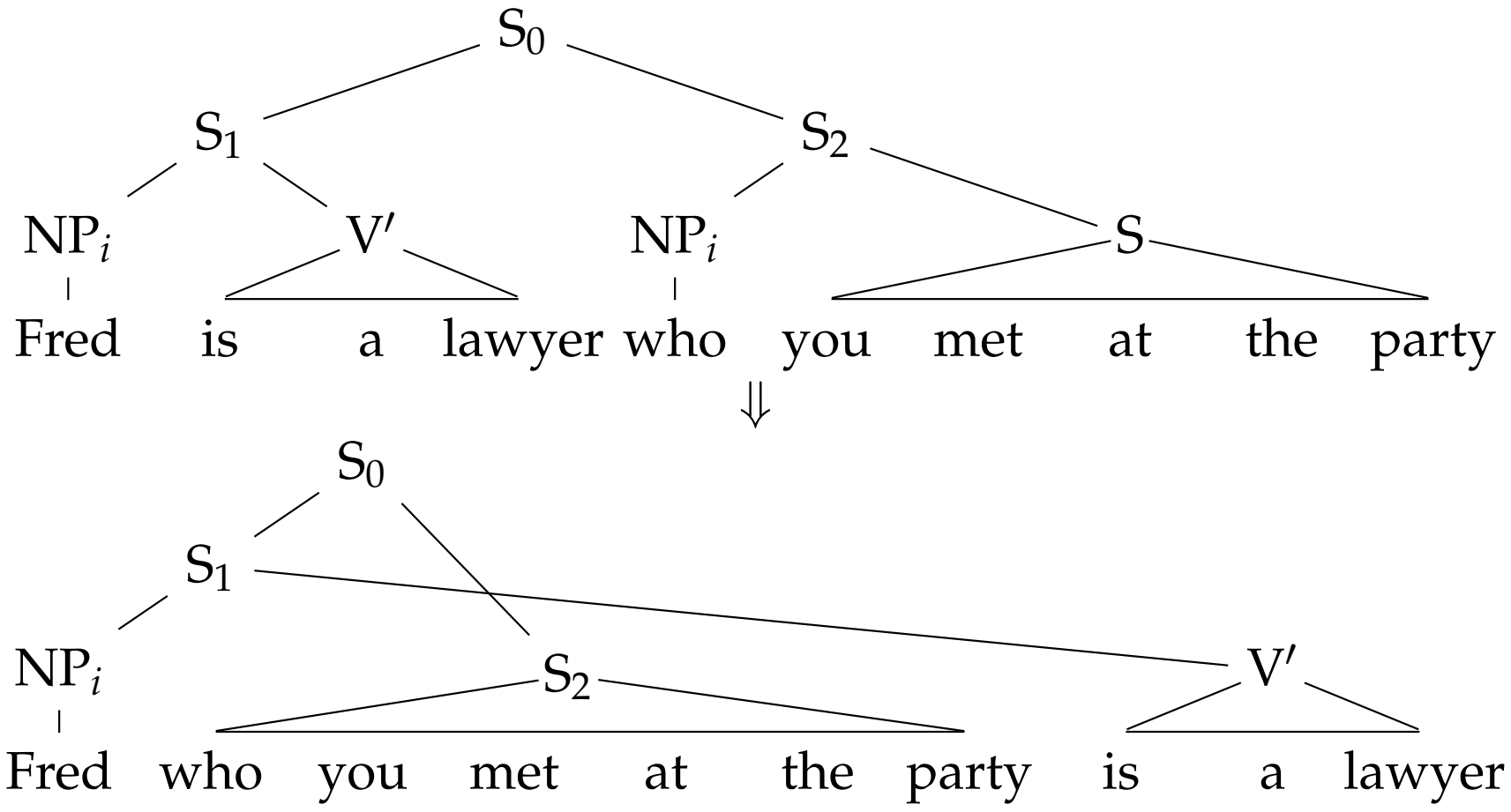
More than meets the eye I

In the transformational grammar accounts due to McCawley (1998), del Gobbo (2007), and Schlenker (2010, ms), supplements are treated as extraposed free-standing sentences



More than meets the eye I

In the transformational grammar accounts due to McCawley (1998), del Gobbo (2007), and Schlenker (2010, ms), supplements are treated as extraposed free-standing sentences



More than meets the eye II

- Schlenker (ms) points out that semantically, this approach departs from strong compositionality: the coindexation requirement makes a constituent's interpretation dependent on an adjacent constituent's interpretation

More than meets the eye II

- Schlenker (ms) points out that semantically, this approach departs from strong compositionality: the coindexation requirement makes a constituent's interpretation dependent on an adjacent constituent's interpretation
- And Potts (2005) notes that McCawley's transformation requires trees that don't observe *nontangling*

More than meets the eye II

- Schlenker (ms) points out that semantically, this approach departs from strong compositionality: the coindexation requirement makes a constituent's interpretation dependent on an adjacent constituent's interpretation
- And Potts (2005) notes that McCawley's transformation requires trees that don't observe *nontangling*
- Del Gobbo also needs to call on *E-type pronouns* for her account

Potts's (2005) "Logic of CIs"

In addition to disallowing interaction between supplements, Potts's account also requires

- A separate representation layer with a modified model-theoretic interpretation
- A special mode of combination for supplement content
- A specialized interpretation rule (*parsetree interpretation*)

Talk outline

(Re)characterizing supplements
- A fresh look at the data
- A new approach

The syntax/semantics interface
- The formalism
- Generalized quantifiers and supplements
- Supplement (non)projection
- Finer points

Comparison with other accounts

Wrapping up

Great taste, less filling!

Great taste This account, I would argue, has better empirical coverage than any other account so far:

- Both supplement scope and projection
- Anaphora between supplements and other content
- A model of supplement deniability
- Supplements in both medial and final positions
- Supplement stacking

Great taste, less filling!

Great taste This account, I would argue, has better empirical coverage than any other account so far:

- Both supplement scope and projection
- Anaphora between supplements and other content
- A model of supplement deniability
- Supplements in both medial and final positions
- Supplement stacking

Less filling Apart from two dedicated lexical entries, all the work is done by independently-motivated machinery:

- Noun phrases as generalized quantifiers
- Predicativization
- Discourse update and parataxis
- The standard dynamic anaphora model
- Scope preferences for quantifiers and definites

Great taste, less filling!

Great taste This account, I would argue, has better empirical coverage than any other account so far:

- Both supplement scope and projection
- Anaphora between supplements and other content
- A model of supplement deniability
- Supplements in both medial and final positions
- Supplement stacking

Less filling Apart from two dedicated lexical entries, all the work is done by independently-motivated machinery:

- Noun phrases as generalized quantifiers
- Predicativization
- Discourse update and parataxis
- The standard dynamic anaphora model
- Scope preferences for quantifiers and definites

(To be fair, part of the reduced complexity comes from the fact that the account only uses a single meaning dimension.)

Implications for categorial grammar

- The framework used here extends a minority tradition in CG that breaks up syntax into surface form and underlying combinatorics

Implications for categorial grammar

- The framework used here extends a minority tradition in CG that breaks up syntax into surface form and underlying combinatorics
- This move can be seen as borrowing a successful idea from formalisms like Head-driven Phrase Structure Grammar (HPSG) and Lexical-Functional Grammar (LFG)

Implications for categorial grammar

- The framework used here extends a minority tradition in CG that breaks up syntax into surface form and underlying combinatorics
- This move can be seen as borrowing a successful idea from formalisms like Head-driven Phrase Structure Grammar (HPSG) and Lexical-Functional Grammar (LFG)
- The account also sticks with the long-standing tradition in CG and other strongly lexicalist formalisms in doing almost all the work in the lexicon

Implications for categorial grammar

- The framework used here extends a minority tradition in CG that breaks up syntax into surface form and underlying combinatorics
- This move can be seen as borrowing a successful idea from formalisms like Head-driven Phrase Structure Grammar (HPSG) and Lexical-Functional Grammar (LFG)
- The account also sticks with the long-standing tradition in CG and other strongly lexicalist formalisms in doing almost all the work in the lexicon
- Taken together, these aspects of the account offer strong evidence that the two-component approach it uses is a good one

Thank you!

Acknowledgments for helpful comments on the syntax/semantics interface are due to Yusuke Kubota, Carl Pollard, and the workshop reviewers.

- The proceedings paper mostly details the syntax/semantics interface for supplements
- For more on the semantics, please check out my forthcoming paper in *Semantics and Pragmatics* (Martin, in press)
- Both are available on my website, `http://coffeeblack.org/`

References I

P. Amaral, C. Roberts, and E. A. Smith. Review of *The Logic of Conventional Implicatures* by Chris Potts. *Linguistics and Philosophy*, 30 (6):707–749, 2007. doi: 10.1007/s10988-008-9025-2.

S. AnderBois, A. Brasoveanu, and R. Henderson. Crossing the appositive/at-issue meaning boundary. In *20th Conference on Semantics and Linguistic Theory (SALT)*, 2010.

S. AnderBois, A. Brasoveanu, and R. Henderson. At-issue proposals and appositive impositions in discourse. *Journal of Semantics*, 32(1): 93–138, 2015. doi: 10.1093/jos/fft014.

D. Bekki and E. McCready. CI via DTS. In *11th International Workshop on Logic and Engineering of Natural Language Semantics (LENLS)*, pages 110–123, 2014.

J. Bos. Implementing the binding and accommodation theory for anaphora resolution and presupposition projection. *Computational Linguistics*, 29(2):179–210, 2003. doi: 10.1162/089120103322145306.

References II

P. de Groote. Towards abstract categorial grammars. In *Association for Computational Linguistics, 39th Annual Meeting and 10th Conference of the European Chapter*, 2001. doi: 10.3115/1073012.1073045.

F. del Gobbo. On the syntax and semantics of appositive relative clauses. In N. Dehé and Y. Kavalova, editors, *Parentheticals*, pages 173–201. John Benjamins, Amsterdam & Philadelphia, PA, 2007. doi: 10.1075/la.106.10del.

J. Ginzburg. *The Interactive Stance*. Oxford University Press, New York, NY and Oxford, 2012. doi: 10.1093/acprof:oso/9780199697922.001.0001.

G. Giorgolo and A. Asudeh. $\langle M, \eta, \star \rangle$ monads for conventional implicatures. In A. A. Guevara, A. Chernilovskaya, and R. Nouwen, editors, *Sinn und Bedeutung 16*, volume 1, Cambridge, MA, 2012. MIT Working Papers in Linguistics.

References III

H. Kamp and U. Reyle. *From Discourse to Logic: Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic, and Discourse Representation Theory*. Number 42 in Studies in Linguistics and Philosophy. Springer, Dordrecht, 1993. doi: 10.1007/978-94-017-1616-1.

T. Koev. On the information status of appositive relative clauses. In M. Aloni, V. Kimmelman, F. Roelofsen, G. W. Sassoon, K. Schulz, and M. Westera, editors, *Logic, Language and Meaning*, number 7218 in Lecture Notes in Computer Science, pages 401–410. Springer, Berlin and Heidelberg, 2012. doi: 10.1007/978-3-642-31482-7_41.

T. Koev. Two puzzles about appositives: Projection and perspective shift. In U. Exteberria, A. Fălăuş, A. Irurtzun, and B. Leferman, editors, *Sinn und Bedeutung 18*. University of the Basque Country, 2014.

References IV

Y. Kubota and W. Uegaki. Continuation-based semantics for conventional implicatures: The case of Japanese benefactives. In *19th Conference on Semantics and Linguistic Theory (SALT)*, 2009.

S. Martin. *The Dynamics of Sense and Implicature*. PhD thesis, Ohio State University, Columbus, OH, 2013.

S. Martin. Supplemental update. *Semantics and Pragmatics*, in press. (`http://semanticsarchive.net/Archive/TMzYTZhY/suppdate.pdf`).

S. Martin and C. Pollard. A higher-order theory of presupposition. *Studia Logica*, 100(4):727–751, 2012a. doi: 10.1007/s11225-012-9427-6.

S. Martin and C. Pollard. Hyperintensional dynamic semantics: Analyzing definiteness with enriched contexts. In P. de Groote and M.-J. Nederhof, editors, *Formal Grammar*, number 7395 in Lecture Notes in Computer Science, pages 114–129, Dordrecht, 2012b. Springer. doi: 10.1007/978-3-642-32024-8_8.

References V

S. Martin and C. Pollard. A dynamic categorial grammar. In G. Morrill, R. Muskens, R. Osswald, and F. Richter, editors, *19th Conference on Formal Grammar*, number 8612 in Lecture Notes in Computer Science, pages 138–154, Dordrecht, 2014. Springer. doi: 10.1007/978-3-662-44121-3_9.

J. D. McCawley. *The syntactic phenomena of English*. University of Chicago Press, Chicago, IL, second edition, 1998.

V. Mihaliček. *Serbo-Croatian Word Order: A Logical Approach*. PhD thesis, Ohio State University, Columbus, OH, 2012.

R. Muskens. Separating syntax and combinatorics in categorial grammar. *Research on Language and Computation*, 5(3):267–285, 2007. doi: 10.1007/s11168-007-9035-1.

References VI

R. Nouwen. A note on the projection of appositives. In E. McCready, K. Yabushita, and K. Yoshimoto, editors, *Formal Approaches to Semantics and Pragmatics: Japanese and Beyond*, number 95 in Studies in Linguistics and Philosophy. Springer, Dordrecht, 2014. doi: 10.1007/978-94-017-8813-7.

R. T. Oehrle. Term-labeled categorial type systems. *Linguistics and Philosophy*, 17(6):633–678, 1994. doi: 10.1007/BF00985321.

C. Pollard and E. A. Smith. An alternative explanation for presupposition projection variability. Talk at the Workshop on Projective Meaning, August 2011. Ljubljana: European Summer School in Logic, Language and Information (ESSLLI) 23.

C. Potts. *The Logic of Conventional Implicatures*. Number 7 in Oxford Studies in Theoretical Linguistics. Oxford University Press, New York, NY and Oxford, 2005.

References VII

C. Roberts. Pronouns as definites. In M. Reimer and A. Bezuidenhout, editors, *Descriptions and Beyond*, pages 503–543. Oxford University Press, New York, NY and Oxford, 2005.

P. Schlenker. Supplements within a unidimensional semantics I: Scope. In M. Aloni, H. Bastiaanse, T. de Jager, and K. Schulz, editors, *Logic, Language and Meaning*, number 6042 in Lecture Notes in Computer Science, pages 77–83. Springer, Dordrecht, 2010. doi: 10.1007/978-3-642-14287-1_8.

P. Schlenker. Supplements without bidimensionalism. Unpublished manuscript, Institut Jean-Nicod and New York University, February, 2013. (`http://www.semanticsarchive.net/Archive/jgwMjNmM/Supplements_without_Bidimensionalism.pdf`)., ms.

C. Worth. The phenogrammar of coordination. In *EACL Workshop on Type Theory and Natural Language Semantics*. Association for Computational Linguistics, 2014.