What Syntax Feeds Semantics?

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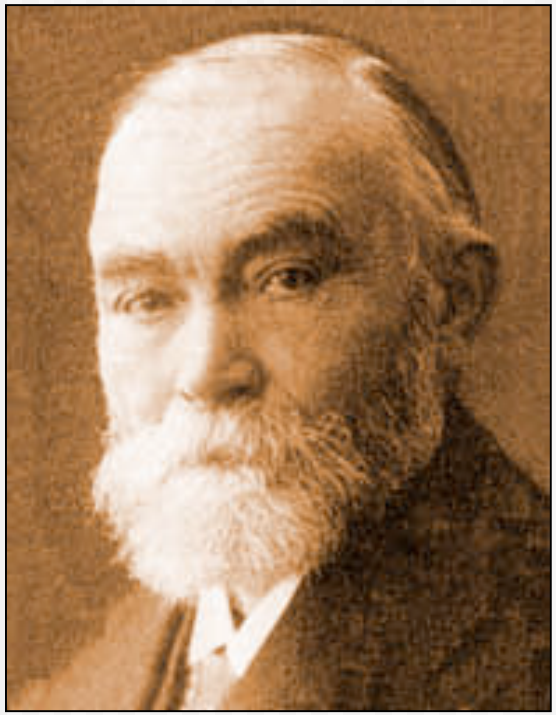
Maribel Romero

University of Konstanz

Division of labor between Syntax and Semantics

Frege's Principle of Compositionality:



The meaning of a complex expression is a function of the meaning of its parts and the way they are combined.

Phenomena at issue

- Quantifier scope
- Ellipsis
- Reconstruction and Connectivity
- Variables and binding
- Etc.

Quantifier scope

- Ambiguity (Pollard 2008; Uchida 2008; also Luo 2008)

(1) A student admires every professor.

a. $\exists x[\text{student}(x) \wedge \forall y[\text{prof}(y) \rightarrow \text{adm}(x,y)]]$

b. $\forall y[\text{prof}(y) \rightarrow \exists x[\text{student}(x) \wedge \text{adm}(x,y)]]$

- Split scope & alike (Richter & Sailer 2008; Egg 2008)

(2) [Not everyone] can win.

(3) [Nicht jeder] kann gewinnen.

↳ ¬ > CAN > ∀ ✓

Quantifier Scope

- Boundeness: roughly to the first tensed clause

(1) A student wants to visit every professor. ∀∃ ✓

(2) A student said that he visited every professor. ~~∀∃~~

(May 1985; Uchida 2008)

- Immediate scope: e.g. nested QuNPs

(Larson 1985, Joshi et al. 2007)

(3) Two policemen spy on someone from every city.

a. 2 >∃>∀ b. ∃>∀,2

c. 2>∀>∃ d. ∀>∃>2 e. ~~∀>2>∃~~

Ellipsis

- The ellipsis site and recoverability:

(1) John didn't like the play, but Paul did ▲.

- Syntactic material? $[_{VP}$ like the play]
- Semantic anaphora? $\lambda x.like(x,\iota y[play(y)])$

Ellipsis as semantic anaphora

- The elided VP may precede its antecedent, but it cannot c-command, as in pronominal anaphora (Ross 1967).

(1) a. If she$_1$ can work, Mag$_1$ will work.

b. * She$_1$ will work, if Mag$_1$ can work.

(2) a. If I can ▲, I will [work on it]

b. * I will ▲, if I can [work on it].

(Dalrymple et al. 1991, Jacobson 1992, Hardt 1999, etc.)

Ellipsis as involving syntax

- A *wh*-phrase binding into the elided VP obeys syntactic islands (data from Hardt 1999).

(1) Who did Angleton believe that Philby suspected t?

(2) * Who did Angleton wondered why Philby suspected t?

(3) Dulles suspected everyone that Angleton believed that Philby did ▲.

(4)* Dulles suspected everyone that Angleton wondered why Philby did ▲.

Ellipsis as involving syntax

(4)* Dulles suspected everyone that Angleton wondered why Philby did ▲.

- Syntactic material: $[_{VP}$ suspect t] ✓
- Semantic anaphora: ~~[e]~~
- Semantic anaphora plus Pseudogapping: ~~$[_{VP}$ [e] t].~~

(5) a. * John sat near Pat, and Mary did [e] Sue.

b. John sat near everyone that Mary did [e] t.

(Lasnik 1995; Kennedy 1997)

(Rooth 1992, Fiengo and May 1994, Lasnik 1995, Kennedy 1997, Fox 1999, etc.)

Ellipsis and syn/sem identity

- Some syntactico/semantic differences are ignored between the antecedent and the syntax/semantics of the ellipsis site (Heim 1995; Maier 2008)

(1) I turned in my homework, but most of the other students didn't.
<turn in their homeworks>

(2) You didn't eat anything, but I did.
<eat something> *<eat anything>

Ellipsis: Fragments

- In question/answer pairs (Merchant 2004)

(1) Q: Who did John see?
A: Mary.

- Other fragments in dialog (Kempson et al. 2008)

(2) A: Bob left.
B: (Yeah,) the accounts guy.

Reconstruction & Connectivity

- Scope reconstruction:

(1) How many papers did every student read?

a. ?n: $\exists_n x$ [paper(x) $\wedge \forall y$[student(y) $\rightarrow$ read(y,x)]]

b. ?n: $\forall y$[student(y) $\rightarrow \exists_n x$ [paper(x) $\wedge$ read(y,x)]]

- Variable binding reconstruction:

(2) What friend of hers$_1$ did every woman$_1$ invite?

Her best friend.

Syntactic Reconstruction: Copy Theory of Movement

- Scope reconstruction in covert syntax:

(1) How many papers did every student read?

a. How many papers did every student read ~~how many papers~~

?n: $\exists_n x$ [paper(x) $\wedge \forall y$[student(y) $\rightarrow$ read(y,x)]]

b. How ~~many papers~~ did every student read ~~how~~ many papers

?n: $\forall y$[student(y) $\rightarrow \exists_n x$ [paper(x) $\wedge$ read(y,x)]]

- Variable binding reconstruction in covert syntax. E.g.:

(2) What friend of hers_1 did every woman_1 invite?

?$f_{<et,e>}$: $\forall z$ [woman(z) $\rightarrow$ invite(z, f(λx.friend-of(x,z)))]

(Engdahl 1980, Reinhart 1992, Heycock 1995, Romero 1998, Sauerland 1998, Rullmann and Beck 1998, Fox 1999, etc.)

Semantic Reconstruction: Higher Type Traces

- Lower scope through higher trace T:

(1) How many papers did every student read?

a. How many papers$_1$ did every student read $t_{1,e}$

?n: $\exists_n x$ [paper(x) $\wedge \forall y$[student(y) $\rightarrow$ read(y,x)]]

b. How many papers$_1$ did every student read $T_{1,<et,t>}$

?n: $\forall y$[student(y) $\rightarrow \exists_n x$ [paper(x) $\wedge$ read(y,x)]]

- Variable binding via Skolem function:

(2) What friend of hers$_1$ did every woman$_1$ invite?

?$f_{<e,e>}$ [$\forall x \in$Dom(f): friend-of(f(x),x)]: $\forall z$[woman(z) $\rightarrow$ invite(z, f(z))]

(Engdahl 1986, Cresti 1995, Rullmann 1995, Jacobson 1999, Sharvit 1999, etc.)

Reconstruction & Connectivity without Movement

- In specificational copular sentences (Higgins 1979, Sharvit 1999, Romero 2005):

(1) a. The number of planets is large. PREDICATIONAL

b. The number of planets is nine. SPECIFICATIONAL

(2) a. What $John_1$ is is important to $himself_1$ / *him_1.

b. What he_1 is is important to him_1 / *$John_1$.

- In other constructions: e.g. resumption (Guilliot 2008)

Variables and Binding

- World/situation variables in NPs: (Cresswell 1990, Farkas 97)

(1) λs_0. If$_s$, every poor child$_{s_0}$ was rich instead, I'd be happy.

↳ Non-local binding ✓

- World/situations variables in (ad)verbal elements:

(2) λs_0. John sometimes$_s$, beat$_s$, the winner$_{s_0}$.

" John beat at times the overall winner."

Variables and Binding

- World/situation variables in NPs: (Cresswell 1990, Farkas 97)

(1) λs_0. If$_{s'}$ every poor child$_{s_0}$ was rich instead, I'd be happy.

↳ Non-local binding ✓

- World/situations variables in (ad)verbal elements:

(2) λs_0. John sometimes$_{s'}$ beat$_{s_0}$ the winner$_{s'}$

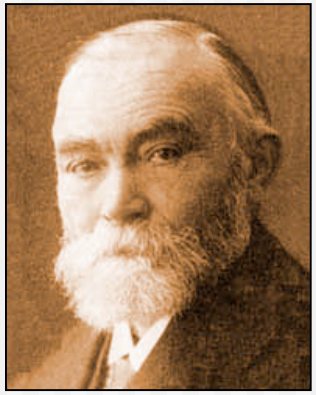
* "John beat in the overall game the winner of some round"

↳ ~~Non-local binding~~

(Percus 2000, Kallmeyer and Romero 2008, von Stechow 2008)

Back to compositionality

Back to
Frege's
Compositionality



The meaning of a complex expression
is a function of the meaning of its parts
and the way they are combined.

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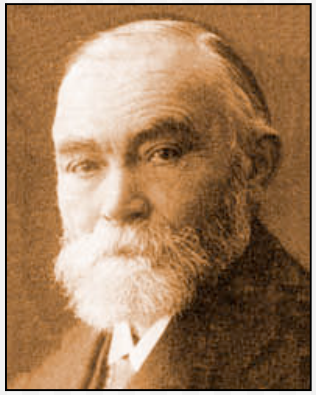

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The meaning of the parts:

- Hendriks-style Argument-Raising in Categorial Grammar: Uchida 2008
- Richer semantic contribution of the Chinese distributor *dou* in GB/Minimalism: Luo 2008

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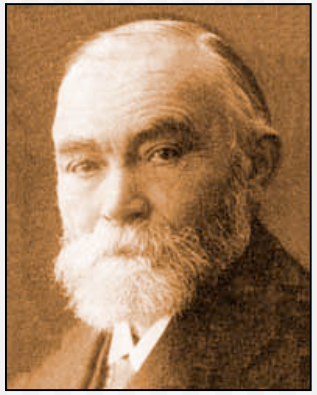

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is a function of the meaning of its parts
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The way the parts are combined…

… in the syntactic structure:

- Transparent Logical Form in GB/ Minimalism: Guilliot 2008, Luo 2008, von Stechow 2008
- Surface syntax in Categorial Grammar, HPSG, etc.: Egg 2008, Guilliot 2008, Kempson et al. 2008, Maier 2008, Pollard 2008, Richter and Sailer 2008, Uchida 2008
- Derivation Tree in Tree Adjoining Grammar: Joshi's work

Back to compositionality

The way the parts are combined…
… in the interpretation procedure:

- Variable-free semantics in Categorial Grammar: Guilliot 2008
- Lexical Resourse Semantics in HSPG: Richter and Sailer 2008
- (Semantic/pragmatic) Higher-order unification: Maier 2008

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The way the parts are combined…
… both in the syntactic structure and in the interpretation procedure.

- Dynamic syntax: Kempson et al. 2008
- Convergent Grammar: Pollard 2008

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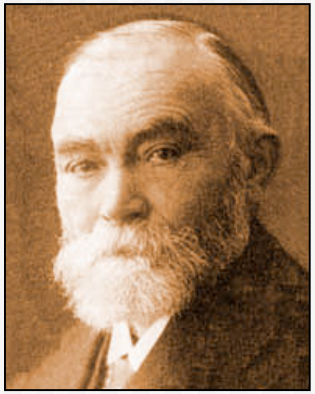

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The meaning of a complex expression…
…as an underspecified semantic representation.

- Constraint Lg for Lambda Structures: Egg 2008
- Lexical Resource Semantics: Richter and Sailer 2008
- Minimal Recursion Semantics: Joshi's work

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