

# What is the syntax-semantics interface?

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# Initial questions

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- How are these issues approached?

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- Why is the syntax-semantics interface interesting?
- What are the main problems this area of linguistics is concerned with?
- What does the syntax-semantics interface tell us about the language faculty?
- How are these issues approached?
- Are there any open issues?

# Today

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## Goals

Get a flavor of what stands for *syntax-semantic interface* in the generative grammar framework, clarify the notion of *Logical Form* and open our views to adopt a broader conception of the syntax-semantic interface.

# Overview

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## The model changes over the years ...

- Aspects: Deep and Surface Structure

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# Overview

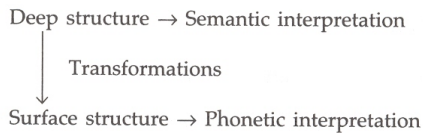
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## The model changes over the years . . .

- Aspects: Deep and Surface Structure
- GB: D-Structure, S-Structure, LF
- Minimalist Program: no D-Structure, but LF
- Latest model: no interfaces

# Aspects

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Deep Structure is the locus of interpretation and the transformational operations are meaning preserving (i.e., they do not contribute to the grammatical licensing of interpretive information encoded in the Deep Structure phrase marker.)

# Aspects

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- In the early 1970s, the model is modified in order to involve **grammar** in the contribution of **meaning** (Extended Standard Theory).
- Deep Structure is the locus of the sentence's **thematic** properties, coreference and scope are a consequence of the transformations, and focus and presupposition are the result of **Surface Structure**. (Jackendoff 1972)

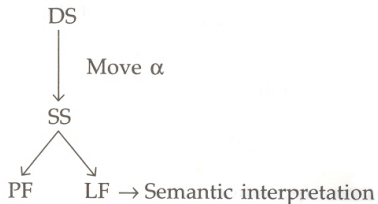
# Aspects

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- Deep Structure is the locus of the sentence's **thematic** properties, coreference and scope are a consequence of the transformations, and focus and presupposition are the result of **Surface Structure**. (Jackendoff 1972)
- In the mid 1970s, trace theory makes it possible for **S-Structure** to be the sole locus of **semantic interpretation** (i.e., structures before the transformations apply may be preserved) (Revised Extended Standard Theory).

# GB

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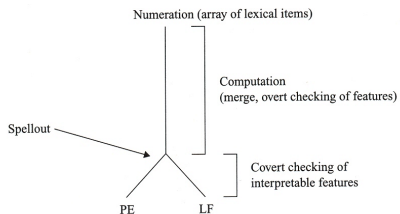
GB organizes the grammar in a “T-model”, which contains a path that relates S-Structure and Logical Form, where interpretive-semantic information is represented.

# GB

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- The path from S-Structure to LF is the domain of **covert syntax**.
  - The operations that take place in this path are of the same nature as the ones occurring at S-Structure (i.e., Move  $\alpha$ )
  - They do not have any phonologic consequences.
- The  $\theta$ -criterion applies at D-Structure, Subjacency and Case Theory apply at S-Structure, Binding Theory applies both at S-Structure and LF, and Quantifier Raising applies at LF.

# Minimalist Program



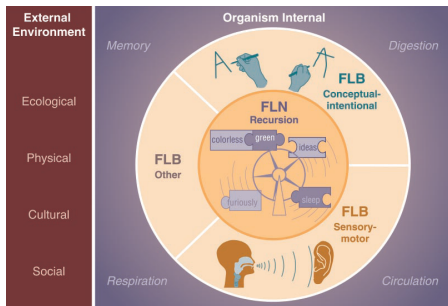
The MP seeks to obtain the maximal amount of results by using the minimal amount of machinery: it does not give X-Bar Theory any grammatical significance, it gets rid of S-Structure and D-Structure and keeps PF and LF as the sole levels of representation.

# Minimalist Program

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- The **output conditions** that used to occur in different stages of the derivation (i.e., Subjacency,  $\theta$ -criterion, the case filter and Binding Theory) are required to occur at **LF**.
- Specific conditions and principles are gradually being subsumed under more general **locality** requirements.
- We have two basic operations, i.e., **merge** and **move**, the former of which is more economical.
- The **VP layer** exhibits the basic thematic operations.
- Movement is triggered by the need to check **uninterpretable features**.

# Latest model



“The Faculty of Language–Broad Sense (FLB) includes an internal computational system (Faculty of Language–Narrow Sense) combined with at least two other organism-internal systems, which we call *sensory-motor* and *conceptual-intentional*.”  
(Hauser, Chomsky and Fitch 2002)

# Latest model

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- FLN is specifically human insofar it is the implementation of **recursion** to language (and not e.g., navigation), which derives **discrete infinity**.
- FLB comprises capacities that are necessary and sufficient for language, and some parts of it are shared with other vertebrates (e.g., imitation as a rational, intentional system).
- In a **perfect** design there should be no spurious levels of representation.
- We assume that we do not have interfaces and that we can obtain the same results by applying **merge** and **multiple spell-out**.

# Logical Form

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Despite the latest evolution of the model, people working on the syntax-semantics interface use the term *Logical Form* to refer to the location within the abstract model of the faculty of human language they are interested in.

## from a logical form...

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*The LOGICAL FORM of a sentence (or utterance) is a formal representation of its logical structure; that is, of the structure which is relevant to specifying its logical role and properties. There are a number of (interrelated) reasons for giving a rendering of a sentence's logical form. Among them is to obtain proper inferences [...], to give the proper form for the determination of truth-conditions [...], to show those aspects of a sentence's meaning which follow from the logical role of certain terms (and not from the lexical meaning of words [...]), and to formalize or regiment the language in order to show that it has certain metalinguistic properties (e.g. that it is free of paradox, or that there is a sound proof procedure).*

(R. May, MIT Encyclopedia of Cognitive Sciences)

## from a logical form...

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*Natural languages have been held to be **insufficiently specified in their grammatical form** to reveal directly their logical form, and that no mere paraphrase within the language would be sufficient to do so. This led to the view that as far as natural languages were concerned logical analysis was a matter of rendering sentences of the language in some antecedently defined **logical (or formal) language**, where the relation between the sentences in the languages is to be specified by some sort of contextual definition or rules of translation.*

(R. May, MIT Encyclopedia of Cognitive Sciences)

# from a logical form...

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## Example

- (1)
- a. Every politician is deceitful.
  - b.  $\forall x[P(x) \rightarrow D(x)]$
  - c.  $\neg\exists x[P(x) \ \& \ \neg D(x)]$

## ... to the Logical Form (aka LF)

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*LF is the level of linguistic representation at which all grammatical structure relevant to semantic interpretation is provided.*

(Hornstein 1995)

## ... to the Logical Form (aka LF)

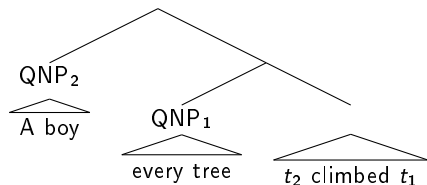
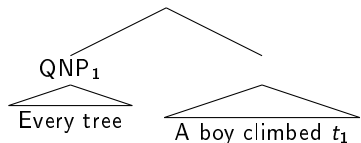
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- LF is a grammatical level where all **output conditions** are applied. Specifically, it is the unique grammatical level where phrase structure properties apply.
- Quantifier scope, scope of negation, modality, opacity, pronoun binding, variable binding, focus and presupposition structure, adverbial modification, etc., are **done off** the LF phrase marker.
- LF provides the requisite **compositional** structure for the execution of these interpretive procedures.

## ... to the Logical Form (aka LF)

### Example

(2) A boy climbed every tree.



# Questions at the syntax-semantics interface

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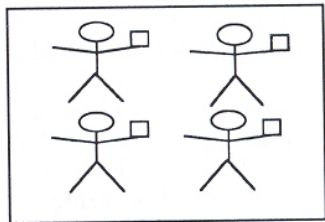
## Topics at LF

1. Quantifier scope
2. Ellipsis
3. Reconstruction
4. Binding

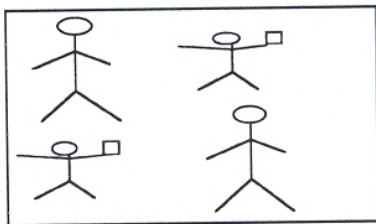
# Quantifier scope

## Example

(3) Every boy is holding a block.



Picture A



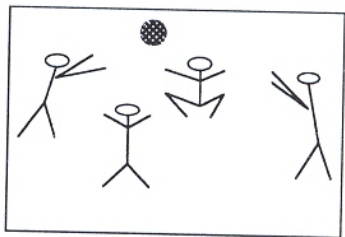
Picture B

(Sauerland and von Stechow 2001)

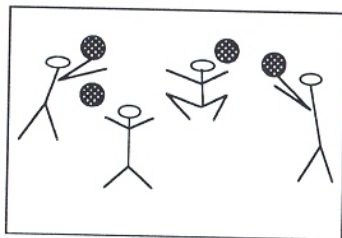
# Quantifier scope

## Example

(4) Every boy is playing with a ball.



Picture A



Picture B

(Sauerland and von Stechow 2001)

# Quantifier scope

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## Example

- (5) Every boy is playing with a ball
- a. *Every boy c-commands a ball*  $\Rightarrow$  for every boy, there is a ball he is playing with (Picture B).
  - b. *A ball c-commands every boy*  $\Rightarrow$  there is a ball every boy is playing with (Picture A).

# Ellipsis

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## Example

- (6) a. John likes every one that I do <>.  
b. John likes every one that I like.

# Ellipsis

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## Example

- (7) a. Who did Angleton believe that Philby suspected  $t$ ?  
b. \*Who did Angleton believe why Philby suspected  $t$ ?
- (8) a. Dulles suspected everyone that Angleton believed that Philby did  $\langle \rangle$ .  
b. \*Dulles suspected everyone why Angleton believed that Philby did  $\langle \rangle$ .

# Reconstruction

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- Total reconstruction: the moved phrase is interpreted in its base position.

## Example

(9) [An Austrian]<sub>i</sub> is likely to *t<sub>i</sub>* win the gold medal.

(Sauerland and Elbourne 2002)

# Reconstruction

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- Binding reconstruction (aka Connectivity or Partial reconstruction): surface scope of the *wh*-phrase corresponds to the “final” scope, but binding relations need to be reconstructed.

## Example

(10) [Which relative of hers]<sub>*i*</sub> did every student<sub>*i*</sub> invite *t<sub>j</sub>*?

(Sauerland and Elbourne 2002)

# Reconstruction

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## Example

- (11) a. [Which relative]<sub>i</sub> did Mary ask whether to invite  $t_i$ ?  
b. Did Mary ask which relative to invite?

(Sauerland and Elbourne 2002)

# Binding

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## Example

- (12) a. Every girl<sub>*i*</sub> is riding her<sub>*i/j*</sub> bike.  
b. Every girl is riding John's bike.

- (13) The boys who talked to every girl<sub>*i*</sub> are riding her<sub>*\*i/j*</sub> bike.

(Hornstein 1995)

# Binding

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## Example

- (14) a. \*Who<sub>i</sub> did his<sub>i</sub> mother kiss t<sub>i</sub>?  
b. Who<sub>i</sub> did you stay with t<sub>i</sub> before his<sub>i</sub> wife had spoken to t<sub>i</sub>?

(Hornstein 1995)

# Binding

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## Example

- (15) a. \*His<sub>i</sub> mother gave his<sub>i</sub> picture to every student<sub>i</sub>.  
b. His<sub>i</sub> mother gave every student<sub>i</sub> his picture.

(Hornstein 1995)

# The interface, broadly speaking: the left periphery

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## Mapping syntax and semantics-pragmatics

1. Information structure
2. Clause types

# Information structure

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## Basic questions

- Do we have enough with CP to account for all the processes that take place at the sentence's left periphery?
- How do we make compatible a blind derivation with movement triggered by semantic or pragmatic reasons?
- How much information must be grammatically encoded so the conceptual-intentional system can interpret clauses that differ in terms of information structure?
- ...

# Information structure

## Prototypical cases

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### Example

- (16)
- a. This cake I brought for today's party.
  - b. This cake, I brought it for today's party.

# Information structure

## Prototypical cases

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### Example

- (17)
- a. It is John who got the job (and not Tom).
  - b. John got the job (and not Tom).

# Clause types

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## Basic questions

- What defines a clause type? Are clause types supposed to be universal?
- What is the force of a clause? How is it syntactically or semantically encoded?
- Are clause types embeddable? And force?
- ...

# Clause types

## Prototypical cases

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### Example

- (18)
- a. John goes to school.
  - b. Does John go to school?
  - c. Go to school!

# Clause types

## Trickier cases

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### Example

- (19)
- a. John is rich!
  - b. John is so rich!
  - c. How rich John is!

# Clause types

## Trickier cases

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### Example

- (20)
- a. Call your mom!
  - b. I ask you to call your mom.
  - c. John said call his mom.

# Clause types

## Trickier cases

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### Example

- (21)
- a. What the hell have you done in the kitchen?!
  - b. What a terrible mess this kitchen is!
  - c. Who wouldn't go to his sons graduation?!
  - d. What was I thinking?!

# What now?

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- We have seen what the syntax-semantics interface is: what role it has in the overall picture of the faculty of language and what topics it includes.

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- We have seen what the syntax-semantics interface is: what role it has in the overall picture of the faculty of language and what topics it includes.
- We may have preferences for one of the topics.
- We are ready to look at the list of papers and pick one each.

# What now?

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## Our calendar

28.10.08 Fox (2002)	04.10.08 Fox (2002)
11.11.08 Pesetsky (1987-2000)	18.11.08
25.11.08	02.12.08
09.12.08	16.12.08
13.01.09	20.01.09
27.01.09	03.02.09
10.02.09	

I'll meet you all next Tuesday to discuss Danny Fox's  
"On Logical Form" :-)

## References (1)

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