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The Minimalist project

1 Overview

This discussion largely follows Ch. 1 of Hornstein et al. (2005).

- Today I'll give an overview of the Minimalist program and how it differs from its predecessors, especially Government and Binding (Chomsky 1981, *et seq*).
- Part of understanding Minimalism is understanding where it comes from and why its questions are pertinent.
- One of the central ideas here is that Minimalism is an approach to developing or deciding between theories.
  - As a research program, it is a framework for asking questions about grammar and deciding between competing approaches.
  - Much of what people think of as Minimalist syntax is the result of Minimalist inquiry, but it's a not a grand unified theory of syntax.
- Some overarching questions:
  i. What does a good theory of syntax look like? How do we decide between different approaches?
  ii. What parts of a theory are absolutely necessary? Are there any parts we can get rid of?
  iii. How do we decide what parts of theory are necessary?

2 Background

The material in this section should be familiar to some degree.

- Minimalism borrows and is built upon many of the concepts and principles of preceding approaches to syntax.
- A central goal of Generative Grammar has been to understand how children acquire language without a complete input and with minimal instruction.
  - Children do not hear the entirety of a language, yet they manage to become fluent, competent speakers by a very young age.
  - This is commonly known as poverty of the stimulus.
- A central hypothesis of Generative Grammar is that humans are endowed with a dedicated language faculty that gives us the ability to acquire language.
- One of the core research goals is to understand what that language faculty must look like.

2.1 Principles & Parameters

- This language faculty is Universal Grammar (UG), a set of principles for constructing grammars. The most widely adopted view of UG is the Principles & Parameters (P&P) model.
  - Minimalism assumes the P&P framework (Chomsky and Lasnik 1993).
- UG can be seen as the general conditions or constraints on grammars.
- There are two central sets of these conditions:
  i. Principles, which are invariant, cross-linguistic properties that all languages share.
  ii. Parameters, whose values are determined as part of the language-acquisition process.
- Simplifying, as a child gets input from whatever language is spoken around them, they will set the parameters (*i.e.*, assign them values) based on what they hear.
  - This means that the acquisition process is sensitive to the environment in which language is acquired.
  - The parameters made available by UG are limited (by hypothesis), but they are not restricted to the knowledge that can be gleaned from the input language itself.

It is important to remember that Universal Grammar does not mean that all languages have the same rules or grammar.

- Grammars are thus the result of environmental input, principles of UG, and parameter setting.
  - For instance, Alexiadou and Anagnostopoulou (1998) show that languages that alternate between VSO and SVO orders also permit null subjects.

(1) Juan leyó el libro.
Juan read.PST.3SG the book
'Juan read the book'

(2) Leyó Juan el libro.
read.PST.3SG Juan the book
'Juan read the book'

(3) Leyó el libro.
read.PST.3SG the book
'He/She read the book'

  - They argue that this is the result of a single parameter setting.
  - A child would only need to hear VSO sentences to know that the language they are learning permits
- This is important: If grammars are the result of parameter setting, a child need not hear every part of their language to know the grammar of that language.

2.2 Explanatory adequacy

- In principle, it is possible to construct different grammars in this way – or to create a completely different kind of grammar – that describe the syntactic phenomena we observe, so-called descriptive adequacy.

- But ultimately, we should want to create a grammar that does better than others at describing the facts.
- Explanatory Adequacy is a measure of distinguishing between theories beyond just the empirical data they explain. It is a metric for describing the linguistic system, not just the output of the system.
  - "To the extent that a linguistic theory succeeds in selecting a descriptively adequate grammar on the basis of primary linguistic data, we can say that it meets the conditions on *explanatory adequacy* [...] Gross coverage of a large mass of data can often be attained by conflicting theories; for precisely this reason it is not, in itself, an achievement of any particular theoretical interest or importance. [...] On a much deeper and hence much more rarely attained level (that of explanatory adequacy), a grammar is justified to the extent that it is a principled descriptively adequate system, in that the linguistic theory with which it is associated selects this grammar over others, given primary linguistic data with which all are compatible."

  Chomsky 1965: 25, 26–27; emphasis original

  Note here that descriptive adequacy is a necessary condition on explanatory adequacy.
- Much work on UG in the last several decades has focused on the explanatory adequacy of the P&P theory.
  - We need a theory that is constrained enough to allow grammars to be acquired based on the impoverished input that a child receives
  - At the same time we need to allow for the variation observed across all languages.
- This is not to say that other concerns (*e.g.*, naturalness, parsimony, elegance) have not influenced the theory so far.
- If we take it for granted that P&P is explanatorily adequate, we can start to ask questions about these other concerns.

  And this is what Hornstein et al. (2005) do, as will we.
- This is where the Minimalist Program comes in.

2.3 Minimalist inquiry

- One way to think of what Minimalism tries to do is that it tries to evaluate different P&P-based models.
  - If we adopt P&P as the best model for understanding UG, then we should want to develop the simplest and most elegant model possible.
- This is what we mean when we refer to the Minimalist *Program*.
  - In this sense, Minimalism is not a theory, but a way of evaluating questions about the extant theories.
  - That is, it is a research program.

3 Some Minimalist projects

- Hornstein et al. (2005: 7) list the following 'big facts' as conditions on theoretical adequacy:

  These are facts that any descriptively adequate theory must account for.

  F_0: The P&P architecture
  F_1: Sentences are basic linguistic units.
  F_2: Sentences are pairings of form and meaning.
  F_3: Sentences are composed of smaller expressions.
  F_4: These smaller units are composed into units with hierarchical structure – *i.e.*, phrases – larger than words and smaller than sentences.
  F_5: Sentences show displacement properties in the sense that expressions that appear in one position can be interpreted in another.
  F_6: Language is recursive, that is, there's no upper bound on the length of sentences in any given natural language.

- Add to these two distinct notions of Economy:

  i. Substantive economy: 'Least effort notions as natural sources for grammatical principles'. Derivations are organized to make the best use of resources, short steps preclude longer strides, prefer shorter derivations to longer ones, *etc*.

  These are (presumed) constraints on how language works.

  ii. Methodological economy: Roughly, the fewer relations, stipulations, or modules, the better.

  These are constraints on building a theory.

- This promotes a specific research strategy: Look for the simplest theory whose operations have a least effort flavor and that accommodates the facts above.

3.1 Levels

- Fact F_2 implies that the sentential output of grammars must interface with two other systems.

  i. Articulatory and Perceptual (A–P): Basically, physical expression
  ii. Conceptual and Intentional (C–I): Roughly, meaning

- If we assume a grammar with various levels of representation, then that implies that there must be at least two levels, one to interact with each of these systems.

  As in GB D-structure, S-Structure, PF, LF…

- This motivates Phonological Form (PF) and Logical Form (LF).

  – These levels are said to be conceptually necessary, since we need these levels to interact the A–P and C–I systems, respectively.
  – We cannot remove them from the theory due to the fact that it is necessary for syntactic structures to interact with these systems.

- Methodological economy should privilege theories that only need to posit these two levels. A Minimalist project is thus to show that other levels can be dispensed with.
- Coming from GB, this would amount to showing that D-structure and S-Structure are actually unnecessary, reconsidering the evidence for these levels.

We will start talking about these issues in the next lecture!

3.2 Interface conditions

- Given that the C–I and A–P interfaces are a necessary aspect of the theory, we should try to capitalize on them
- One idea is that the syntax must create grammatical structures that are legible to the interfaces. Thus, one of the jobs of syntax is to eliminate any material that may be illegible.
- The interfaces thus impose conditions that grammatical objects must respect.
- Substantive economy will dictate how the grammar meets those conditions.
- This leads to two potential kinds of conditions on the grammar.

  i. Bare output conditions: Filtering effects imposed by the interfaces.
  ii. Economy conditions: Conditions on derivational features of the grammar.

- Things that don't fit into either box ought to be dispreferred.

Many GB modules are reconceptualized as interface conditions in Minimalist theorizing.

3.3 Phrase structure and $\bar{X}$-theory

- Given that phrases exist (F_4), UG should make reference to them and any relations within them.
- Assuming they are in $\bar{X}$-format, there are two phrase-internal relations: specifer–head, and head–complement.
- We should, of course, reexamine $\bar{X}$-theory – and we will! What are its foundations, and how natural is it? What are the motivations for heads, complements, specifiers and bar-levels? Does every head really project every level and position?
- We will also spend some time reexamining the relations heads have to their specifiers and complements.
- A major shift we will see is that structure is built progressively over the course of the derivation by an operation called Merge. This will ultimately go a long way in explaining why syntactic structures are recursive.

3.4 Government

- Given the relations internal to the $\bar{X}$-structure, is it possible to eliminate other relations as well?
- Government was the relation that united several disparate phenomena in GB (as the name implies).

And indeed, Minimalism is famous for rejecting Government.

(4) *Government*: α governs β iff
   a. α c-commands β, and
   b. β c-commands α.

- But if we can eliminate it and replace it with independently necessary relations, this would be greatly simplify the theory.
  - This is no small undertaking. Every part of the grammar in GB interacted with Government in some way: Case- and θ-role assignment, trace licensing, binding, and the distribution of PRO.
  - Eliminating Government will require us to rethink how all of these components work.

3.5 Traces

- The common view in GB was that movement left behind traces.
- In GB, movement happened freely (via the operation Move-α), and the distribution of traces was constrained by Government and the ECP.

Movement could only occur if its trace could be properly governed.

- But traces were always a theory-internal construct – phonologically null elements introduced by movement – and nailing down their distribution was always problematic.
- Minimalist principles dictate that movement only occur if it must.

That is, under Minimalism, movement only occurs to satisfy and interface condition.

- Rather than introducing traces as part of the derivation, Minimalism often uses the material already there – copies of the moved words and phrases.

4 The Minimalist thesis

- A central hypothesis of Minimalism:

(5) The language faculty is an optimal solution to interface conditions.

This is an idea expressed by Chomsky at several points in his work (see, *e.g.*, Chomsky 2001).

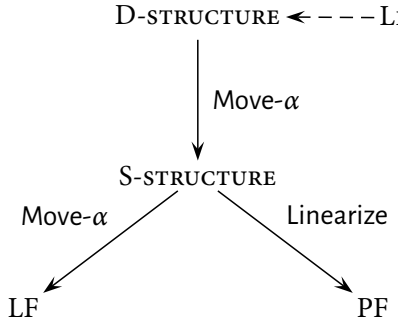
- Put less opaquely, syntax is the optimal (non-redundant) way of relating form and meaning. The system is subject to economy considerations.
- Minimalism addresses the question of what conditions are imposed on the linguistic system based on its interaction with the interfaces (C–I and A–P).

- Minimalism reduces the number of levels of representation to those that interact with these interfaces.
  - LF → C–I
  - PF → A–P
- Assuming these are the only interface levels, LF and PF provide instructions to the performance systems.
- All principles and parameters should be stated in terms of legibility at LF or PF (interface conditions) or be byproducts of the computational system (requirements for building syntactic structures).
- The result of a full computation results in two objects: π, a PF object, and λ, an LF object, which are related by the syntactic derivation.
- The features of each of the pair (π, λ) are required to be legible at their respective interfaces. This is known as Full Interpretation, an economy condition.
  - If both π and λ are legible, the derivation converges.
  - If one is illegible, then the derivation crashes.

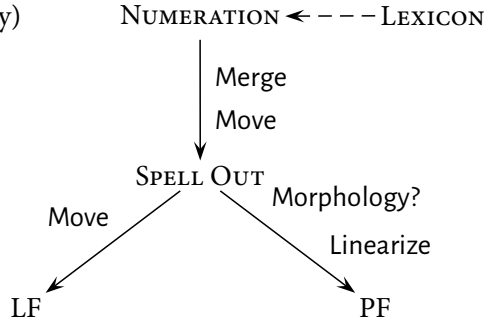
You will often hear people say that a derivation 'crashes at LF' or 'crashes at PF'.

A Minimalist grammar *vs.* GB

(6) *A standard GB grammar*:



(7) *A Minimalist Grammar*:



References

Alexiadou, Artemis, and Elena Anagnostopoulou. 1998. Parameterizing Agr: Word Order, V-movement and EPP-checking. *Natural Language and Linguistic Theory* 16:491–539.

Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 1981. *Lectures on Government and Binding: The Pisa Lectures*. Dordrecht: Foris.

Chomsky, Noam. 2001. Derivation by Phase. In *Ken Hale: A Life in Language*, ed. Michael Kenstowicz, 1–52. Cambridge, Mass: MIT Press.

Chomsky, Noam, and Howard Lasnik. 1993. The theory of principles and parameters. In *Syntax: An International Handbook of Contemporary Research*, ed. J. Jacobs, A. von Stechow, Wolfgang Sternefeld, and T. Vennemann, 506–69. Berlin: Walter de Gruyter.

Hornstein, Norbert, Jairo Nunes, and Grohmann. 2005. *Understanding Minimalism*. Cambridge University Press.