A quick overview on Minimalist Program

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Outlines

• Part I: What Minimalist Program is about
  – SM or CI interface
  – FL; UG; SMT;
  – the third factor

• Part II: phase-theory by examples
  – PIC:
    • cyclic movements
  – vP: Bipartite Verb Structure
    • Transitives, unaccusatives, unergatives
    • Double object,
    • Causatives

• Implications on language acquisition and processing
Various interests in Language (I)

• Mathematical formalism
  – e.g. TAG

• Accounting for the linguistic evidence
  – e.g. Theory of control
    • John promise Mary to return home by midnight.
    • John persuade Mary to return home by midnight.
  – e.g. Studies on ba-construction in Chinese
    • As a preposition
    • As a case marker
    • As a lexical verb
    • As a causative morpheme
Various interests in Language (II)

• Language acquisition
  – Challenges: Poverty of Stimulus; our unique ability
  – Two views in language acquisition (e.g. lexical cat.)
    • In the nativist view, lexical categories are structural primitives (Chomsky 1970, Baker 2003), or have a cognitive basis (Brown 1973). Category acquisition is a process of mapping from the surface onto the innate representation, and may be aided by semantics (Pinker 1984).
    • In the empiricist view (Harris 1946, 1954; Fries 1952), syntactic categories are not internal to the linguistic or cognitive system, but are representations acquired from data
      – (quoted from Chan 2008)
  – Chan’s work on morphology meaning (combination of two)

• Applying machine learning techniques
Part I:
What Minimalist Program is about

A sub-discipline that focus on searching for a principled explanation of UG (the initial state of FL) which can meet the “explanatory adequacy”

- Theory-netural
- Not a hypothesis of language
- Not a new approach to locality constraints

A repeat claim on Chomsky’s interest in language acquisition?
A biological perspective

• FL: the faculty of language
  – An organ of body
  – A product of evolution in long long history
  – and unique to human being

• “language” is a state of FL
  – Cross-linguistic implications

• UG: Universal Grammar
  – is the theory of the initial state of FL
A biological perspective (II)

- Three factors that enter into the growth and development of FL (the faculty of language)
  - External Data
    - Linguistic experience
  - Genetic Endowment
    - The topic of UG
  - Computational factor
    - Not specific to the organ under investigation

- The questions arise in principle for any organic system
An example of computational factor

**Wh-Island Condition:** An interrogative clause is an island for extraction.

(1)  
a. Which shelf did Mary say that she should put the book on __?  
b. *Which shelf did Mary ask whether she should put the book on __?  
c. *Which shelf did Mary ask which book she should put on __?

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This C must Agree with the higher of the two wh-phrases, and cause it to move:  
**Shortest Move.**

An interactive research

• So as to understand UG
  – we need to “clarify the nature of the interfaces and optimal computational principles through investigation of how language satisfies the conditions they impose”

• **SMT**: Strongest Minimalist Thesis
  • “language is an optimal solution to interface conditions that FL must satisfy”
Asymmetry between two interfaces

• *Syntax as an interface between semantics and phonology*
  
  — SM: Sensor-Motor
    • Other devices such as prosody
  
  — C-I: semantic/conceptual-intentional interface
    • language evolved primarily as a means of “development of abstract or productive thinking”

• “SMT is satisfied by phonological systems that violate otherwise valid principles of computational efficiency, while doing the best it can to satisfy the problem it faces: to map to the SM interface syntactic objects generated by computations that are “well-designed” to satisfy C-I conditions”
Overall Task of MP

• To clarify the notions that enter into SMT and to determine how closely the ideal can be approached
  
  – Justify any departure from SMT
    • any postulation of descriptive technology that cannot be given a principled explanation (of UG)
  
  – indeed help distinguishing the features of language
    • (especially cross-linguistically) in recent progress, e.g. causatives
MP: principled explanation

• A sub-discipline that focus on searching for a **principled** explanation of UG (the initial state of FL) which can meet the “explanatory adequacy”

  – as to understand the nature of FL and how FL evolves
  – even to more general understanding of intelligence

• **principled**: insofar as it derives them by efficient computation satisfying interface conditions
  – Theory neutral
  – Not a hypothesis of language
  – Not a new approach
The most elementary form of a generative system

• Language is a system of discrete infinity consisting of hierarchically organized objects

• Any such system is based on an operation that takes n syntactic objects (SOs) already formed, and constructs from them a new SO: Merge

  – Back to the idea of transformation
  – CFG: Unbounded Merge or some equivalent is unavoidable in a system of hierarchic discrete infinity, so we can assume that it “comes free,” in the present context
Approaching UG from below

• Operating without bounds, Merge yields a discrete infinity of structured expressions.

• Hence Merge, and the condition that it can apply without bound, fall within UG.
• Part II:
  • phase-theory by examples
Cycles of operations

- Merge yields compositional/cyclic properties
- Optimal computation requires some version of strict cyclicity
Cyclic movement: A’-chain

**PIC**: optimal computation requires some version of strict cyclicity. That will follow if at certain stages of generation by repeated Merge, the syntactic object constructed is sent to the two interfaces by an operation Transfer, and what has been transferred is no longer accessible to later mappings to the interfaces.
The adjoining operation allows us to derive the effects of the PIC: displacement out of a lower domain is only possible if movement has already taken place to the left edge of that domain. There is no need to explicitly stipulate the visibility of the edge of a lower domain to subsequent movement, as the accessibility of this element to displacement follows from the nature of adjoining.

--Frank, 2005 (View phase theory as another approach to understand locality)
Phases

• Syntactic account
  – PIC: a computational factor helps define phases
    • *it was the CAR of which [the (driver, picture) caused a scandal]
    • it was the CAR (not the TRUCK) of which [the (driver, picture) was found]

• Semantic account
  – Thus optimally designed FL “provides forms that a possible human structured
    meaning may have, leaving a residue of non-structured meanings (concepts), a
    substantive amount of which we share with other animals that lack syntax”
  – CP (propositions),
  – vP (event),
  – DP (definite objects)

• Phases
  – an account of UG instead of a new linguistic theory
  – the fixed structures hopefully hold among mono-linguistic variations
    and cross-linguistic counterparts
Bipartite verb structure of vP

- transitives
Bipartite verb structure of vP

- Double object construction

```
   vP
     /  \
   /    \\
Mary   v'
    /  \
   /    \\
   v    VP
     /  \\   /
 CAUSE HAVE tHAVE
     /  \\
   /    \\
   V    DP DP
     /  \\   /
   HAVE John a book
     /  \\   /
   give
```
Bipartite verb structure of \( vP \)

- Unergatives
- Unaccusatives

Bi-eventive analysis: causing event (manner) and affected event

\[ \text{====> external argument vs. internal argument:} \]

\[ \text{====> passives} \]
Bipartite verb structure of vP

• Causatives: Japanese

Taro-ga musuko-o sin-ase-ta.
Taro-NOM son-ACC die-CAUSE-PAST
(i) ‘Taro caused his son to die’
(ii) ‘Taro’s son died on him’ (the adversity causative)
Bipartite Verb structure of vP

- Causatives: ba-construction
Implications

• Language acquisition: UG
  – Distinguishing the features
    • E.g. accusative Case in different syntactic constructions exampled above
  – Decomposing the heads
  – cross-linguistic evidences

• Language processing
  – FL: an organ: procedural