

Chomsky's Universal Grammar

An Introduction

Slides from the book of V.J. Cook

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STRUCTURE-DEPENDENCY

Nature: A principle common to the syntax of all human languages

Definition: operations on sentences such as movement require a knowledge of the structural relationships of the words rather than their linear sequence

Example:

- (1) Is the man who is tall John?
- (2) *Is the man who tall is John?

Gloss: question formation in English involves moving the auxiliary from the main clause to the front; thus making (1) grammatical and (2) ungrammatical

Extension: Chapter 5 deals with movement in detail

Source: e.g. Chomsky (1980a), KOL, Chomsky (1988)

THE HEAD PARAMETER

Nature: A principle of syntax concerning the position of heads within phrases, e.g. Nouns in NPs, Verbs in VPs, etc.

Definition: a language has the heads on the same side in all its phrases

Example:

- (1) English is head-first
in the bank (Preposition head to the left of NP in a prepositional phrase)
liked the man (verb to the left of NP in a Verb phrase)
- (2) Japanese is head-last
Watashi wa nihonjin desu (I Japanese am)
Nihon ni (Japan in)

Extension: X-bar syntax in chapter 4

THE PROJECTION PRINCIPLE

Definition: the properties of lexical entries project onto the syntax of the sentence

'lexical structure must be represented categorially at every syntactic level' (KOL, p. 84)

Gloss: syntax and lexicon are integrated by seeing the characteristics of the specification of lexical items as projecting onto the syntax rather than having to be specified in rules

Example: *Sue likes whiskey*

The properties of the lexical entry *like* [_NP] ensure that the verb is followed by an NP in the sentence.

Extension: chapter 4

E-LANGUAGE

Samples of language (performance)
 - describes features of the sample via 'structures' etc.

Social convention
 'Behavior'

The external situation

Pragmatic or communicative competence

Main source : Chomsky, KOL; Chomsky, 1987

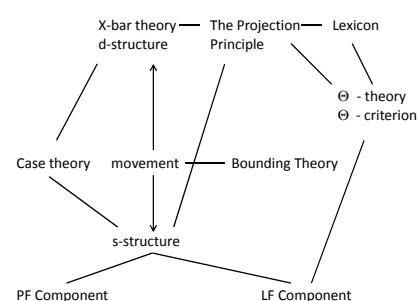
I-LANGUAGE

Single invented sentence
 - describes aspects of mind via 'principles'

Mental reality
 'Knowledge'

The internal representation

Grammatical competence



THE GOVERNMENT/BINDING FRAMEWORK

Definition:

- *X-bar syntax*
- *Projection Principle*
- *Movement*
- *Bounding Theory*
- *θ-Theory*
- *Case Theory*
- *Binding Theory*
- *Control Theory*
- *Phonetic Form Component*
- *Logical Form Component*

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

- *X-bar syntax*

describes the structure of phrases, for example the head parameter (chapter 4)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

- *Projection Principle*

requires all the levels of syntax to observe the specifications for each lexical item in its entry in the *lexicon* (chapter 4)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

- *Movement*

is the relationship between two levels (chapter 5):

- d-structure where the underlying structure of the sentence is given
- s-structure where the related form of the sentence after movement is described, including traces (*t*) of the underlying positions of the items

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

- *Bounding Theory*

prevents the relationship of movement from extending too far in the sentence (chapter 5)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

- *θ-Theory*

deals with the assignment of semantic roles (θ-roles), such as 'recipients' to elements in the sentence, constrained by the θ-criterion (chapter 4)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

• *Case Theory*

assigns cases to Noun Phrases in the sentence (chapter 5)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

• *Binding Theory*

concerns the reference relationships of Noun Phrases
(chapter 2 and chapter 6)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

• *Control Theory*

deals with the subject of infinitival clauses (chapter 6)

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

• *Phonetic Form Component*

interprets s-structure to represent it as sounds

THE GOVERNMENT/BINDING FRAMEWORK

Definition:

• *Logical Form Component*

represents the sentence as syntactic meaning, one aspect of
semantic representation

THE PRO-DROP PARAMETER

The pro-drop parameter, sometimes called 'the null subject parameter'
'determines whether the subject of a clause can be suppressed'
(Chomsky, 1988, p. 64).

Definition: a parameter with two settings
either INFL is a proper governor
or INFL is not a proper governor

The Empty Category Principle: an empty category must be properly
governed.

Examples:

English	he speaks	*speaks	*speaks he
Italian	lui parla	parla	parla lui

Gloss: a language that has INFL as a proper governor will permit null
subjects (since the empty category *pro* is properly governed); a language
that does not have INFL as a proper governor will not (as *pro* will not be
properly governed)

Extension: chapter 6 (sources given there)

BINDING THEORY

'The theory of binding is concerned with the relations, if any, of anaphors and pronominals to their antecedents' (Chomsky, 1982a, p. 6).

Binding Principles (KOL, p. 166 adapted):

- A: An anaphor is bound in a local domain
 B: A pronominal is free in a local domain
 C: A referring expression is free

Examples:

- (1) McCabe said that Jensen, shot himself.
 (2) McCabe, said that Smith shot him.

Gloss: in (1) the anaphor *himself* must refer to the same person as *Jensen* because it is within the same local domain, (Principle A); in (2) the pronominal *him* may refer to the same person as McCabe because it is in an different local domain (Principle B)

Extension: chapter 6

Some insufficient ways of acquiring UG principles from the environment

	positive evidence	other evidence	occurrence	uniformity
imitation	+		-	-
explanation		+	-	-
correction		+	-	-
social interaction	+		+	-

X-BAR THEORY

Definition: a theory of the phrase structure of the d-structure of the sentence.

Principles: $XP \rightarrow \dots X \dots$ (a phrase always contains a head of the same type)
 $X'' \rightarrow$ specifier X' (a two bar category consists of a head that is a single-bar category and a possible specifier)

$X' \rightarrow$ X complements (a one-bar category contains a head that is a lexical category and possible complements)

Lexical categories: N Noun, V Verb, A Adjective, P Preposition

Parameter: the head parameter distinguishes languages that incorporate the above principle with complements (maximal bar categories) to the right or left of the head, i.e. as:

$X' \rightarrow$ X complements
 or
 $X' \rightarrow$ complements X

X-BAR THEORY

Extensions: discussed in the last section of chapter 4

Sources: apart from the Chomskian references, the main recent contributions to X-bar theory have been Stowell (1981) and Huang (1982); for a discussion of the exceptions to the head parameter and an alternative explanation see Hawkins (1982)

C-SELECTION

The Projection Principle: 'representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.' (LGB, p. 29)

Gloss: the entries for each lexical item contain not only details of its lexical category, meaning, etc., but also specifications of the syntactic categories (complements) that it projects onto the structure of the sentence. E.g.:

give [_{NP}₁ NP₂]

means that the V *give* needs a V' in which there are two complement NPs

GRAMMATICAL FUNCTIONS

Subject: the NP of S; the N'' immediately dominated by S

Object: the NP of VP, i.e. the N'' immediately dominated by V'

Object of Preposition: the NP of PP, i.e. the N'' immediately dominated by P'

Gloss: grammatical functions (GFs) are defined in terms of configurations in the phrase structure; the subject is the 'NP of S'. There are no independent GFs in their own right.

Source: largely KOL

Θ -THEORY

'Θ-theory is concerned with the assignment of thematic roles such as agent-of-action, etc.' (LGB, pp. 5-6)

Θ-criterion: 'each argument bears one and only one Θ-role is assigned to one and only one argument' (LGB, p. 36)

Θ-roles:

Agent: the person or thing carrying out the action
 Patient: the person or thing affected by the action
 Goal: the recipient of the object of the action

Gloss: a lexical entry such as:
 like [_{NP}] <Agent, Patient>

s-selects two Θ-roles which are assigned to A-propositions consisting of GFs; internal roles are assigned within the maximal projection, here the VP; an external Θ-role such as Agent may be assigned to the GF subject outside the maximal projection.

MOVEMENT

Principle: ' " Move α" (that is " move any category anywhere")'
 (Chomsky, 1982a, p. 15)

Types:

NP-movement: movement of NPs from A-positions to non-Θ-marked A-positions, leaving NP-trace

Wh-movement: movement of wh-phrases from A-positions to the non-A-position of specifier of C, leaving wh-trace (variable)

V-movement: movement of V to INFL and of V_i to head of C

Restrictions:

- (i) only maximal or zero-level bar categories may move
- (ii) movement must only be from an A-position
- (iii) movement must be to a position that is not Θ-marked, i.e. an empty A-position (NP-movement) or a non-A-Position (wh-movement)

MOVEMENT**Examples:**

(a) passives such as *the mouse was killed* are derived by NP-movement from d-structures such as *e was killed the mouse*

(b) questions such as *what did the cat kill* are derived by wh-movement from d-structures such as *the cat past kill what*

(c) relatives such as *the mouse which the cat killed was white*

(d) Inversion questions such as *was the mouse killed* involve V-movement of *be* into I and of the resulting amalgamation into head of C

Extensions: see Bounding Theory and L movement in later sections of this chapter

BOUNDING THEORY

' Bounding theory poses locality conditions on certain processes and related items.' (LGB, p. 5)

Subadjacency Principle:

Movement may not cross more than one bounding node

Bounding nodes: S, S', NP

Parameters: languages differ over whether S or S' is a bounding node

Examples:

- A *which tune did Clifford play t?*
- B **Which tune did Harold accept Max's guess that Clifford played t?*
- C **The task which I didn't know to whom they would entrust*
- D (Italian) *il incarico che non sapevo t_i a chi avrebbero affidato*

BOUNDING THEORY

Gloss: in A movement of which tune from t crosses only S_i; in B which tune crosses S', NP, and S and is ungrammatical. In C and D movement crosses S and S', ungrammatical in English but grammatical in Italian

Extensions: see the remarks on chains in the last section of chapter 5

CASE THEORY

' Case theory deals with assignment of abstract case and its morphological realization.' (LGB, p. 6)

Case is assigned to all NPs by case assigners:

- Nominative is assigned by the Tense part of INFL in s-structure to the GF subject
- Accusative is assigned by V in s-structure to the GF object
- Accusative (Oblique) is assigned by P to the GF object of Preposition
- Genitive is assigned by the structure _{NP} (NP_i)

Case Filter: 'Every phonetically realized NP must be assigned (abstract) Case' (KOL, p. 74)

CASE THEORY**Parameters:**

- (i) adjacency: some languages such as English require case assigners to be adjacent to the NP that receives Case
- (ii) direction: some languages such as English require case assigners to be to the left, others such as Chinese require them to be to the right
- (iii) Exceptional Case Marking: The lexical subject of infinitival clauses in English exceptionally has Accusative Case

C-COMMAND

' α c-commands every element of its domain that is not contained within α .'
(KOL, p. 162)

'the domain of α is the least maximal projection containing α .'
(KOL, p. 162)

Gloss: c-command is the relationship between an element and those other elements it is 'superior to' but does not dominate. When it is defined in terms of maximal projections it is also termed 'm-command'.

Example:
The woman will arrest John

The domain of the NP *the woman* is the C' (S') and hence it c-commands all elements except for *the* and *woman* (which it dominates)

The domain of *arrest* is the VP and hence it c-commands *John* but not the subject NP (which is outside of the domain)

GOVERNMENT

'A category α governs a maximal projection X' if α and X' c-command each other' (KOL, p. 162)

'only lexical categories and their projections can be governors'
(KOL, p. 162)

Gloss: government is the relationship between two elements defined by mutual c-commands within ceiling and floor of maximal projections, provided one element is a governor.

Example:
They will give it to him.

The V *give* governs *it* because it is a governor within the same maximal projection VP, and c-commands it.

GOVERNMENT

Hence:

- (i) Case is subject to government
The NP *him* is governed by the case assigner *to*.
- (ii) c-selection is subject to government
The NP *it* and the PP *to him* are governed by the verb *give* and so are projected from the entry.
- (iii) s-selection is subject to government
The θ -roles Goal and Patient are assigned to A-positions governed by *give*
- (iv) The agreement in number of the verb is due to it being governed by the AGR feature of INFL
- (v) A parameter of variation is whether INFL (AGR) governs the subject (pro-drop languages) or does not (non-pro-drop languages)

CONTROL THEORY

'Control theory determines the potential for reference of the abstract pronominal element PRO.' (LGB, p. 6)

Principle: 'PRO is ungoverned'
(KOL, p. 183)

Obligatory control: PRO has the main sentence subject as antecedent as in *John asked PRO to go* or the object as antecedent as in *John asked Peter PRO to go*.

Arbitrary control: PRO refers indefinitely to people in general as in *it is time PRO to go*.

Gloss: the empty subject position of infinitival clauses either takes as antecedent an NP that may be subject or object in the main clause, or has indefinite 'arbitrary' reference.

Types of Noun Phrase

	overt	anaphor	pronominal
anaphor	+	+	-
NP-trace	-	+	-
r-expression	+	-	-
wh-trace	-	-	-
pronominal	+	-	+
pro	-	-	+
PRO	-	+	+