

1. UG AND LANGUAGE TYPOLOGY

Word order	Languages Number	%
SOV	180	45
SVO	168	42
VSO	37	9
VOS	12	3
OVS	5	1
OSV	0	0
Total	402	

Frequencies of basic constituency orders (Tomlin 1986: 22)
Table 1

	VSO	SVO	SOV
Prep	6	10	0
Postp	0	3	11

Correlations between word order and adposition order (Greenberg 1963)
Table 2

(1) Every introduction to typology has basically assumed a functionalist approach to language: Comrie 1989; Croft 1990; Mallinson and Blake 1981; Whaley 1993

It is commonly held that modern linguistic and anthropological investigations have conclusively refuted the doctrines of classical universal grammar, but this claim seems to me very much exaggerated. Modern work has indeed shown a great diversity in the surface structure of languages. However, since the study of deep structure has not been its concern, it has not attempted to show a corresponding diversity of underlying structures, and, in fact, the evidence that has been accumulated in modern study of language does not appear to suggest anything of this sort. ... Insofar as attention is restricted to surface structures, the most that can be expected is the discovery of statistical tendencies, such as those presented by Greenberg 1963. (Chomsky 1965: 118)

I have not hesitated to propose a general [i.e., universal— FJN] principle of linguistic structure on the basis of observation of a single language. The inference is legitimate, on the assumption that humans are not specifically adapted to learn one rather than another human language ... Assuming that the genetically determined language faculty is a common human possession, we may conclude that a principle of language is universal if we are led to postulate it as a 'precondition' for the acquisition of a single language. (Chomsky 1980: 48)

To test such a conclusion, we will naturally want to investigate other languages in comparable detail. We may find that our inference is refuted by such investigation. (p. 48)

There has also been very productive study of generalizations that are more directly observable: generalizations about the word orders we actually see, for example. The work of Joseph Greenberg has been particularly instructive and influential in this regard. *These universals are probably descriptive generalizations that should be derived from principles of UG.* (Chomsky 1998: 33; emphasis added)

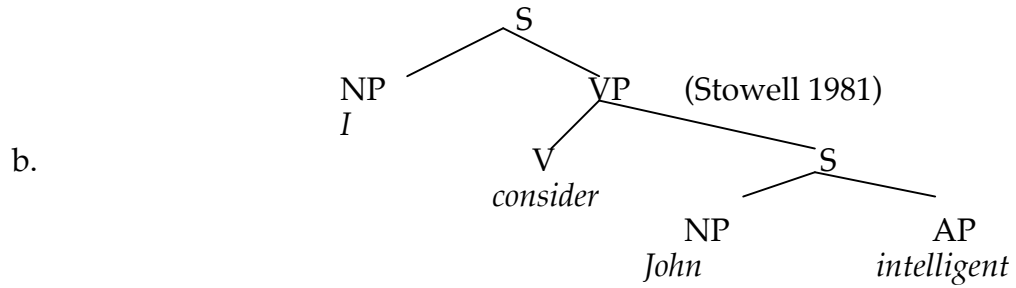
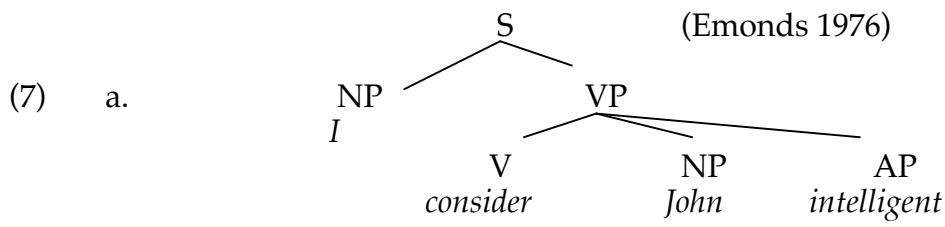
- (2) Who_i did you ask Mary to tell John to see ____i
 (3) *John_i asked Mary to tell Bill to help himself_i
- (4) Hierarchy of morphological incorporability (Mithun 1984, as presented in Croft 1995)

If a language can incorporate on a particular position on the hierarchy, it can incorporate on any position on its left.

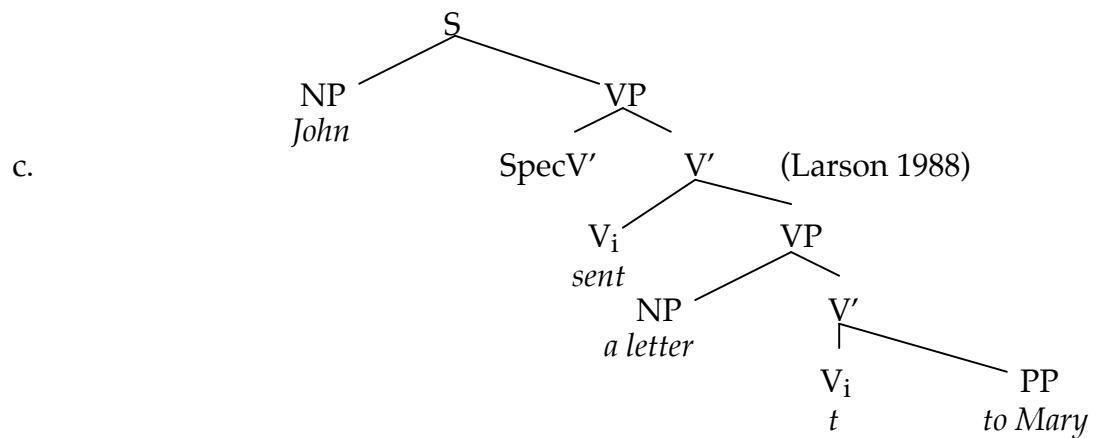
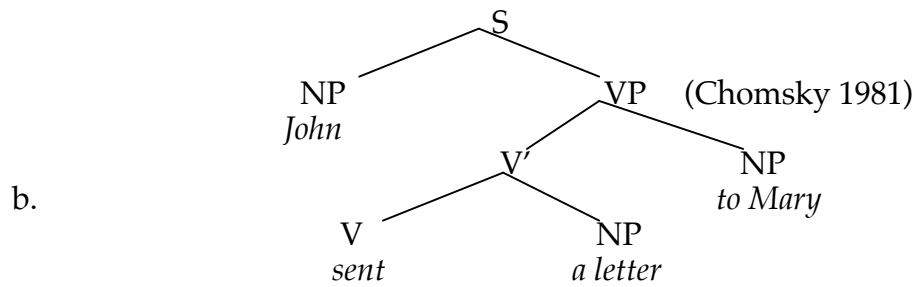
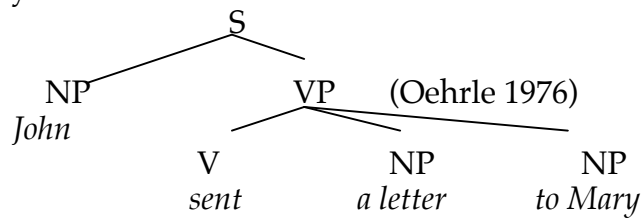
Nonreferential Ns > Demoted NPs > Backgrounded NPs > Fully Referential NPs
 TYPE I TYPE II TYPE III TYPE IV

- (5) a. TYPE I Mary went mushroom-picking (English)
- b. TYPE II (Another argument of the clause can occupy the case role vacated by the incorporated noun)
 Nít-ohpokón-sskoawa nóko'sa (Blackfoot)
 I-ball-acquire.him my.child
 'I provided my child with a ball'
- c. TYPE III (Incorporation serves to reduce the salience of the incorporated noun within the discourse)
 A. askeman ti-'kwa nakatl (Huahtla Nahuatl)
 never you-it-eat meat
 'You never eat meat'
- B na' ipanima ni-naka-kwa
 I always I-meat-eat
 'I eat it (meat) all the time'
- d. TYPE IV (Fully referential NPs may be incorporated)
 bene-dulg-naj mangaralaljmayn (Gunwinggu)
 they.two-tree-saw cashew.nut
 'they saw a cashew tree'

- (6) I consider John intelligent



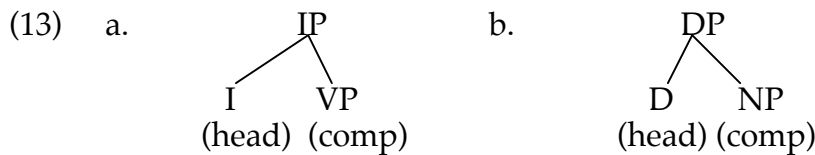
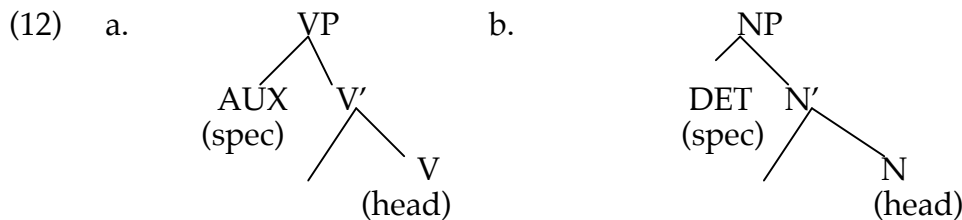
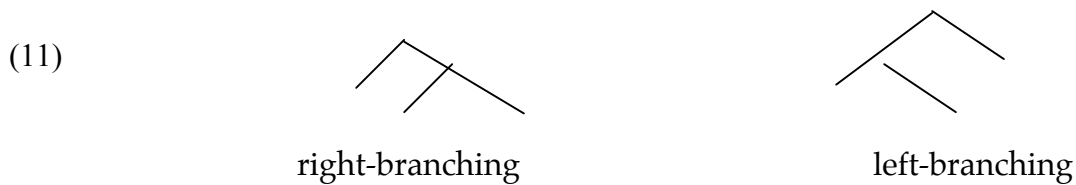
(8) John sent Mary a letter
 (9) a.



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(10) Dryer 1992 correlates basic word order with many other factors in a sample of 625 languages, e. g.

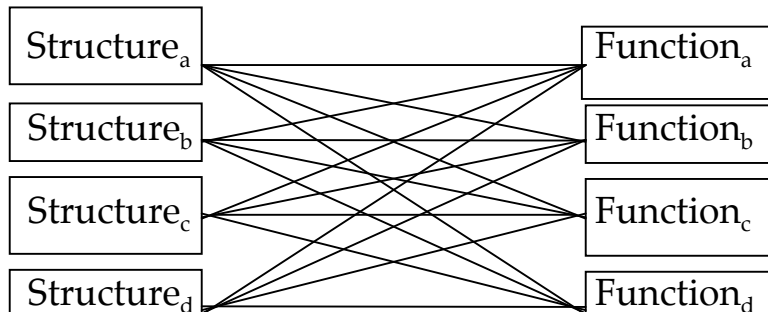
- a. prepositionality vs. postpositionality
- b. the position of the relative clause with respect to the head
- c. the position of the adjective with respect to the noun
- d. the position of the adjective with respect to the main verb
- e. much more



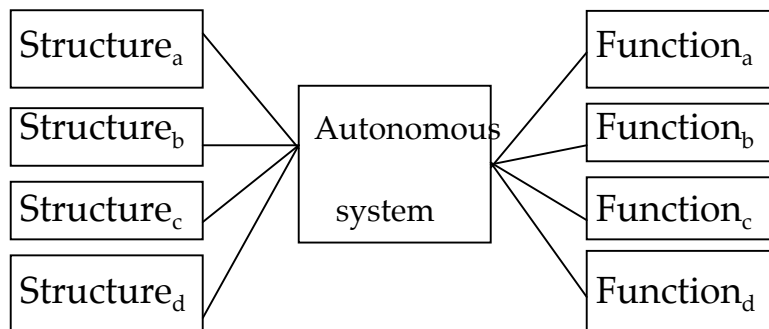
- (14) a. the table's leg
 b. the leg of the table

- (15) a. Tuesday's lecture, Fermat's theorem, Rome's destruction
 b. a piece of cake, the dog in the window, the destruction of Rome

The autonomy of syntax cuts off [sentence structure] from the pressures of communicative function. In the [formalist] vision, language is pure and autonomous, unconstrained and unshaped by purpose or function. (Bates and MacWhinney 1989: 5)



A classic functionalist view of the interrelationship between Structure and Function



A view of the interrelationship between Structure and Function compatible with *both* autonomy and external functional explanation

Comrie 1981; Comrie 1984; Coopmans 1983; Coopmans 1984

English is consistently Spec-Head:

- (16) a. *the* book
 b. *must* go

But Malay is inconsistent:

- (17) a. surat *itu* 'letter that'
 b. *akan* membaca 'will read'

P-Stranding / Difference between French and English:

- (18) a. John was talked to ___
 b. *Jean était parlé à ___
 (19) a. Who did you talk to ___?
 b. Qui avez-vous parlé à ___?

Kayne 1981: In English V and P assign objective case structurally
 French — objective case structurally assigned, but oblique case assigned at D-structure

Sranan (English/Dutch-based creole spoken in Surinam)

- (20) *nanga san u koti a brede?*
 with what you cut the bread

- (21) **san u koti brede nanga*

KEENAN & COMRIE'S ACCESSIBILITY HIERARCHY FOR RELATIVIZATION
 (Comrie and Keenan 1979; Keenan and Comrie 1977; Keenan and Comrie 1979)

- (22) SU > DO > IO > OBL > GEN >
 OCOMP

'>' means 'is more accessible than', 'SU', 'DO', 'IO', 'OBL', 'GEN', and 'OCOMP' stand for 'subject', 'direct object', 'indirect object', 'major oblique case NP', 'genitive', and 'object of comparison', respectively.

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that-trace phenomena:

- (23) a. Who do you think Bill saw ___
b. Who do you think ___ saw Bill
- (24) a. Who do you think that Bill saw ___
b. *Who do you think that ___ saw Bill

Italian relativization possibilities (Cinque 1981)

- (25) La proposta che è stata fatta è assurda.
'The proposal that has been made is absurd'
- (26) a. Era *un gentiluomo*
'He was a gentleman'
- b. Il gentiluomo [_S che era] gli impedì di reagire in malo modo
'The gentleman that he was prevented him from reacting nastily'
- (27) a. La proposta Banfi era stata bocciata *il giorno prima*.
'The proposal made by Banfi had been rejected the day before'
- b. Il giorno [_S che la proposta Banfi fu bocciata] non c'era nessuno.
'The day that the proposal made by Banfi was rejected nobody was there'
- (28) *the girl that you think that ___ will come
- (29) la ragazza che credi che ___ verrà

According to Rizzi 1982, (29) would derive from:

- (30) verrà la ragazza

But Comrie points out Portuguese seems to violate the *that*-trace filter and it doesn't have postposing:

- (31) a menina que você acredita que ___ vai chegar

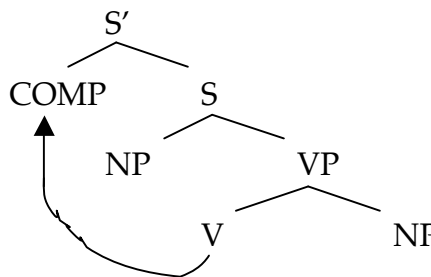
Zubizarreta 1982 argues that the *que* is a relative pronoun, not a complementizer, so there is no '*that*-trace' (ECP) violation

But then— Comrie asks — why doesn't English allow:

- (32) *the girl who you think who ___ will come
- (33) The schizophrenic goals of Coopmans (1984):
- a. To argue that Greenbergian universals are superficial and uninteresting.
- b. To provide an explanation of Greenbergian universals in terms of UG.

(34)

The derivation of VSO languages (Emonds 1980)



(35)

- Other theoretical assumptions made by Coopmans:
- Sentence-initial COMP entails *wh*-fronting
 - All movements to left-edge are attractions to COMP

Given this, Coopmans says that we have 'explained' Greenberg's Universal 12:

(36) Universal #12: VSO initial *wh*-words

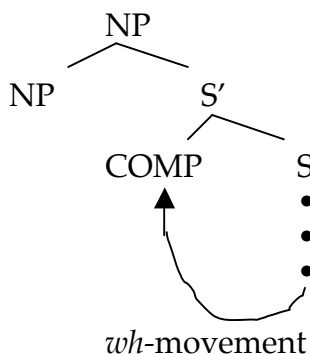
Another Greenberg universal Coopmans says follows from his assumptions:

(37) VSO N Rel

Why?

- We know VSO has sentence-initial COMP and *wh*-fronting
- In relativization, the head of the noun has to be immediately adjacent to COMP:

(38) N-Rel order



If the order were Rel-N, there would be no adjacency

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2. EARLY GENERATIVE SYNTACTIC TYPOLOGY

- (1) Groundbreaking early work in generative syntactic typology:
 - a. Syntax can avail itself of Praguean marking conventions (Bach 1965)
 - b. Languages can be shown to be more typologically consistent at a deep level of structure than at the surface (Bach 1970)
 - c. Principles of UG can solve typological problems (Ross 1970; Emonds 1976)
 - d. The application of certain rules to typologically distinct languages follows from UG principles (Bresnan 1970; Baker 1970; Bach 1971)

Bach 1965 — proposed to handle the Greenbergian word order correlations by means of marking conventions internal to the grammar.

- (2) SVO - N Rel SOV - Rel N
Marking conventions put the relative clause in the right place

Bach 1970 on Amharic

- (3) Amharic is surface SOV, but has several 'non-SOV-like' properties:
 - a. it is prepositional
 - b. it has both prefixes and suffixes
 - c. honorifics precede names
 - d. relative clauses can either precede or follow the head noun
 - e. there are alternatives to verb-final order
 - f. it has verb-object agreement (unusual for SOV languages)

Bach argues that underlyingly Amharic is VSO

prefix *yə-* involved in possessives

- (4) a. *yəne bet* 'my house' (*yə* + *ine* + *bet*)
b. *yəsəwiyyəw* 'the man's house'

Assume that relative clauses come from a structure like:

- (5) *yə* [_S V X NP_i Y] NP_i

Derivation of *yəne bet* 'my house'

- (6) a. *yə* [all- *ine* *bet*] *bet*
 be *me* *house* *house*
- b. *yə* [all- *ine*] *bet* deletion of identical NP
- c. *yə* [*ine*] *bet* copula deletion
- d. *yə* + *ine* *bet* *yə-* attachment

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If copula deletion does not apply, *yə-* attachment will stick *yə-* on the verb
(which will be immediately to the right) to get *the house that I had*

But if we assume that Amharic is SOV, you would need two rules of *yə-*
attachment — one for possessives and one attaching it to verbs at the *end*
of the clause

That misses the generalization that *yə-* is attached to the next lexical element, no
matter what it is

Ross 1970 on gapping

(7) I ate fish, Bill ate rice, and Harry ate roast beef □

I ate fish, Bill ___ rice, and Harry ___ roast beef

(8) Watakusi-wa sakana-o tabe, Biru-wa gohan-o tabeta □

I fish eat Bill rice ate
'I ate fish, and Bill ate rice'

Watakusi-wa sakana-o, Biru-wa gohan-o tabeta

I fish Bill rice ate
'I ate fish, and Bill ate rice'

(9) Possible Gapping orders

- a. SVO + SO (English)
- b. SO + SOV (Japanese)
- c. *SO + SVO (unattested)

Ross — the order in which Gapping operates depends on the order of elements
at the time that the rule applies. If the identical elements are on left branches,
Gapping applies forward; if they are on right branches, it applies backward.

(10) ja pil vodu, i Anna pila vodku (Russian)



Ø (SVO + SO)
I drank water and Anna (drank) vodka

(11) ja vodu pil, i Anna vodku pila



Ø (SO + SOV)

Russian also has SO + SVO

(12) ja vodu, i Anna pila vodku

S O S V O

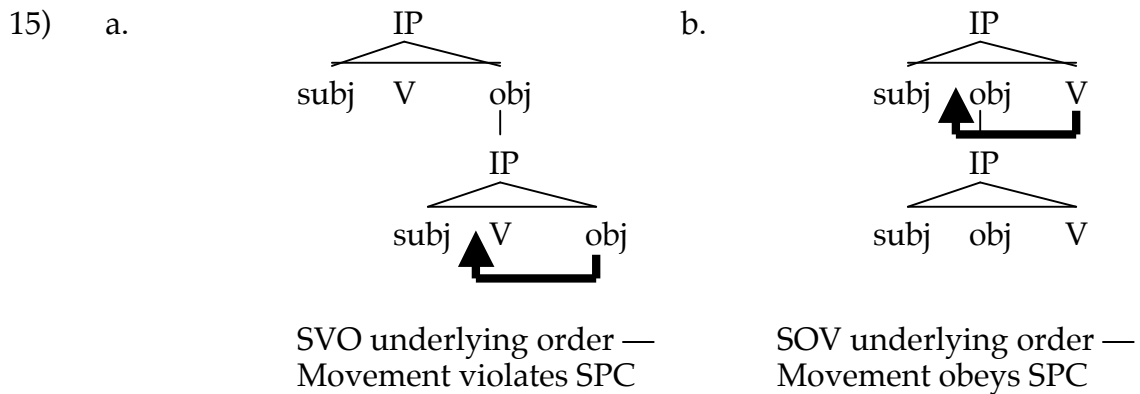
Many problems with Ross's analysis (Jackendoff 1970; Maling 1972)

Emonds 1976: German must be underlyingly SOV

- (13) a. Hans schlug den Ball. (SVO)
 b. Schlug Hans den Ball? (VSO)
 c. Ich denke, dass Hans den Ball geschlagen hat. (SOV)

Almost without exception, generative grammarians have argued underlyingly SOV (Bach 1962; Bierwisch 1963; Bierwisch 1966; Koster 1975; Bennis and Hoekstra 1984)

(14) Structure Preserving Constraint (Emonds 1976): Rules that distort phrase structure configurations apply only in main clauses



	V-final	SVO	V-initial
<i>Wh-in situ</i>	71	42	16
Final Q particles	73	30	13

Proportion of languages with *Wh-in situ* and final question particles, by word order type Dryer 1991
 Table 1

Baker 1970 proposed a universal rule of Question Movement, in which a *wh*-type element moves to the left to replace an abstract question morpheme 'Q'.

Bresnan 1970 identified 'Q' with the category 'COMP' (i.e. 'Complementizer') and suggested that only languages with clause-initial COMP permit a COMP-substitution transformation.

Bach 1971 — slightly different set of assumptions from Bresnan — concludes:

- (16) a. Movement of question words will always be to the left.
 b. Question Movement will never occur in SOV language.

These conclusions seem to follow from the following assumptions:

- (17) a. *Wh*-Movement must be unbounded
 b. The element moved by this rule is attracted to a verb that governs questions (which might be an abstract performative verb)
 c. UG allows only leftward movement rules to be unbounded

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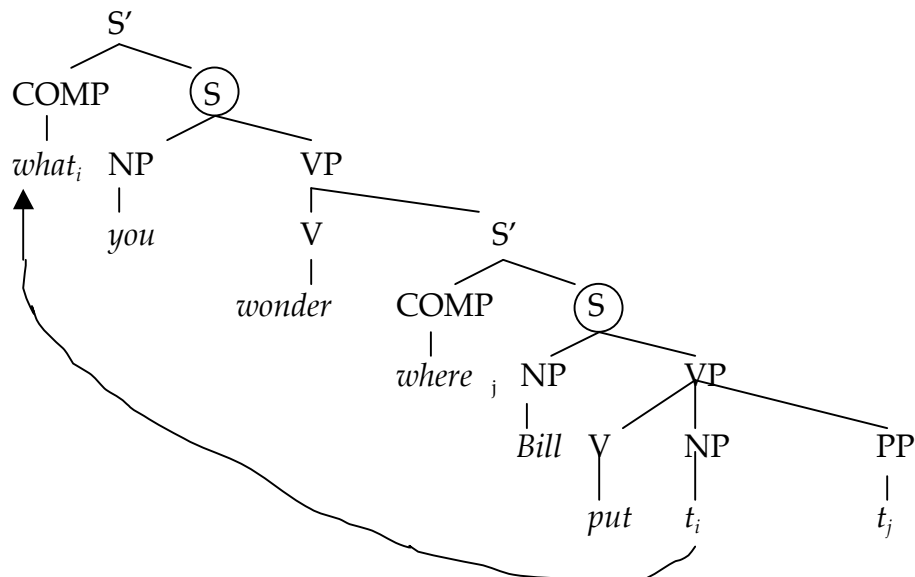
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3. PARAMETERIZED PRINCIPLES AND THEIR PROPERTIES

- (1) Subjacency (Chomsky 1973) — A moved element may not cross two (or more) bounding nodes, where bounding nodes are S and NP.
- (2) *What did you wonder where Bill put? (originally covered by the *Wh*-Island Constraint)

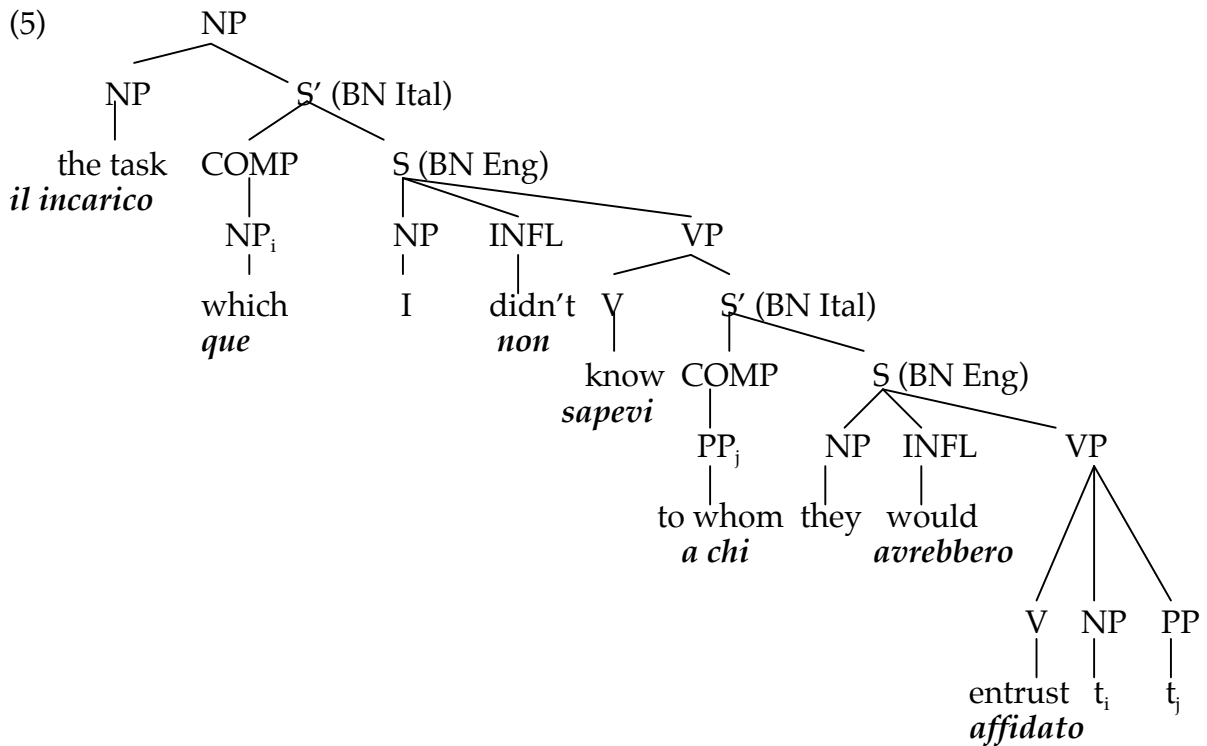
(3)



Rizzi 1982 observed, however, that Italian violates the *Wh*-Island Constraint quite freely:

- (4) (a) Il solo incarico che non sapevi a chi avrebbero affidato è poi finito proprio a te.
 'The only charge that you didn't know to whom they would entrust has been entrusted exactly to you.'
- (b) Tuo fratello, a cui mi domando che storie abbiano raccontato, era molto preoccupato.
 'Your brother, to whom I wonder which stories they told, was very troubled.'

Rizzi's solution: The notion of 'bounding node' is *parameterized*. Different languages have bounding nodes. In Italian, S' is a bounding node, but S is not:



Other languages with *Wh*-Movement are stricter still. Russian has *Wh*-Movement:

- (6) a. kavo ljubit Marija (Russian; Freidin and Quicoli 1989)
 who-ACC loves Mary-NOM
 'who does Mary love?'
 b. ja znaju kavo Marija ljubit
 I know who-ACC Mary-NOM loves
 'I know who May loves'

But the *wh*-phrase may not be extracted from its clause:

- (7) *kavo gavorit Ivan čto Marija ljubit
 who-ACC says Ivan that Mary-NOM loves
 'Who does Ivan say that Mary loves?'

Hence in Russian both S and S' are bounding nodes

- (8) The systems of principles of Government-Binding Theory (Chomsky 1981):
 a. Government
 b. Binding
 c. Bounding
 d. Case

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- e. Control
 - f. Theta-theory
 - g. X-bar
- (9) The leading idea of GB: Each system is very simple, but admits to small amount of parameterization

What we expect to find, then, is a highly structured theory of UG based on a number of fundamental principles ... with parameters that have to be fixed by experience. If these parameters are embedded in a theory of UG that is sufficiently rich in structure, then the languages that are determined by fixing their values one way or another will appear to be quite diverse, since the consequences of one set of choices may be very different from the consequences of another set; yet at the same time, limited evidence, just sufficient to fix the parameters of UG, will determine a grammar that may be very intricate ... (Chomsky 1981: 3-4)

- (10) Core vs. periphery (see especially discussion in Joseph 1992)
- (11)
- a. Why paint your house purple? (Gordon and Lakoff 1971)
 - b. We danced the night away. (Jackendoff 1997)
 - c. It's amazing the difference. (Michaelis and Lambrecht 1996)
 - d. Frank sneezed the tissue off the table. (Goldberg 1995)
 - e. What are your shoes doing on the table? (Kay and Fillmore 1999)
 - f. No matter what John says, we are going to see that movie. (Culicover 1999)

There has also been very productive study of generalizations that are more directly observable: generalizations about the word orders we actually see, for example. The work of Joseph Greenberg has been particularly instructive and influential in this regard. *These universals are probably descriptive generalizations that should be derived from principles of UG.* (Chomsky 1998: 33; emphasis added)

- (12) Lexical Parameterization Hypothesis (Borer 1984; Manzini and Wexler 1987): Values of a parameter are associated not with particular grammars, but with particular lexical items.
- (13) John and Mary think that [*themselves/?each other are the best candidates]

Fukui 1988 argues that the LPH is too strong: Many facts about a language don't seem to be lexically-based:

EXAMPLES:

- A. Basic word order — whether a language is SVO or SOV has nothing to do with the 'lexicon'.
- B. Languages might differ in their bar-levels: Fukui and Speas 1986 — Japanese constituents are X' , not X'' . Japanese lacks functional categories

such as DET, INFL, and COMP. (Fukui argues that the 'complementizers to 'that, *ka*, 'Q', etc. are really Ps.)

Suchsland 1993 argues that various factors lead to the conclusion that German has one more bar level in the VP than English:

- (14) dass sie [_v' meinem Kollegen [_v' leider [_v' die Bücher [_v' noch immer
that she my-dat colleague unfortunately the books yet always

[_v' nicht [_v' zurückgegeben hat]]]]]
not returned has

'that unfortunately she has not yet returned the books to my colleagues'

- C. A parameter separating languages is the degree of adjacency required between heads and complements. Ewert and Hansen 1993 call attention to the following differences between English and German:

- (15) a. a father proud of his daughter
b. a husband loyal to his wife
(16) a. *a proud of his daughter father
b. *a loyal to his wife husband
(17) a. der auf seine Tochter stolze Vater
b. einer seiner Frau treuer Ehemann

- D. Not all lexical items are involved in parametric variation. We wouldn't expect a language in which the word for 'eat' took its complements to the right and the word for 'drink' took its complements to the left. It seems to be mostly *functional categories* that are involved in parameters (for development of this view, see especially Ouhalla 1991)

Note that functional categories often do have particular lexical properties in terms of ordering restrictions, etc. In Nupe, the complementizer *gànáń* precedes the clause that it introduces; the complementizer *o*, which occurs in the focus construction, follows it (Zepter 2000):

- (18) a. mi kpaye [gànáń Musa lá èbi] Nupe (Zepter 2000)
I think COMP Musa took knife
'I think that Musa took the knife'

- b. ebi Musa lá o
knife Musa take COMP
'[it's] a knife that Musa took'

- (19) Fukui 1988: Two revisions to the Lexical Parameterization Hypothesis:
a. Ordering Restriction Hypothesis. Non-lexical parameters are limited to ordering restrictions.
b. Functional Parameterization Hypothesis. Only functional elements in the lexicon (Complementizer, Agreement, Tense, etc.) are subject to

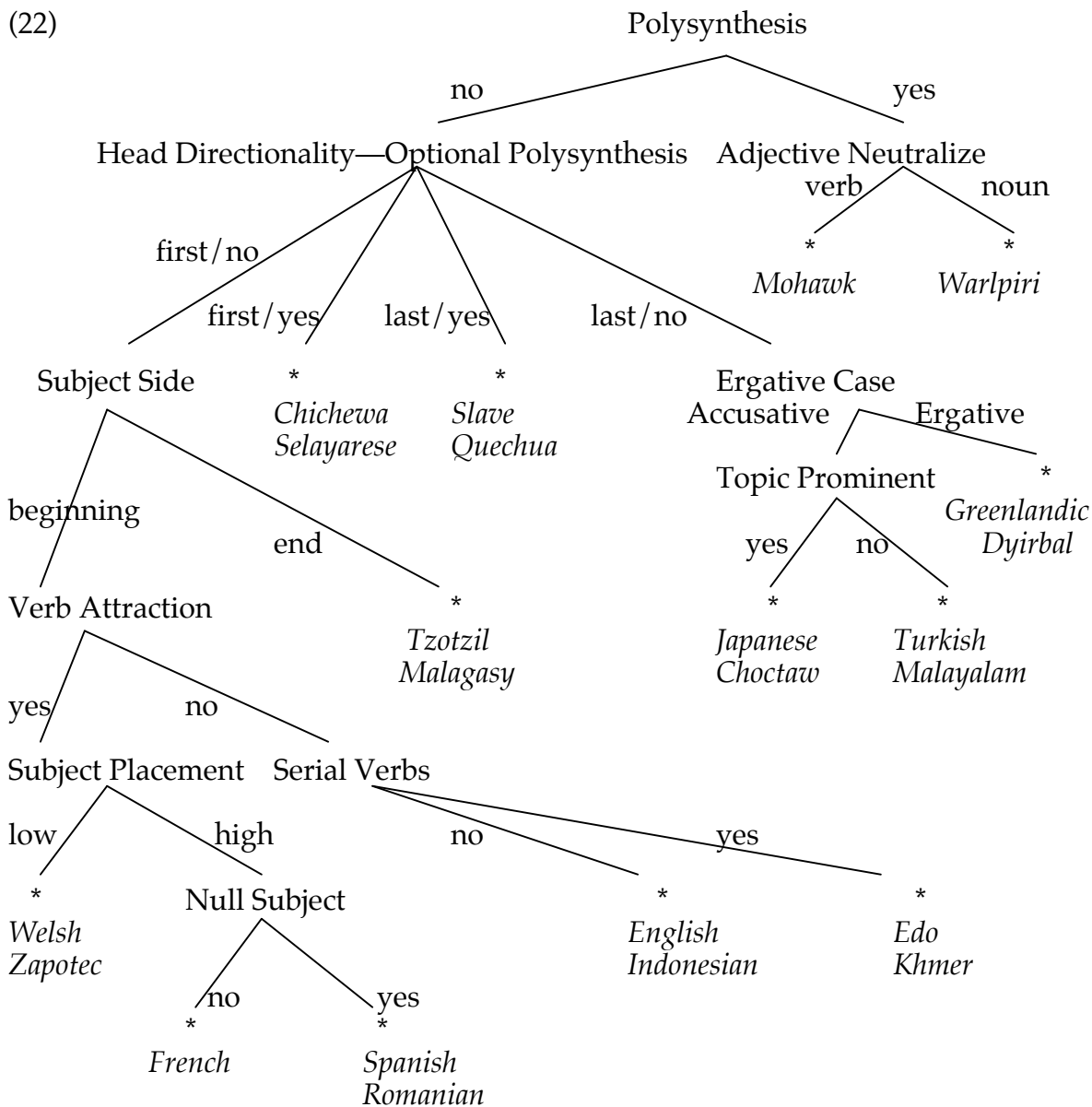
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parametric variation. (Borer 1984 had already argued that parameters were located in the 'inflectional system')

Example from Borer of difference between Lebanese Arabic and Hebrew (from Ouhalla, p. 6):

- | | | | | | |
|------|-----------------------|----------|-----------|-------|-------------------|
| (20) | hkit | ma?-o | la | Karim | (Lebanese Arabic) |
| | talked-I | with-him | to | Karim | |
| | 'I talked with Karim' | | | | |
| (21) | *dibarti | 'im-a | (le/s.el) | Anna | (Hebrew) |
| | talked-I | with-her | to/of | Anna | |
| | 'I talked with Anna' | | | | |

(22)



The Parameter Hierarchy (Baker 2001: 183)

- If Parameter X has logical priority over Parameter Y, then X is written higher than Y and is connected to Y by a downward slanting line.
 - If two parameters are logically independent of each other, then they are written on the same line and separated by a dash.
 - If there are no further parametric choices to be made given a particular setting of a particular parameter, then the branch ends in a terminal symbol *.
- Beneath the asterisk languages are listed that have this combination of parameter settings.
- Structurally similar languages end up being close on the diagram, dissimilar languages far apart.

Since the difference between English-style and Japanese-style word order is attributable to a single parameter, there is only one decision to make by coin flip: heads, heads are initial; tails, heads are final. So we expect roughly equal numbers of English-type and Japanese-type languages. (Baker 2001: 134)

Within the head-initial languages, however, it requires two further decisions to get a verb-initial, Welsh-type language: Subjects must be added early *and* tense auxiliaries must host verbs. If either of these decisions is made in the opposite way, then subject-verb-object order will still emerge. If the decisions were made by coin flips, we would be predict that about 25 percent of the head-initial languages would be of the Welsh type and 75 percent of the English type. This too is approximately correct ... (Baker 2001: 134)

Hixkaryana is mostly OVS:

- (23) kanawa yano toto Hixkaryana (Derbyshire 1985)
 canoe took person
 'the man took the canoe'

Baker endorses Kayne's idea that no special word order parameter involved here
Rather SOV with fronting of VP by a movement rule (Hixkaryana does have SOV as
variant order):

- (24) S[OV] -> [OV]S

But what would determine why H. has this rule and other languages don't besides a
'parameter'?

- (25) Some impossible languages in the theory of Baker (2001)
a. a head initial language that is ergative
b. a polysynthetic language that has serial verbs
c. a subject-final language without a distinct category of 'adjective'
d. etc.

Microparameters (Kayne 2001)

If it were possible to experiment on languages, a syntactician would construct an experiment of the following type: take a language, alter a single one of its observable syntactic properties, examine the result and see what, if any, other property has changed as a consequence. If some property has changed, conclude that it and the property that was altered are linked to one another by some abstract parameter.

Although such experiments cannot be performed, I think that by examining pairs (and larger sets) of ever more closely related languages, one can begin to approximate the results of such an experiment. To the extent that one can find languages that are syntactically extremely similar to one another, yet clearly distinguishable and readily examinable, one can hope to reach a point such that the number of observable differences is so small that one can virtually see one property covarying with another. (Kayne 2001: 5-6)

... in Northern Italy alone one can individuate at least 25 syntactically distinct languages/dialects solely by studying the syntax of subject clitics. More recently, I have had the privilege of participating in a Padua-based

syntactic atlas/(micro)comparative syntax project with Paola Benincà, Cecilia Poletto, and Laura Vanelli, on the basis of which it is evident that one can individuate at least 100 syntactically distinct languages/dialects in Northern Italy. A very conservative estimate would be that present-day Italy has at least 500 syntactically distinct-languages/dialects. 500,000 would in consequence, I think, then be a very conservative extrapolation to the number of syntactically distinct languages/dialects in the world at present. (Kayne 2001: 7)

the number of independent binary-valued syntactic parameters needed to allow for 5 billion syntactically distinct grammars is only 33 (2 raised to the 33rd power is about 8.5 billion) ... it seems plausible that the child is capable of setting at least that many syntactic parameters' (p. 8)

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