4. TYPOLOGY, UNIVERSAL GRAMMAR, AND PARSING

<table>
<thead>
<tr>
<th></th>
<th>Prep</th>
<th>10</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postp</td>
<td>3</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Correlations between word order and adposition order (Greenberg 1963)

Table 1

(1) UG characterizes the notion ‘possible human language’, not the notion ‘probable human language’.

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. \textit{These universals are probably descriptive generalizations that should be derived from principles of UG.} (Chomsky 1998: 33; emphasis added)

[W]hat we ‘know innately’ are the principles of the various subsystems of \(S_0\) [= the initial state of the language faculty — FJN] and the manner of their interaction, and the parameters associated with these principles. What we learn are the values of these parameters and the elements of the periphery (along with the lexicon, to which similar considerations apply). The language that we then know is a system of principles with parameters fixed, along with a periphery of marked exceptions. (Chomsky 1986: 150-151)

it would make sense if children, too, instinctively work their way down the hierarchy, taking advantage of its logical structure to avoid agonizing over needless decisions (Baker 2002: 192)

(2) \(W_1 - W_2 - W_3 - \ldots - W_n \rightarrow W_n - \ldots - W_3 - W_2 - W_1\)

(3) Guiding assumption in mainstream generative work: there is no disparity between the notions \textit{typologically} significant generalization and \textit{linguistically} (i.e. grammatically) significant generalization

Chinese is consistently head final except in rule expanding \(X’\) to \(X^0\) (if the head is verbal it precedes the complement)

(4) (Huang 1994):
   a. \(XP \rightarrow YP X’\)
   b. \(X’ \rightarrow YP X’\)
   c. \(X’ \rightarrow c’. X^0 YP \text{ iff } X = [+v]\)
   c”. \(YP X^0\) otherwise
(5) \[ \text{CP} \xrightarrow{[\text{spec, CP}]} C' \xrightarrow{\text{IP}} C \xrightarrow{\text{IP}_1} \] (Kayne 1994)

(6) *NDem & NumN predicted by Kayne
But Berber, Welsh, Hebrew, Zapotec, etc. have this correlation
These languages have and extra movement of demonstratives (Cinque 1996)

(7) Possible orders of V, direct object, complement PP₁, and adjunct PP₂:

<table>
<thead>
<tr>
<th></th>
<th>PP₂</th>
<th>PP₁</th>
<th>NP</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>PP₁</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>PP₁</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>NP</td>
<td>PP₁</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>NP</td>
<td>PP₁</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HEADEDNESS  | THETA  | CASE  | LANGUAGE
---|--------|-------|--------
 a. final | left   | left  | Japanese |
 b. final | left   | right | Chinese (future) |
 c. final | right  | left  | * |
 d. final | right  | right | Chinese (present) |
 e. initial | left  | left  | Kpelle (past) |
 f. initial | left  | right | * |
 g. initial | right | left  | Kpelle (present) |
 h. initial | right | right | English |

Combinations of the headedness, direction of theta-role assignment, and direction of case assignment parameters (Travis 1989)

Table 2

For specific proposals concerning marked values to entail testable claims, these claims will have to hold in an ‘external’ domain, a domain other than that of the distribution of morphemes or grammatical well-formedness. Claims to explanatory adequacy will have to be grounded in such domains. Natural candidates for such a domain wherein markedness proposals make empirically testable claims are language change and acquisition. (Lightfoot 1979: 76-77; emphasis added)

[In] determining which notions are encoded in a language’s morphology, the child is faced with a formidable search problem ... [B]y imposing a weighting on the child’s hypotheses, one could account for the large disparities in the prevalence of various grammatical encodings in the world’s languages, and in the speed of acquisition of various encodings by children. (Pinker 1984: 168-171)
One intriguing possibility is that the relative accessibility for children of alternative schemes for partitioning meaning in a given conceptual domain is correlated with the frequency with which these schemes are instantiated in the languages of the world. ... It is plausible that relative frequency is correlated with ‘ease’ or ‘naturalness’ for the human mind. (Bowerman 1985: 1306).

(8)

a. Cross-linguistically frequent properties of language are reflected by correspondingly simple (unmarked) properties of grammars.
b. Cross-linguistically frequent properties of language are acquired early by the child.
c. Cross-linguistically frequent properties of language are diachronically stable.

If (8a-c) were right, then typology would be relevant to gram theory in two complementary ways:

1. One could appeal to grammatical theory to explain typological distribution
2. Typological distribution would be a reliable heuristic for grammatical analysis

But they are not right!

Emonds 1980: Irish and other VSO languages are underlingly SVO: they have rule that fronts the verb. Their grammars are ‘more complicated, therefore rarer’ (p. 44).

Baker 2001: the more ‘choices’ a language learner needs to make on the Parameter Hierarchy, the rarer the language type is claimed to be.

(9) a. Who did you talk to?
   b. Mary was spoken to.

**Stranding grammars are simpler than non-stranding grammars:**

(10) a. NON-STRANDING LANGUAGES: The lexical categories N, V, and A are proper governors. The lexical category P is not a proper governor.
b. STRANDING LANGUAGES: All four lexical categories are proper governors.

A popular reanalysis approach to stranding (Hornstein & Weinberg 1981)

(11) a. You talked_ [to who] > You_v[talked to] who > Who_i did you _v[talk to] e_i?
b. e was spoken_ [to Mary] > e was_v[spoken to] Mary > Mary_i was_v[spoken to] e_i

But reanalysis demands implausible lexical items:

(12) a. Which shoes did you [walk across Europe in] ___? (Jones 1987)
b. Which of the two knives did you [pay twice for] ___? (Inada 1981)
Gapping doesn’t treat the V-P complex as a verb:
(13)   a. *John looked at Mary and Bill ___ Sue.
       b. John looked at Mary and Bill ___ at Sue.

Nor does Heavy NP-shift:
(14)   a. John looked at [the woman he loved] very often.
       b. John looked very often [at the woman he loved]
       c. *John looked at very often [the woman he loved].

Extraposition out of a lexical item would be necessary:
(15)   What did you [talk to that guy ___ about] ___ who was here yesterday?

Mutually incompatible analyses, where *wh*-movement and passive both apply:
(16)   a. Which problems has Harry been [[talked to] e about] e?
       b. Who would you like to be [[sung to] e by] e?

If P is a proper governor, then V and P don’t have to be adjacent:
(17)   a. Who did you give all those books about golf to?
       b. Which burner did you leave the pot on?

Most interesting prediction of this analysis: stranding is possible with extraction of NP from PP adjuncts to VP:
(18)

This is correct:
(19)   a. Which shoes did you walk across Europe in?
       b. Which ball park did Ruth hit the most home runs in?
       c. Which knife shall we use to cut the turkey with?
       d. Which red-headed man is Mary standing beside?

See Bayer (1999) on problems with Kayne’s treatment of COMP-final language’s lack of Wh-movement

<table>
<thead>
<tr>
<th></th>
<th>V-final</th>
<th>SVO</th>
<th>V-initial</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Wh-in situ</em></td>
<td>71</td>
<td>42</td>
<td>16</td>
</tr>
<tr>
<td>Final Q particles</td>
<td>73</td>
<td>30</td>
<td>13</td>
</tr>
</tbody>
</table>

Proportion of languages with Wh-*in situ* and final question particles, by word order type (Dryer 1991) Table 3
The Parameter Hierarchy (Baker 2001: 183)

<table>
<thead>
<tr>
<th>V-initial</th>
<th>V-medial</th>
<th>V-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>30</td>
<td>64</td>
</tr>
</tbody>
</table>

Percent of languages of each type with explicit dependent (case) marking
(Siewierska and Bakker 1996)

Table 4

(21) *the man met you ___ is my friend
(22) *[NP NP tense VP]
It is difficult to believe that everyone who knows [this filter] has been explicitly corrected (or has observed corrections) for violation. Dismissing this possibility, we must assign to the language faculty some principle that leads to postulating [the presence of this filter] as the ‘unmarked case’ unless there is specific evidence to the contrary. (Chomsky and Lasnik 1977: 437)

(23) \[NP\text{the man own the land}] come over

(24) There is little or no correlation between age of acquisition and typological frequency:
   a. American children acquire P-stranding before pied-piping (Karin Stromswold, personal communication)
   b. French-speaking children have the verb-raising parameter from the earliest multi-word utterances (Pierce 1992)
   c. there is no period during which German-speaking children fail to set the V2 parameter (Poeppel and Wexler 1993)
   d. the null subject parameter is set very early, regardless of whether the language is null subject or not (Valian 1991)
   e. children acquiring English, German, and French evidence strong knowledge of locality in wh-extraction domains at early ages (Roeper and De Villiers 1994)

(25) The Strong Continuity Hypothesis: The parameters of UG are set early and are not subject to change in the course of development (see especially Lust, Suñer and Whitman 1994)

This hypothesis is probably too strong, however (Clahsen and Penke 1992; Radford 1996; Clahsen, Eisenbeiss, and Penke 1996)

(26) Early Immediate Constituents (EIC) (Hawkins 1994)
   The human parser prefers linear orders that maximize the IC-to-non-IC ratios of constituent recognition domains (CRD).

(27) a. ?I consider everybody who agrees with me and my disciples about the nature of the cosmos (to be) smart.
   b. I consider (to be) smart everybody who agrees with me and my disciples about the nature of the cosmos.

(28) a. ?I met the twenty three people who I had taken Astronomy 201 with last semester in the park.
   b. I met in the park the twenty three people who I had taken Astronomy 201 with last semester.
(29) a. 
\[
\begin{array}{c}
\text{S} \\
\text{NP} \\
\text{VP} \\
\text{I} \\
\text{V} \\
\text{met} \\
\text{NP} \\
\text{PP} \\
\text{the 23 ... 201 in the park} \\
\end{array}
\]

b. 
\[
\begin{array}{c}
\text{S} \\
\text{NP} \\
\text{VP} \\
\text{I} \\
\text{V} \\
\text{met} \\
\text{P} \\
\text{NP} \\
\text{D} \\
\text{N'} \\
\text{in the park the 23 ... 201} \\
\end{array}
\]

(30) a. That John will leave is likely.
b. It is likely that John will leave.

(31) a. Mary-ga [kinoo John-ga kekkonsi-ta to] it-ta
'Mary said that John got married yesterday'
b. [kinoo John-ga kekkonsi-ta to] Mary-ga it-

(32) a. \[s_s[\text{that}_s[\text{John will leave}]]_{\text{VP}}[\text{is likely}]]

b. \[s_{\text{NP}}[\text{it}]_{\text{VP}}[\text{is likely}_s[\text{that}_s[\text{John will leave}]]]]

(33) a. \[s_l[\text{Mary-ga}_{\text{VP}}s_l[\text{kinoo John-ga kekkonsi-ta} to] it-ta]]

(34) a. 
\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{NP} \\
\text{PP} \\
\text{P} \\
\text{NP} \\
\end{array}
\]

b. 
\[
\begin{array}{c}
\text{VP} \\
\text{PP} \\
\text{NP} \\
\text{V} \\
\end{array}
\]

c. 
\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{NP} \\
\text{PP} \\
\text{NP} \\
\text{P} \\
\end{array}
\]

d. 
\[
\begin{array}{c}
\text{VP} \\
\text{PP} \\
\text{NP} \\
\text{V} \\
\end{array}
\]

(35) a. [N Adj [C S]]
b. [Adj N [C S]]
c. [[S C] N Adj]
d. [[S C] Adj N]
e. [N Adj [S C]]
f. [Adj N [S C]]
g. [N [C S] Adj]
h. [Adj [C S] N]
i. [N [S C] Adj]
j. [Adj [S C] N]
k. [[C S] N Adj]
l. [[C S] Adj N]
The Prepositional Noun-Modifier Hierarchy (PrNMH) of Hawkins 1983:

(37) PrNMH
    If a language is prepositional, then if RelN then GenN, if GenN then AdjN, and if AdjN then DemN.

(38)
    a. $\text{pp}[P_{NP}[\_\_N\ldots]]$ (Arabic, Thai)
    b. $\text{pp}[P_{NP}[\_\_N\ldots]; P_{PP}[P_{NP}[\text{Dem N}\ldots]]$ (Masai, Spanish)
    c. $\text{pp}[P_{NP}[\_\_N\ldots]; P_{PP}[P_{NP}[\text{Dem N}\ldots]; P_{PP}[P_{NP}[\text{Adj N}\ldots]]$ (Greek, Maya)
    d. $\text{pp}[P_{NP}[\_\_N\ldots]; P_{PP}[P_{NP}[\text{Dem N}\ldots]; P_{PP}[P_{NP}[\text{Adj N}\ldots]; P_{PP}[P_{NP}[\text{PossP N}\ldots]]$ (Maung)
    e. $\text{pp}[P_{NP}[\_\_N\ldots]; P_{PP}[P_{NP}[\text{Dem N}\ldots]; P_{PP}[P_{NP}[\text{Adj N}\ldots]; P_{PP}[P_{NP}[\text{PossP N}\ldots]; P_{PP}[P_{NP}[\text{Rel N}\ldots]]$ (Amharic)

The Greenbergian correlations hold better at surface level than at deep level.

(39) German and Dutch:
    a. main clause declaratives: SVO
    b. subordinate clauses: SOV

But German and Dutch are not typologically SOV.

(40) SURFACE ORDER AND TYPOLOGICAL GENERALIZATIONS
    a. Dutch and German are more ‘consistent’ at the surface than underlyingly.
    b. Despite Bach (1970a), Amharic is typologically more like an OV than a VO language.
    c. Languages with discourse-governed word order (where it is hard to make a case for one or another deep order of elements) manifest the correlations associated with that surface order having the highest text frequency (see Table 5).
    d. Some languages have been argued by generativists to have no underlying order of subject, object, and verb (Kiss 1987 for Hungarian, Hale 1992
for Warlpiri, etc.) Clearly, in such languages the Greenbergian correlations cannot be captured at D-structure.

<table>
<thead>
<tr>
<th>Language</th>
<th>Frequency</th>
<th>Case Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ute</td>
<td>72%</td>
<td>GenN, Po</td>
</tr>
<tr>
<td>Tlingit</td>
<td>67%</td>
<td>GenN, Po, RelN</td>
</tr>
<tr>
<td>Huallaga Quechua</td>
<td>69%</td>
<td>GenN, Po, RelN</td>
</tr>
<tr>
<td>Trumai</td>
<td>65%</td>
<td>GenN, Po</td>
</tr>
<tr>
<td>Koryak</td>
<td>66%</td>
<td>GenN, Po</td>
</tr>
<tr>
<td>Tacana</td>
<td>86%</td>
<td>GenN, Po, Clause-final subordinator</td>
</tr>
<tr>
<td>Takelma</td>
<td>85%</td>
<td>GenN, Po</td>
</tr>
<tr>
<td>Hupa</td>
<td>53%</td>
<td>GenN, Po</td>
</tr>
<tr>
<td>Cherokee</td>
<td>(more frequent)</td>
<td>GenN, Po</td>
</tr>
<tr>
<td>Korana</td>
<td>89%</td>
<td>GenN, Po, Clause-final Q, etc.</td>
</tr>
</tbody>
</table>

Frequency of OV order and OV characteristics among languages with purely discourse-governed orders (Dryer 1989)

Table 5


Language design appears to be problematic from a parsing-theoretic perspective, though elegant regarded in isolation from considerations of use. (Chomsky 1991: 448)

<table>
<thead>
<tr>
<th>Property</th>
<th>V-final</th>
<th>SVO</th>
<th>V-initial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postpositional</td>
<td>96</td>
<td>14</td>
<td>09</td>
</tr>
<tr>
<td>Relative-Noun</td>
<td>43</td>
<td>01</td>
<td>00</td>
</tr>
<tr>
<td>Standard of comparison-Adjective</td>
<td>82</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>Predicate-Copula</td>
<td>85</td>
<td>26</td>
<td>39</td>
</tr>
<tr>
<td>Subordinate clause-Subordinator</td>
<td>70</td>
<td>06</td>
<td>06</td>
</tr>
<tr>
<td>Noun-Plural word</td>
<td>100</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Adpositional phrase-Verb</td>
<td>90</td>
<td>01</td>
<td>00</td>
</tr>
<tr>
<td>Manner Adverb-Verb</td>
<td>91</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Verb-Tense/aspect aux verb</td>
<td>94</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Verb-Negative auxiliary</td>
<td>88</td>
<td>13</td>
<td>00</td>
</tr>
<tr>
<td>Genitive-Noun</td>
<td>89</td>
<td>59</td>
<td>28</td>
</tr>
<tr>
<td>Sentence-Question particle</td>
<td>73</td>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>Wh-in situ</td>
<td>71</td>
<td>42</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 6

Percent of V-final, SVO, and V-initial languages manifesting particular properties (Dryer 1991)
Occurrence of distinctive reflexives:

<table>
<thead>
<tr>
<th></th>
<th>3rd person</th>
<th>1st / 2nd Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Old English</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>French</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>*</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Faltz and Comrie have argued that the data in (42) result from it being more ‘useful’ to have 3rd person reflexives than 1st or 2nd, since that helps to reduce ambiguity.

DIFFERENTIAL OBJECT MARKING (DOM): The higher in the hierarchies of animacy and/or definiteness (see 2 and 3) a direct object is, the more likely it is to be case marked in a particular language:

(43) Animacy Hierarchy: Human > Animate > Inanimate
(44) Definiteness Hierarchy: Personal Pronoun > Proper Noun > Definite NP > Indefinite Specific NP > Non-specific NP

<table>
<thead>
<tr>
<th></th>
<th>NP</th>
<th>+def</th>
<th>-def</th>
<th>+pron</th>
<th>-pron</th>
<th>+anim</th>
<th>-anim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subj</td>
<td>3151</td>
<td>3098</td>
<td>53</td>
<td>2984</td>
<td>167</td>
<td>2948</td>
<td>203</td>
</tr>
<tr>
<td>Obj</td>
<td>3151</td>
<td>1830</td>
<td>1321</td>
<td>1512</td>
<td>1639</td>
<td>317</td>
<td>2834</td>
</tr>
</tbody>
</table>

Table 7: Frequencies in the SAMTAL corpus of spoken Swedish (Jäger 2003)

An intuition which recurs in the literature on DOM is that it is those direct objects which are most in need of being distinguished from subjects that get overtly case marked. This intuition is sometimes expressed as the idea that the function of DOM is to distinguish subject from object. ... In a weaker form, the intuition can be understood in the following terms: the high prominence which motivates DOM for objects is exactly the prominence which is unmarked for subjects. Thus it is those direct objects which most resemble typical subjects that get overtly case marked. (Aissen 2003)

<table>
<thead>
<tr>
<th>Reflexive pronoun</th>
<th>Number of occurrences in corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>myself</td>
<td>169</td>
</tr>
<tr>
<td>yourself</td>
<td>94</td>
</tr>
<tr>
<td>himself</td>
<td>511</td>
</tr>
<tr>
<td>herself</td>
<td>203</td>
</tr>
<tr>
<td>itself</td>
<td>272</td>
</tr>
<tr>
<td>TOTAL 3rd PERS. SG.</td>
<td>986</td>
</tr>
</tbody>
</table>

Table 8: Reflexive Pronoun Occurrence in a million-word collection of English texts (Johansson and Hofland 1989)
(45) Johansson and Hofland 1989:

a. I 7620 myself 169 = 2.2%

b. he 9068 himself 511 = 5.6%

<table>
<thead>
<tr>
<th>Reflexive pronoun</th>
<th>Number in corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>myself</td>
<td>151</td>
</tr>
<tr>
<td>yourself</td>
<td>189</td>
</tr>
<tr>
<td>himself</td>
<td>129</td>
</tr>
<tr>
<td>herself</td>
<td>43</td>
</tr>
<tr>
<td>itself</td>
<td>296</td>
</tr>
<tr>
<td>TOTAL 3rd PERS. SG.</td>
<td>468</td>
</tr>
</tbody>
</table>

Table 9
Reflexive Pronoun Occurrence in the 1,848,364 word Michigan Corpus of Academic Spoken English

The drive to reduce formal ambiguity cannot be an important force in language design and use because the transmission rate of human speech is so slow.

Sentence (46) was calculated to have 455 parses:

(46) List the sales of products produced in 1973 with the products produced in 1972

[I]nference is cheap, articulation expensive, and thus the design requirements are for a system that maximizes inference. (Levinson 2000: 29)

Grammars provide the most economical coding mechanism … for those speech functions which speakers most often need to perform. More succinctly: Grammars code best what speakers do most. (Du Bois 1985: 362-363)


Washo:

<table>
<thead>
<tr>
<th></th>
<th>Sg.</th>
<th>Dual</th>
<th>Pl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st exclusive</td>
<td>lé</td>
<td>léš̄l (= I &amp; one other)</td>
<td>léw (= I &amp; others)</td>
</tr>
<tr>
<td>1st inclusive</td>
<td>léš̄l ( = I &amp; you [sg.])</td>
<td>léwhu (= I &amp; you [pl.])</td>
<td></td>
</tr>
</tbody>
</table>
(48)  a. Very few deictic systems encode the height of an object in relation to the speech participants
    b. No deictic system encodes whether an object is to the left or the right of the speaker/hearer

A striking fact discovered by Len Talmy: No language has grammatical means for encoding an event structure that is independent of that encoded by the lexical categories in the sentence. That is, no language has sentences like (49) with meanings like (50a-b):

(49) The chair broke-ka
(50) a. The chair broke and I’m currently bored.
    b. The chair broke and it was raining yesterday.

Ambiguity-reduction is not an important factor in language change.

Form-function reanalysis [one of Croft’s principal mechanisms of change — FJN] is syntagmatic: it arises from the (re)mapping of form-function relations of combinations of syntactic units and semantic components. The process may nevertheless have an apparently paradigmatic result, for example, a change of meaning of a syntactic unit … (Croft 2000: 120)

Appeals to ambiguity-reduction are psychologically-implausible

Word order frequencies:
(51) SVO/SOV > VSO > VOS/OSV > OSV

If speakers were really driven to reduce ambiguity, they would put the object before the subject

It is easier to predict the properties of the direct object of a transitive sentence given the subject than to predict properties of the subject, given the direct object

So an ambiguity-reduction theory predicts objects to precede subjects

An ambiguity-reduction theory also makes the wrong predictions with regard to grammatical relations and case-marking

Subjects are the least likely grammatical relation to be overtly case-marked — the more ‘oblique’ the relation, the more likely case marking is

But case marking not only reveals properties of the element case-marked, but it also reveals properties of other sentential elements, in particular the predicate

So, a benefactive marker, say, on an NP restricts severely the class of verbs possible in the sentence, namely, to those that can take benefactive arguments.

An ambiguity-reduction theory predict incorrectly that benefactive NPs should in general occur earlier than (nonpredictive because non-case-marked) subjects
REFERENCES

5. PARSING AND BASIC WORD ORDER TYPOLOGY

(1) The Basic Word Order Paradox: Speakers rarely utter sentences with ‘canonical’ constituent order (main clause declaratives in which all argument positions are filled by lexical NPs). But then why are typologies based on ‘canonical’ constituent order so useful?

Within the context of typological studies the term ‘basic order’ is typically identified with the order that occurs in stylistically neutral, independent, indicative clauses with full noun phrase (NP) participants … It must be remembered that the word order correlations constituting the word order type… are established in terms of the meta-theoretical concept of ‘basic order’. Therefore the determined correlations hold only for a limited subset of the actual linearization patterns found in the language. (Siewierska 1988: 8, 25)

(2) Greenberg’s 6-way classification:
VSO, SVO, SOV, VOS, OSV, OVS

<table>
<thead>
<tr>
<th>Languages</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOV</td>
<td>180</td>
<td>45</td>
</tr>
<tr>
<td>SVO</td>
<td>168</td>
<td>42</td>
</tr>
<tr>
<td>VSO</td>
<td>37</td>
<td>9</td>
</tr>
<tr>
<td>VOS</td>
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<td>3</td>
</tr>
<tr>
<td>OVS</td>
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<td>1</td>
</tr>
<tr>
<td>OSV</td>
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<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>402</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>V-initial</th>
<th>V-medial</th>
<th>V-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>30</td>
<td>64</td>
</tr>
</tbody>
</table>

Table 2
Percent of languages of each type with explicit dependent (case) marking
(Siewierska and Bakker 1996)

Cayuga (Iroquoian) — 1-2% of clauses contain 3 major constituents (Mithun 1987)
Chamorro (Austronesian) — 10% of transitives have 2 lexical arguments (Scancarelli 1985)
Coos (Penutian) — 2-3% of clauses contain 3 major constituents (Mithun 1987)
French (Romance) — French preferred clause structure is [(COMP) clitic+Verb (X)]. Only 3% of clauses contain lexical subjects (Lambrecht 1987; this conference)

German (Germanic) — even ditransitive verbs in spoken discourse tend to follow Preferred Argument Structure (Schuetze-Coburn 1987)

Hebrew (Semitic) — 93% of transitive clauses lack a subject NP (Smith 1996)

Huallaga Quechua (Andean) — in one corpus, only 8% of sentences contained both a noun subject and a noun object (Weber 1989)

Mam (Mayan) — 1% of clauses have 2 lexical arguments. (England 1988)

Malay (Austronesian) — ‘Malay is thus similar to what Du Bois (1985) has described for Sacapultec Maya: it has a “Preferred Argument Structure”’ (Hopper 1988: 126)

Ngandi (Australian) — 2% of clauses contain 3 major constituents (Mithun 1987)

‘O’odham = Papago (Uto-Aztecan) — only 9% of transitives have 2 overt arguments (Payne 1992)

Rama (Chibchan) — transitive clauses with 2 NPs are rare (Craig 1987)

Sacapultec (Mayan) — in connected discourse, only 1.1% of clauses have 2 lexical arguments. (Du Bois 1985; Du Bois 1987)

Yagua (Peba-Yaguan) — in a corpus of 1516 clauses, only 3% contained both a noun subject and a noun object (Payne 1990)

Even English, non-null-subject and considered rigidly SVO — a corpus of 20,794 sentences (from telephone conversations) included only 5,975 (29%) that were SVO (Dick and Elman 2001)

(4) Two two-way typological parameters (Dryer 1991, Dryer 1997)
   a. SV vs. VS
   b. OV vs. VO

(5) Arguments for two two-way typological parameters (Dryer 1997)
   a. A number of languages are indeterminately VSO or VOS — the revised typology classifies them identically (i. e., VO and VS).
   b. The fact that VSO and VOS have same the typological properties now follows.
   c. The fact that VSO languages and VOS languages easily change from one order to the other now follows.
   d. Cross-linguistically, clauses are rare with both an N subject and an N object
   e. Some languages can be classified by this typology, but are too ‘inconsistent’ with respect to the six-way typology.
   f. Some languages can be classified with respect to SV/VS, but not by OV/VO, or vice-versa. Therefore, it is correct to separate out the two parameters.
   g. It is the OV/VO parameter that is central for typological predictions.
   h. The six-way typology does not distinguish between transitive subjects and intransitive subjects, yet they often behave differently (e. g., Spanish is typically SVO, but VS).
Percent of V-final, SVO, and V-initial languages manifesting particular properties (Dryer 1991)

(6)  a. VSO languages are VS and VO  
     b. SVO languages are SV and VO

(7) a.  
    \[ \text{IP} \]  
    \[ \text{NP}_{\text{subj}} \]  
    \[ \text{I} \]  
    \[ \text{VP} \]  
    \[ \text{V} \]  
    \[ \text{NP}_{\text{obj}} \]  
    \[ \text{PP} \]  
    \[ \text{V} \]  
    \[ \text{NP}_{\text{obj}} \]  
    \[ \text{PP} \]  
    \[ \text{P} \]  
    \[ \text{NP} \]  

    English — SVO

b.  
    \[ \text{IP} \]  
    \[ \text{I} \]  
    \[ \text{VP} \]  
    \[ \text{V} \]  
    \[ \text{NP}_{\text{subj}} \]  
    \[ \text{V} \]  
    \[ \text{NP}_{\text{obj}} \]  
    \[ \text{PP} \]  
    \[ \text{P} \]  
    \[ \text{NP} \]  
    \[ \text{NP}_{\text{obj}} \]  
    \[ \text{PP} \]  

    Irish — VSO (McCloskey 1991)

<table>
<thead>
<tr>
<th>Property</th>
<th>V-final</th>
<th>SVO</th>
<th>V-initial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postpositional</td>
<td>96</td>
<td>14</td>
<td>09</td>
</tr>
<tr>
<td>Relative-Noun</td>
<td>43</td>
<td>01</td>
<td>00</td>
</tr>
<tr>
<td>Standard of comparison-Adjective</td>
<td>82</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>Predicate-Copula</td>
<td>85</td>
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<td>39</td>
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<tr>
<td>Subordinate clause-Subordinator</td>
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<td>06</td>
<td>06</td>
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<tr>
<td>Noun-Plural word</td>
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<td>24</td>
<td>13</td>
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<tr>
<td>Adpositional phrase-Verb</td>
<td>90</td>
<td>01</td>
<td>00</td>
</tr>
<tr>
<td>Manner Adverb-Verb</td>
<td>91</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Verb-Tense/aspect aux verb</td>
<td>94</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Verb-Negative auxiliary</td>
<td>88</td>
<td>13</td>
<td>00</td>
</tr>
<tr>
<td>Genitive-Noun</td>
<td>89</td>
<td>59</td>
<td>28</td>
</tr>
<tr>
<td>Sentence-Question particle</td>
<td>73</td>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>Wh-in situ</td>
<td>71</td>
<td>42</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3

Percent of V-final, SVO, and V-initial languages manifesting particular properties (Dryer 1991)

<table>
<thead>
<tr>
<th>V-initial</th>
<th>V-medial</th>
<th>V-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>30</td>
<td>64</td>
</tr>
</tbody>
</table>

Table 2

Percent of languages of each type with explicit dependent (case) marking (Siewierska and Bakker 1996)
Table 4
Word order characteristics of VSO and VOS languages
(Dryer 1997:77)

<table>
<thead>
<tr>
<th></th>
<th>VSO</th>
<th></th>
<th>VOS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With</td>
<td>With</td>
<td>%</td>
<td>With</td>
<td>With</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>property</td>
<td>opposite</td>
<td>property</td>
<td>property</td>
<td>opposite</td>
<td>property</td>
</tr>
<tr>
<td>Prep</td>
<td>20</td>
<td>4</td>
<td>83</td>
<td>12</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>NGen</td>
<td>24</td>
<td>3</td>
<td>89</td>
<td>11</td>
<td>3</td>
<td>79</td>
</tr>
<tr>
<td>NRel</td>
<td>22</td>
<td>0</td>
<td>100</td>
<td>6</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>ArtN</td>
<td>14</td>
<td>3</td>
<td>82</td>
<td>7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>NumN</td>
<td>19</td>
<td>5</td>
<td>79</td>
<td>8</td>
<td>1</td>
<td>89</td>
</tr>
<tr>
<td>V-PP</td>
<td>20</td>
<td>0</td>
<td>100</td>
<td>8</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>NegV</td>
<td>23</td>
<td>1</td>
<td>96</td>
<td>10</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>AuxV</td>
<td>16</td>
<td>6</td>
<td>73</td>
<td>5</td>
<td>1</td>
<td>83</td>
</tr>
<tr>
<td>Initial Q</td>
<td>12</td>
<td>7</td>
<td>63</td>
<td>3</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Initial wh</td>
<td>19</td>
<td>5</td>
<td>79</td>
<td>6</td>
<td>2</td>
<td>75</td>
</tr>
</tbody>
</table>

A typical VOS language

(8)

(9)

(10)  a. subject - V  
      b. V - object
Lemma structure plays a central role in the generation of surface structure. In particular, the main verb dictates what arguments have to be checked in the message, and which grammatical functions will be assigned to them. (Levelt 1989: 244)

*Marie Jean voit.

Who does John want to shave?

a. Himself
b. Him

c. Me
d. *Myself
e. *Him

John wants to shave himself,
b. John wants to shave him.
c. John wants to shave me.
d. *John wants to shave me.
e. *John wants to shave him.

Mary thinks that Sue has finally solved the problem.
b. *Mary thinks Sue’s having finally solved the problem.
c. *Mary thinks Sue to have finally solved the problem.

Notice the possible answers to (17)

What does Mary think?

Only (18a) is possible, not (18b) or (18c):

Sue has finally solved the problem.
b. *Sue’s having finally solved the problem.
c. *Sue to have finally solved the problem.

The internal structure of NP arguments has to be preserved as well, as (19a-c) show:

a. Does Alice like the soprano?
b. No, the tenor.
c. *No, tenor.

REFERENCES
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6. TYPOLOGY, UNIVERSAL GRAMMAR, AND LANGUAGE EVOLUTION

TWO ASSUMPTIONS ABOUT SOV VIS-A-VIS SVO ORDER:

(1) SOV order predominates among the languages spoken today.

<table>
<thead>
<tr>
<th></th>
<th>Afr</th>
<th>Eura</th>
<th>A-NG</th>
<th>NAm</th>
<th>SAm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOV</td>
<td>22</td>
<td>26</td>
<td>19</td>
<td>26</td>
<td>18</td>
<td>111</td>
</tr>
<tr>
<td>SVO</td>
<td>21</td>
<td>19</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>57</td>
</tr>
<tr>
<td>VSO</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>12</td>
<td>2</td>
<td>22</td>
</tr>
</tbody>
</table>

Breakdown of genera in terms of basic word order, by area (Dryer 1989)

(2) The historical change OV > VO is both more common than the change VO > OV (Li 1977) and more ‘natural’ (Aske 1998; Vennemann 1973).

(3) Many have argued that OV > VO is more ‘natural’ than VO > OV
   a. Vennemann (1973) points to the loss of case endings in SOV languages through phonological attrition. In such an eventuality, the shift of the verb to the middle serves to demarcate more saliently the subject from the object.
   b. Hawkins (1994) notes that SOV languages with ‘heavy’ objects create considerable parsing difficulty. Processing efficiency is maximally improved by preposing the object to initial position, creating OSV order. Efficiency is also increased (though not as greatly) by postposing the object, creating SVO order. Thus there is a ready parsing-based mechanism for ‘leakage’ from SOV to SVO. It is never advantageous from the point of view of parsing for an SVO language to prepose a heavy object to a position between the subject and the object. And hence, no there is nothing based in language processing that would create ‘leakage’ from SVO to SOV.
   c. Aske (1998) points to discourse-based pressure for the development of a focus position after V in OV languages, leading ultimately to VO order. However, there is no corresponding mechanism for the loss of an NP after V in VO languages. Thus he posits a long-term drift to VO.

(4) SOV languages are more likely to have alternate orderings of S,V, and O than do languages with other basic orderings:

<table>
<thead>
<tr>
<th>VOS</th>
<th>VSO</th>
<th>SOV</th>
<th>SVO</th>
</tr>
</thead>
<tbody>
<tr>
<td>very common</td>
<td>VSO</td>
<td>VOS</td>
<td>OSV</td>
</tr>
<tr>
<td>common</td>
<td>-----</td>
<td>SVO</td>
<td>SVO</td>
</tr>
</tbody>
</table>

Alternate orderings for basic orders (Steele 1978)

(5) INTERIM CONCLUSION: SOV order was once much more typologically predominant than it is now.

(6) Protolanguage had thematic structure (Bickerton 1990).
Protolanguage lacked quantificational structure.

A NEW OBSERVATION ABOUT VO vs. OV TYPOLOGY:

a. VO languages are ‘good at’ representing quantification directly, but ‘bad at’ representing thematic structure directly.

b. OV languages are ‘good at’ representing thematic structure directly, but ‘bad at’ representing quantification directly.

English, a typical SVO language, the verb find, say, can take an agent, a theme, or a locative as a subject:

a. Mary found what she was looking for.

b. My old sofa found a home in the departmental lounge.

c. Noon found Bill eating lunch in the Student Union.

English (VO) vs. German (OV) (Hawkins 1995):

a. **Subject-to-Subject Raising**
   
   E: The noise ceased to get on his nerves.
   G: ?Der Lärm hörte auf, ihn aufzuregen.

b. **Tough Movement**
   
   E: Literature is boring to study.
   G: *Die Literatur ist langweilig zu studieren.

c. **Subject-to-Object Raising**
   
   E: I believe the farmer to have killed the cow.
   G: *Ich glaube den Bauern, die Kuh geschlachtet zu haben.

d. **Out-of-clause Wh-Movement**
   
   E: What did you assume that we would not bring?
   G: *Was hast du angenommen, dass wir nicht mitbringen würden?

e. **Semantic diversity of grammatical relations**
   
   E: My guitar broke a string.
   G: *Meine Gitarre hat eine Seile zerrissen.

f. **Breadth of subcategorization possibilities**
   
   E: This door will open (new possibilities).
   G: Diese Tür  wird sich öffnen / *neue Möglichkeiten öffnen.

Universal 41 (Greenberg 1963: 113)

If in a language the verb follows both the nominal subject and nominal object as the dominant order, the language almost always has a case system.

In the sample of 237 languages presented in Siewierska and Bakker (1994), 64% of SOV languages have explicit case, but only 30% and 42% of SVO and VSO languages respectively.

An SVO underlying structure like (13a) can underlie (13b) and (13c), where the surface position of who uniquely identifies the former as an indirect question and the latter as a direct question:

(13) a. He was wondering [you saw who]

b. He was wondering who you saw

c. Who was he wondering that you saw?
But with no movement of the wh-operator, an SOV underlying structure like (14a) represents the order of elements both in the indirect and the direct question:

(14) he [you saw who] were wondering =
   a. Who is he wondering that you saw? or
   b. He was wondering who you saw.

(15) break
Frame 1.  NP — V — NP  John broke my guitar
         [Agent] [Patient]
2.   NP — V  My guitar broke
     [Patient]
3.   NP — V — PP  A string broke on my guitar
     [Patient] [Locative]
4.   NP — V — NP  My guitar broke a string
     [Locative] [Patient]
5.   NP — V — NP  My guitar broke a world record
     [Instrument] [Patient]

(16) believe
Frame 1.  NP — V — NP  I believe the farmer
         [Agent] [Dative]
2.   NP — V — NP  I believe this report
     [Agent] [Patient]
3.   NP — V — S'I believe that the farmer killed
     the cow
     [Agent] [Object of belief]
4.   NP — V — NP — VP'  I believe the farmer to
     have killed the cow'
     [Agent] [Agent]

(17) CONCLUSION: THE EARLIEST HUMAN LANGUAGE WAS OV

(18) 3 BROAD SCENARIOS FOR THE ORIGIN OF UG CONSTRAINTS:
   a. Big Bang theories — the evolutionary ‘event’ responsible for
      human language was responsible for UG constraints (Chomsky 1988; Chomsky
      1991; Bickerton 1990)
   b. Genetic assimilation theories — UG constraints resulted from the
      nativization of parsing (and other performance?) principles via genetic
      assimilation (the Baldwin Effect) (Berwick and Weinberg 1984; Kirby and
      Hurford 1997)
   c. Constraints as epiphenomena theories — there is no evolutionary
      issue per se, since ‘UG constraints’ are in reality epiphenomenal by-products of
      mechanisms not particular to grammar (Deane 1992; Kluender 1992)

(19) [[[e, osiete-ita] seito ga] rakudaisita] sensei,
     ‘teaching-was student flunked teacher’
     the teacher who the students that (he) was teaching flunked
(20) John-wa Mary-ga nani-o katta kadooka siritagatte iru no
John wants to know whether Mary bought what

(21) NP
   S
   NP
   sensei,
   NP
   VP
   rakudaisita
   S
   NP
   seito-ga
   e
   VP
   osiete-ita

(22) cakicasin, / pro-casin, -GEN mother-NOM John, betrayed / hit himself’s mother John betrayed

(23) Ranked constraints in the binding of Korean Long Distance Anaphors (Moon 1995):
a. Thematic Hierarchy Constraint (LDA must be bound by a thematically higher NP)
b. Larger Domain Preference Constraint (Given potential antecedents for LDA in different domains, the more distant the domain, the stronger the preference)
c. Subject-Orientation Constraint (LDA must be bound by a subject NP)
d. C-Command Constraint (LDA must be bound by a c-commanding NP)
e. Discourse Binding Constraint (LDA must be bound by a prominent discourse NP if no sentential antecedent is available)

(24) *John-wa Mary-ga naze sore-o katta kadooka siritagatte iru no?
   ‘John wants to know [whether [ Mary bought it why]]?’

REFERENCES

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