Typology

Some proposed universals:

- **# of arguments = # of complements** (e.g., $\theta$ criterion) (only a tendency; explanation of tendency; 12 slides)
- **Linking rules** (only modern version holds; explanation for modern version; 9 slides)
- **Head direction parameter** (only a tendency; explanation for tendency; 6 slides)
- **Pro-drop parameter** (no interesting version holds; 4 slides)
- **Recursion** (Piraha; 12 slides)
- **Island constraints** (alternative explanation, evidence; 42 slides)
- **Adj N Numeral** (doesn’t hold; explanation for experimental result; 27 slides)

<table>
<thead>
<tr>
<th>Psychological reality</th>
<th>Typological explanation</th>
</tr>
</thead>
</table>

Examples of general tendency in English

<table>
<thead>
<tr>
<th>Meaning</th>
<th>Form</th>
</tr>
</thead>
</table>
| X moves (to) Y | Subj V PP  
| | X Y |
| X causes Y to move Z | Subj V Obj PP 
| | X Y Z |
| X causes Y to become Z | Subj V Obj RP 
| | X Y Z |
| X causes Y to receive Z | Subj V Obj Obj2 
| | X Y Z |

Proposed universals related to ARGUMENT STRUCTURE

# of arguments = # of complements (cf. theta criterion)

(Lädž et al. 2003)

Do we need a generalization that is specific to language?

- **Grice (1975)**: Maxim of Quantity: Say as much, and only as much, as is needed for the communicative goal.

  : Pragmatic assumption in all kinds of linguistic and non-linguistic communicative acts.

  (cf. also Paul 1889; Zipf 1935; Horn 1984; Levinson 2003)
Pragmatic Mapping Generalizations
(Goldberg, 2004, *Cognition*)

A) The arguments that are expressed are interpreted to be *relevant* to the message being conveyed.

B) Any semantic arguments in the event being conveyed that are *relevant and non-recoverable* from context must be overtly indicated.

…Pragmatic generalization

- Expressed --> Relevant
- Relevant & Non-recoverable --> Identifiable

Recoverable arguments are commonly omitted cross-linguistically:

Chinese
A: *gei3*

"[I] give [you] [some peach]" (Mok and Bryant 2006)

Korean, Japanese, Thai, Hindi, Hungarian, Kannada, Laos…

Typological explanation

Thai:

Recoverable arguments are generally omissible.

Yet speakers often use proper name NPs (nicknames) to refer to self when talking to intimates

Speaker Mai (Ratnambok 2007):

Mai waa Mai tham _ʔa_ ʔa-o-y kwaa qa _ʔik na_

Mai think Mai make _Pat, delicious more restaurant more Part._

Mai[speaker] thinks Mai[speaker] made (it) better than the restaurant.

Typological explanation

English: arguments are not generally omissible, and yet we do have special constructions:

<table>
<thead>
<tr>
<th>Short Passives (e.g., <em>Pat was killed</em>)</th>
<th># arguments expressed</th>
<th># semantic arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2: (Pat, Pat’s killer)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The defunctional object construction (e.g., <em>The tiger killed again</em>) (Goldberg 2001)</th>
<th># arguments expressed</th>
<th># semantic arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2: (the tiger, the tiger’s prey)</td>
<td></td>
</tr>
</tbody>
</table>
So Isomorphic Mapping principle does not hold, but Pragmatic Mapping generalizations do.

Typological explanation

- **Dowty: relatively weak claim**
- Oversimplified account of ergativity
  - Yidin is syntactically ergative with nominals; syntactically accusative with pronouns (Dixon 1979)
- Also, what counts as “subject” “object” differs cross-linguistically (Kuraran 1976; Van Valin 1981; Fried 1993; Morris 1997; Croft 2001; Barndahl 2005)

Proposed Cross-Linguistic Universals
E.g., Dowty (1991) (c.f. also Van Valin 1990):

- if there’s a subject and an object, and
- if there’s an ACTOR and an UNDERGOER then
  - ACTOR - > subject;
  - UNDERGOER - > object,

except when they’re linked the opposite way, in certain (syntactically ergative) languages.

Reformulation of Dowty’s generalization:

- Actors and undergoers tend to be expressed in prominent slots

Prominent slots may be:
- obligatory
- lack case marking
- closer to the verb
- indicated by verb agreement

Actors are salient

-- Visual attention tends to be centered on the actor in an event (Robertson and Suei, 1980; Leslie 1982; 1984).
-- Agent bias (chase vs flee) (Fisher et al. 1994)
-- 9 month olds attribute intentional behavior to even inanimate objects (Culbra et al. 1999)
-- 16 month olds distinguish intentional vs accidental actions (Carpenter et al. 1998).
Undergoers are salient

- Easier to discriminate between events that have distinct endpoints than distinct onsets (Regier and Zheng 2003)
- 6 month olds attend more to changes of state than to changes of motion without corresponding state change (Woodward 1998, 1999)
- Subjects use a wider range of more specific verbs to describe endpoint-focused actions than onset-focused actions (Landau, 2003).
- Eng and Fr speakers are more likely to mention goal-directed paths of motion than atelic paths when describing video clips (Pourc el, 2004).

Reformulation of Dowty's generalization:

Actors and undergoers tend to be expressed in prominent slots

Tendency is explained by the fact that we attend to actors and undergoers.

Particular constructions allow for exceptions (e.g., passive)

"universals" of UG

The "head-direction" parameter (if VO <-> PO)

It is a true universal? Persian is OV and PO

Latin (from Ivan Sag): [leges sine moribus] vanae
"Laws without character are in vain" (the UPenn motto).
Diachronically, Ps often evolve from Vs (due to semantic similarity/conceptual metaphor):

a. Akan (spoken in Ghana)
   o-ye adwumma ma ne ma bimma no
   he does work gives his brother the
   Lá, "He gave his brother the work." (Intended, "He does work for his brother.")

b. Medieval Chinese
   Shuo yu ta dao
   Speak give him Dao
   "Speak to him (about) Dao"

c. Thai
   Than ca his caak krungtheep.
   He will fly leave Bangkok.
   "He will fly from Bangkok."

d. Thai
   Than ca his maas krungtheep.
   He will fly come Bangkok.
   "He will fly to(wards) Bangkok."

e. Efik (Niger-Congo family spoken in Nigeria)
   Da akari shee no
   Take me out now.
   "Cut the tree with an axe."

f. Chinese
   Shoushi le dongxi gen wo la
   Prepare things follow me come
   "Prepare (your) things and come with me."

Also, processing motivation has been proposed:
less cost to keeping V&P close in the string
(Hawkins 1994; Newmeyer 2005)

- VO & PO: V[PO]
- OV & OP: [OP]V

How are parameters supposed to be set exactly?
A problem:
Oddball constructions often provide misleading triggers:

Bagels, I like.

- Does the human conceptual system involve recursion? yes
- Do we presume that all languages necessarily have recursive syntactic patterns?
• Does the human conceptual system involve recursion? yes

• Should we presume that all languages necessarily have recursive syntactic patterns?

• Is it complicated to represent recursion in constructionist approaches? No.

• Sometimes the issue is blocking recursion.

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Elicitation Jan '07 by Gibson, Frank, Redorenko, and Everett

Tried to elicit embedded possessives: “Koho’s spouse’s parent’s dog.”

→ None produced (possible task demand issue)

Embedded clauses:

“Hoegaixoat said she is not giving birth.”

Hoegaixoat spoke. Hoegaixoat spoke. She is not giving birth.

Compelling evidence for recursion would be to find subject relative clauses: [Subj [embedded clause] main verb]

Tried to elicit: The man who killed the jaguar fell down.

→ Non-embedded paraphrases produced (“The man killed the jaguar. He fell down.”)

---

Piantadosi, Stearns, Everett, Gibson (2012):

= Analysis of corpus of stories collected by Sheldon and Everett.

= 15 stories (14 by Sheldon, 1 by Everett)

= Approx. 1000 sentences

= Transcribed morpheme by morpheme by Sheldon with overall glosses

= Tagged for part of speech

---

Piantadosi, Stearns, Everett, Gibson (2012)

160 instances of NP said/speaks followed by clause.

E.g., Lit, “I speak-do. He move on the ground. Crying, TixoIOI”

or Unclear whether best gloss is:

• “I said that TixoIOI is crying on the ground”

• “I spoke. He is moving on the ground. TixoIOI is crying.”

• Semantic dependency doesn’t imply syntactic dependency:

→ You drink, you drive, you go to jail (Everett 2010)

---

Piantadosi, Stearns, Everett, Gibson (2012)

68 possessives. i.e., 68 per 1000.

If possessives are as likely to have possessors as nouns are, should expect .068 * 68 = 4 or 5 embedded possessives.

None found.
• No conjunctions or disjunctions.
• No clear relative clauses
• No unambiguous embedded phrases
• No recursive possessives

→ Looks like no clear evidence for recursion.
(very hard to prove non-existence)

Iterative recursion in repetition of arguments?

E.g., He foreigner Martins foreigner intends to sleep.

• Authors note a caveat: these may be false starts followed by repairs.

• If grammatically licensed, these cases pose a different sort of challenge to the Universal Grammar Hypothesis.

(cf. theta criterion).

Consider Numeral Noun and Adjective Noun orders.

All fixed word orders are attested:

Numbers provided by Culbergson, Smokovsky & Legendre based on Dryer 2008a, b
Other logical possibilities are also attested

- Variable A N order (e.g., French)
- Variable N Num order (e.g., Russian; Sikkimese, Jugl, and Mao
  Nag chu distinct Tibeto-Burman language families Dryer 2000: 31)
- No Numerals (Piraha Frank et al. 2008)
- No grammatical category of Adjectives (Dixon 1977)

• Greenberg Universal:

<table>
<thead>
<tr>
<th></th>
<th>Noun-Adj</th>
<th>Adj-Noun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Num-N</td>
<td>149 (17%)</td>
<td>227 (27%)</td>
</tr>
<tr>
<td>Noun-Num</td>
<td>443 (52%)</td>
<td>32 (4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N-Adj</th>
<th>Adj-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Num-N</td>
<td>3. unmarked</td>
<td>1. harmonic</td>
</tr>
<tr>
<td>N-Num</td>
<td>2. harmonic</td>
<td>4. marked</td>
</tr>
</tbody>
</table>

A N Num

Dominant in 25 known languages, including 9 distinct Tibeto-Burman languages (Dryer 2000).
E.g., Purki:
rdamo bomo ngis
beautiful girl two
‘two beautiful girls’ (Rangan 1989: 122)

• Artificial grammar learning task: exposed people to one of the four language types: orderings of Noun with Adjectives or Numerals.

• Tested their production of new combinations.
• Pts were given feedback: awarded points for matching order of informant (known to lead to probability boosting)

Typological explanation

a. Regularization bias: acquire grammars that minimize variation [induces reduction of variation that may be present in the input to learning]

: domain-general preference for consistency (doing one thing is easier than doing two):

• \{A, Num\} N or N \{A, Num\}

Evidence for substantive bias against marked order?

Typological explanation

CSL are explicitly agnostic about the “locus, scope, experience-dependence, and ultimate source” (pg 307) of the bias against A-N + N-Num,

but they claim that the bias “does not plausibly reflect a domain-general constraint it therefore constitutes evidence for the existence of cognitive biases specific to language” (pg 323).
why should this order be more difficult to learn?

Humans ≠ star nosed mole

Is there a bias against *Adj N; N Num?

Where would bias without a function come from?

How and why would such a specific constraint evolve?

Not life-threatening nor sexually unattractive to produce A-N + N-Num

No spandrel story has been proposed.

Non-functional biases are only descriptive until one motivates how they arise in the course of evolution and how they unfold during development.

(see Blumberg 2006; Drak 2000, Karmiloff-Smith 1994 for relevant discussion)

CSL suggest possible explanation

Syntactic, functionless:

Final-Over-Final constraint (Biberauer, Holmberg and Roberts 2010).

*[[α c]_{AP} β]_{JP}

[[A N] Numeral]

Requires that the A is the head of the [A N] phrase
FOFC is categorical constraint, but ppts produced A N Num structure 60% of the time.

Latin (from Ivan Sag):
\[
[\text{leges} \text{ sine } \text{moribus}] \text{ vaina}
\]
"Laws without character are in vain" (the UPenn motto).

Typological explanation

More plebian explanation: Transfer effects
Undergraduates at Johns Hopkins and might be expected to be familiar with Spanish, a type 3 language (N-A + Num-N).

Typological explanation

Typological explanation

Typological explanation

Goldberg, 2013, Cognition

Possible transfer effect from minor English constructions:

He likes all things linguistic  \[ [[\text{thing }] \text{NP Adj}]\]
He owned something blue.

He saw the man naked. Depictive secondary predicate
He hammered the metal flat. Resultative secondary predicate

\[ \text{The man, big and hairy, scared the child. Heavy postnominal Ap}} \]

Typological explanation

Boys 25 and under ≠ 25 boys
Thing I and Thing II ≠ 1 thing and 2 things

Typological explanation

\[ \begin{array}{|c|c|c|}
\hline
\text{Sample of N-<Adj>-constructions} & \# \text{of instances} & \text{Potential N-<Num>-constructions} & \# \text{of instances} \\
\hline
\text{with} & \text{with} & \text{with} & \text{with} \\
\text{modification} & \text{quantifica} & \text{modification} & \text{quantifica} \\
\text{interpretation} & \text{tion} & \text{interpretation} & \text{tion} \\
\text{(lower bound} & \text{ation} & \text{(lower bound} & \text{ation} \\
\text{given)} & \text{given)} & \text{given)} & \text{given)} \\
\hline
\text{all things } <\text{adj}> & 150 & \text{all things } <\text{Num}> & 0 \\
\text{something } <\text{adj}> & 25,000 & \text{something } <\text{Num}> & 0 \\
\text{made it } <\text{adj}> & 6000 & \text{made them } <\text{Num}> & 0 \\
\hline
\text{[stuff }] <\text{present}} & <\text{adj}> & 4000 & \text{[stuff }] <\text{present}} & <\text{Num}> & 0 \\
\hline
\text{Heavy postposed construction (sample list):} & & \text{Heavy postposed construction} & \text{(possibly exhaustive list):} \\
\hline
\text{N-<adj> then} & 200 & \text{N-<Num> in all} & 1 \\
\text{N-<adj> with} & 200 & \text{N-<Num> at a time} & 200 \\
\text{N-<adj> of} & 4000 & \text{N-<Num> in number} & 3 \\
\hline
\end{array} \]

Table 2: Frequencies of a small sample of constructions that allow N-<Adj>-order with a modification meaning and an attempt to find all of the constructions that allow N-<Num>-order with quantification meaning. (Searches performed on 450 million word COCA corpus on 8/7/17/2012, 12/6/13/2012). Goldberg, 2013, Cognition

• Domain general preference for consistency/simplicity.

• Possible transfer effect from Spanish or minor constructions in English
Culbertson and Newport 2015:

No evidence of a bias against Adj N, N Num order in attempted replication with children

Moral: be suspicious of proposed functionless universals...almost all claimed universals have functional motivations that allow exceptions.

Consistent with the perspective that languages are learned for the purpose of communication.