Language universals and Universal Grammar: definitions

Universals: linguistic properties of all natural languages independent from historical transmission or language contact
Types:
1) absolute universals: shared by all natural languages
2) implicational universals: feature A and feature B exist in a language
   2.1) unilateral universals: if feature A exists, feature B exists but not vice versa
   2.2) bilateral/equivalent universals:
3) statistic/frequency universals: a feature exists with a probability higher than chance

Evidence:
1. crosslinguistic investigation of properties of languages
2. evidence from language acquisition
3. general cognitive abilities

Universal Grammar (UG): definitions

Universal Grammar: the study of the common grammatical properties shared by all natural languages and of the parameters of variation between the languages

Evidence:
Rapid and uniform acquisition of all children without instruction
a) IF a linguistic property of an individual speaker is a property in all known languages and
b) IF the property is not acquired as imitation of input data
→ evidence that the property comes from specific feature of UG

Common linguistic properties:
Semantics: Thematic roles: e.g. AGENT, INSTRUMENT, found in nearly all languages
Syntax: word order patterns of functional categories S, V, O found in nearly all languages

The biological foundations of language (Lenneberg)

Lenneberg's biological premises:
1. cognitive function is species-specific
   - cerebral functions mediate between sensory input and motor output and correspond with cognitive functions
2. specific properties of cognitive function are replicated in every member of the species (form/function invariance)
3. cognitive processes/capacities are differentiated spontaneously with maturation
4. at birth, humans are immature, certain cognitive aspects emerge during infancy, some require extra-organismic stimuli:
   - for development of visual perception it needs "properly illuminated objects"
5. social phenomena emerge via spontaneous adaptation of behavior

Language is the manifestation of species-specific cognitive propensities (Lenneberg, 1996)

The biological foundations of language (Bickerton)

Bickerton (2001): Language faculty is an emergent property of
• biological predispositions
• learning and information processing

Evidence for biological predispositions
• UG and structural evidence from Generative theory
• first language acquisition and the "poverty of stimulus" argument
• animals and symbolic behavior (e.g. Chimpanzees, Grey parrots)
• studies on language deprivation (Creoles, sign languages, individual deprivation "Genie" etc., aphasia research)

Evidence from learning and information processing
Cognitive functioning (incl. language): reduced to neuronal functioning (Churchland, 1992)
• processes of enzephalization
• lateralization
• neuronal maturation

The neuronal approach

• reductionist approach that eliminates psychological explanations for language processing

Neville (1991): competition between inputs
• input deprivation leads to: reduction of responsive neurons
Therefore: early experience influences neuronal development
a) neuron growth (size, number)
b) dendritic branching increases
c) synapse number increase
→ mature values are reached at around age 15

Neural structures → Low-level implementations → Physical symbol systems → Language of thought → Mental structures and language

• in course of competition: important variable is the temporal patterning of the input: neurons that are active together tend to migrate + aggregate

The emergence of symbolic activity

Iconic relationship: signifier and signified have some similarity
Indexical relationship: signifier and signified have a certain spatiotemporal contiguity
Symbolic relationship: signifier and signified are linked by agreement, causality or convention


**Encephalization and lateralization**

**Encephalization**: increase in brain size during an evolution of a species

**Lateralization**: language located in left hemisphere for 95% of right handers and 70% of all lefthanders (Corballis)

- left hemisphere: larger, has Broca/Wernicke areas but language functions are distributed
- left hemisphere: serial processing
- right hemisphere: holistic and spatial processing

---

**Poverty of stimulus and innateness**

Chomsky: choice between parameters of a UG is determined by innate learning mechanisms

LAD: Language Acquisition Device, = a mental organ

Poverty of stimulus: under-determination of theory by data

- child perceives finite number of sentences, acquires comprehension for sentences drawn from infinite set of sentences
- children are only exposed to a finite amount of data
- children appear to converge on a grammar capable of interpreting unfamiliar sentences

**Conclusion**: some aspect of grammar must be innate

- dependence on parental correction of errors is ruled out
- plausible errors never occur, cf.

The dog is barking \(\rightarrow\) is the dog barking?
The dog that is barking is black \(\rightarrow\) is the dog that is barking is black?

---

**Universal principles in first language acquisition**

- result of acquisition: sets of grammatical rules
- rules must be productive for novel items
- washed/*doed \(\rightarrow\) typical errors show progress in rule formation
- research: focuses on early utterances

**Phonological development**

1) to separate noises/non-speech from speech
- ability is present at birth, newborns respond to human sounds
2) articulatory movements start even before
- articulatory skills emerge at around 6 months

Babbling: experimenting to gain control of articulatory organs
- independent of particular languages, therefore universal
3) 12 months: babbling increases until children produce understandable words
- babbling-real words overlap for weeks
- babbling ends: lexicon of about 50 words

---

**Universal features of phonological acquisition 1**

Across all languages:

- vowels are acquired before consonants
- stops before other consonants
- place of articulation: 1) labials 2) velars, alveolars, 3) palato-alveolars, 4) dentals
- phonemic contrasts emerge in word-initial position
- sounds in frequent words are acquired before peculiar sounds in infrequent words like \(3\)

**Age 2/ age 4 consonants:**

<table>
<thead>
<tr>
<th>Stops</th>
<th>Fricatives</th>
<th>Affricates</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>p b m</td>
<td>f v</td>
<td>f j d s</td>
<td>w j</td>
</tr>
<tr>
<td>t d n</td>
<td>s z</td>
<td>l r</td>
<td></td>
</tr>
<tr>
<td>k g ?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(-\rightarrow this inventory enlarges over time, cf. \(d d\)\)

---

**Universal features of phonological acquisition 2**

**Universal phonetic processes of replacement of more difficult sounds with easier sounds (in perception/production):**

- systematic deletion to simplify syllabic structure: reduction

1) s deletion
   - stop \(\rightarrow\) /t/
   - small \(\rightarrow\) /m/
   - desk \(\rightarrow\) /deks/

2) liquid deletion
   - try \(\rightarrow\) /t/ with fricatives
   - crumb \(\rightarrow\) /g/ with fricatives
   - bring \(\rightarrow\) /g/

3) nasal deletion
   - bump \(\rightarrow\) /b/ with fricatives
   - tent \(\rightarrow\) /t/ with fricatives

4) deletion of final consonants
   - dog \(\rightarrow\) /d/ 
   - bus \(\rightarrow\) /b/ 

---

**Universal features of phonological acquisition 3**

**Universal phonetic processes of replacement of more difficult sounds with easier sounds substitution:**

1) stopping (fricative \(\rightarrow\) stop)
   - sing \(\rightarrow\) /s/ 
   - thing \(\rightarrow\) /s/ 
   - this \(\rightarrow\) /s/ 

2) fronting (forward shift of place of articulation)
   - ship \(\rightarrow\) /s/ 
   - jump \(\rightarrow\) /j/ 

3) gliding (liquid \(\rightarrow\) glide)
   - lion \(\rightarrow\) /j/ 
   - look \(\rightarrow\) /l/ 
   - story \(\rightarrow\) /s/ 

4) assimilation: modification of one segment under influence of neighboring sounds
   - forward voicing
   - bell \(\rightarrow\) /b/ 
   - pig \(\rightarrow\) /g/ 
   - stop \(\rightarrow\) /s/ 

---

2
Universal features of morphological acquisition 1

- Initially: no internal morphological structure, no affixes
- Words: single root morphemes → gradual basis for word formation
  a) Irregular plurals/past: initially on case by case
     mouse → mice run → ran
  b) Overuse of rule (overgeneralization)
     mouse → mouses run → runned
  c) a) + b) mice ranned
  d) Complete rule acquisition

- Grammatical morpheme acquisition order:
  - ing/plural – s
  - the, a
  - ed
  - 3rd person – s
  - aux

- Frequency of occurrence in speech:
  the, a – ing/ plural – s – aux – ed – the, a

Universal features of morphological acquisition 2

- Factors of order of acquisition
  a) Utterance – final is more focal
  b) Syllabicity (<ing can form own syllable, -s cannot)
  c) Form meaning – relationship 1:1 is conducive
     whereas -s stands for 3 different grammatical phenomena
  d) Number of exceptions (past/plural)
  e) Allomorphic variance cats dogs houses (-s/-z/-s')

Test of productivity e.g. for plural: wug - test

word formation

a) Productivity of derivational morphemes - er, compounds, adj – y /
   + ly, instrumental – er increases
b) Morphemes with restricted application like - ly (*fast-ly) are
   acquired much later
   → Lack of exceptions is supportive cf. *rats-eater vs. mice-eater

c) Multisyllable compounds: order errors like *bird black

Phonological Universals: evidence from language change

Different languages change in similar ways, determined by universal principles

Lenition vs. Fortition (Weakening vs. Strengthening)

1. Lenition hierarchy of strength
   a) Voiced higher than voiceless
   b) Stops higher than continuants
   c) Consonants higher than semi-vowels
   d) Orals higher than glottals
   e) Front/back vowels higher than central vowels

- Change: Usually from strong to weak [k] → [ʔ]

Lenition examples: Rotational
   probable root: [k[i]t] → rhotic between vowels [wə][e] (was) in plural: [wə] [wə] (were)

Therefore: lenition [i] → [e]

Fortition examples: [n] → [ŋ] (Tok Pisin)

Sound addition 1

Universal preference for CV-structure across languages
- Tendency of syllables to end in vowels, allowing no final consonants

Maori English Japanese
luki cook kuki
mapi map mapi
taberu

- Excrescence: C → CCC

Consonant added between 2 consonants

a) Something → [sump[i]ng]
   amig → [imp[i]ng]
   Iyume (timble) → [limb[i]l]

- Inserted stop: homorganic with preceding nasal
  (Same place of articulation)

Sound addition (cont.) and metathesis

b) Epenthesis: C → CVC

V added to break up consonant cluster produces CV syllables

epenthic schwa [θim] → [θi:m]

Tok Pisin:
black → bitak
blue → bulu

c) Prothesis

Addition of sound at the beginning

Spanish: special → especial
Spain → España

Metathesis

Change of order of sound, rare

bird: [brid] → [brid]
Regressive assimilation of speech sounds: partial vs. full

- most universal sound change: influence of one sound upon another

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>voiced</td>
<td>voiceless</td>
</tr>
<tr>
<td>2</td>
<td>alveolar</td>
<td>bilabial</td>
</tr>
<tr>
<td>3</td>
<td>nasal</td>
<td>stop</td>
</tr>
</tbody>
</table>

- partial assimilation
  a) A3 nasal → stop np → dp
  b) A2 alveolar → bilabial np → rp
  c) A2+3 np → tp
  d) A1+3 np → tp
  e) A1+2+3 np → pp

- full assimilation produces geminates

Æ all: regressive (from p backward) indivisible/ impossible

Progressive assimilation, palatalization, devoicing

forward: progressive
a) A1 np → nb
b) A2 np → nt
c) A3 np → rm
d) A1+2+3 np → rm

palatalization
a non-palatal sound (dental, alveolar, velar…) becomes palatal velar stops [k], [g] → [tʃ], [ʤ]
kinn → tʃ’in, chin
k=ai → tʃ’ai cheese
geldan → jɔ;id yield

final devoicing, esp. German
bad → bat
gab → gap
hund → hunt

Sound shift: Grimm’s law

Sound shift: the systematic modification of series of phonemes

<table>
<thead>
<tr>
<th>Greek</th>
<th>Latin</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>pater</td>
<td>pater</td>
<td>father</td>
</tr>
<tr>
<td>tres</td>
<td>tres</td>
<td>three</td>
</tr>
<tr>
<td>hekaton</td>
<td>centum</td>
<td>hundred</td>
</tr>
</tbody>
</table>

Grimm’s law: consonant shift between Proto-Indo-European and Proto-Germanic

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[p]</td>
<td>[f]</td>
<td>tenue &lt; thin</td>
</tr>
<tr>
<td>[b] &gt; [p]</td>
<td>[d] &gt; [t]</td>
<td>lubricus &gt; slippery</td>
</tr>
<tr>
<td>[bh] &gt; [b] e.g. bhakri &gt; brother</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Aspiration: delay in the onset of the vibration of the cords after the release of a preceding voiceless consonant [pʰat] vs. [spat]

Universal features of aspiration

English: aspirated stops occur in syllable-initial positions before V, typically in monosyllabic words preceding [t] deprives

bʰ tʰ dʰ tʰ gʰ kʰ

violations: a language that has /pʰ/ /bʰ/ as reconstructed is implausible

plausible: /p/ /b/ /pʰ/ or /p/ /b/ /pʰ/ /bʰ/

Æ implausible is a system with voiceless aspirates /bʰ/ but without unvoiced aspirates /pʰ/

Aspiration: delay in the onset of the vibration of the cords after the release of a preceding voiceless consonant [pʰat] vs. [spat]

Universal features of aspiration

- voiced aspirates always occur together with unvoiced aspirates in a phoneme inventory of a language

Universal processes of Grammaticalization 1

Grammaticalization = process of forming of grammatical morphemes out of lexical items/sequences of lexical items

Tendency: grammatical morphemes develop out of lexical material

a.) by gradual generalization of meaning
b.) by gradual reduction of form

Grammatical tense/aspect marking: 70-80% of all languages (Bybee/Dahl)

Future tense:
"desire/movement + goal” ➔ intention/future

ex. willen (Old English) ➔ will (future)

going to <place> ➔ going-to + inf. (future)

other languages: desire verbs as future marker in Bulgarian, Bantu, Rumanian...

Paths: (Bybee 2001):

1) movement path: spatial movement > intention > future
2) volition path: desire > intention > future

Universal processes of Grammaticalization 2

Perf: in Germanic languages: formation usually with
a.) possessive + past participle (has eaten/hat gegessen)
b.) copula + past participle (bin gelaufen)

Progressive:
- universal tendency to be periphrastic rather than bound

Source: locatives, "to be located in an activity"

Gaelic Irish: "He is at shutting the door"

German: She is smoking ➔ Sie ist (gerade) beim rauchen.

English: also locative meaning of English copula: I am here – I am working

Spanish: estar from Latin stare = to stand – Estoy fumando

Course of grammaticalization: unidirectional

Processes: words/phrases become phonetically reduced via reduction, assimilation, deletion

Æ gr. is “automatized” from frequently occurring sequences
Universal processes of Grammaticalization 3: Trends in English

English determiners: the from demonstrative that, a/an from numeral one
- other languages: German, French, Spanish, Greek, Monê, Hebrew...
- OE: no use of determiners

English modal auxiliaries: from lexical verbs
can from cunnan (know how to)
may from magan (be able to)

English affixes: from N, cf. -ly from lic (OE: body)
mann-lic (having the body/appearance of a man) → manly

*conceptual origin of grammaticalized forms: culturally independent, universal experiences (Heine 1991)*

<table>
<thead>
<tr>
<th>concrete/lexical</th>
<th>abstract/grammatical</th>
</tr>
</thead>
<tbody>
<tr>
<td>head</td>
<td>top/on top of</td>
</tr>
<tr>
<td>back</td>
<td>back</td>
</tr>
<tr>
<td>towards</td>
<td>to, DAT</td>
</tr>
<tr>
<td>stative, active verbs</td>
<td>be/have, do</td>
</tr>
</tbody>
</table>