

**Einführung in die Psycholinguistik
WS 2022/23
Sitzung 12/13: Spracherwerb I und II**

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Universität des Saarlandes

Übersicht

- Folien (Passwort: !quid-alter?)
 - Finden sich in Teams als PDF-Datei
- Ab und zu kleine Übungen ☺
- Beinhaltet auch, dass man Texte und Kapitel lesen muss ☺

Übersicht

- **Webseite der Vorlesung:**
- Webseite der Vorlesung: Moodle; bitte anmelden!!
- **Teamslink:**
 - https://teams.microsoft.com/l/team/19%3aYlGbEMf6Zb61zZ-GwxOGq_M4yiAgWsZHEPx0z8EZmA1%40thread.tacv2/conversations?groupId=5400fc4c-2b0e-4148-acf4-185fb84af02d&tenantId=67610027-1ac3-49b6-8641-ccd83ce1b01f
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 - Raum: 1.06 (Gebäude C7.1)
 - E-mail: drenhaus@lst.uni-saarland.de und auf Teams

Übersicht

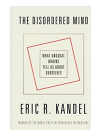
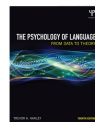
- **Klausur**
 - 90 Minuten
 - Wann: **09.02.2023 !!!!!**
 - (unter Vorbehalt (Corona und/oder Räume für die Klausur?)!!!!!!!!!!!!)
- **Anmeldung zur Klausur !!!!**
- **Anmeldefrist/ Deadline: normalerweise eine Woche vor der Klausur**
- **Tote Linie: → Anmeldefrist (auch für LS etc.)**
- **Anmeldung zur Klausur per HIS-POS/LSF (Dies gilt für alle Teilnehmerinnen/Teilnehmer!!!!)**

Übersicht & Zeitplan

- 03.11 Organisatorisches und Forschungsmethoden der Psycholinguistik
- 10.11 Experimentelle Methoden I
- 17.11 Experimentelle Methoden II
- 24.11 Experimentelle Methoden II/2 Exkurs Statistik?
- 01.12 Wortverarbeitung/ Worterkennung I
- 08.12 Wortverarbeitung/ Worterkennung II
- 15.12 Sprachproduktion I

Grundlagentexte

- Grundlagen, syntaktische Verarbeitung, Satz- und Textverstehen, Sprachproduktion und Struktur des Sprachverarbeitungssystems, Spracherwerb
- Barbara Höhle (Hrsg.) Psycholinguistik, 2010, ISBN 978-3-05-004935-9, Akademie Studienbücher – Sprachwissenschaft Akademie Verlag
- Barbara Höhle (Hrsg.) Psycholinguistik, 2012, ISBN 978-3-05-005920-4, Akademie Studienbücher – Sprachwissenschaft Akademie Verlag, 2. Auflage.
- Harley, T. (2013). The psychology of language. From data to theory. Hove: Psychology Press.
 - Crocker, M.W. (2005). Rational models of comprehension: addressing the performance paradox. In A. Cutler (Ed.), Twenty-first century psycholinguistics. Four cornerstones (pp. 363-380). Mahwah, NJ: Erlbaum.
 - Norris, D. (2005). How do computational models help us develop better theories? In A. Cutler (Ed.), Twenty-first century psycholinguistics. Four cornerstones (pp.331-346). Mahwah, NJ: Erlbaum.
- For FUN: Kandel, E.R. (2018). The Disordered Mind: What Unusual Brains Tell Us about Ourselves. Farrar Strauss & Giroux



Übersicht & Zeitplan

- 22.12 Sprachproduktion II (auf Teams online)
- 05.01 Satzverarbeitung (auf Teams online)
- 12.01 Neurowissenschaftliche Komponenten der Sprachverarbeitung I
- 19.01 Neurowissenschaftliche Komponenten der Sprachverarbeitung II
- 26.01 Spracherwerb I
- 02.01 Spracherwerb II und Klausurvorbereitung
- 09.02 Klausur

Grammatische Entwicklung

- Einwortäußerungen (ca. 1;0 – 1;8)
- Zweiwortäußerungen (ca. 1;6 – 2;3)
- Mehrwortäußerungen (ca. 2;0 – 4;0)
- Komplexe Äußerungen (ca. 3;6 – ...)

Einzelwortäußerungen

- Nomen: *Mama, Papa, Biss, Wau, ...* (teilweise als Namen verwendet)
- Verbpartikel: *weg, auf, ab, runte, ...*
- Adverbien: *me (mehr), noma (noch einmal), auch, ...*
- Demonstrativpronomen: *da, hier, ...*
- UND NATÜRLICH:
- **NEIN!**

Zweiwortäußerungen (Relationen)

- Vorhanden/Anwesendsein (Person oder Gegenstand)
- Zeigegeste
Hier
Wau
Wau da

Zweiwortäußerungen

- Nicht nur die Bedeutung beider Wörter
 - Intendierte Relation -> realisiert durch
 - Betonung
 - Wortfolge
 - Kontext

Zweiwortäußerungen (Relationen)

- **Nicht** Vorhanden/Anwesendsein (Person oder Gegenstand)

Biss

weg

Biss weg

Zweiwortäußerungen (Relationen)

- **Wiederholung** (etwas soll geschehen bzw. etwas soll sich wiederholen)

Mehr (Zeigegeste) *Nane* (Banane)!

I au (Ich auch)

Wau sitt (sitzen)

Zweiwortäußerungen (Relationen)

- **Verb + Objekt** (deklarative, imperative, interrogative Intonation)
Buch lesen
Werf Ball
 - Bedeutung ist abhängig von der Intonation!
 - Verb > Objekt als auch Objekt > Verb im Deutschen möglich

Zweiwortäußerungen (Relationen)

- **Verb + Subjekt** (deklarative, imperative, interrogative Intonation)

Papa les

I au esse (Ich auch)

- Bedeutung ist abhängig von der Intonation!

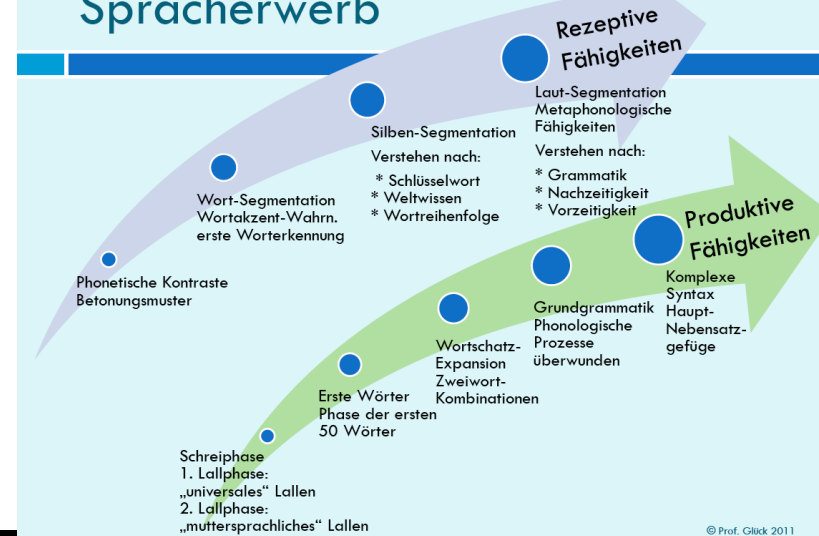
Zweiwortäußerungen (Relationen)

- **Besitzverhältnisse**
 - *Marc Buch*
- **Orts- und Richtungsangaben**
 - *Bus (r)auf* (Kind schiebt einen Bus eine Schräge hoch)
 - *Wau Boden* (Hund liegt auf dem Boden)
- **Attribute**
 - *Wau krank*
 - *Opa putt*

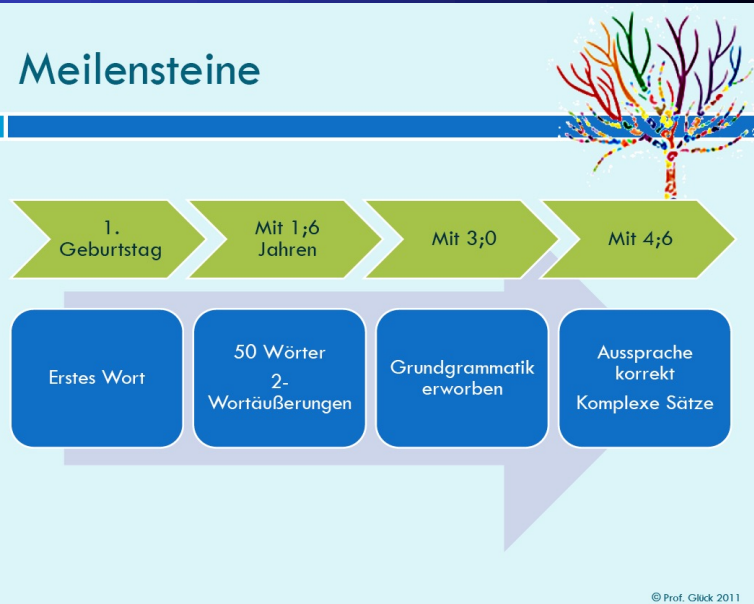
Zweiwortausierungen und Morphologie

- Morphologie -> „selten“
 - Pluralmorphologie
 - Possessivmarkierungen (*Marcs Auto*)
 - Der Versuch eines Partizip-Perfekt (*wegenehm*)
 - Artikel werden reduziert zu: ‚de‘ oder ‚n‘

Spracherwerb



Meilensteine



Intro

- Around 2 years -> children start to combine words
- Simplification of adult grammar?
- Deviant from adult language
- Children
 - features of a grammatical system
 - rule-governed system

Intro

- Children -> fast learners
 - Capture properties of their language
- Languages -> different syntactic properties
 - Word order; morpho-syntax (e.g. verbs)
- Variation -> Parameters
 - Value based on the input

Learnability and Syntax

Generative Grammar

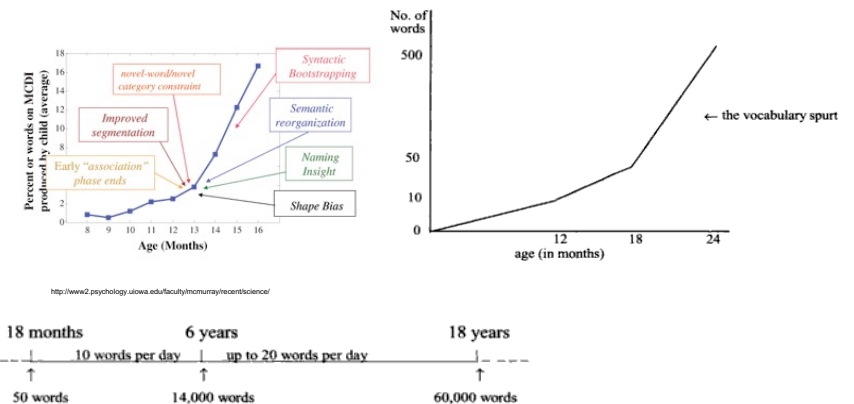
„ \Leftrightarrow “

Language acquisition

Why is this interesting?

Early stages

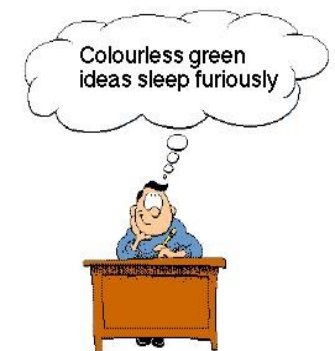
Acquiring words



Learnability

- Chomsky's ideas are now so taken for granted that their originality has been obscured

And, what was before ?



Learnability

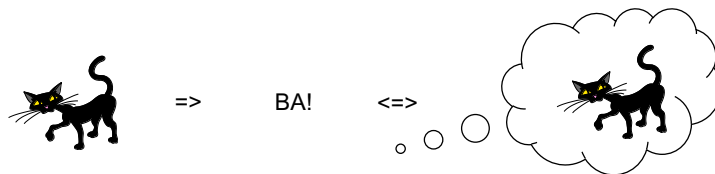
- Bloomfield (1933) *Language*
- *language was considered to be not knowledge but behavior*
- acquiring a language = more or less accidentally
- children produce for example something like:
ba, da etc.
- children associate this 'sound' with an 'object or entity'; for example 'cat'.
- acquisition process ?!



Learnability

Acquisition process !!!

- children learn:
 - s/he can refer to a 'cat' even if the cat is not there!
- children learn a relation



Learnability

- the adult is a crucial part of the process!!!!

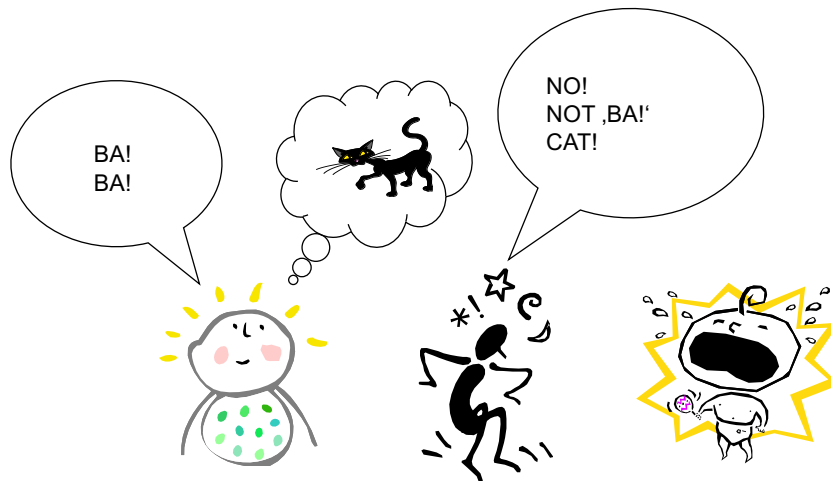
Why???

- without the adult's reaction and reinforcement
- children would never learn to use 'ba' for cat
- before Chomsky:
 - the Bloomfieldian version of language acquisition was the common place of linguistics

- Chomsky specifically rejected:
 - the more sophisticated behaviourist theory of B.F. Skinner (1957)
- Skinner rejected explanations for language
 - inside the organism
 - in favor of explanations in terms of outside conditions

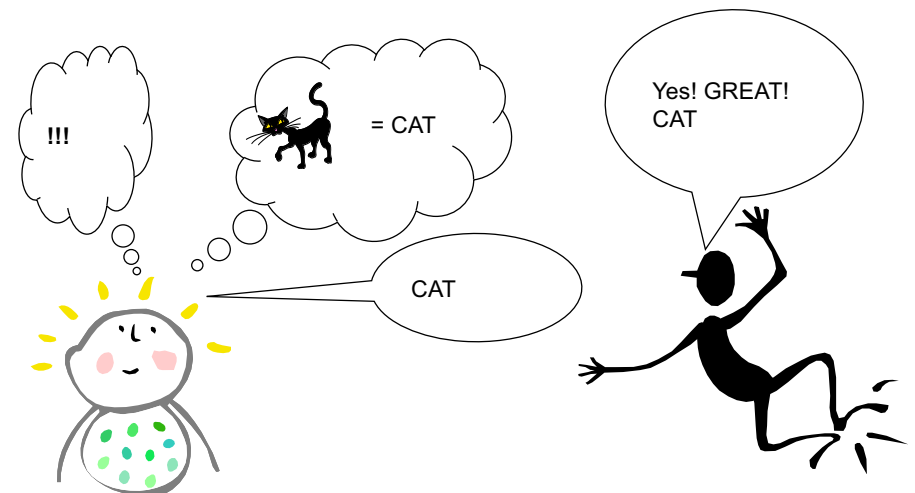
SO WHAT???

Well, it's true, isn't it??

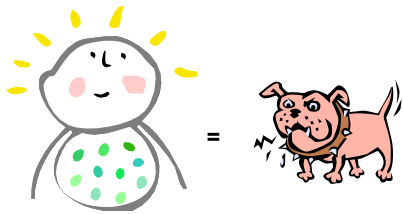


- language is determined by *stimuli*
 - consisting of specific attributes of the situation
 - by response the stimuli call up in the organism
 - by *reinforcing stimuli* that are their consequences
- that means:
- 'object' *cat* acts as a stimulus for the child
 - response *cat*
 - which is reinforced by the parents saying 'clever child'.

=> Learning



- parents are the active part
- the child is reduced to something like a 'saving device'
- the child has only to react



'Pawlows dog'

Imitation?

My nose is crying.
Don't giggle me.
I am barefoot all over.
What the boy hit?
Mommy get it my ladder.

Jason broke my toy.
There are many sheeps in the picture.
I holded the baby rabbits.

Imitation?

How do we acquire the knowledge of our language?

By imitation?

His thoughts tumbled in his head, making and breaking alliances like underpants in a dryer without Cling Free.

Thank you very much for stepping on my toe because I was afraid I had elephantiasis and now that I can feel it hurt I know it isn't so.

Her hair glistened in the rain like nose hair after a sneeze.

Children and correction

By reinforcement (positive or negative)?

Child: My teacher *holded* the rabbits and we patted them.

Parent: Did you say your teacher held the baby rabbits?

Child: Yes.

Parent: What did you say she did?

Child: She *holded* the baby rabbits and we patted them.

Parent: Did you say she held them tightly?

Child: No, she *holded* them loosely.

(Cazden, 1972)

Children and correction

Child: *Nobody don't* like me.

Parent: No, say "nobody likes me."

Child: *Nobody don't* like me.

...

(Eight repetitions of this dialogue)

...

Parent: No, now listen carefully;
say "nobody likes me."

Child: Oh! *Nobody don't likes* me.

(David McNeill, 1970)

Learnability and Syntax

- Chomsky 1959 Review of B. F. Skinner
Verbal Behavior
- central: '**creativity**'
- humans are able to produce and understand sentences which they have never uttered or used before
- humans are able to react to situations even if the situation is absolutely new

Children and correction

Child: Want *another one* spoon, Daddy.

Parent: You mean, you want the other spoon.

Child: Yes, I want *other one* spoon, please Daddy.

Parent: Can you say "the other spoon"?

Child: Other ... one ... spoon.

Parent: Say "other."

Child: Other.

Parent: "Spoon."

Child: Spoon.

Parent: "Other spoon."

Child: "Other spoon."

Child: "Other ... spoon. Now give me *other one* spoon?"

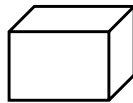
Learnability and Syntax

- "The volcano is erupting!"
or
"There is a maniac in the next room/ in front of the class!"
- stimuli are usually not unambiguous
- different reactions to the same stimuli (stimulus)
 - pictures in a museum
 - discussion about a novel or a movie

- no 1:1 relation between
 - stimulus and the reaction medium
- one stimulus => many responses
- no 'certain' prediction from stimulus to response
- Example: Phrase book

• and now, what is Chomsky's idea?

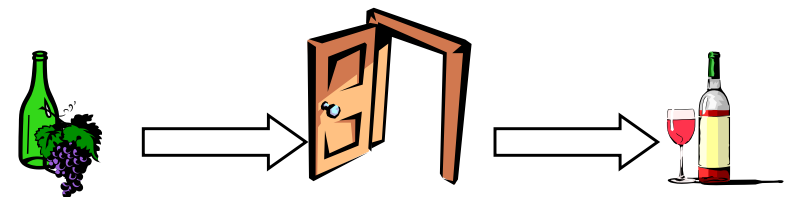
- Language Acquisition Device (Chomsky 1964)
- black box



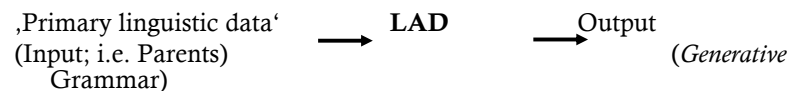
- grapes and bottle example:

What does this tell us?

- **language is not predictable !!!**
- **language is**
 - (more or less) 'stimulus-free'
 - not 'stimulus-bound'; in other words,
- **We can say anything anywhere without being controlled by precise stimuli**



- detailed analysis of the liquid and the grapes
- to deduce the process
- one is transformed into the other



What does this mean?

- A child is able to acquire every language
- **no matter**
 - where s/he was born or
 - where s/he lives.

"The theory of linguistic structure must be distinguished clearly from a manual of helpful procedures for the discovery of grammars." (Chomsky, 1957)

Descriptive Adequacy:

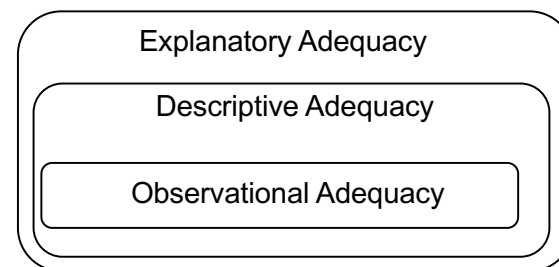
- * The theory formally specifies rules accounting for all observed arrangements of the data.
- * The rules produce all and only the well-formed constructs (relations) of the protocol space.

"...the grammar gives a correct account of the linguistic intuition of the native speaker, and specifies the observed data (in particular) in terms of significant generalizations that express underlying regularities in the language."

(http://en.wikipedia.org/wiki/Levels_of_adequacy)

Observational Adequacy:

- * The theory achieves an exhaustive and discrete enumeration of the data points.
- * There is a pigeonhole for each observation.



"The theory of linguistic structure must be distinguished clearly from a manual of helpful procedures for the discovery of grammars." (Chomsky, 1957)

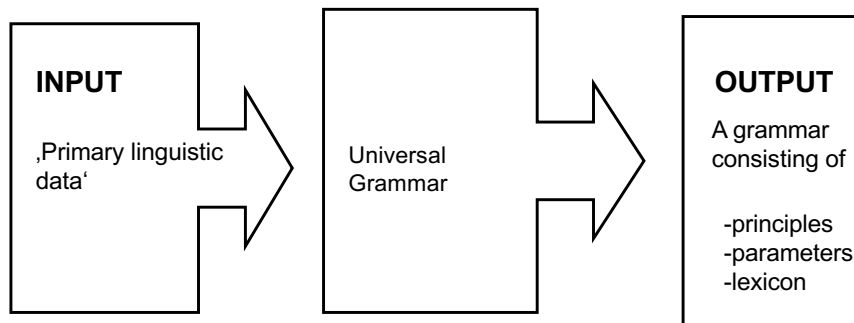
Explanatory Adequacy:

- * The theory provides a principled choice between competing descriptions.
- * It deals with the uttermost underlying structure.
- * It has predictive power.

"A linguistic theory that aims for explanatory adequacy is concerned with the internal structure of the device [i.e. grammar]; that is, it aims to provide a principled basis, independent of any particular language, for the selection of the descriptively adequate grammar of each language." (Chomsky, 1964)

(http://en.wikipedia.org/wiki/Levels_of_adequacy)

• The Principles and Parameters-Model:



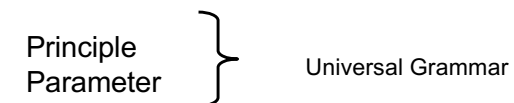
• Chomsky's Solution:

- innate properties ('*the mind as an organ*')
 - the point is quite simple and easy:
- complexity of language (language knowledge)
- only impoverished data available to the learner
 - poverty-of-the stimulus argument
- the data in the INPUT are too thin to justify the knowledge that is built out of it

Universal Grammar

- Plato's Problem
- 'the poverty-of-the-stimulus argument'
- "How do we come to have such rich and specific knowledge of language, or such intricate systems of belief and understanding, when the evidence available to us is so meager?" (Chomsky, 1987)

- children are able to build his/her knowledge of a specific language
 - despite of this bad conditions
- source for the knowledge of language
- 'the mind' by itself



- which elements are universal?
 - content of Universal Grammar
 - the nature of parameterization
 - variation along the different outlines of Generative Grammar

The idea of Principles and Parameter

- Generative Framework
- human brain - component - **Language Faculty**
- **Initial State:**
 - undergoes changes during the language acquisition process
- **Final State:**
 - the target grammar
- Universal Grammar is considered to be "**the theory of the initial state**" (Chomsky 1998)

- especially,
whether children have full access to Universal Grammar

- more specific,

what is the content of Universal Grammar?

Principles and Parameter

- all natural languages are based on Universal Grammar
- concept of principles and parameters (Chomsky 1981)
- **Principles** apply to every natural language
 - therefore language independent or universal
- languages differ regarding their **Parameters**
- acquisition process =>
setting of **parameter values**

Principles and Parameter/ example

- X-bar schema:
 - structural relationship between heads, complements and specifiers
- but:
 - **no** information about their relative linear order
- the X-bar schema = language independent
- **universal Principles**
- linear order:
 - complements and heads
 - variation from language to language

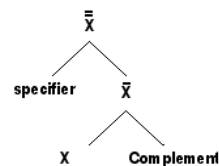
Word order

- Order of heads and complements
 - Head final
 - Head initial
- Head-direction parameter
- X-bar schema
 - $XP \rightarrow \text{Spec } X'$
 - $X' \rightarrow (YP) X^0 (YP)$

Table 1: head-parameter

English	Japanese
[_{VP} read the book]	[_{VP} hon-o yonda]
	book-ACC read
[_{NP} picture of John]	[_{NP} John-no syasin]
	John-of picture
[_{PP} with John]	[_{PP} John-to]
	John-with

(from o'Grady (1997))



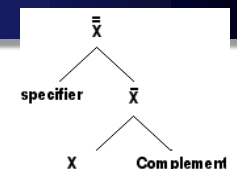
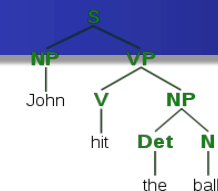
Principles and Parameter

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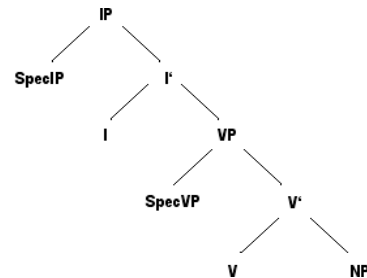
X-Bar



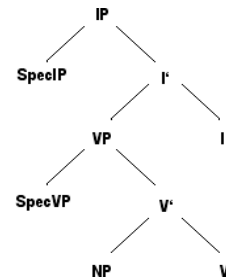
- A theory of the phrase structure
 - Principles
 - A phrase always contains a head of the same type
 - i.e. NPs Ns, VP Vs etc.
 - $XP \rightarrow \text{specifier } X'$
 - XP consists of a head that is a single bar, a specifier position, and a possible adjunct
 - $X' \rightarrow X \text{ complement}$
 - A single-bar category contains a head with no bars and a possible complement
 - $X' \rightarrow X' \text{ adjunct}$
 - A single-bar category can also contain a further single-bar and an adjunct ("a nice blue ball")
 - Lexical categories: N (Noun), V (Verb), A (Adjective), P (Preposition)

Phrase structure (reduced)

English

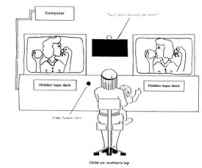


German:



Word order in children's perception

- Studies -> (some) parameters have been set (correct value)
- First word combinations
- Perception (Hirsh-Pasek et al., 1996)
- 17 moth old (single word speakers)
- Preferential looking paradigm
- Rely on word order to understand reversible struct
- Trial 1 (Loudspeaker): *Big Bird is washing Cookie Monster*
- Trial 2(Loudspeaker): *Cookie Monster is washing Big Bird*



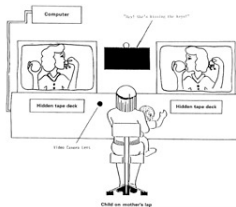
Screen 1 showed:
Big Bird is washing Cookie
Monster

Screen 2 showed:
Cookie Monster is washing
Big Bird

Word order in children's perception

Loudspeaker: *Big Bird is washing Cookie Monster*

Screen 1 showed:
Big Bird is washing Cookie
Monster



Screen 2 showed:
Cookie Monster is washing
Big Bird

- Result: childre
- Children rely on word order

atching screen

Principles and Parameter

- **Parameter**
- X-bar schema
 - capture the variation in the head-complement order
 - harmonize the differences in languages
 - Universal Grammar
- **Head-parameter:**
 - the head follows or precedes its complements.
- Universal Grammar
 - head and complement are standing in sisterhood relation

- the acquisition task:
 - figure out the right order in the Input
 - set the parameter to a value
 - head-initial (English) or head-final (Japanese).
- syntactic structure is innate and universal
- properties of different languages have to be learned by experience, i.e. by the **Input**
- "learning is primarily a matter of filling in details within a structure that is innate." (Chomsky 1975)

- verb position/movement and negation in English and German (different word orders)
 1. $[_{IP} \text{ Peter}_i [_I \text{ eats}_j [_{VP} e_i e_j \text{ the cake}]]]$.
 2. $*[_{IP} \text{ Peter}_i [_I \text{ eats}_j [_{NegP} \text{ not } [_{VP} e_i e_j \text{ the cake}]]]]]$.
 3. $[_{IP} \text{ Peter}_i [_I \text{ does } [_{NegP} \text{ not } [_{VP} e_i \text{ eat the cake}]]]]]$.
 4. $[_{IP} \text{ Peter}_i [_I \text{ ißt}_j [_{VP} e_i \text{ den Kuchen } e_j]]]$.
 5. $[_{IP} \text{ Peter}_i [_I \text{ ißt}_j [_{NegP} \text{ nicht } [_{VP} e_i \text{ den Kuchen } e_j]]]]]$.
 6. $[_{IP} \text{ Peter}_i [_I \text{ ißt}_j [\text{den Kuchen}_k [_{NegP} \text{ nicht } [_{VP} e_i e_k e_j]]]]]]]$.

- **parameterization**
 - closed class elements: DET, COMP, INFL ADV, NEG etc.
- "If substantive elements (verbs, nouns, etc.) are drawn from the invariant vocabulary, then only functional elements will be parameterized" Chomsky (1989)
- functional categories
 - idiosyncratic properties
 - determine parametric variation

- different parameterizations
- **German:**
 - verb movement is not restricted -> negation
- **English:**
 - negation blocks the movement of the main verb
- different parameter settings
- NEG and the movement of V to I⁰

Summary

- => **Principles**
- e.g. the X-bar schema
 - language independent or universal
- acquisition task => **parameter settings**
 - e.g. different directionality in languages
- parameterization of functional categories

Maturation

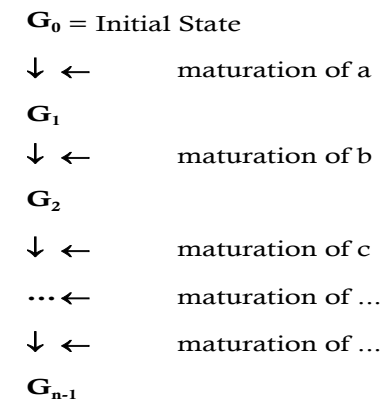
- Grammar develops as a consequence of biology:
 - biological schedule (the maturation process) makes the next grammar (stage) available
- new parts of *Universal* Grammar develop (genetic plan)
- new properties to express further structures

Learnability

- different learnability approaches
- access to Universal Grammar ?
- what is the content of Universal Grammar?

- Maturation approaches
- Continuity approaches

Maturation



Maturation

- Felix (1987, 1992)
- Universal Grammar is not accessible from the outset
- emergence of Principles
 - determined by a biological schedule
- order in which the components of UG become visible
 - "does not reflect any externally determined factors in the child's linguistic experience, but rather is itself an inherent part of the genetic program"(Felix 1987)

Maturation

- the lack of the structure (x-bar-schema)
- **two-word stage** of child English

8. more write
9. there high
10. see [NP pretty]
11. see [NP broke]
12. Ben swim [PP pool]

Maturation

- Felix (1987, 1992)
- children's grammar *construction* are not constrained by Universal Grammar ('wild grammars')
 - free constituent orders in early child German
 - structural relations (x-bar-schema) is not available at this stage
 - structural relation between head, complement and specifier is not established

Maturation

to sum up:

- strong proposal by Felix (1987; 1992)
 - (similar ideas by Gleitman (1981) and White (1982))
- principles of UG appear because of an innate schedule
- principles are not constrained by Universal Grammar
- **discontinuous process** of acquisition possible

- **Radford (1990; 1995):**
- Universal Grammar
 - available from the onset of acquisition
- maturation process
 - only related to Functional Categories
- detailed approach for child English

three maturation-stages

B. second stage (18-24 months)

- two things happen:
 - vocabulary increases dramatically
 - (the four lexical categories)
 - children start to combine items
 - (early multi-word stage)
- rising of lexical categories together with syntactic structure('lexical stage')

three maturation-stages

A. children produce only single word utterances (12-18 months)

- single words are not categorized syntactically
 - (i.e. nouns, verbs etc.)
- consequence
 - no syntactic structure
 - 'single word stage'

three maturation-stages

13. cup tea (N-N)
 14. open box (head-complement)
 15. more write (modifier-head)
 16. good girl (modifier-head)
 17. Mummy milk (possessor/subject-head)
 18. Hayley draw boat (subject-head-complement)
- (from Radford 1990 &1995)

three maturation-stages

- distributions of the data
- Radford assumes the following tree-structure for this stage:

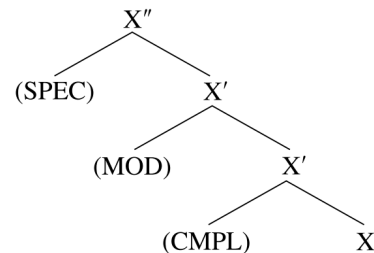


Figure 4.9. General schema for phrase structure

Maturation 'PROBLEMS'

- **assumption:**
 - human genetic program is built in this way
- **prediction:**
 - same acquisition sequence in all language
- Demuth (1992) for Sesotho or Whiteman, Lee and Lust for Korean (1991) ...
 - did not find the distribution predicted by Radford

- **C. third stage (after 24 months)/ functional stage**
- functional categories start to mature
 - grammar becomes more adult-like
 - use of suffixes and functional words (functional categories)
- different components of Universal Grammar
 - are genetically programmed
 - come into operation at different biologically determined stages of maturation (Radford 1990)

Maturation ,PROBLEMS'

- the main difficulties with all Maturation proposals
 - explain language development as the result of a genetic or biologic schedule
- these approach (in its strongest version) ignores
 - influence and interaction of Input and the Language Acquisition Device
- principles of UG mature

=> language develops

Maturation ,PROBLEMS‘

- Maturation Hypothesis à la Radford
 - assumptions -> linguistic theory
 - but **does not consider** i.e. **Input/ Primary linguistic data**
 - does it make any (theoretical) predictions and implications
- role and importance of triggers for language acquisition
=> **Continuity Hypothesis**

Maturation ,PROBLEMS‘

- these proposals do not consider
 - children are exposed to **similar input** at different stages and the **intake** (Corder 1967) of the child at different points of the acquisition
 - the **perception abilities** of a child are different from adults
- **in this sense,**
 - **children's grammar system build up at each stage of development is optimal**
 - **for children's own perception of the data**

Maturation ,PROBLEMS‘

- these approaches only consider what is missing in children's grammar
- do not consider what child grammar already contains
- **child grammar is only a deficient system from the adult point of view**

Continuity Hypothesis

- the Continuity Hypothesis assumes that Universal Grammar constrains child grammar from the onset-at all stages of development
- the child has access to all Principles and Parameters of Universal Grammar and it never violates them

Continuity Hypothesis

- the child grammar shows delays and differences to the target system at any stage of the development
- these delays and differences are not seen as a difference in (syntactic) representations
- e.g. memory/ memory load

Continuity Hypothesis

- input data trigger the setting of the parameters in one direction.
- the child has to find a 'trigger' in the input data
- to figure out in which way the target grammar handles a specific structure or syntactic phenomena.
- the developmental process of a child can be compared with a filter that picks up the relevant data.

Continuity Hypothesis

Two notions are important for the Continuity Hypothesis:

- first, the interaction of the input with the Language Faculty
- secondly, the idea of triggers

Continuity Hypothesis

G_0 = Initial State

↓ ← INPUT

G_1

↓ ← INPUT

G_2

↓ ← INPUT

... ← INPUT

↓ ← INPUT

G_{n-1}

↓ ← INPUT

G_n = Final State

Continuity Hypothesis

- these data (trigger) push the current grammar system of the child (Initial State) into another state of grammar
- the child continuously 'scans' the input for relevant data in order to converge his grammar with the target grammar
- the child 'chooses' the most suitable system to account for the input data
- done by switching a parameter(s) from a default value to a position that is compatible with the input data

Continuity Hypothesis

- one solution for this problem is given by Roeper and Weissenborn (1990):
- pro-drop parameter
- Monolingual children are exposed to contradictory input
- children acquiring German, Italian and Catalan
- pro-drop has to be set on a positive value in the Catalan and in the Italian target system
- the pro-drop parameter has to be set on a negative value in the German target system

Continuity Hypothesis

- the idea of triggers in the input is crucial for the Continuity Approach
- children are exposed to contradictory input
- if interpreted incorrectly, this would lead to a setting and resetting of parameters
- children's grammar would be unable to set parameters on the right target-value
- in the worse case children would be unable to learn the target system (learnability problem)

Continuity Hypothesis

- German children are exposed to input where the subject pronoun is not used

Was machte Hans? Er lief weg.

– What did Hans do? He ran away.

Was machte Hans? Lief weg.

– What did Hans do? Ran away.

Continuity Hypothesis

- how do German children determine to set the parameter on the correct target value?
- children must find the crucial feature (unique trigger) which sets (definitely) the parameter
- important is that all other properties of a language can exist for either option of the parameter

Continuity Hypothesis

- Catalan drops expletives in similar contexts

S'hi ha ballat
'There was danced'
S'ha ballat
'There was danced'

Continuity Hypothesis

- Italian and Catalan are analyzed as pro-drop languages
- however, Italian requires expletives

Ci estado ballato
'There was danced'
*estado ballato
*'There was danced'

Continuity Hypothesis

- Italian:
- general pro-drop property but there is a syntactic domain e.g. expletives
- Catalan does not show this restriction

Parameter setting????
?????Solution?????

Continuity Hypothesis

- general parameters and sub-parameters (local parameters)
- general parameters can only be set by unique triggers
- sub-parameters (local parameters) are the result of this setting but are not fixed
- sub-parameters:
 - a set of unmarked possibilities
 - local and structure-specific

Continuity Hypothesis

- Catalan is generally a pro-drop language
- local or sub-parameter does not have a setting different from the general pro-drop-parameter
- Catalan children can expand and fix this general setting with regard to the discussed examples.

S'hi ha ballat
'There was danced'
S'ha ballat
'There was danced'

Continuity Hypothesis

- Italian is generally a pro-drop language
- => general parameter
- however, in a syntactic domain (expletives)
 - Italian does not allow pro-drop
- => a local or sub-parameter

Ci stato ballato
'There was danced'
*ci stato ballato
'*There was danced'

Continuity Hypothesis

- Roeper's and Weissenborn's account
- children's grammar does not get stuck on a parameter setting which is only target-like in a sub-domain
- triggers and parameter values are related to the existence of specific syntactic domains
- these domains
 - do not provide contradictory evidence for the setting of a general property of a language

Continuity Hypothesis

- **German**

Was machte Hans? Er lief weg.

What did Hans do? He ran away.

Was machte Hans? Lief weg.

What did Hans do? Ran away.

- ?????Pro-drop-parameter?????

Continuity Hypothesis

- **Claim:**

- the subordinate clause is

"the point at which the ['underlying'/lexical] structure (deep structure) of language is open to view".

..., weil er weg lief.

..., because he ran away.

*..., weil weg lief.

*..., because ran away.

Continuity Hypothesis

- domain for the general parameter (at least in German)
 - subordinated clause
- matrix clauses contain ambiguous information for setting a general parameter

Continuity Hypothesis

- different suggestions for the precise formulation of the Continuity Hypothesis were made.
- the Continuity Hypothesis can be split into two sub-hypothesis:
- **'Weak Continuity Hypothesis'** (e.g. Clahsen et al. 1992; 1996)
- **'Strong Continuity Hypothesis'** (e.g. Poeppel and Wexler 1993; Weissenborn 1994; Penner & Weissenborn 1996)