



Syntax & Semantics, WiSe 2022/2023

Lecture 1: Organization & Introduction

25/10/2022, Christian Bentz



Overview

Section 1: Organization

Hybrid Teaching

Course Credits

Schedule

Tutorials

Moodle

Learning Strategy

Section 2: Literature

Section 3: Introduction

Form and Meaning

Combinatoriality and Compositionality

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Section 1: Organization



Hybrid Teaching

- ▶ The University of Tübingen decided to **go back to teaching in presence** (except for the last week before Christmas break, in which online courses are supposed to be offered).
- ▶ In this course, people can also join online via **Zoom-links** given on the moodle course page:
<https://moodle.zdv.uni-tuebingen.de/>
- ▶ However, you are encouraged to come in person if you can by any means.

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Course Credits

- ▶ **Exam on Thursday 9th February 2023: 6 ECTS**
 - ▶ You will have to **register for the exam and the tutorials** during the semester on **ALMA**. The registration period is **5th December 2022 to 23th January 2023**.
 - ▶ Very likely in presence, here in Room 0.02.
- ▶ **Tutorials:** handing in (and passing) **5 Tutorial Exercise Sheets** (see details below): **3 ECTS**

Note: Master students in AS who have to do the module ASW-MA-01 “Linguistic Basics” only need 6 ECTS for Syntax and Semantics. So they don’t need to hand in exercise sheets, though it is advisable in preparation for the exam.

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Schedule (2022)

25/10/2022	Lecture 1	Organization & Introduction
27/10/2022	Lecture 2	Basic Concepts I
03/11/2022	Lecture 3	Basic Concepts II
08/11/2022	Lecture 4	Dependency Grammar I
10/11/2022	Lecture 5	Dependency Grammar II
15/11/2022	Lecture 6	Phrase Structure Grammar I
17/11/2022	Lecture 7	Phrase Structure Grammar II
22/11/2022	Lecture 8	The Chomsky Hierarchy
24/11/2022	Lecture 9	X-bar Theory
29/11/2022	Lecture 10	Government & Binding I
01/12/2022	Lecture 11	Government & Binding II
06/12/2022	Lecture 12	Minimalism
08/12/2022	Lecture 13	Lexical Functional Grammar I (Feature Descriptions)
13/12/2022	Lecture 14	Lexical Functional Grammar II
15/12/2022	Lecture 15	Construction Grammar
20/12/2022	Lecture 16	The Evolution of Syntax

Christmas Holidays

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Schedule (2023)

10/01/2023	Lecture 17	Syntax Summary
12/01/2023		Mock Exam
17/01/2023	Lecture 18	Introduction to Semantics
19/01/2023	Lecture 19	Word Meaning
24/01/2023	Lecture 20	Propositional Logic
26/01/2023	Lecture 21	Predicate Logic
31/01/2023	Lecture 22	Syntax & Semantics Interface
02/02/2023	Lecture 23	Semantics Summary
09/02/2022		Exam

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Tutorials

Tutorial 1: Alla Kutkina, alla.kutkina@student.uni-tuebingen.de

Tutorial 2: Sophie Vollmer, sophie.vollmer@student.uni-tuebingen.de

	Monday	Tuesday	Wednesday	Thursday	Friday
8-10		Tutorial 2			
10-12				Tutorial 1	
12-14			Tutorial 1		
14-16					
16-18	Tutorial 2				

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- ▶ You need to go to **only one tutorial (2 SWS)**, so you can choose one of these four options.
- ▶ Rooms: Tutorial 2 (Mon), Room 035 (Neuphilologikum); Tutorial 2 (Tue), Room 181 (OSA-Keplerstraße); Tutorial 1 (Wed), Room 181 (OSA-Keplerstraße); Tutorial 1 (Thu), Room 035 (Neuphilologikum).
- ▶ The tutorials held in Room 181 could be held hybrid. Please check with the tutors.



Exercise Sheets

- ▶ You have to **pass five (out of ten) Exercise Sheets** to get your 3 ECTS points for the tutorial.
- ▶ You can **choose** which Exercise Sheets to hand in or not.
- ▶ Exercise Sheets will go online (moodle) **after the thursday lectures**.
- ▶ You have to send them via email to your tutor **by midnight on the following saturday**, in order to get your pass/fail for this Exercise Sheet.

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Tutorials

Week 1: 31/10-04/11/2022

Week 2: 07/11-11/11/2022

Week 3: 14/11-18/11/2022

Week 4: 21/11-25/11/2022

Week 5: 28/11-02/12/2022

Week 6: 05/12-09/12/2022

Week 7: 12/12-16/12/2022

Week 8: 09/01-13/01/2023

Week 9: 16/01-20/01/2023

Week 10: 23/01-27/01/2023

Week 11: 30/01-03/02/2023

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Notes:

- Tutorial **Week 9** will be used to discuss the Mock Exam.



Moodle

Please go to moodle and sign up for one of the tutorials
(possible between today 2pm and coming sunday 11:59pm).

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The screenshot shows the Moodle interface for a course titled 'Syntax and Semantics'. At the top, there is a navigation bar with the Moodle logo, the text 'moodle Uni Tübingen', and a language dropdown set to 'Deutsch (de)'. On the right, there are notification icons and a user profile for 'Christian Bentz'. The main content area has a header 'Syntax and Semantics' with a settings gear icon. Below this is a breadcrumb trail: 'Startseite / Meine Kurse / Wintersemester 2022 - 2023 / 5 - Philosophische Fakultät / Allgemeine Sprachwissenschaft / Computerlinguistik / General Linguistics / Syntax and Semantics'. A red button labeled 'Bearbeiten einschalten' is on the right. The main content area is divided into two sections: 'Ankündigungen' (Announcements) and 'Tutorial Sign-Up'. The 'Tutorial Sign-Up' section has a button that says 'Als erledigt kennzeichnen' (Mark as completed).

<https://moodle.zdv.uni-tuebingen.de/course/>



Learning Strategy

- ▶ Come to the lecture (online or offline).
- ▶ Go through the lecture slides again.
- ▶ Do the exercises (if possible) before the tutorial.
- ▶ Join the tutorial.

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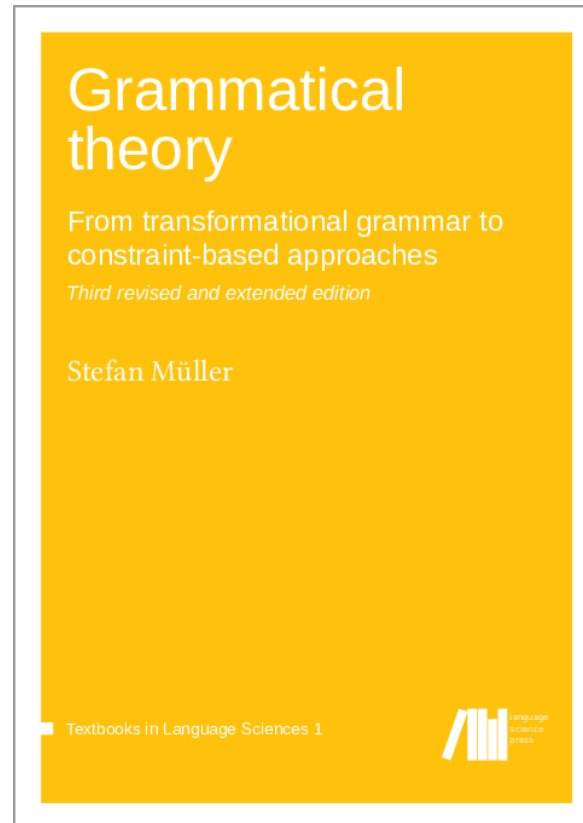


Section 2: Literature



Syntax

Müller, Stefan (2019). *Grammatical theory: From transformational grammar to constraint-based approaches. Third revised and extended edition. Volume I*. Berlin: Language Science Press.



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download at: <http://langsci-press.org/catalog/book/255>



Further Introductions

- ▶ Adger, D. (2003). *Core Syntax. A minimalist approach*. Oxford: Oxford University Press.
- ▶ Carnie, A. (2013). *Syntax. A generative introduction*. Oxford: Wiley-Blackwell.
- ▶ Müller, Stefan. 2019. *Grammatical theory: From transformational grammar to constraint-based approaches. Third revised and extended edition. **Volume II***. Berlin: Language Science Press.
- ▶ Radford, A. (2004). *English Syntax. An introduction*. Cambridge: Cambridge University Press.

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Some notes on Müller (2019)

- ▶ Volume I of Müller (2019) (i.e. pages 1-439) gives an extensive overview of a wide variety of grammatical frameworks from the early 20th century to the latest developments.
- ▶ Volume II (i.e. page 444 onwards) discusses further more general topics such as the “innateness of linguistic knowledge”, “The competence/performance distinction”, “Language acquisition”, etc.
- ▶ It is for free (!)

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However:

- ▶ Not all of the frameworks presented in the book are discussed in the lecture series (e.g. Categorical Grammar, Tree Adjoining Grammar, etc.).
- ▶ The order in the lecture series diverges from the order of chapters in the book. This is because the lecture series considers different grammatical theories in (roughly) chronological order (e.g. starting with Dependency Grammar of the early 20th century).
- ▶ Müller (2019) gives mainly German and English example sentences. The lecture series will aim to give examples from a wider variety of languages across the world.
- ▶ Theories, and parts of theories, which are only applicable to German syntax are not considered here.

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Section 3: Introduction



Form and Meaning



Form and Meaning

“Every linguistic expression we utter has a meaning. We are therefore dealing with what has been referred to as form-meaning pairs (de Saussure 1916b). A word such as *tree* in its specific orthographical form or in its corresponding phonetic representation is assigned the meaning *tree*’ [read: “tree prime”]. Larger linguistic units can be built up out of smaller ones: words can be joined together to form phrases and these in turn can form sentences.”

Müller (2019). Grammatical theory, p. 3.

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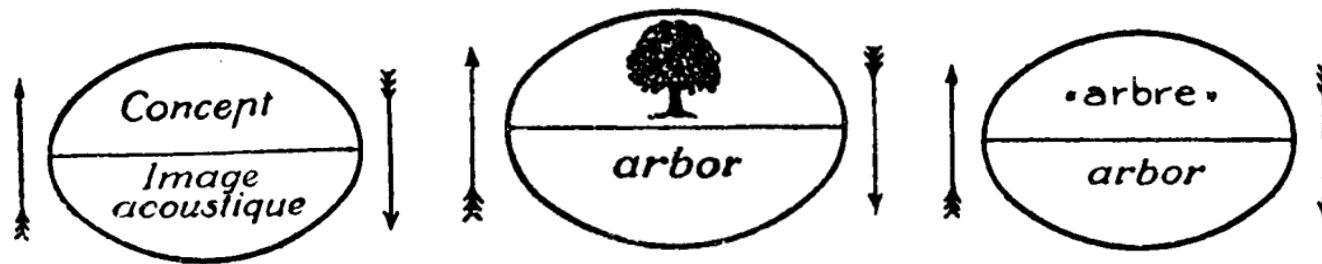
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The Roots

“Signifié et signifiant” at three levels:



Level 1: Abstract Relation

Level 2: Concrete Mapping (Denotation)

Level 3: Metalanguage (Translation)

Saussure (1995). *Cours de linguistique générale*, p. 99.

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Notational Format

German (deu, Indo-European)¹

(1) phonemic: /baum/
orthography: Baum
glossing: tree.NOM.SG²
part-of-speech: NOUN³
translation: “tree”
meaning: *tree*⁴

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¹The language name is given with the ISO-639-3 code and the language family according to Glottolog (<https://glottolog.org/>).

²see Leipzig glossing rules at <https://www.eva.mpg.de/lingua/resources/glossing-rules.php>.

³Part-Of-Speech. The exact denotations e.g. *NOUN* vs. just *N* can vary according to the syntactic framework. In this lecture I use the POS tags of the Universal Dependencies Project, see <https://universaldependencies.org/u/pos/index.html>.

⁴Following Müllers' notation.



Syntax

(2) /baʊm/
Baum
tree.NOM.SG
NOUN
“tree”
tree'

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Syntax typically deals with the morphosyntactic and POS level.



Semantics

(3) /baum/
Baum
tree.NOM.SG
NOUN
“tree”
tree'

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Semantics typically deals with the mapping of utterances to the “real world”, translation into another language (“what does x mean in language y?”), and with translation into a universally valid logical form.



Interlude: Chomsky's Colorless Green Ideas

- (4) Farblo-s-e grün-e Idee-n schlaf-en furios.
colorless-NOM.PL green-NOM.PL ideas-NOM.PL sleep-PRS.3PL furiously
[[[ADJ ADJ NOUN] VERB] ADV]
"Colorless green ideas sleep furiously."
Meaning ???

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Chomsky (1957, p. 15) has famously argued that syntax and semantics are independent of one another, since sentences as the one above can be syntactically analyzed and are grammatically correct, while deriving a meaning is impossible. Is it? ...



The Stanford Christmas Challenge

“It can only be the thought of verdure to come, which prompts us in the autumn to buy these dormant white lumps of vegetable matter covered by a brown papery skin, and lovingly to plant them and care for them. It is a marvel to me that under this cover they are labouring unseen at such a rate within to give us the sudden awesome beauty of spring flowering bulbs. While winter reigns the earth reposes but these *colourless green ideas sleep furiously*.”

source: <https://linguistlist.org/issues/2/2-457.html#2>

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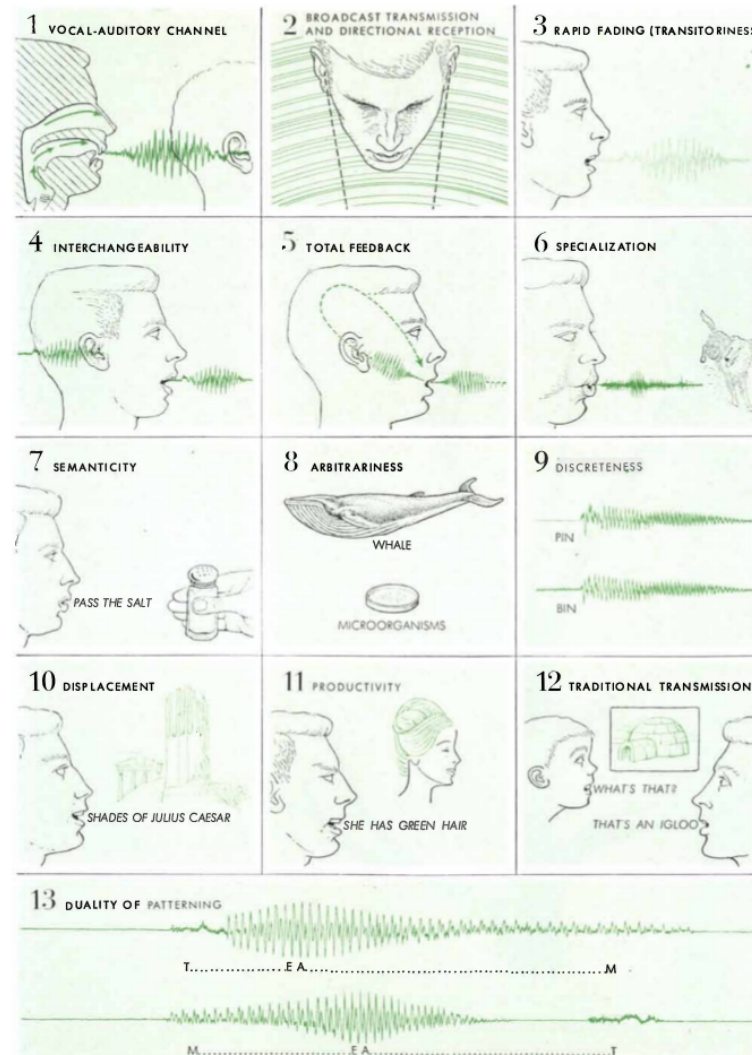
Combinatoriality and Compositionality



The Design Features of Human Language

“A set of 13 design-features is presented in the illustration on the opposite page. There is solid empirical justification for the belief that all the languages of the world share every one of them.”

Hockett (1960). The origin of speech, p. 90.



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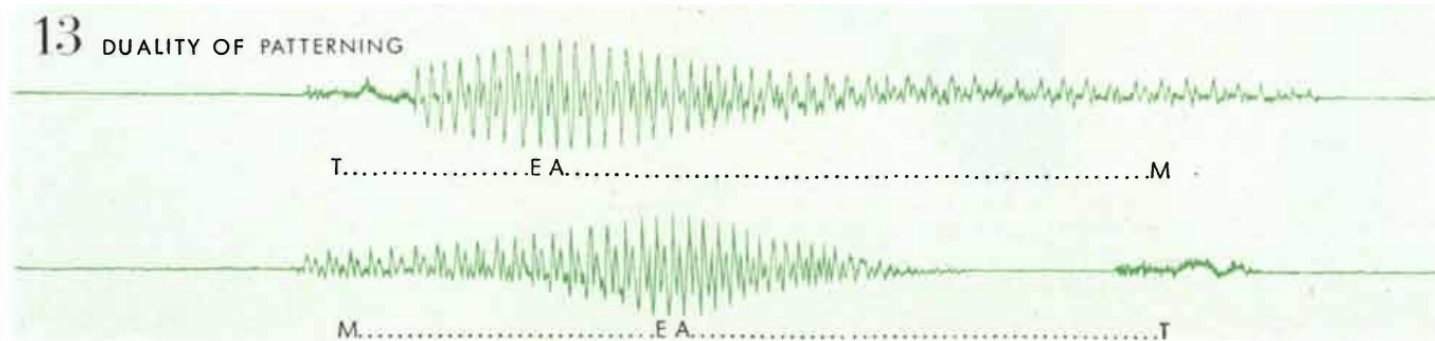
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Duality of Patterning



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“The **meaningful** elements in any language [...] constitute an enormous stock. Yet they are represented by small arrangements of a relatively very small stock of distinguishable sounds which are themselves wholly **meaningless**.”

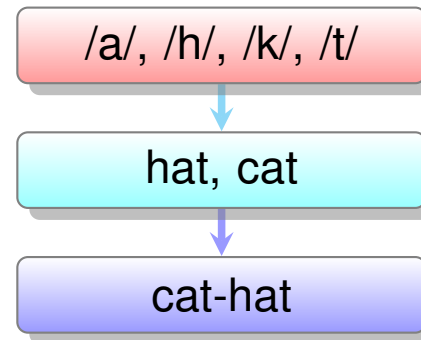
Hockett (1960). The origin of speech, p. 90.



Duality of Patterning

“Language is structured on at least two levels (Hockett, 1960). On one level, a small number of **meaningless building blocks** (phonemes, or parts of syllables for instance) are combined into an **unlimited set of utterances** (words and morphemes). This is known as **combinatorial structure**. On the other level, meaningful building blocks (words and morphemes) are combined into **larger meaningful utterances** (phrases and sentences). This is known as **compositional structure**.”

Little et al. (2017), p. 1.



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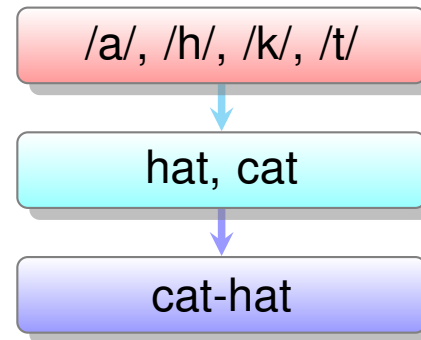
References



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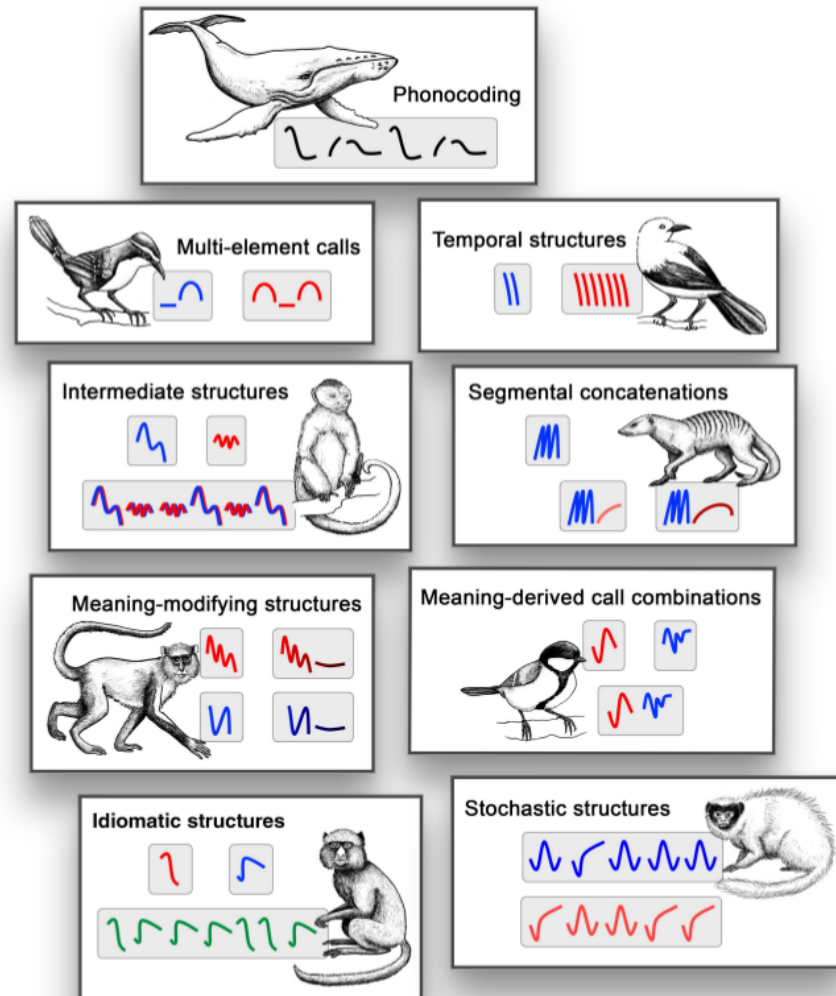




Combinatoriality in Animal Communication

“Graphical illustration of combinatorial structures in nonhuman vocal systems. Shapes distinguish sound elements, colors distinguish meaning (black indicates absence of functional- or context-specific meaning).”

- ▶ **Phonocoding:** combination of meaningless elements into sequence that lacks functional- or context-specific meaning (e.g., whales, songbirds).
- ▶ **Multi-element calls:** combination and reuse of meaningless elements to generate context-specific/functionally meaningful calls (e.g., chestnut-crowned babblers).
- ▶ **Temporal structures:** meaning-differentiating temporal variation (e.g., number of element repetitions) within a string of repeated sounds (e.g., pied babblers, Mexican free-tailed bats).
- ▶ **Intermediate structures:** combination of meaningful calls into sequence reflecting intermediate stages experienced by the caller (e.g., wedge-capped capuchins, gorillas).
- ▶ etc.



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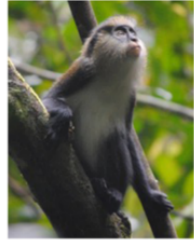
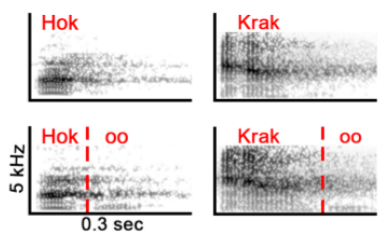


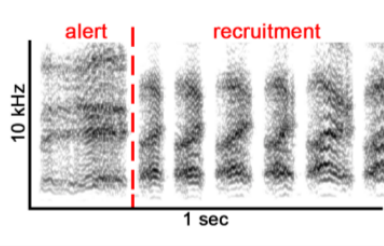

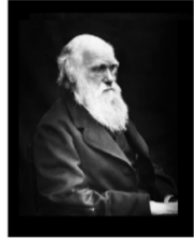
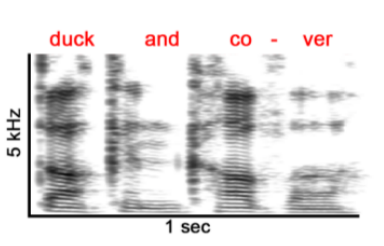
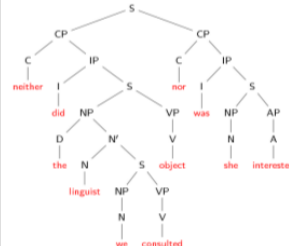
References

Engesser & Townsend (2018).



Compositionality in Animal Communication

- ▶ a) **Compositionality in primates:**
Male Campbell's monkeys produce 'krak' alarms (to leopards) and 'hok' alarms (to eagles), but both calls can also be merged with an '-oo' suffix to generate 'krak-oo' (to a range of disturbances) and 'hok-oo' (to non-ground disturbances) [...]
- ▶ b) **Compositionality in birds:**
Pied babblers produce 'alert' calls in response to unexpected but low-urgency threats and 'recruitment' calls when recruiting conspecifics to new foraging sites. When encountering a terrestrial threat that requires recruiting group members (in the form of mobbing), pied babblers combine the two calls into a larger structure, and playback experiments have indicated that receivers process the call combination compositionally by linking the meaning of the independent parts.
- ▶ c) **Compositionality in humans:**
humans are capable of producing both simple, nonhierarchical compositions (e.g., 'Duck and cover!') and complex hierarchical compositions and dependencies.

	simple	complex
		
		
		

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Townsend et al. (2018), p. 4.



Compositionality in Syntax and Semantics

Amharic (amh, Afro-Asiatic)

- (5) *zaf* *təlləq' näw*⁵
 tree.NOM.SG big be.N.3SG
 [[NOUN ADJ] VERB]
 “The tree is big.”
 *big'(tree')*⁶

Two words might be productively combined *zaf təlləq'* to yield a new meaning. *Compositionality* is a hallmark of human language syntax and semantics, as it enables the *infinite use of finite means*.

⁵Amharic is normally written in Ge'ez script. This is a transliteration into Latin script based on Leslau (1995).

⁶This is the notation in Müller (2019). The notation in Kroeger (2019) for this example would be BIG(t) – this notation will be used in the semantics part of this course.

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Compositionality in Syntax

Standard German (deu, Indo-European)

(6) Kim sieht einen großen Baum
 [PROPN [VERB [DET [ADJ NOUN]]]]

“Kim sees a big tree.”

In the example above, the elements of the sentence which combine to larger phrases (e.g. adjective and noun, determiner and noun phrase, etc.) are *adjacent* to one another. However, this is not always the case...

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Problem: Non-Adjacency

- (7) Kim **hat** den Wald vor lauter Bäumen nicht **gesehen**
... [AUX VERB]
“Kim **hasn’t seen** the forest because of all the trees.”

The term *non-adjacency* refers to the fact that elements of a sentence which depend on each other, do not necessarily occur next to each other in linear order. This is also sometimes referred to as the *non-linearity* of syntax, or *long-distance dependency*.

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Problem: Non-Adjacency

Mandarin Chinese (cmn, Sino-Tibetan)

(8) 我 到 书 店 去 买 一 本 书

wǒ **dào** shū diàn **qù** mǎi yī běn shū

I **arrive** book store **go** buy one CL book

“I go to the book store *in order to* buy a book.”

The construction *dào* [some place] *qù* [do something] is a productive pattern which can be reused to create many different sentences. Hence, the two verbs are linked/dependent at least in the sense that they co-occur in a predictable manner. However, they are not adjacent.

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Summary: Combinatoriality and Compositionality

- ▶ Phonetics and phonology (to some extent also the study of morphology) deal with **combinatoriality** in the narrow sense defined here.
- ▶ Every syntactic and semantic theory (or both combined) have to deal with **compositionality**, and also, importantly, with the problems of **non-linearity** and **non-adjacency** of meaning and form.

Note: The distinction between combinatoriality/compositionality drawn above is not adhered to by all researchers. These two terms might also be used interchangeably.

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Chomsky, N. (1957). *Syntactic structures*. The Hague: Mouton.

Hockett, Charles F. (1960). The origin of speech. *Scientific American*, Vol. 203, No. 3, pp. 88-97.

Leslau, Wolf (1995). *Reference grammar of Amharic*. Wiesbaden: Harrassowitz.

Little, Hannah, Eryilmaz, Kerem, & De Boer, Bart (2017). Signal dimensionality and the emergence of combinatorial structure. *Cognition*, No. 168, p. 1-15.

Müller, Stefan. 2019. *Grammatical theory: From transformational grammar to constraint-based approaches. Third revised and extended edition. Volume I*. Berlin: Language Science Press.

de Saussure, Ferdinand (1995). *Cours de linguistique générale*. Publié par Charles Bailly et Albert Sechehaye avec la collaboration de Albert Riedlinger. Édition critique préparée par Tullio de Mauro. Paris: Payot.

Townsend, S. W., Engesser, S., Stoll, S., Zuberbühler, K., Bickel, B. (2018). Compositionality in animals and humans. *PLOS Biology*.

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Thank You.

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