1 Introduction

- A grammar is a system of rules and representations that determines how sound is related to meaning.

- Syntax lies at the core of grammar.

- This specification of sound-meaning relation is usually thought in two steps; first the syntactically well-formed expressions are specified, then how these well-formed expressions are to be understood is specified. This type of characterization is sometimes followed by the misleading statement that only the first part falls within the domain of syntax. In whichever way stated, remember that what we mean by grammar and syntax encompasses all the way from form (sound) to meaning, it is never only the specification of form.

- The task of a grammar is not just specifying the grammatical sentences of a language, it is also required to assign the *right structure* to them, so that it constitutes an account of what the speakers understand from the sentences.

- Consider the following pair of sentences, which look so alike in structure, but are they so?

  (1)   a.   I persuaded John to leave.
         b.   I expected John to leave.

- Let's take the following example and see what should a successful grammar specify about this sentence?

  (2)   It was Bill who John could have persuaded to examine himself.

  Exercise 1.1
  Try to specify the rules that govern which expression in the first set goes with which in the second.

(3)   Ahmet'in eve $\left\{ \begin{array}{l} \text{geldiğini} \\ \text{geleceğini} \\ \text{gelmesini} \\ \text{gelişini} \end{array} \right\}$ $\left\{ \begin{array}{l} \text{özlüyorum.} \\ \text{bekliyorum.} \\ \text{istiyorum.} \\ \text{biliyorum.} \\ \text{umuyorum.} \end{array} \right\}$

2 Word classes

- Why do we need word classes?

- The reason is the same as why we need to categorize morphemes.

- Word classes has three bases:

  (4)   a.   morphosyntactic: the same morphological processes are applicable to to the members of a class;
         b.   distributional: the members of a class are interchangeable in a given slot of a sentence or a phrase (what we mean by "phrase" will come below).
         c.   functional: the members of a class have the same type of contribution to the meaning of a sentence or phrase.

- Most basic distinction is **lexical** versus **functional** categories.

  Lexical categories are rich in semantic content. E.g. noun, verb, adjective, adverb.

  Functional categories carry grammatical information that pertains to the organization of how expressions come together and how their meanings are composed to arrive at more complex meanings. E.g. prepositions, conjunctions, articles, and so on.

- Another distinction is between **closed-class** versus **open-class** words.

- In most of the cases lexical categories are open, and functional categories are closed; but there are exceptions.

2.1 Verbs

- **Function:** predication of a state, event, situation, process, and so on. A general expression that is proposed to cover all these types of objects is **eventuality**.

- **Distribution:** Verbs come in subclasses that determine their distribution.

  - Intransitive verbs have a single **argument**.

    (5) Bhéic   sé.
    sneezed he
    'He sneezed.'   (Irish)

    (6) Öğrenciler hapşurdu(lar).

  - Transitive verbs have two,

    (7) Bhris   sí   an chathaoir.
    break.PAST she the chair
    'She broke the chair.'   (Irish)

  - Ditransitive verbs have three.

    (8) human rassal-o   maktūb le ʔabū-hum
    they   send.PAST-3PL letter   to father-their
    'They sent a letter to their father.'   (Chadian Arabic)

    Some ditransitives have a transitive usage as well, e.g. *buy*, *sell*, but not *hand*.

    And some verbs can be both intransitive and tranitive, e.g. *cook*, *sing*, and so on.

- **Morphosyntax:**

  - **Tense** locates an eventuality in time;

    (9) a.   **ga**-čiux 'He did it some time ago.'   (Chinook)
    b.   **ni**-číux 'He did it long ago.'

    c.   **na**-čiúxᵂ-a 'He did it recently.'
    d.   **i**-číux 'He just did it.'

  - **Aspect** specifies the extent of an eventuality, e.g. whether it is completed, continuing, iterating, and so on;

    (10) a.   ba-**léé**-bomba 'They are working.' (progressive)
    b.   ba-**là**-bomba 'They repeatedly work.' (habitual)

  - **Mood** indicates actuality, possibility, probability, certainty, and so on, of a proposition. These categories are expressed with **modal auxiliaries** in Germanic languages (English, German. . .). They are expressed in verbal morphology in Turkish and many other languages. Some people include the category of **evidentiality** – marking the indirect knowledge of a proposition – under mood as well.

  - **Valency changing processes** like **passive**, **causative** and **reflexive** are usually indicated in verbal morphology.

    (11) a.   Adam köpeği yıkadı.
    b.   Adam yıkandı.   (reflexive or passive)
    c.   Adam köpeği yıkattı.   (causative)
    d.   *Adam köpeği yıkattırıldı.
    e.   Adam köpeğe yıkatıldı.
    f.   Adam köpeğe yıkattırıldı.   (?)

  - **Agreement** morphology on the verb marks the person, gender and/or number of some (or all) of the arguments.

    (12) Nyuna na-tinu-nya   na lau
    she   3SG.SU-weave-3SG.OBJ the sarong
    'She weaves the sarong.'   (Kambera)

2.2 Nouns

- **Function:** Noun phrases provide the arguments of a verb, specifying the **semantic roles** in the eventuality expressed by the verb.

(13)   a.   Lee   handed the letter to Kim.
             AGENT   THEME   RECEPIENT

         b.   Kim   detests sprouts.
             EXPERIENCER   STIMULUS

         c.   Spiders   frighten Lill.
             STIMULUS   EXPERIENCER

         d.   The   flowers wilted.
             PATIENT

         e.   The ball   broke the window.
             INSTRUMENT   PATIENT

- **Distribution:** Every noun phrase appears in one of a number of **grammatical relations**, like **subject**, **direct object**, **indirect object**, and so on.

  In English you can spot subjects by the position of the noun phrase, by looking at which argument the verb agrees with, and so on.

  (14)   a.   This woman buys all the best apples.
           b.   All those people are enjoying our apples.
           c.   Apples were grown in that orchard.
           d.   Apples, she really enjoys.

- It is important to note that the relation between grammatical relations and semantic roles is quite complex.

- **Morphology:** Nouns and noun phrases in most languages carry a selection of these grammatical categories:

  - **number**;
  - **gender** (or class), which may have no semantic correlate;
  - **case** is a rather direct indicator of grammatical relations (Tr. "ismin halleri"). But not every case signals the same grammatical relation in every language that has it (E.g. Icelandic has accusative subjects).

- Another word class that is closely related to nouns and noun phrases is **determiners**, which contains articles (*the paper*, *a cat*, demonstratives (*this cat*),

wh-determiners (*which cat*), quantifiers (*every cat*, *some cat(s)*), possessive determiners (*my cat*), determiner pronouuns (*we cats*, *you linguists*).

2.3   Adjectives

- **Function:** Adjectives can be **predicative** or **attributive**.

  Attributive adjectives directly modify a noun.

  Predicative adjectives occur in contexts like the following:

  (15)   a.   He felt ___.
           b.   She seems ___.
           c.   I find it ___ to think she's an acrobat.

- **Distribution:** Adjectives can be modified with **intensifiers** like *very*, *quite*, *too*, *rather*, *somewhat*, *enough*.

- **Morphology:** Adjectives can appear in **comparative** and **superlative** forms.

  Exercise 2.1
  Does Turkish have distinct classes of nouns and adjectives?

2.4   Adverbs

(16)   a.   This [strangely sad] song.
         b.   She spoke [strangely lucidly].
         c.   She spoke strangely.

- Functionally, adverbs modify the eventuality, rather than its participants.

- Adverbs do not differ from adjectives in form in some languages.

2.5   Adpositions

- Adpositions mainly code information on time, location and manner.

- Some languages put adpositions before their arguments (**prepositions**) and some put them after (**postpositions**).

3   Sentence structure

- The **clause** is a technical linguistic abstraction based on the classical notion of a sentence, according to which a sentence is the result of bringing together a subject and a predicate.

- There are different sub-types of clauses. Those where the verbal element has or lacks grammatical information like tense, agreement, etc., those with or without subjects, and so on. We will not be concerned with sub-typing of clauses in detail.

- A sentence is a structural organization of one or more clauses. A **simplex** sentence has one clause, while a **complex** sentence has more.

3.1   Coordination and subordination

- The structurally simplest way of forming a complex clause is to **coordinate** (or **conjoin**) two clauses by coordinating conjunctions like the English *and*, *but*, or *or*. Note that putting a logical disjunction like *or* is also conjoining.

- In coordinating conjunctions, the conjuncts are syntactically on equal terms.

  For instance, modulo pragmatic concerns, the order of the conjuncts does not affect grammaticality.

- In **subordination** of two clauses, there exists a structural asymmetry between the clauses.

  Complement clauses:

  (17)   a.   My friend claimed [(that) Ceri liked chips].
          b.   I wondered [whether/if Lee had gone].
          c.   They want [to leave before breakfast].
          d.   [That Chris liked Lee so much] really surprises me.
          e.   [For Mel to act so recklessly] shocked everyone.

- One of the clauses (**complement clause**) appears as the complement (or the argument) of the verb of another clause (**matrix** or **root** clause). Another

term for the relation is that the complement clause is **embedded** under another clause.

- Having clauses as components of other clauses is a typical instance of **recursion** in natural languages, which is one source of structural **hierarchy**. Theoretically three is no limit to the number of **levels of embedding**.

  (18)   They want [to know [whether we'd expect [to leave before breakfast]]].

- When we come to the topic of constituency, we will have a more solid foundation for positing a hierarchical syntactic structure.

  Adjunct (or adverbial) clauses:

  (19)   a.   Mel will be there [when she's good and ready].
          b.   [If you're leaving early], please get up quietly.
          c.   [Kim having left early], we drank her beer.

- These are optional subordinations; they give extra information, but not required for a syntactically complete sentence.

4   Constituency and phrase structure

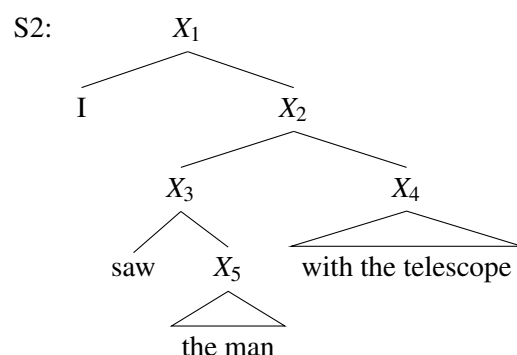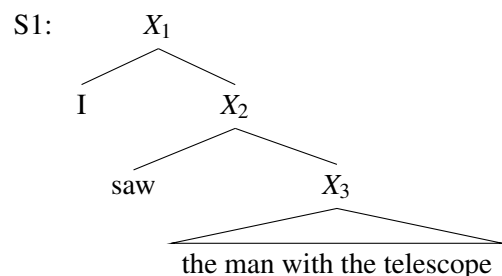### 4.1   Motivation for constituent structure

- **Motivation 1:** A primary indication of the fact that linguistic expressions are structured into constituents is the notion of structural ambiguity.

  (20)   I saw the man with the telescope.

  (21)   Because the man that the police interrogated didn't call his lawyer was concerned.

- Example (20) is **globally** ambiguous, while (21) is **locally** ambiguous.

- In (20) each **reading** corresponds to a different **constituent structure**.

- Here are the two structures for (20):

  S1:

  X_1 → I, X_2
  X_2 → saw, X_3
  X_3 → the man with the telescope

  S2:

  X_1 → I, X_2
  X_2 → X_3, X_4
  X_3 → saw, X_5
  X_4 → with the telescope
  X_5 → the man

- As can be seen in the *telescope* example, constituency is not a property of strings alone. It makes sense to talk about constituency only in the context of a structural description, which represents a certain interpretation of the given expression.

- **Motivation 2:** Another motivation for constituency is that certain syntactic operations and constraints refer to constituents; in other words, there are generalizations that are best expressed in terms of constituents. We will see some of these below when we discuss constituency tests.
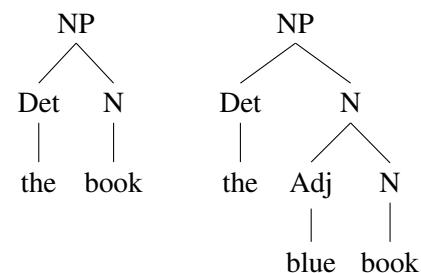
4.2　Constituents and phrases

- Basics of trees:

  - a node A dominates a node B iff either A is B or there is a path from A to B, such that moving along this path increases your distance from the root.

  - the distance from a node A to B is the number of intervening edges along the shortest path from A to B.

  - root is the node that dominates every other node but is not dominated by any.

  - two types of nodes: terminal and non-terminal.

- A maximally large sequence of terminals dominated by a single node is a constituent.

- Just like morphological rules need to know word classes like verb, noun, and so on, syntactic rules need to know phrase classes like verb phrase, noun phrase, prepositional phrase, and so on.

- A **phrase** is a structural organization of a **head**, it's **complements** (or **dependents**), and a number of optional **modifiers** (or **adjuncts**).
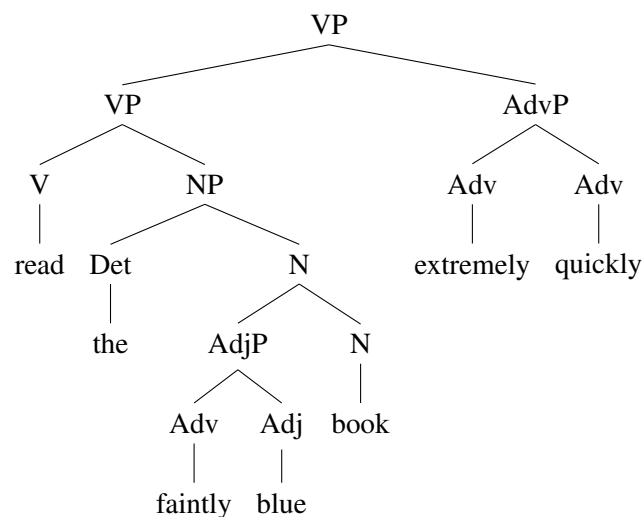
  Here is a noun phrase first without, then with adjectival modification – let's take the determiner to be a modifier of the noun:

  NP → Det, N
  Det → the
  N → book

  NP → Det, N
  Det → the
  N → Adj, N
  Adj → blue
  N → book

  Now a verb phrase, again without and with modification:
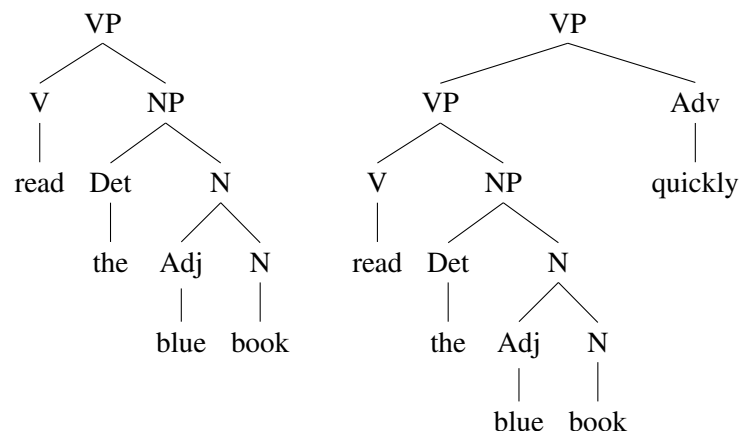
- The above trees simplify the structure by treating Adj and Adv as non-phrasal. But they can have modifiers and complements as well.

4.3   Constituency tests

Sentence fragment test:

Any expression that can be put as an answer to a *wh*-question (=a question involving *what*, *which*, *who*, and so on) is a constituent.

(22) a. Kim wrote that book with the blue cover.
      b. Kim bought that book with her first wages.

(23) a. What did Kim write?
      b. That book with the blue cover.

(24) a. What did Kim buy?
      b. *that book with her first wages.

Echo question test:

(25) a. *Kim wrote **what** with the blue cover?
      b. Kim bought **what** with her first wages?

(26) Kim wrote that **what** with the blue cover?

The cleft test:

(27) a. Kim wrote that book with the blue cover.
      b. Kim bought that book with her first wages.

(28) a. It was [that book with the blue cover] that Kim wrote
      b. *It was [that book with her first wages] that Kim bought.

Ellipsis test:

(29) a. John wrote a book last year. Jane did so (too).
      b. John wrote a book last year. Jane did so the year before.

What can the following sentence mean?

(30) John saw the man with the telescope, Jane did so with the monocular.

(31) a. John sent a book to Jane. Irma did so to Harry.
      b. *John asked Bill to send a book to Jane. Irma did so to Harry.

(32)   a.   Ali hızlı araba kullanıyor; Mehmet yavaş.
            b. ??Ali hızlı araba kullanıyor; Mehmet motosiklet.

(33)   a.   Ahmet Veli'yi Aylin'e şikayet etii; Hasan da Sevgi'yi öyle.
            b. ??Ahmet Veli'yi Aylin'e şikayet etii; Hasan da Bilge'ye öyle.

Exercise 4.1

Work out the constituent structure of the following sentences by constituency tests:

1. My brother wrote down his address.
2. My brother applied for this job.
3. John expected Jane to leave.
4. John promised Jane to leave.

Coordination test:

Only constituents having the same syntactic category can get combined via coordinating conjunctions.