

## General introduction: Why this course?

- Why do we start the program with linguistics and formal languages?
- Some say “language is a window into mind”. What do they mean by that?
- The central notion in the cognitive science of language – and possibly in other domains – is **grammar**. We will repeatedly deal with the concept throughout the term.
- For a language  $L$ , a grammar is an explicit specification of the principles governing the formation of words, phrases and sentences in  $L$ , and their interpretation.
- A satisfactory grammar for Turkish not only should realize that (1a) is, but (1a) isn't, a well-formed noun phrase with the main emphasis is on the first word, rather than the second, but also that the entity expressed by (1a) is a sort of box rather than a shoe – knowing what words mean is not enough.

- (1)    a.    ayakkabı kutusu  
          b.    \*kutusu ayakkabı  
               Intended: ‘shoe box’.

- Genuine philosophical and scientific inquiry starts at the moment you begin to discover that something that you thought was completely ordinary and expected, is not so.
  - How do speakers of Turkish know(!) the facts in (1)?
  - Could general cognitive mechanisms like memorization or stimulus-response conditioning be adequate for this? Let's think for a while.
  - Here are some facts about Turkish that you may not be aware of before.
- A. If you look at it closely, you realize that usually words are stressed on their final syllable. However if the word is a place name, then the stress shifts to an earlier syllable.

Can it be the case that I stress *Ayrancı dolmuşu* in the way I do because that's the way I heard it?

- B. Another example, assume a learner of Turkish says s/he is puzzled about how to put an accusative case (Tr. “ismin ‘i’ hali”) in Turkish? How would you describe the rules?

- C. Turkish compounds:

Type 1: dolap + kilit = dolap kilidi

Type 2: trafik + ceza = trafik cezası

Try possessive suffixes on these, how do they differ? Why?

- D. Restrictions on Turkish expressions *hiç* and *bile*.

First some English:

- (2)    a.    John didn't drink any water.  
          b.    Did John drink any water?  
          c.    If John drank any water, he must be in trouble.  
          d.    \*John drank any water.

Now Turkish:

- (3)    a.    Ahmet hiç su içmedi.  
          b.    Ahmet hiç su içti mi?  
          c.    \*Ahmet hiç su içti.  
          d.    \*Ahmet hic su ictiyse, hapi yuttu demektir.
- (4)    a.    Ahmet bir damla su bile içmedi.  
          b.    Ahmet bir damla su bile içti.  
          c.    \*Ahmet bir damla su bile içti mi?  
          d.    Ahmet bir damla su bile ictiyse, hapi yuttu demektir.
- (5)    a.    Ahmet bir damla bile su içmedi.  
          b.    \*Ahmet bir damla bile su içti.  
          c.    ?Ahmet bir damla bile su icti mi?

d. Ahmet bir damla bile su ictiyse, hapı yuttu demektir.

E. Under what circumstances is the following sentence true?

(6) Her öğrenci bir romancının yazdığı her romanı okudu.

E. Who can the pronouns refer to in these sentences? What is the rule?

- (7) a. Ahmet [Ayşe'nin onu sevdiğini] biliyor.  
b. Ahmet [onun Ayşe'yi sevdiğini] biliyor.

• I think we are at a point to justifiably claim this:

(8) **Proposition:** Language operates via rules and principles not accessible to consciousness.

• When speaking of rules we do not mean rules on “proper”, “good”, “effective” speaking (**prescriptive** rules), we mean rules on what is possible to occur in nature (**descriptive** rules)– compare with the rules of other sciences.

(9) **Observation:** Language is creative; everyday we hear many sentences that we never heard before, and this will continue to be so.

• Memorization alone does not work because...

• Stimulus-response conditioning alone does not work because...

• How do you think such a system of rules and restrictions is mastered? The technical term is **language acquisition**.

• Some crucial observations on language:

- i. Languages are acquired by kids without any training on the grammar of their native language, starting at very early ages; who are not yet capable of adult-like reasoning; and even by those non-typical in their

cognitive development, for instance those lacking communicative capacities like “reading” others’ minds, attending to the same thing with others, interpreting emotional states and gestures, and so on.

ii. Language acquisition follows a similar course regardless of where the kid is born and what natural language she acquires.

iii. There is a **critical period** of language acquisition (roughly the first 8 years) during which language “matures” in the mind/brain of the child, and beyond which native-level competence in another language is virtually impossible.<sup>1</sup>

iii. Language is uniquely human; no successful attempts to observe anything similar in other species.

• These facts make cognitive scientists think that there are **universals** of human language, a core which is common to all natural languages acquirable by human beings. Or from another angle, the capacity to acquire and use language is a defining characteristic of our species.

• One influential hypothesis is that humans are born with a genetically determined capacity for language residing in their brains, which guides the language acquisition process so that they end up with an abstract system of rules – a grammar – determining how sound is paired with meaning.<sup>2</sup>

• It has many historical precedents but the idea is first systematized into a research program by Noam Chomsky:<sup>3</sup>

- (10) a. What is the system of knowledge? What is in the mind/brain of the speaker of English or Spanish or Japanese?  
b. How does this system of knowledge arise in the mind/brain?  
c. How is this knowledge put to use in speech?  
d. What are the physical mechanisms that serve as the material basis of this system of knowledge and for the use of this knowledge.

<sup>1</sup>Beyond this period, we switch to the phrase “language learning” (in contrast to “acquisition”). If no language is acquired in the critical period, even a basic level of competence is unattainable.

<sup>2</sup>We abstract away from written and signed forms of language.

<sup>3</sup>Adapted from p. 3 of Chomsky N. (1988). *Language and Problems of Knowledge, the Managua Lectures*. The MIT Press: Cambridge, MA.

- Throughout the term we will train ourselves in some methods and attempts to address the question (10a).
- Our focus is what makes human language unique among other similar systems of representation and communication.
- We will see that there are types (or families) of languages grouped according to the complexity of their structure. We will see that a case can be made about the location of human languages in this hierarchy of types.
- We will see that this might in turn serve a key to what makes human language capacity what it is.