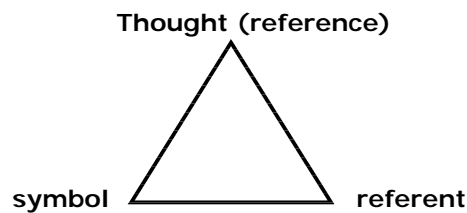


## Introduction to linguistics

### What is language?

*Language is a purely human and non-instinctive method of communicating ideas, emotions and desires by means of voluntarily produced symbols (Sapir 1921)*



## Issues in linguistics

- Structuralism (de Saussure): langue vs. parole  
langue: language system shared by a community of speakers  
langage: the language capacity= "having language"  
parole: language behavior of members of a speech community
- generative linguistics (Chomsky)  
competence vs. performance  
competence: what a speaker knows about his/her language  
performance: what a speaker produces

## Communication vs. language

communication: *the passing on or exchange of information – distinguishes what is living from what is non-living in nature* (O'Grady et al. 1996)

human language and animal communication:  
the **design features of human language**

1. interchangeability: all members of the species can send and receive messages
2. feedback: users of the system are aware of what they are transmitting
3. specialization: the communicative system serves no other function but to communicate

## The design features of human language

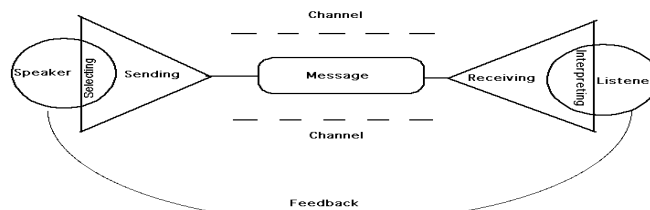
4. semanticity: the system conveys meaning through a set of fixed relationships among signifiers, referents and meaning.
5. arbitrariness: there is no natural or inherent connection between a token and its referent
6. discreteness: the communication system consists of isolatable, repeatable units
7. displacement: users of the system are able to refer to events remote in space and time
8. productivity: new messages on any topic can be produced at any time
9. tradition, cultural transmission: certain aspects of the system must be transmitted from an experienced user to a learner

## The design features of human language

9. duality of patterning: meaningless units (phonemes) are combined to form arbitrary signs. signs can be recombined to form new larger meaningful units (s-p-o-t à tops, pots)
11. prevarication: the system enable users to talk nonsense or to lie
12. learnability: the user of the system can learn other variants. Humans can learn different languages, bees are limited to their genetically specified dialect
13. reflexiveness: the ability to use the communication system to discuss the system itself

## Features of communication

- channel: the messages are primarily transmitted via the vocal-auditory channel
- linearity: the message is extended temporally (speech) and locally as a string (writing) and is produced and analyzed as a sequence.
- redundancy: the same information may be given several times



## Phonetics: introduction

Phonetics: *The study of the speech sounds that occur in all human languages to represent meanings.*  
(Fromkin/Rodman 1993:176)

types of phonetics

1. articulatory phonetics

study of the way how speech sounds are made (articulated) by the vocal organs

2. acoustic phonetics

study of the physical properties of the speech sounds

3. auditory phonetics

study of the perceptual response to speech sounds through ear, auditory nerve, brain

## Vocal organs and articulators

area above larynx: vocal tract

parts of the oral tract forming sound:

articulators

articulators: lips, teeth, alveolar ridge, hard palate, soft palate (velum)

velum: a flap that can shut off the nasal tract

end of velum: uvula

part between larynx and uvula: pharynx

tongue: can be separated into: tip, blade, front, center, back

## Articulation of consonants and vowels

vocal cords: can vibrate under pressure of airstream

vibrating cords: voiced

non-vibrating cords: voiceless

- vowels vs. consonants:

vowels: little obstruction of airstream, generally voiced

consonants: voiceless or voiced, obstructed airstream

- consonants:

for forming consonants: airstream must be obstructed

thus: consonants to be classified according to place and manner of obstruction

## Places of consonant articulation

1. labial/bilabial (upper and lower lips)

<pie>, <buy>, <my>

2. labiodental (lower lip + upper front teeth)

<fire>, <fun>, <vicious>

3. dental/interdental (tongue tip + upper front teeth)

<thigh>, <thy>

4. alveolar (tongue tip/blade + alveolar ridge)

<tie>, <die>, <lie>

5. retroflex (tongue tip + back of alveolar ridge)

<rye>, <row>, <ray> and <hour>, <air>

- not used by all speakers of English

### Places of consonant articulation

6. palato-alveolar (tongue blade + back of alveolar ridge)  
<shy>, <she>, <show>
7. palatal (tongue front + hard palate)  
<Hugh>
8. velar (tongue back + soft palate)  
<hack>, <hag>, <hang>
9. glottal (vocal cords)  
<heave>, <hug>

not used in English:  
uvular (French <r>);  
pharyngeal (Arabic)

### Manners of consonant articulation

articulators can completely or partially close the oral tract

1. stop (closure, airstream cannot escape)
  - nasal stop: air stopped in mouth but can escape through nasal tract <my>, <night>, <song>
  - oral stop: raised velum closes nasal tract → pressure builds, airstream is released in bursts:  
<pie>, <cool>, <guy>, <tool>
2. fricative (close approximation of two articulators)  
airstream is partially obstructed → turbulent airflow  
→ hissing sounds  
<shy>, <those>, <friend>
  - higher-pitched: sibilants
  - lower-pitched: non-sibilants

### Manners of consonant articulation

#### 3. approximant

- narrowing of articulators until turbulent airstream occurs but not close enough for a fricative  
<we>, <Howard>

#### 4. lateral

obstruction along center of oral tract without complete closure <lip>

#### 5. affricates

some sounds are combinations of other simpler sounds, cf. <church>  
stop + fricative = affricates

### Articulation of vowels

- articulators are open, airstream unobstructed  
cf. <heed, hid, head, had, father, good, food>
- tongue tip on front lower teeth  
dome of tongue: raised  
<heed, hid, head, had>: highest point of tongue: front of mouth à front vowels  
high front vowels <heed> and low front vowels <had>
- mouth is increasingly open

tongue close to back of vocal tract à back vowels  
high back vowels <food> and low back vowels <father>

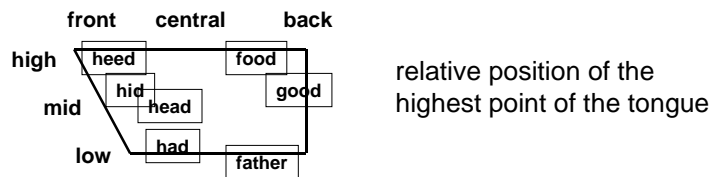
## Articulation of vowels

lip position: close together in mid and high back vowels  
<good, food>

lip rounding: rounded vs. unrounded vowels

à three factors for vowels

1. height of the body of the tongue
2. front-back position of tongue
3. degree of lip rounding



## Phonology: introduction

speech sounds to be analyzed after:

physical properties (form) à phonetics

sound differences / similarities (function) à phonology

<b>phonetics</b>	<b>phonology</b>
sounds of language	functioning of sounds as part of a system
parole, speech act	langue, language system
universal	language specific
concrete	abstract
phone [ ]	phoneme / /

- sounds form segments; speakers know which segments contrast
- segments contrast à are in opposition or distinctive

*sip vs. zip; hit vs. hot* à minimal pair test (2 forms with distinct meanings that differ only by one segment)

Levels of description: from minimal pairs to phonemes

- established on basis of sound, not spelling
- only one segment can differ, cf. *soldier* vs. *shoulder*
- contrasts are language-specific; sounds that are distinctive in one language may not be distinctive in another

wide vs. narrow transcription for *leaf-fee!*

[l] is never to differentiate meanings → phonetic difference, not a phonemic difference

- unit of description: phoneme /l/

phoneme: smallest unit with a potentially distinctive function

variants: allophones, cf. German /x/: *ich* vs. *Buch*

Principles in phonology

- complementary distribution: phonetic units that never occur in the same environment

[l] only in front of vowels and /y/: clear

[l] in front of consonants and word endings: dark

- free variation: <economics> phonetic difference realised by speakers for the same word

spelling systems generally ignore phonetic variation that is non-distinctive, evidence that speakers have a mental notion what phonemes are

phonologically relevant differences are never left out in spelling:

cf. /r/ and /l/ in *rift* vs. *lift*

- neutralization: foreigners can have difficulty in phonological difference, cf. German *Auslautverhärtung*  
German: *Rad* vs. *Rat*

### Phoneme relationships

- linking (liaison): BE avoids two distinct vowel phonemes

à insertion of liquid [r] or glide[j] or [w]

*near – nearing      near Africa*  
*see – seeing      to see Arthur*  
*sue – suing      to sue Arthur*

- phoneme relationships:      /-et/   /p-t/   /pe-/

    /p/    /e/    /t/  
    /b/    /i/    /n/  
    /l/    /o/    /k/

= matrix of real and potential words

à language can contain irregular words: as loan words, foreign words

### Distinctive features of English stops

	/k/	/g/	/ŋ/	/p/	/b/	/m/	/t/	/d/	/n/
La	-	-	-	+	+	+	-	-	-
Ve	+	+	+	-	-	-	-	-	-
De	-	-	-	-	-	-	+	+	+
St	-	+	-	-	+	-	-	+	-
Na	-	-	+	-	-	+	-	-	+

sub-phonemic analysis

basis: distinctivity of the 9 phonemes

phonemes of one language: can only be defined in contrast to other phonemes of the same language (Hockett)

### Levels of description: syllable

syllable: composed of a nucleus (usually a vowel) and its associated non-syllabic elements

nucleus (N): syllable's obligatory member, forms core

coda (C): consists of those elements following the nucleus in the same syllable

rhyme (R): nucleus + coda

onset (O): elements preceding the rhyme

reason: speakers syllabify after underlying rules

- phonotactics: set of constraints how segments are formed, speaker's knowledge of his/her language

foreign words: accepted or adjusted (*psychology*)

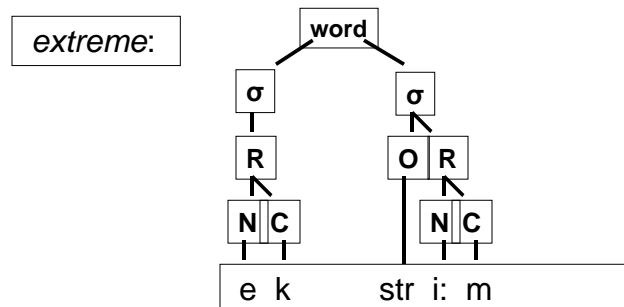
- closed vs. open syllable: syllable with coda vs. syllable without coda

### Syllabification of words

1.) identify nucleus: obligatory, each vowel makes a syllabic nucleus

2.) longest sequence of consonants to the left that does not violate phonotactic rules: onset

3.) remaining consonants to the right: coda



## Morphology: introduction

Morphology deals with the internal structure of words that can be broken down into meaningful parts

à concerned with how speakers understand and create complex words

words: have internal structure consisting of smaller units

**morphemes**: smallest unit that carries information about meaning or function

*build-er, marry/remarry*: phonology is not revealing

–*er* (indicates function of word) cf. *reader, writer, runner*

*re+verb*: meaning understood automatically: *reconsider*

but: *\*relike, \*rehave* à restrictions

• languages differ in complexity (low: Japanese, high: Turkish)

## Morpheme level of analysis

simple/monomorphemic words: no further subdivision

complex/polymorphemic words: 2 or more morphemes

• basic types: free vs. bound morphemes

free: a morpheme that can be a word by itself

bound: must be attached to another element

new words from:

free morphemes: *doghouse, ready-made*

bound morphemes:  $\{\{un\{\{manage\}_V\} \{able\}_A\}_A\} \{ness\}_N$

• lexical vs. grammatical morphemes

lexical: for the construction of new words  $\{black\}\{bird\}$

bound lexical morphemes: derivational (*disbelief, readable...*)

possible: change of word class, change in meaning

## Inflectional morphology

= what forms a word can take depending on role in a sentence

grammatical morphemes: express grammatical relationship between word and context: plural-s, -ed

free grammatical morphemes: *and, the* = function words

### Inflectional morphemes in English

• nouns:

plural -s

*the books*

• verbs:

3<sup>rd</sup> person sg. non-past -s

*Mary reads well*

progressive -ing

*John is working*

past tense -ed

*She read*

past participle -en/ed

*He has eaten/worked*

• adjectives:

comparative -er

*taller*

superlative -est

*tallest*

## Morphological structure of words

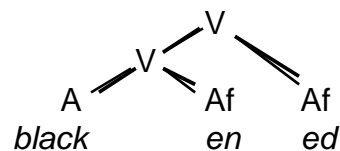
à necessary to identify and classify morphemes according to function for the word and its meaning

complex words: root + one or more affixes

• root morpheme: major component of word's meaning, usually root belongs to N, V, A, P

affixes: always bound morphemes

• base: the form to which a morpheme is added



A: root and base for -en; V: base for -ed

example/exercise: *unhealthy, pretreatment*

Word formation: derivation and composition

= process of morphological variation in the constitution of words

1. derivational: productive vs. unproductive derivation

morphological patterns: vary in degree of productivity

productive: *-ness* (many forms), *-ity* (fewer forms)

unproductive: *-dom* (*kingdom* etc.)

2. compositional: combination of 2+ lexical morphemes

*black+bird* → different lexical categories combinable

endocentric composition: right morpheme determines

word class: *blackbird*, *spoonfeed*, *nationwide*

exocentric: meaning cannot be inferred from rightmost component (*walkman*, *redneck*)

difference: *oak leaves*

*Toronto Maple Leafs*

Word formation: conversion, clipping, backformation

3. zero-derivation/conversion

change of word class without change in form

*challenge* – *to challenge*, *ship* – *to ship*

V derived from N, N derived from V

less common: N from A (*the poor*)

V from Prep (*to down a beer*)

4. clipping and blending = shortening of polysyllabic words

*laboratory* – *lab*, *gymnasium* – *gym*

*smoke/fog* – *smog*, *breakfast/lunch* – *brunch*

5. backformation = to remove a real or potential affix

*to housekeep*, *to babysit*

6. acronyms

*NATO*, *LASER*, *AIDS*

## Syntax: introduction

*syntax: the way how people combine words to form sentences*

- speakers: finite set of memorized words/morphemes as basis for potentially infinite sets of sentences
- *discrete infinity*
- basis of creativity of human language
- allows speakers to create/understand novel sentences

syntactic theory: how speakers know how to form sentences and how they get this knowledge

- speakers' knowledge: mental grammar

## The syntactic structure of language

- language: structured, not random → rules = grammar
- concerns of syntax: word order

- words behaving as units: constituents

*The cat ate the rat / The rat ate the cat.*

→ same words, different meaning

- speakers "know" about importance of word order
- but: *the rat, the cat ate* = larger units than words  
groups of words forming a unit: in [...]

[*our vicar*] – [*likes*] – [*fast cars*] – units, because:

[*he*] - [*likes*] – [*them*]

[*our vicar*] - [[*likes*] – [*fast cars*]]

a unit because *like* is a  $V_t$

## Forms and functions

function of constituents: difference in meaning

*The cat ate the rat/ The rat ate the cat*

- subject: performs action, is agent, what the sentence is about

- predicate: what subject is engaged in doing, predicate is anything except subject

à operations of finding subjects: simple, formal  
subjects not always "do" something

*I dislike the idea. Miriam stood aside.*

can be meaningless: *It was hot, It is raining*

*There are ways of making you talk.*

à non-referential it and existential there: fill subject slot

## Functions: properties of subjects and objects

subjects: predominantly nouns, groups with N: NPs (*the stupid dog, the girl with the red hair, this committee...*)

subjects are:

- a.) usually NPs
- b.) (usually) the 1<sup>st</sup> NP we meet
- c.) obligatory
- d.) determine forms of verbs (agreement)

direct object DO: entities that undergo process denoted by verb: *He broke the teapot.*

- play patient role (= semantic test)

- a.) are often NPs
- b.) after V

Functions: direct vs. indirect object

DO (active sentence) → subject (passive sentence)

DOs complete the meaning of the verb, are complements

→ complement: any element that is required by another element

- indirect objects IO, typical role: receiver, goal

*We gave the boys the CDs.*

verbs taking DO and IO: ditransitive verbs

a.) usually NPs

b.) cannot occur without DO

c.) always precede DO (not in German)

c.) can be passive subjects (*The boys were given the CDs.*)

Form: words, word classes, phrases

words: difficult to define: *dogs, eats, duty-free*

→ grouping into word classes, parts of speech

noun, determiner, adjective, adverb, preposition, adverb, conjunction, interjection

- word classes are notions of form, not function

- criteria of nouns; words preceded by: *a, the, this...*

common determiners: *the/a, this/these, that/those,*

- a noun can be preceded by adjectives

→ N are characterized by their environment

subclasses: common N (+/-count), proper N, numerals (cardinals/ordinals), pronouns

- nouns are heads of NP: *the hat, blue hat on the shelf*

*hat* = central element (Head)

Form: criteria of verbs and adjectives

inflections encode grammatical properties (*ed* → past)  
like tense, agreement

- main verbs and auxiliaries: aux. express point of view

non-finite verbs: to-infinitive, *I wanted him to dance*

V are Head of VPs *The library* [<sub>VP</sub> *recalled their books*]

formal markers: *-ful, -ible, -ive* but not exclusive: *green*

a.) are gradable (*very...*) – exceptions: materials, Nationalities (*?very wooden, ?very Swedish*)

b.) can take comparative, superlative

exceptions: *good-better-best* = analytical comparison

predicative: with V<sub>L</sub>: *appear, be, feel, look, seem, smell*

A are Head of APs: [<sub>AP</sub> *very glad to be here*]

Form: criteria of prepositions, adverbs and conjunctions

- prepositions: no formal criteria

are Head of PPs [<sub>PP</sub> *with* [<sub>NP</sub> *the dog*]]

often: NPs as prepositional object/preposit. complement

- adverbs: modify verbs, adjectives or other adverbs

*-ly, -wards, -wise, -ways*, but not all (*very*)

some have comparison (*well, soon*)

classes: circumstantial *often, reluctantly*

degree *extremely, very*

sentence *however, probably, perhaps*

- conjunctions: linking function

a.) coordinating: *and, or, but*

b.) subordinating: *that, if, whether, for, because*

## Clauses and sentences

clause: a self-containing expression which contains a subject and a predicate

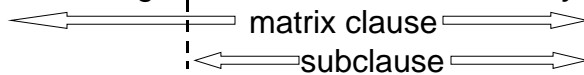
most cases: predicate has a finite lexical verb →  
number of lexical verbs ≅ number of clauses

a.) *I paid the entire bill at once.*

b.) *They were happy after I had paid the bill at once.*

c.) *They wanted me to pay the entire bill at once.*

*Tim thought that Kate believed the story.*



*that*: complementiser

## Semantics: introduction

- for language to fulfill communicative function:

conveys a message: form must have content

same form – different content: ambiguous sentences,  
cf. *Ruth saw the people with binoculars.*

*A car was reported stolen by the police yesterday*

- meaning of single words: to be determined in  
componential analysis (feature semantics)

→ meaning of a lexeme is a list of semantic features

*girl* [+anim, +human, -adult, +female]

*woman* [+anim, +human, +adult, +female]

*table* [-anim]

Semantics is the study of the meaning of linguistic  
expressions.

## Emergence of prototypes

- borders of meanings: blurred, fuzzy, cf. *bird* [+anim, -human, +wings?, +lays eggs, +can fly?, +feathers?]
- à concept of prototypes

use of attributes: can be similar (*birds*)  
or dissimilar (*games*)

(game: only a network of overlapping similarities “family resemblance”, cf. Wittgenstein)

- attribute tests confirm the (intuitive) “best example”
- thus: prototypical members have largest number of attributes in common
- example: basic color terms

focal colors: consistent for speakers of the same and of other languages

## Prototype theory

Prototype: “the clearest cases of category membership defined [...] by people’s judgements of goodness of membership in the category” (Rosch)

- humans classify numbers of things into categories with no discrete boundaries
- categories can be distinguished with emphasis on their structure
- prototype: an image that averages similar experiences

most frequent phenomena: coded as basic categories  
earliest to be learned / easiest to be triggered  
classic example: *bird*, prototype: *robin*

## Semantic relations: synonymy and antonymy

1. synonymy: two words have the same meaning in a number of contexts: *I spent my holidays/vacations in Spain* but: *Christmas, Easter: holidays*

real synonymy: rarer or not-existent

youth	-	adolescent
purchase	-	buy
remember	-	recall
begin	-	start

2. antonymy: lexemes contrast in semantic features

• one member can be marked: *How tall is Rita?* (*tall* vs. *small*, *tall* is unmarked)

graded antonymy: *not clever* <sup>1</sup> *stupid*

ungraded antonymy: *alive* vs. *dead*

dark	-	light
hot	-	cold
in	-	out

## Semantic relations: polysemy and homonymy

3. polysemy: lexemes can have two or more related meanings cf. *surfer*

à to be seen as single word with different meanings

bright:	shining	- intelligent
deposit:	minerals in the earth	- money in the bank

4. homonymy: lexemes have entirely distinct meanings

à to be seen as separate words with same pronunciations

bat:	flying mammal	- equipment in baseball
club:	social organization	- a blunt weapon

homography: words are written identically but pronounced differently: *wind*

homophony: words are pronounced identically but written differently: *threw* – *through*

## Lexicology: introduction

- subfield of semantics, investigates the lexicon of a language and its entries in regard to their meanings and relationships
- lexicon entries: not seen as list of isolated elements  
lexicology tries to find generalizations and regularities
- lexicon: vocabulary considered from a synchronic, systematic perspective
- lexicography: study of dictionaries and dictionary making
- common: assumption: English contains large central area common to all speakers (cf. diagram)
- literary: contains scientific, foreign and archaic words
- colloquial: contains dialectal, vulgar, slang and technical elements

## Structure of the English vocabulary

English vocabulary:  
not homogeneous,  
A temporally variable  
(changes over time)

- synchronic view vs. diachronic view

although words look familiar their meanings can have changed over time

B spatially variable  
BrE vs. AmE  
*railway*      *railroad*  
*luggage*     *baggage*  
*lorry*        *truck*

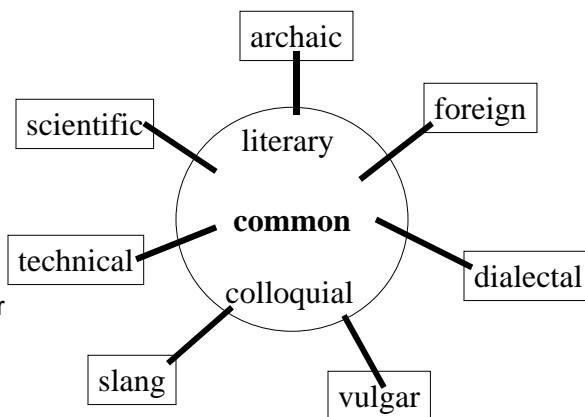


diagram adapted from Lipka 1992.

## Dictionaries of the English language

- bilingual vs. monolingual dictionaries
- monolingual dictionaries should contain the following information: pronunciation, definitions, collocations/ idioms, notes on usage  
for English: Oxford English dictionary OED

others: Advanced learner's dictionary of current English (OALD)

- Longman dictionary of contemporary English
- Collins Dictionary of the English language
- COBUILD English language dictionary
- Webster's New World dictionary of the American language

## Fundamental distinction in lexicology

- paradigmatic vs. syntagmatic relationships in a lexicon
- language is linear, elements follow sequentially  
syntagm: successive linguistic elements that are combined (de Saussure)

paradigm: formed by elements in opposition or alternative to the same position in a syntagm/sentence  
syntagmatic relations exist between elements of the language system that are combined, that co-occur (idioms: *raining cats and dogs*, collocations: *read + book/journal*)

He	can	go	tomorrow	←→	syntagmatic
she	may	come	soon	↑	paradigmatic
I	will	start	next	↓	
You	could	sleep	now		

## On corpus linguistics

*Corpus: body or collection of written or spoken material upon which linguistic analysis is based*

- used as a sample of language
- provided view beyond individual experience
- rules out individual salience
- computer processable

Output:

- concordances (i.e. lists of occurrences)
- KWIC (key word in context)
- relative frequencies

## Corpus search strategies

- relative frequency of a word form: standard deviation from mean frequency of word forms
- collocation: the appearance of one particular word form in certain distance of another particular word forms  
different meanings can have different collocates
  - colligation: the appearance of one particular word form in a particular grammatical structure
  - connotation: the semantic environment, can have positive or negative value

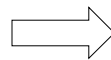
## Corpus research

How frequent is a particular morphological form/grammatical structure?

Which particular structures have particular meanings?

Which particular structures have particular locations in texts?

- corpus tasks have degrees of complexity



Relevance of tagging

## Pragmatics: introduction

context includes: speaker, hearer, third party participants, beliefs, world knowledge

*pragmatics: study of how context influences the interpretation of meaning*

- deals with people's use of language
- is part of performance
- is concerned with principles people use when communicating

• cannot be captured by semantic theory, cf.:  
*It is rather cold in here*

à cooperative principle (Grice):  
4 rules of cooperative behavior

## Grice's rules of cooperative behavior

### 1. maxim of quantity

- give the right amount of information when talking
- make your contribution as informative as required but not more

### 2. maxim of quality

- be truthful, try to make a contribution that is true
- do not say anything for which you lack evidence

### 3. maxim of relevance

- give a reply that fits the question

### 4. maxim of manner

- be clear and orderly, avoid obscurity and ambiguity

## Implications and facticity

Conversational implicatures: something is understood although it has not been explicitly said → drawing conclusions from what is said:

*He continued to write the essay* - implication: *He wrote an essay before*

### Facticity of utterances

- factive verbs: situation is true: *The cat is in the garden*
  - non-factive verbs: situation has some probability:  
*I believe the cat is in the garden*
  - contrafactive verbs: situation is not the case:  
*I wish the cat was in the garden*
  - performative verbs: statement is an action itself  
*I warn you, John accuses Mary, Fred promises...*
- we act with speech (speech act)

## Comprehension and understanding

### Mental Models:

- blueprint /abstraction of aspects of the physical world
- representations in the mind of real or imaginary situations
- mind constructs "small-scale models" of reality that it uses to anticipate events
- can be constructed from perception, imagination, or comprehension of discourse
- underlie visual images, but can also be abstract, representing situations that cannot be visualised

## Strategies in text understanding

- relevance of causal knowledge structures:  
reader establishes a causal field  
contains specific circumstances of the story  
à explicit identification of conditions perhaps only implicitly mentioned

He sat in the waiting room, his cheeks bloated.  
After a while, a nurse called him up. Reluctantly,  
he followed her next door.

- representation updates world knowledge.
- stored for recall (on specific cues).

### Strategies in text understanding

constraints of causality: A causes B

1. temporal constraint (A precedes B)
2. counterfactuality constraint (if A had not happened, B would not have happened)
3. sufficiency constraint

If B occurs after A, circumstances for A are still prevailing

• steps of comprehension:

1. identification of clauses corresponding to events
2. identification of causal relations
3. establishment of causal chains

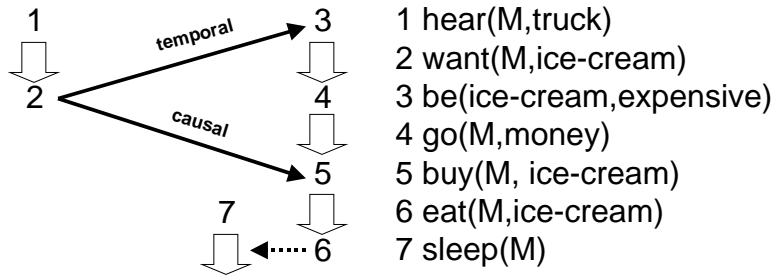
### A comprehension model

knowledge of causal relations between points: "belief function" - assigns degree of belief (can be between 0 and 1)

situation identification	t1	t2	t3
Mary heard the ice-cream truck	1	1	0
Mary wanted to buy ice-cream	0	1	0
Mary is eating ice-cream	0	0	1
Mary is sleeping	0	0	0

• story comprehension: finding a most probable trajectory in situation-state space with respect to a belief function.

### Causal chaining



surface anaphora

"deep" anaphora

Mary heard the ice-cream truck. Mary wanted to buy ice-cream.  
 Ice-cream is expensive. Mary goes home for the money.  
 She buys the ice-cream. John has also chilled drinks.  
 Mary is eating ice-cream. Mary is sleeping.

### Micro- and macrostructures (Kintsch et al.)

- surface structure of a discourse: set of propositions, ordered by semantic relations

2 levels:

- A microstructures – the local level of discourse, individual propositions (eat(Mary,ice-cream))
- B macrostructure – the global discourse structure
  - sets global constraints (topic, title)
  - establishes the "meaningful whole"

## Approaches in psycholinguistics

concerned with psychological processes that make acquisition and use of language possible

approaches:

1. language comprehension (spoken and written)
2. speech production
3. language acquisition

language: a *cognitive system* internalized within the human mind/brain (correspondence hypothesis)

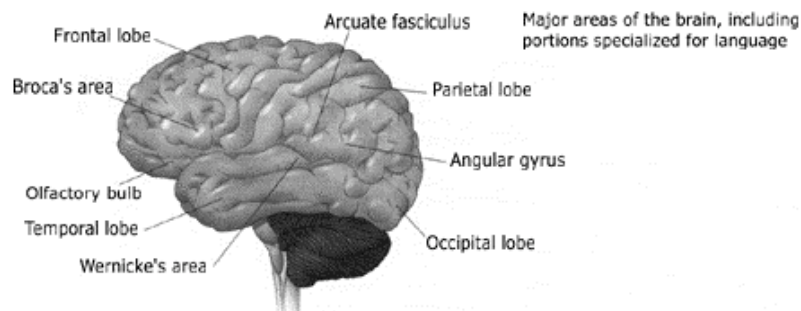
• neurological foundations of language: *particular* areas of the neocortex are responsible for human language faculty (results from aphasia research)

**aphasia:** impairment or loss of language ability due to brain damage

## Neurological foundations of language

Broca: located lesions in left hemisphere; related handedness to speech capability  
plasticity of the brain (i.e. temporal variability)

Wernicke: separated auditory nerve in the left hemisphere



## Language-related areas of the brain

### Broca aphasics:

- nonfluent
- agrammatical
- morphemeless
- unimpaired comprehension

### Wernicke aphasics:

- fluent (logorrheic)
- impaired meanings
- neologisms
- severely impaired comprehension

- spatial: lateral distribution: - detectable in lesions; PET, fMRI scans
- temporal: brain plasticity; learnability constraints

## The paradox of psycholinguistics

L1 acquisition enables children to produce virtually infinite amounts of linguistic data.

Input includes:

- distorted input (also: deviant input; Chomsky) can be: mispronunciations, slips of the tongue
  - omitted rules
- inference of rules out of defective material
- negative evidence
- = pointing at errors

typical errors in L1: *\*go-ed*

atypical errors: *\*I no like syntax.*