

Phonetics as a scientific study of speech

Outline (1)

1. The objectives of phonetics
2. Speech communication – encoding and decoding the message
3. Areas of phonetic studies
4. Information conveyed in speech
5. Types of communication (vocal, non-vocal, verbal, non-verbal)

Outline (2)

6. The semiotic framework (Laver, Principles of Phonetics, 1994): linguistic code and signs
7. Pattern (form) and variability (substance)
8. Phonetics vs. Phonology
9. Communicative and informative behavior
10. Linguistic, paralinguistic and extralinguistic communication

The objective of phonetics

Investigation of **speech communication** by recording, describing and interpreting articulated utterances:

- speech communication (SC) – a **code**
- spoken utterances – **signs** of this coded system
- SC – effective only between people skilled in the **production** and **interpretation** of the relevant **signs**
- SC has many **layers** which carry different types of **information**

Three areas of phonetic study

Articulatory Phonetics

construction and function of the speech organs (larynx, vocal cords, tongue, lips, etc.)

the use of the speech apparatus to produce the speech sounds

Acoustic Phonetics

the acoustic structure of speech - frequencies, intensities, spectra, etc.

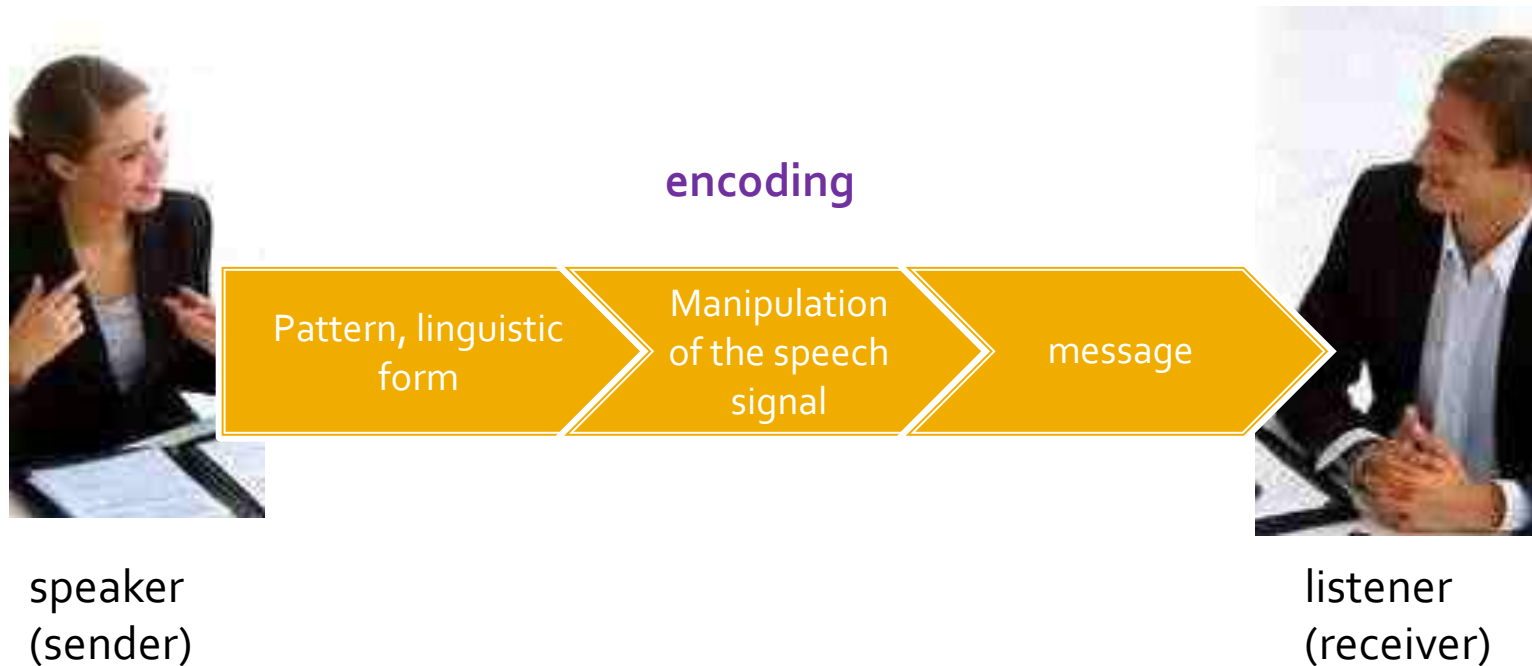
high-precision measuring and recording instruments

Auditory Phonetics

construction and function of the hearing organs

mechanisms by which the signs are perceived by the speaker using the auditory channel

Speech communication (1)



Speech communication (2)



listener
(receiver)

Decoding:

Features of the signal
Pattern
Linguistic form

Information:

Semantic
Evidential
Regulative

Information conveyed in speech (1)

Semantic information

- direct meaning of a spoken utterance (the propositional content of the communicative acts of conversation)
- the more complex the proposition the more likely it is going to be communicated by spoken words e.g. “come here” can be signaled solely by a hand movement (only visual channel)

Information conveyed in speech (2)

Evidential information - carried by signs which act as *attributive markers* on the basis of which the listeners *attribute personal features* to the speaker:

- Physical markers (e.g. sex, age, state of health) conveyed by voice quality
- Social markers (e.g. regional affiliation, educational and social status, occupation) signaled by accent, vocabulary, dialect
- Psychological markers (personality, affective state, mood) conveyed by the tone of voice



Information conveyed in speech (3)

Regulative information

- speaker's desire to retain or to yield the role of the speaker during the conversation
- to control the time-sharing of the interaction
- taking and giving turns in a conversation
 - controlled by special mechanisms
 - specific to a given language community
 - signaled by prosody (intonation, timing) and by non-vocal and non-verbal behavior (e.g. eye contact, head movement)



How do we communicate information? (1)

Vocal behavior

- audible
- imparts semantic, evidential and regulative information

Non-vocal behavior

- visual
- imparts evidential and regulative information
- uses gesture, posture, head and body movements, facial expression, gaze, eye contact (coded system of communication)
- except for the *facial expression* (a universal aspect), the other aspects of the non-vocal behavior are particular to the culture of the speaker.
- the non-vocal aspects lie outside the scope of the phonetic studies



How do we communicate information? (2)

Verbally – using verbal elements

- include vowels, consonants and word stress
- identification of individual words as units of spoken language
- verbal elements are linguistic

Non-verbally – by means of non-verbal elements

- serve function other than that of the verbal identification
- include intonation and stress (for emphasis)
- non-verbal elements are linguistic or non-linguistic

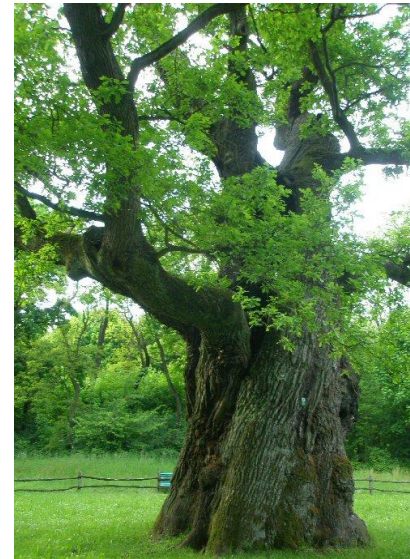

Facial expression, gesture, posture – non-vocal and non-verbal

Linguistic code and signs (1)

- we communicate using a linguistic code that consists of signs such as words
- words are **arbitrary** signs

tree
sign

culturally determined link

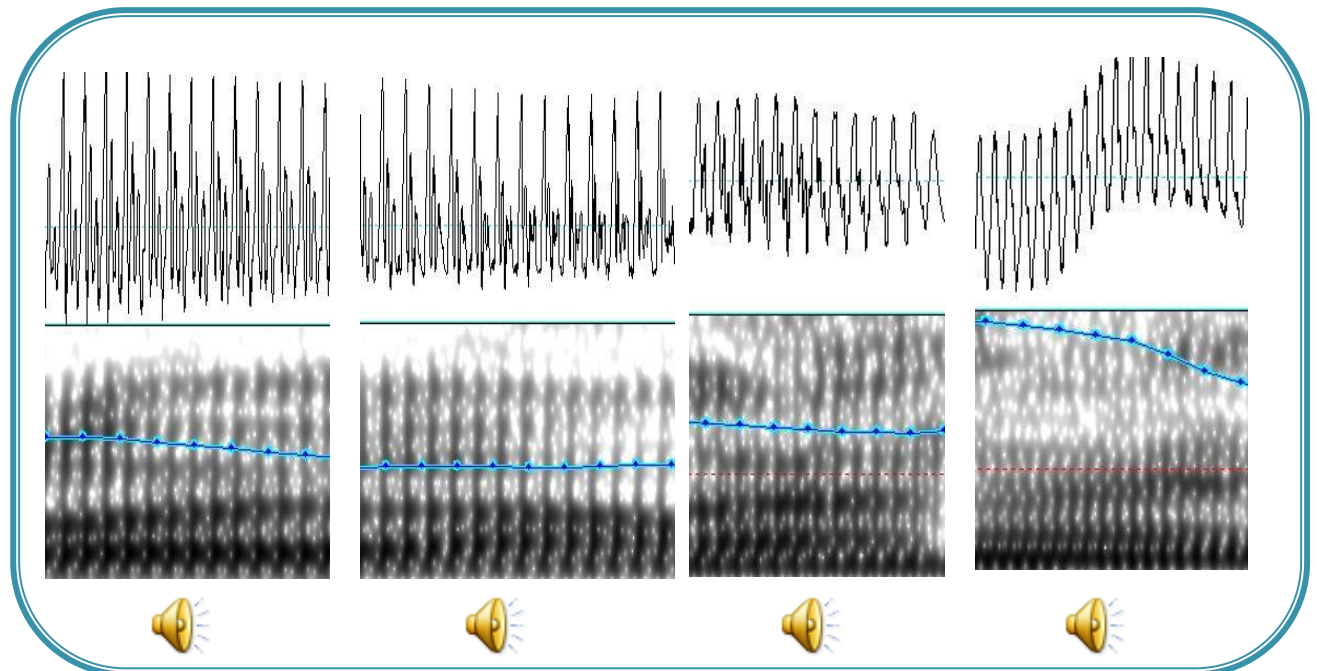


referent

Linguistic code and signs (2)

- Vowels and consonants are also **arbitrary** signs
- a many-to-one relationship:

/a/ →
vowel



speech sounds

Linguistic code and signs (3)

- Non-arbitrary signs



sign

direct link



referent

- Higher overall pitch -> small vocal folds (female speaker, child)
- Lower overall pitch -> large vocal folds (male speaker)

The dual structure of the linguistic code

Linguistic messages (utterances) are created at two levels

- *Grammatical* – abstract grammatical elements such as words, phrases, clauses and sentences
 - made up of combination of phonological units,
 - represent the entities in the external semantic world
- *Phonological* – abstract phonological elements
 - they act as building blocks for the construction of the higher-level grammatical units
 - *segmental* elements such as vowels and consonants (speech-sounds) and *suprasegmental* units such as syllables, rhythmic units and units of intonation and tone

The objective of phonetics is to describe the speech-sounds and to explore and explain their relationship with the phonological level of the linguistic structure.

Pattern and variability

- **variability** is the feature of pronunciation
- the perceiver is able to discern the distinctive **patterns** in speech sounds that identify the phonological units
- phonological and grammatical knowledge – reconstitution of the intended message from partial clues

Reduced utterance: She sh---d --v- giv-n --im the package.
Full utterance: She should have given him the package.

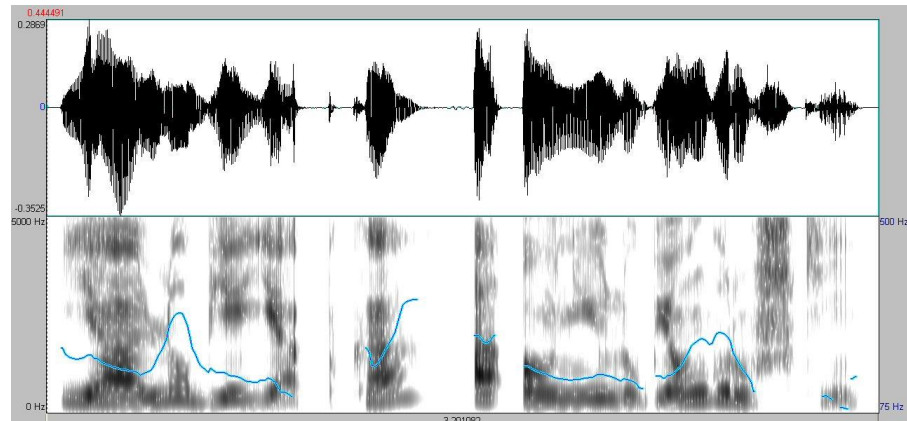
Form and substance

- Form = pattern
 - represents a linguistic unit
 - needs to be realized or manifested to exist in the real world
- Substance – realization of the pattern

form

Ja lubię jabłka, a
oni lubią gruszki.

substance



Phonetics and phonology

- both concern themselves with the form and the substance, but vary in their primary focus
- phonetics – substance
 - realization of formal symbolic patterns and features conveying evidential and regulative information
- phonology – form

Communicative and informative behavior

Information in speech can be conveyed by:

- *Communicative signals* – intended by the sender to make the receiver aware of something of which he was not previously aware.
- *Informative signals* – make the receiver aware of something of which he was not previously aware regardless of the intention of the sender.

Linguistic, paralinguistic and extralinguistic communication (1)

- Linguistic communication
 - the dual-level code of the spoken language (phonological and grammatical units)
 - vocal, verbal, communicative and informative
- Paralinguistic communication
 - tone of voice, non-vocal behavior
 - information about the attitudinal, affective or emotional state
 - regulation of the time-sharing of the conversation
 - vocal, non-vocal, verbal, non-verbal, communicative and informative

Linguistic, paralinguistic and extralinguistic communication (2)

Paralinguistic communication:

- **Similarity** to the **linguistic communication**: the meaning of the coded paralinguistic communication is arbitrary e.g. *false* in English (mocking, effeminacy) and Tzeltal (showing great respect)
- **Difference** from the **linguistic communication**: the sequential structure plays no role and sequential relationships are important only in the judgements about the relative degree of the manifestation of the feature e.g. estimating the change in the speaking rate

Linguistic, paralinguistic and extralinguistic communication (3)

Extralinguistic communication

- features of the speech signal that are not involved in the realization of the linguistic or paralinguistic communication
e.g. voice quality - information about speaker's state of health (smoker), age etc.
- non-coded, non-communicative and informative
- evidential information

Summary – the objectives of phonetics

- description of speech sounds and speech communication (linguistic code)
- investigation and description of the production, perception and physics of speech sounds
- speech sounds - arbitrary signs
- physical markers of spoken communicate - non-arbitrary signs
- investigation and explanation of the relationship between speech sounds and the phonological level of the linguistic structure
- vocal behavior including verbal and non-verbal communication
- aspects of linguistic, paralinguistic and extralinguistic communication

**Thank you
for your attention 😊**