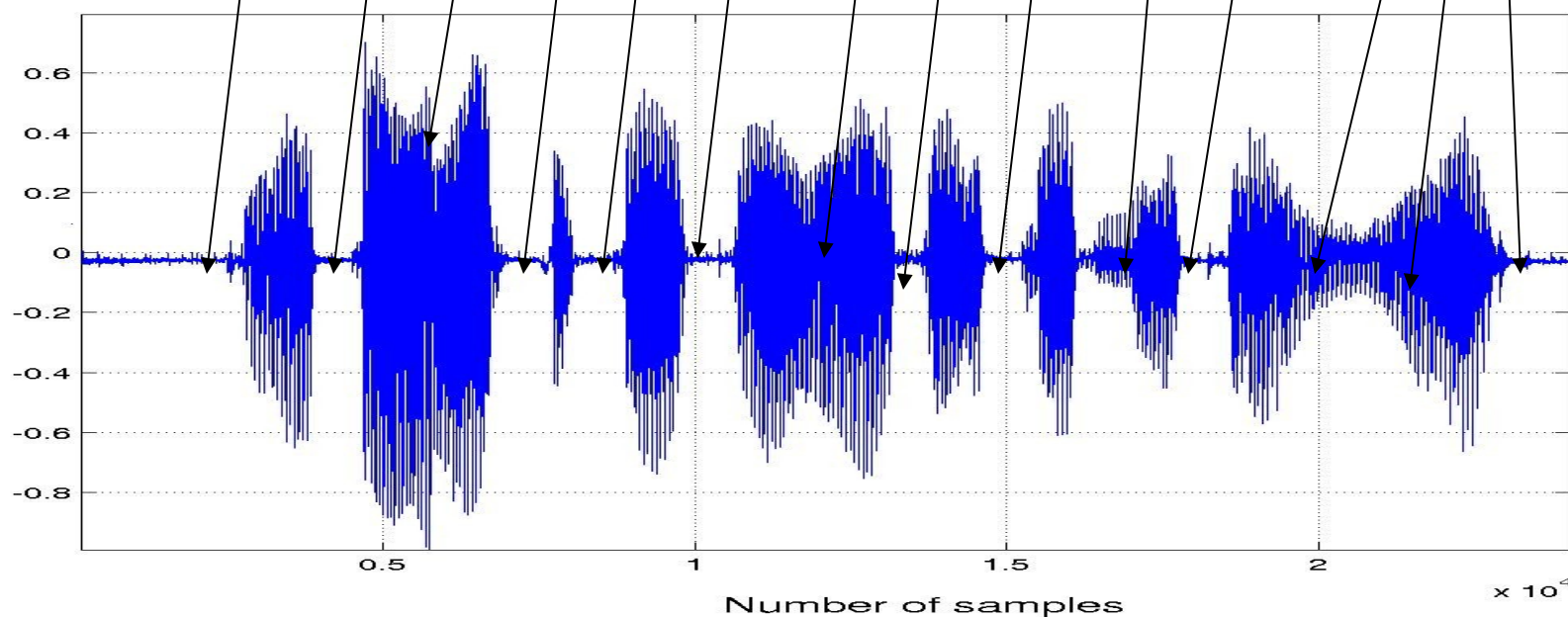# Knowledge Sources in Speech

Knowledge Sources in Speech

- **Message:** Thought to be conveyed
- **Speaker:** Who the speaker is?
- **Language:** Language in which speech is produced
- **Naturalness:** Pleasing quality of speech
- **Intonation:** Inreasing/decreasing pitch
- **Duration:** Variations in the duration patterns
- **Stress:** Uttering with special attention (words or syllables)
- **Accent:** Dialect region of person
- **Emotions (mood):** Status of mind
- **Health:** Condition of speech production organs
- **Device and Channel:** Microphone and medium in which speech is collected
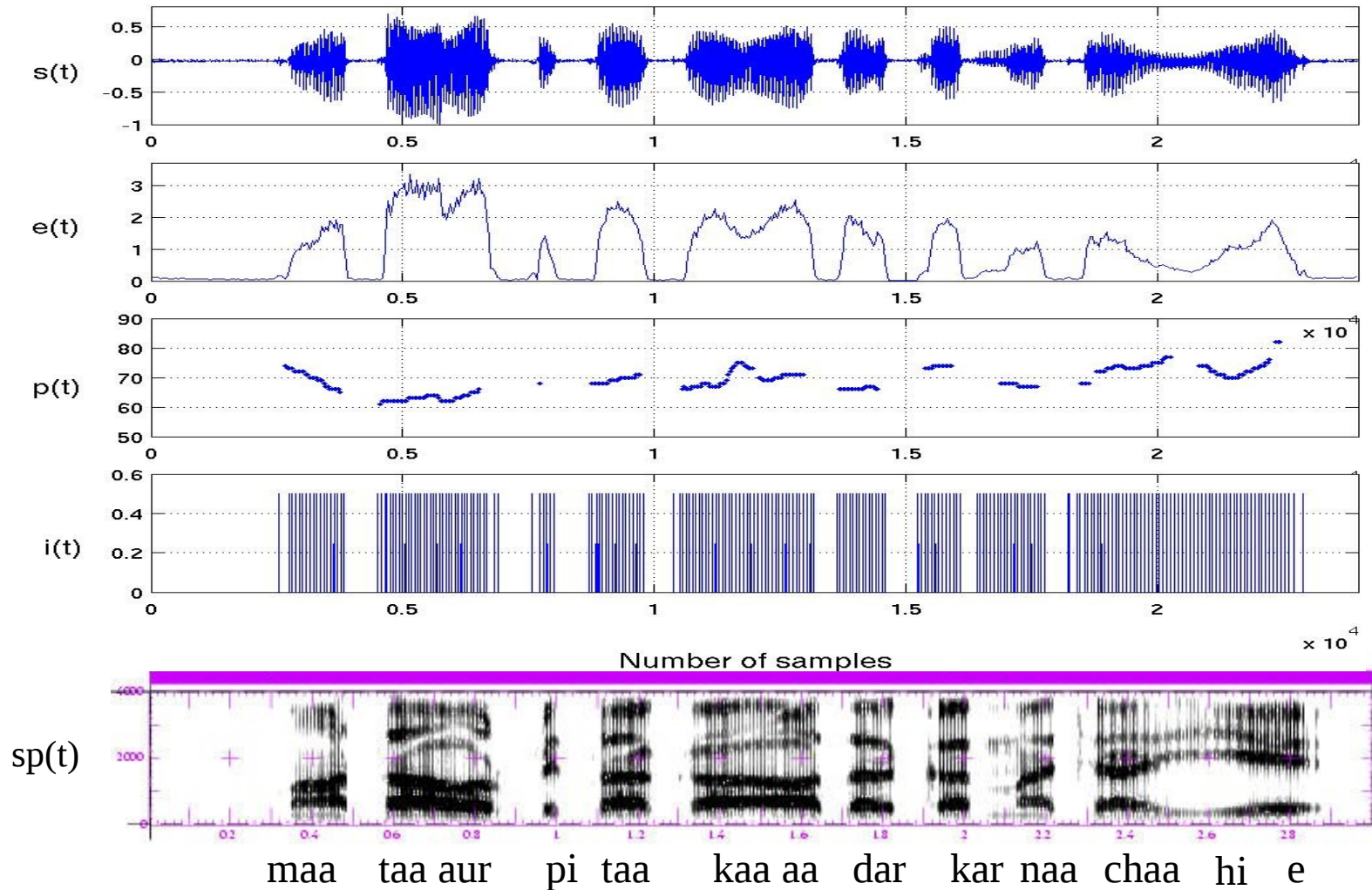
Illustration of knowledge sources in speech

Text : maataa aur pitaa kaa aadar karnaa chaahie
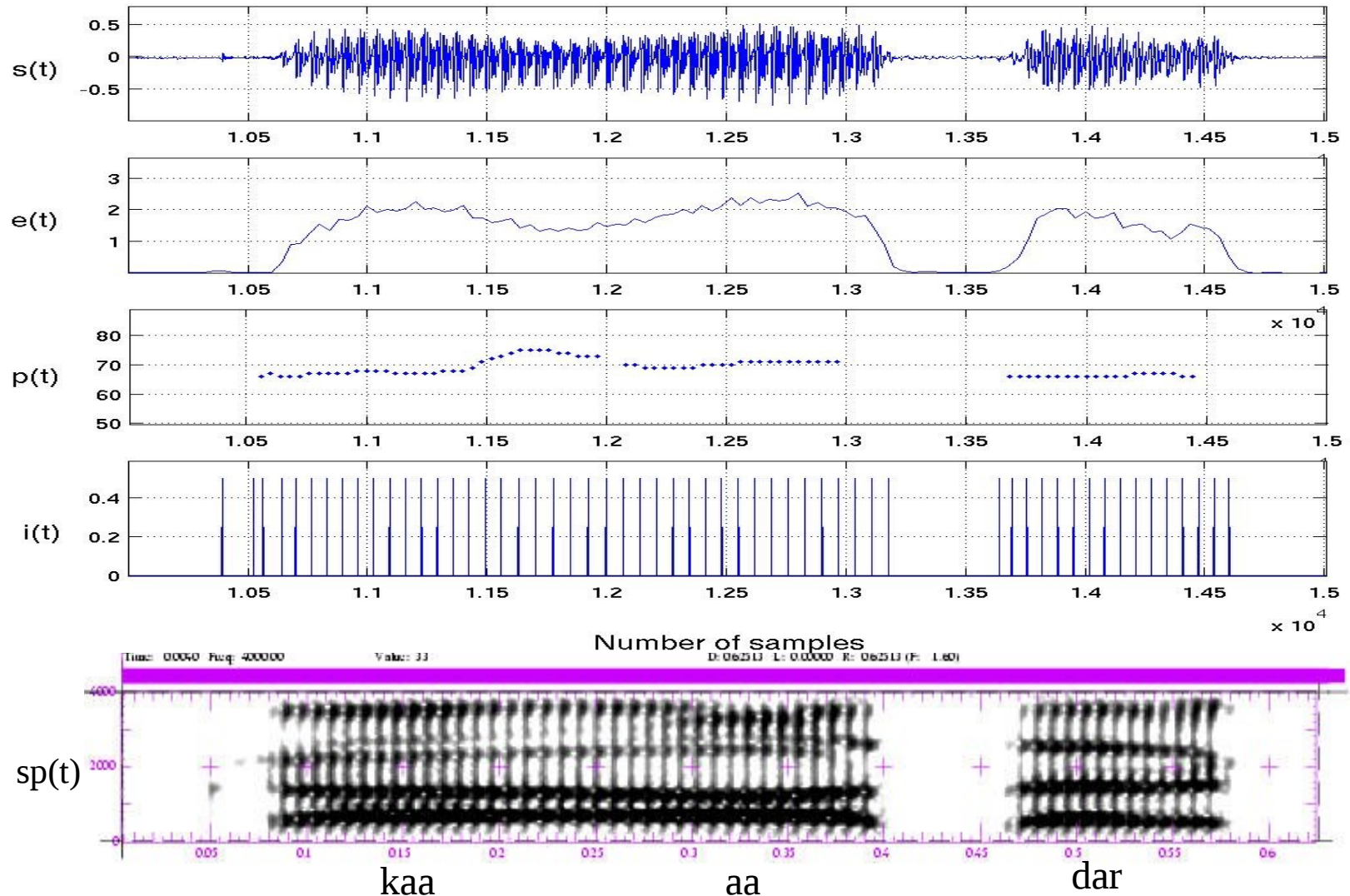

Speech from hypothetical units :

Illustration of knowledge sources in speech (Contd..)

maa   taa aur   pi taa   kaa aa dar kar naa chaa hi e

s(t): speech waveform, e(t): energy contour, p(t): pitch contour,
i(t): instants of significant excitation and sp(t) : spectrogram

Illustration of knowledge sources in speech (Contd..)

kaa   aa   dar

s(t): speech waveform, e(t): energy contour, p(t): pitch contour
i(t): instants of significant excitation and sp(t) : spectrogram

Knowledge sources in speech (analysis point of view)

- Segmental level (10-30 ms) : Positioning and movement of articulators, shapes of cavities (oral and nasal), voiced and unvoiced excitation, periodicity (pitch) and formant structure

- Sub-segmental level (3-5 ms): Glottal pulse shape, open and closure regions of glottis, consonant regions (burst and transition regions)

- Supra-segmental level (>100 ms) : Prosody (duration and pitch), stress, prominence, melody, syntax and semantics.

- Coarticulation level : Constraints due to linguistic context: Influence of the adjacent units in the articulation of the present unit.