

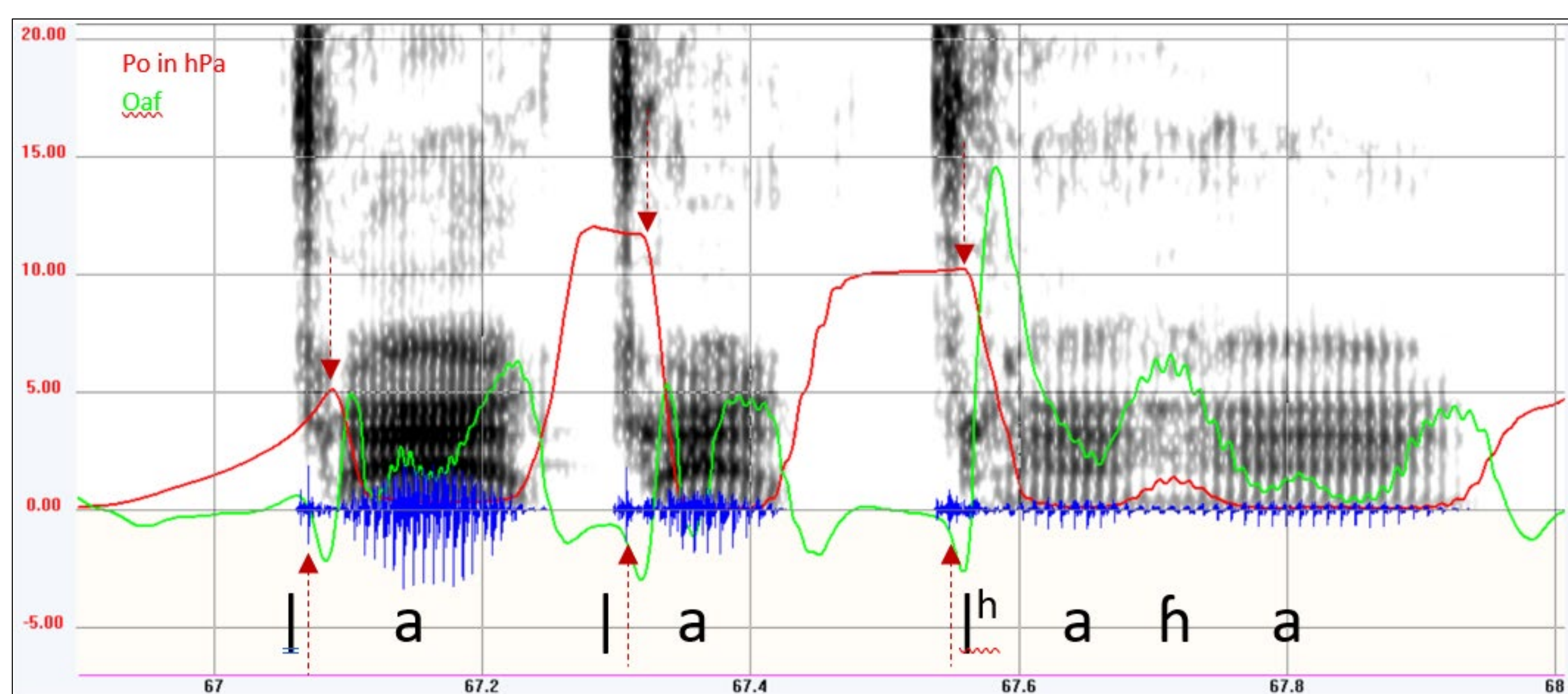
## Development of experimental methods in African and South American languages sound systems

Didier Demolin

Hadza - Tanzania  
Control of front and back closure timing releases in clicks

Aerodynamics  
Ultra sound

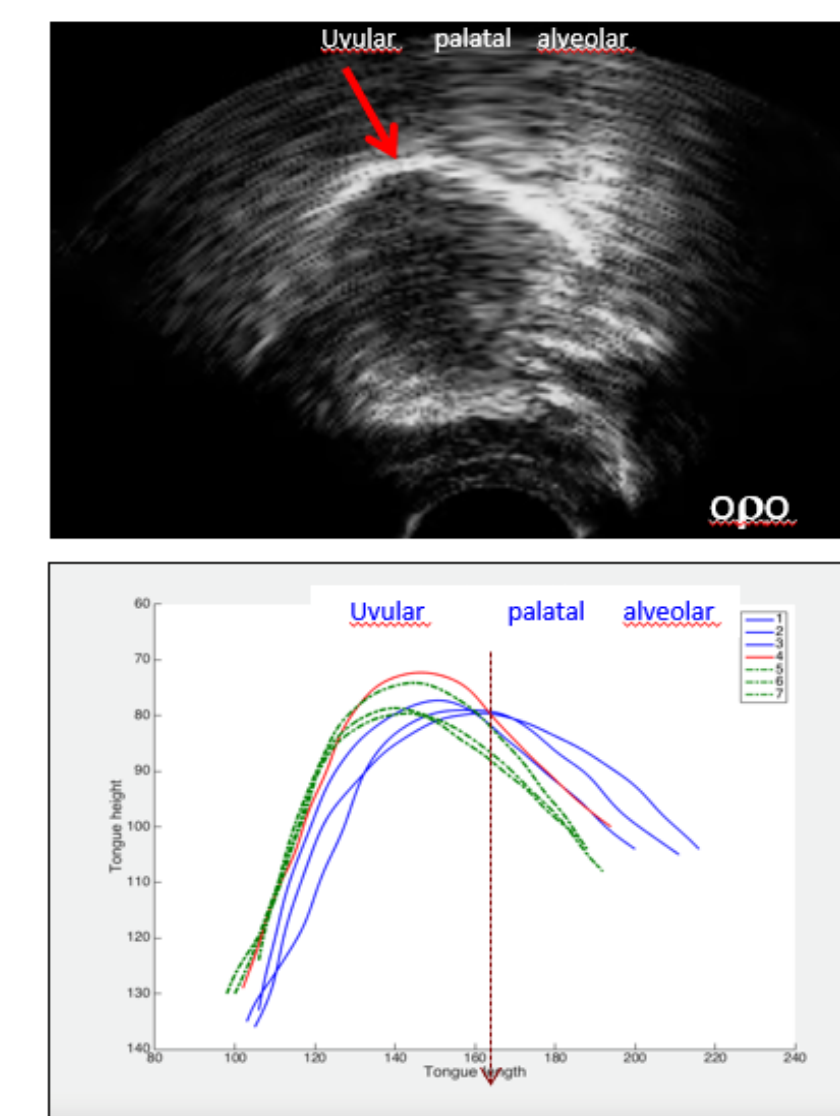
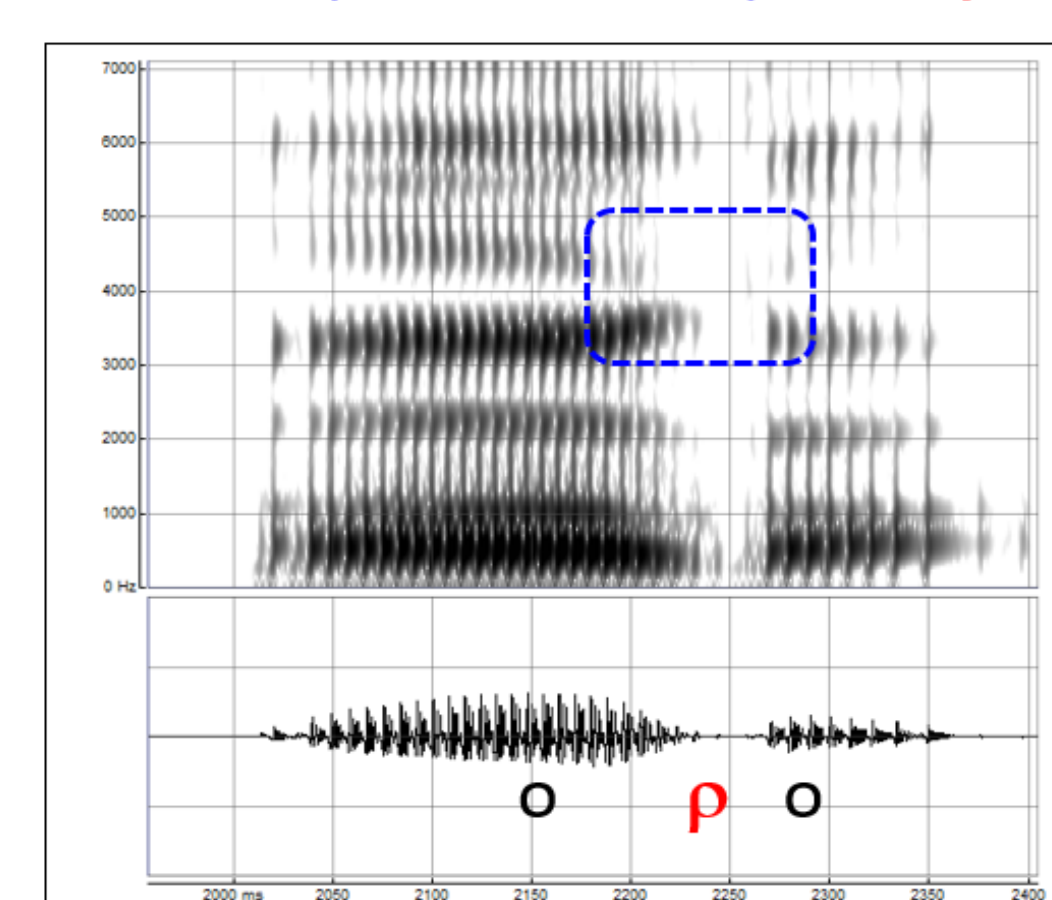
Kalapalo - Brasil  
'New sounds' in *Kalapalo* (Carib) uvular tap [ɸ] (no API symbol)



In 1887 von den Steinen described a sound, in the Upper Xingu (Amazon): "complicated to pronounce, between *gl* and *ri*, always forming a syllable equivalent to *r* followed by a reduced vowel".

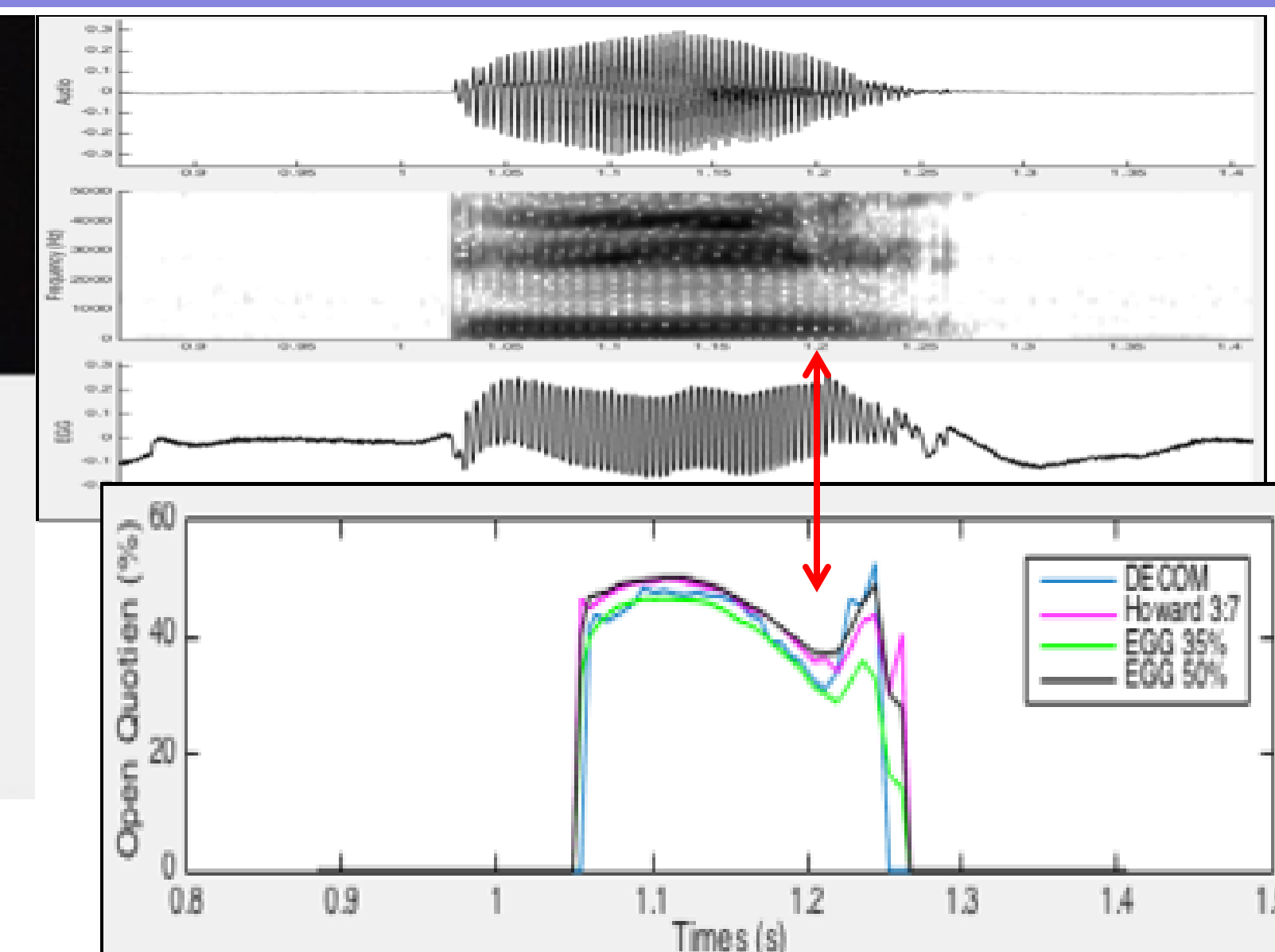
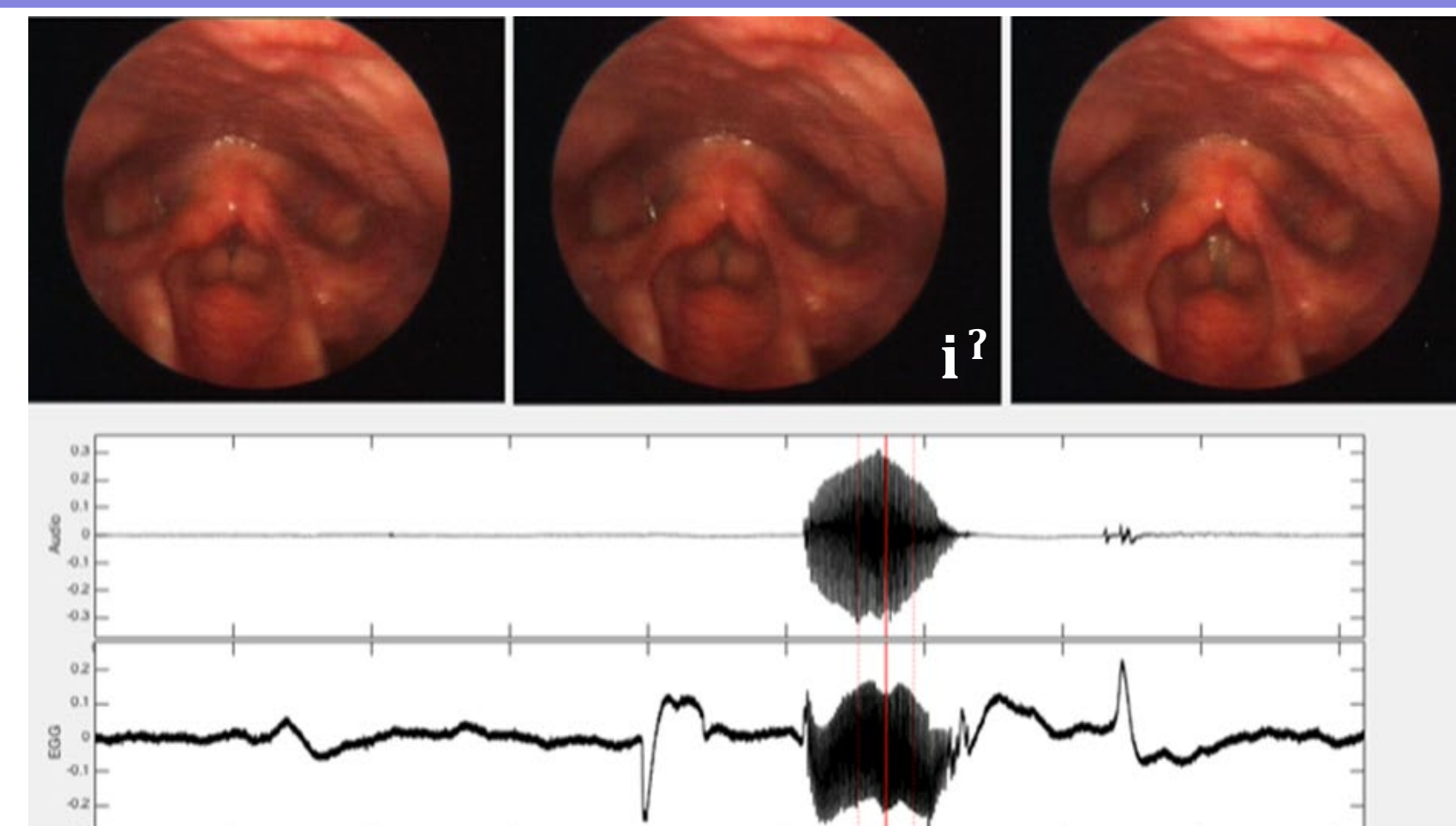
Pole F4/F5

\* r/r > l > ɸ



Namtrik - Colombia : Retroflex fricatives  
Palatography & Ultra sound

Nasa Yuwe - Colombia : Glottal vowels  
Fibroscopy, aerodynamics and electroglottography



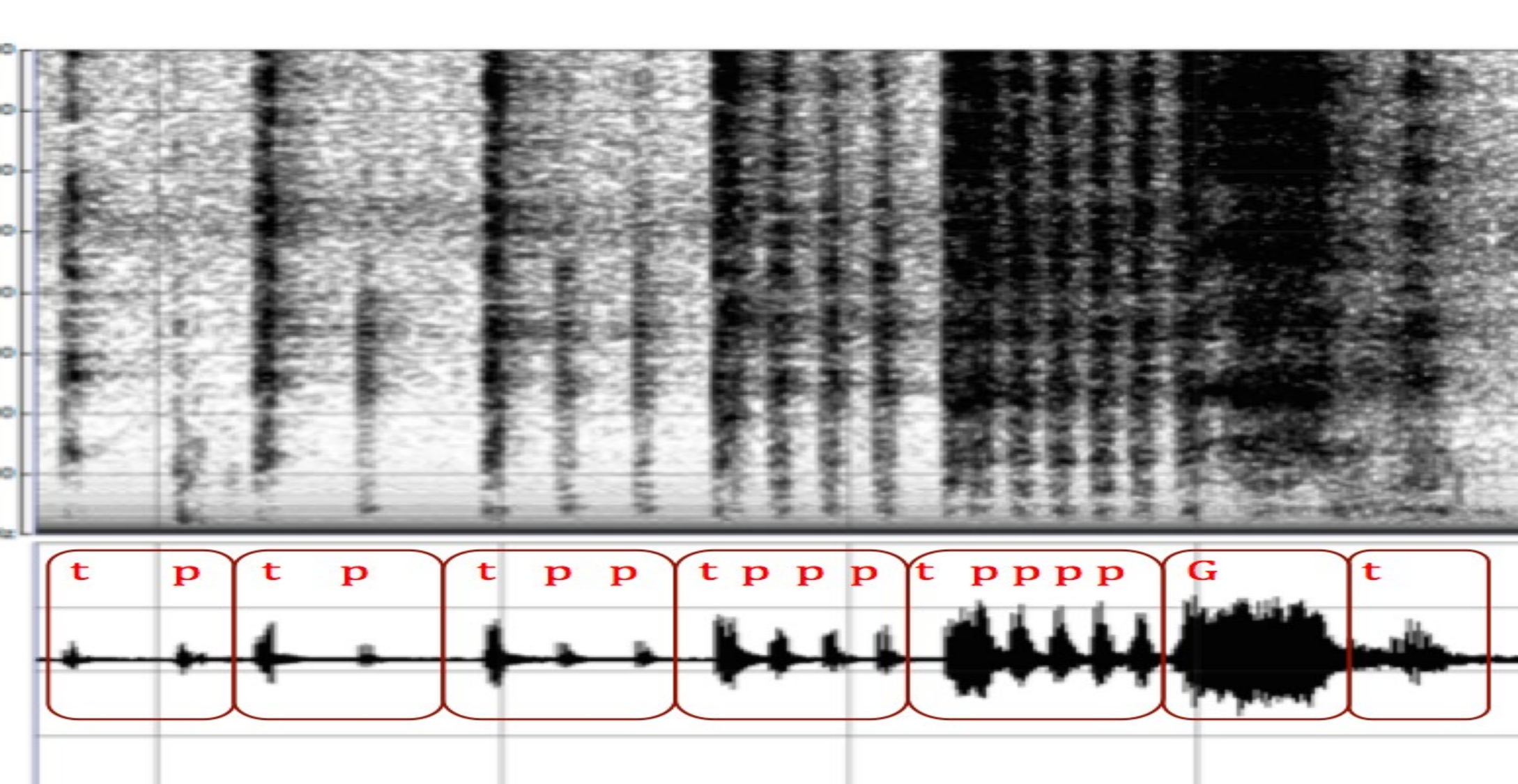
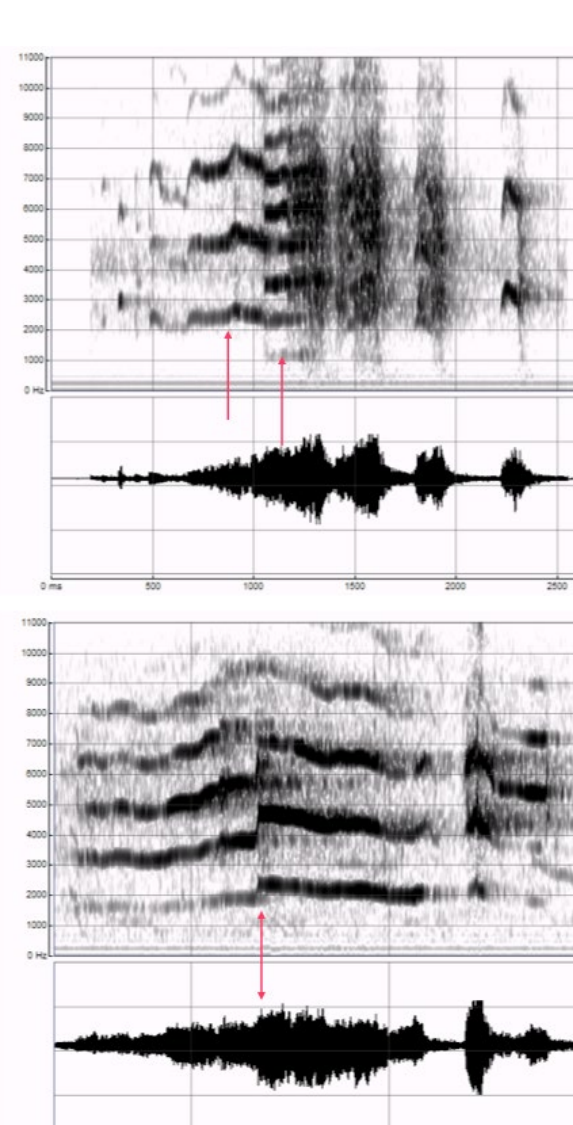
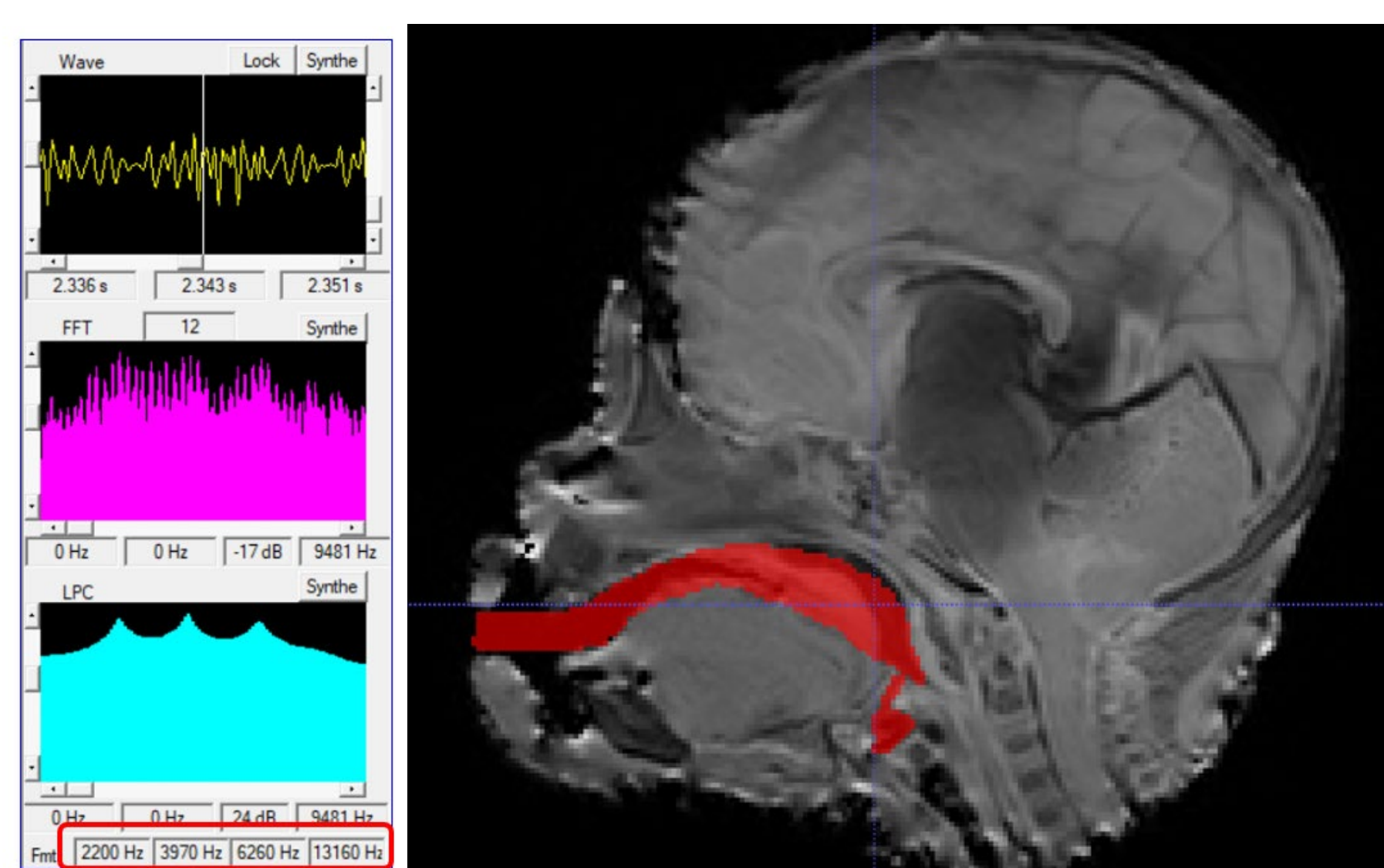
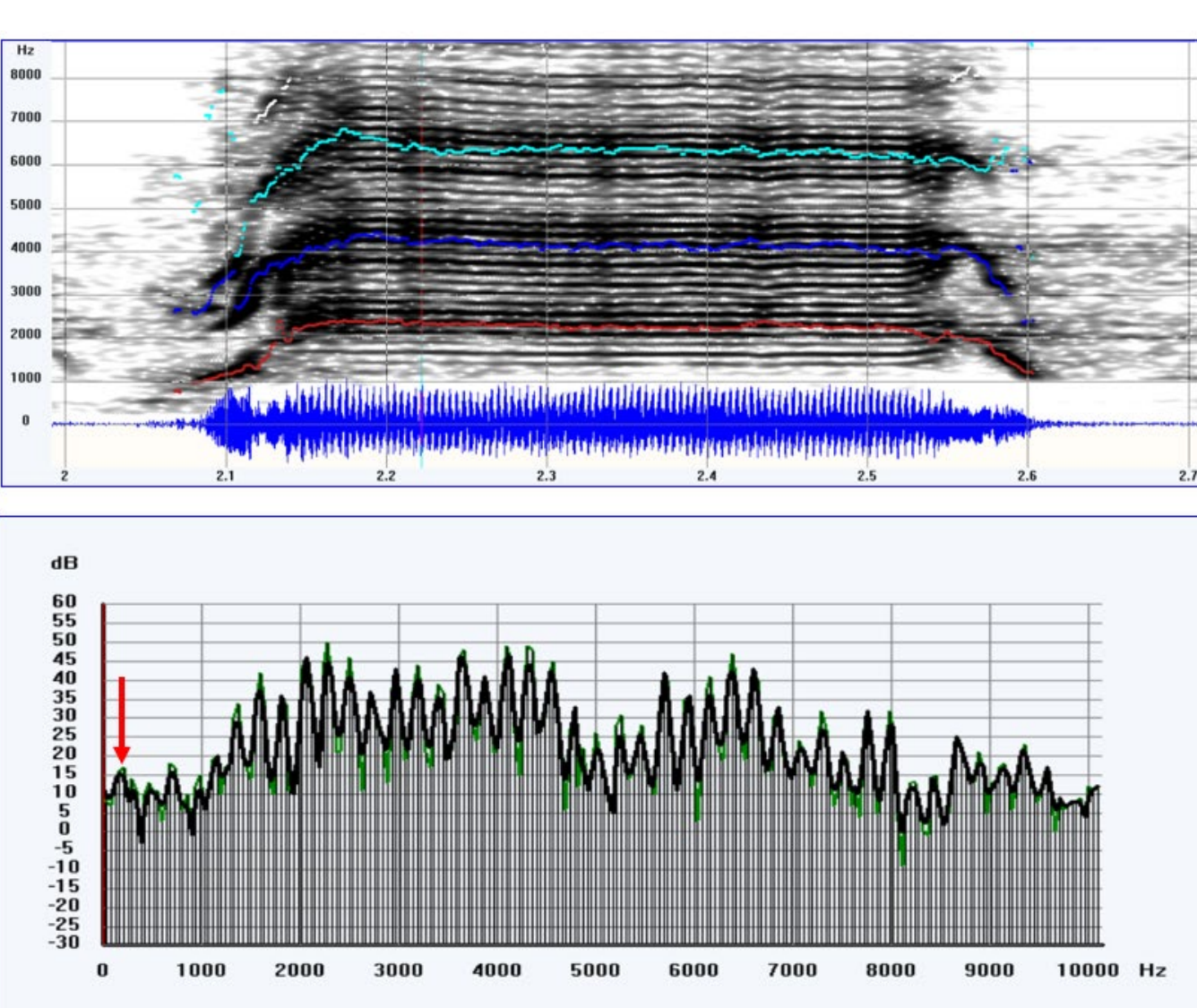
Determining the place of articulation and the tongue shape

Determining the state of laryngeal valves and measuring the open quotient.

## The evolution of speech and language: comparative aspects of primate vocalizations

Bonobo vocalizations, their larynx and vocal tract features  
Explaining the double source: MRI , anatomy and 3D reconstruction

Muriqui: non linear-phenomena and acoustic features  
Analyzing the structure of the vocalizations



## Ethnomusicology: vocal polyphonies, musical scales and music acoustics

Efe Pygmies yodel  
Frequency jumps and pentatonic scales

Mangbetu talking drums  
Tone - speech - song (Pitch, duration & intensity)

