

Linguistics 450

Introduction to Phonetics

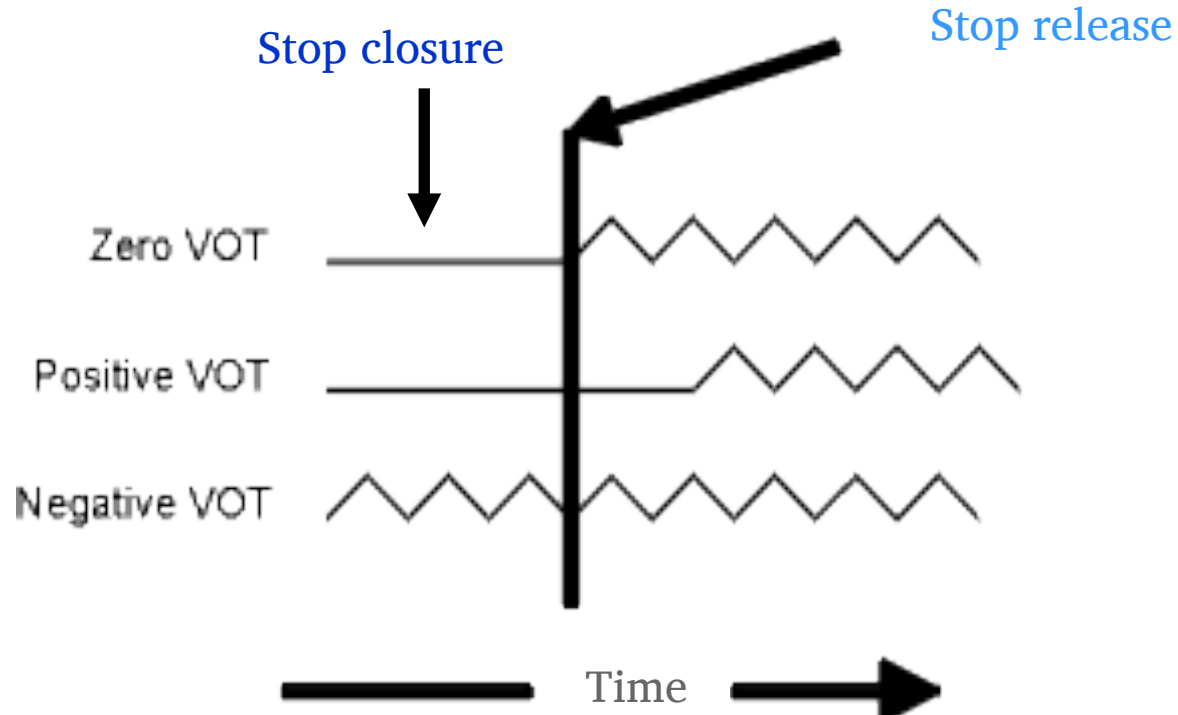
Voice Onset Time

Read Ladefoged & Johnson, chapter 6

adapted from slides by Richard Wright, Dan McCloy, and Valerie Freeman

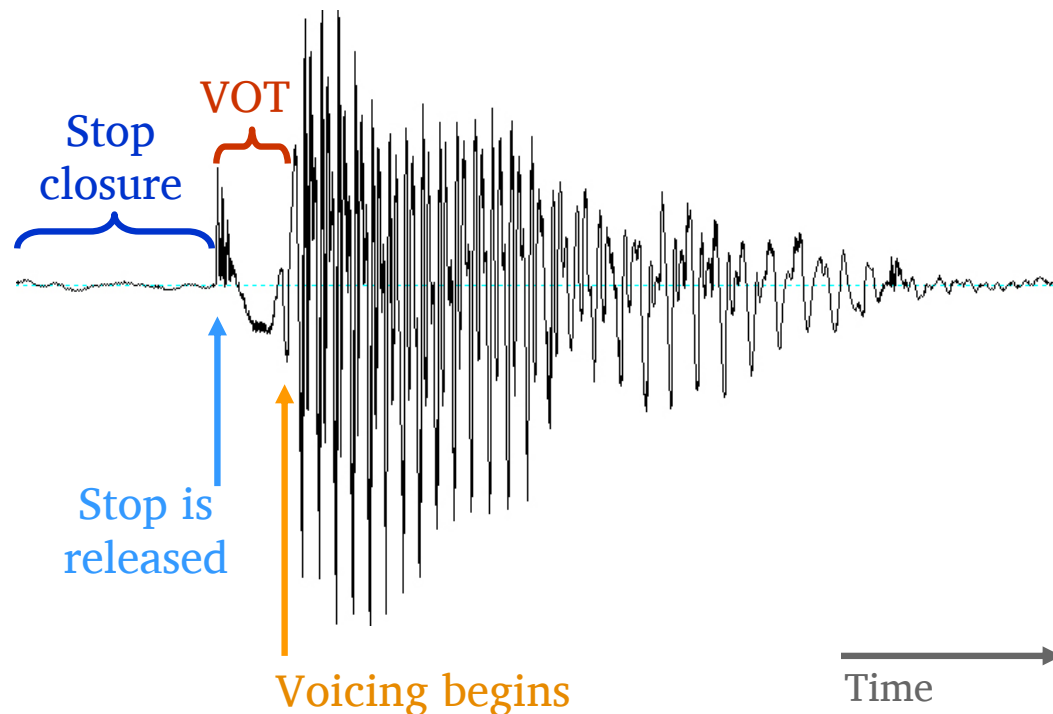
Voice Onset Time (VOT) Defined

- *Voice onset time (VOT)* is the time between the release of a stop closure and the beginning of vocal fold vibration.
- VOT is the basis for our perception of whether a stop is voiced, voiceless, or aspirated.



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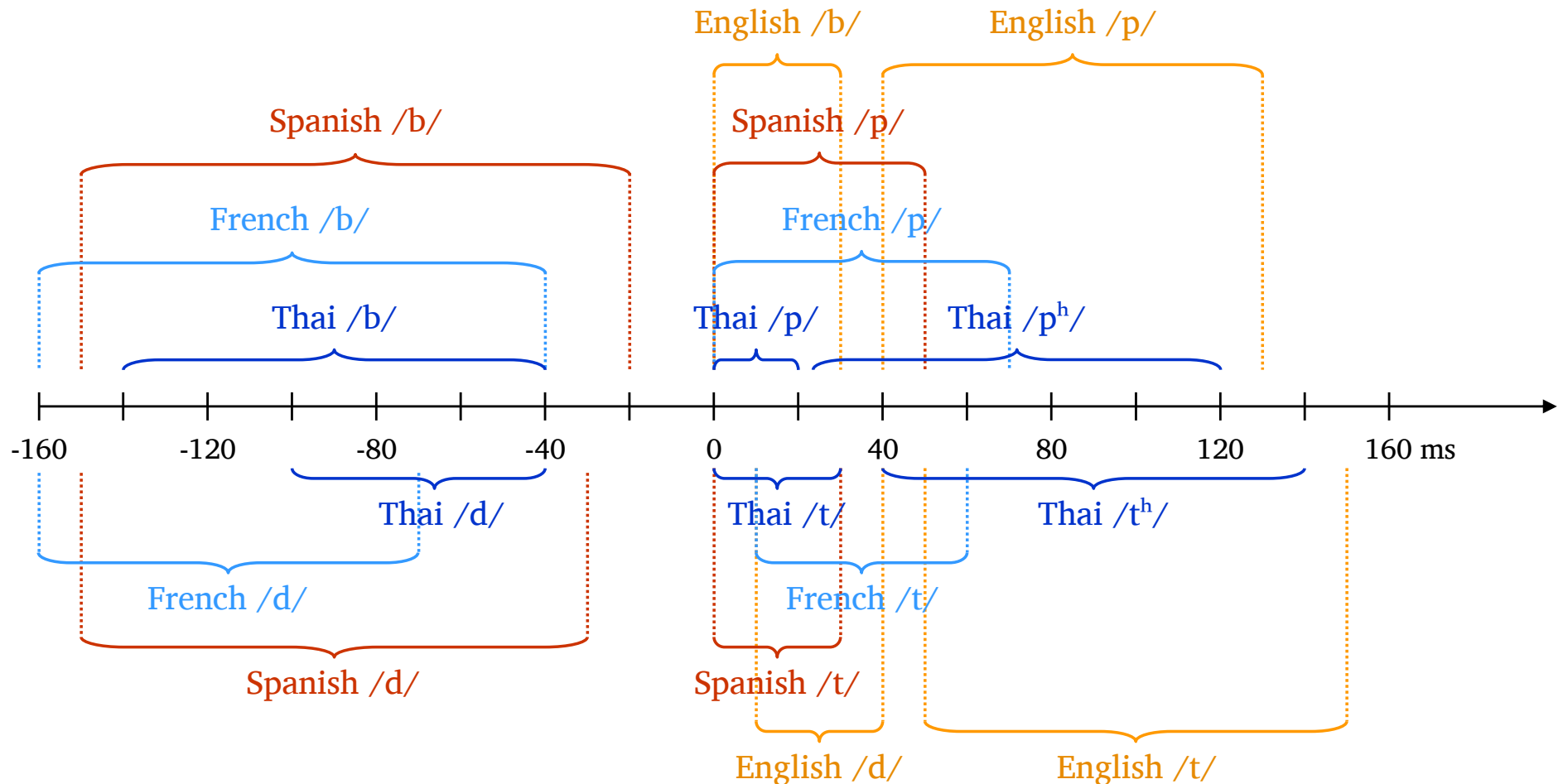
Variation in Voice Onset Time

- Negative VOT
 - Voicing begins before the stop is released.
- Short (lag) VOT
 - Voicing begins almost immediately after the stop is released.
- Intermediate VOT
 - Voicing begins shortly after the stop is released.
- Long (lag) VOT
 - Voicing begins long after the stop is released.
 - Before voicing begins, there is aspiration.

Describing Stops

- In a given language, stops are often described and symbolized as **voiced** or **voiceless**, or as **unaspirated** or **aspirated**, or as **voiced**, **voiceless unaspirated**, or **voiceless aspirated**.
- The VOT ranges for stops associated with these labels and symbols vary greatly from language to language.

Cross-Linguistic Comparisons of VOT

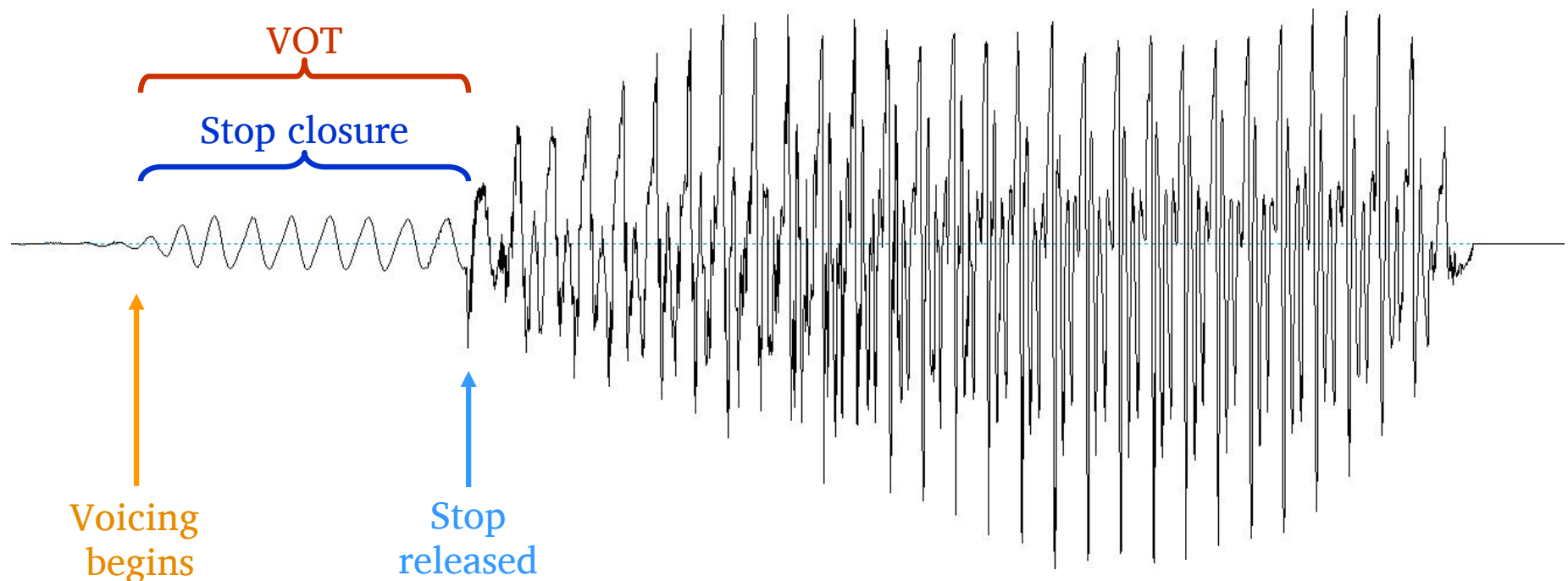


Sources:

Rosner, B.S. et al. "Voice-onset times for Castilian Spanish initial stops." *Journal of Phonetics* (2000) 28, 217–224.

Kessinger, R.H. and Blumstein, S.E. "Effects of speaking rate on voice-onset time in Thai, French, and English." *Journal of Phonetics* (1997) 25, 143–168.

Estimating VOT from Waveforms

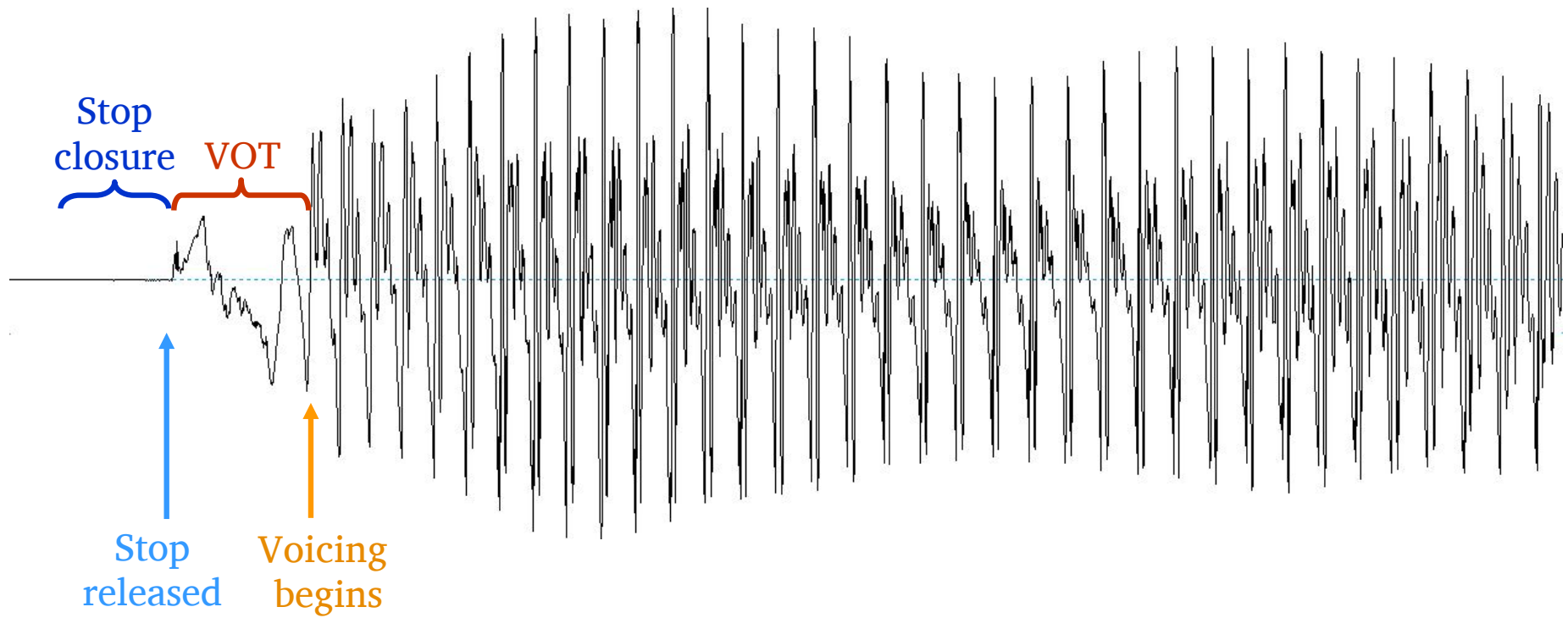


VOT = -50ms

Scale: 50 ms

Voicing: Negative VOT = Voiced

Estimating VOT from Waveforms

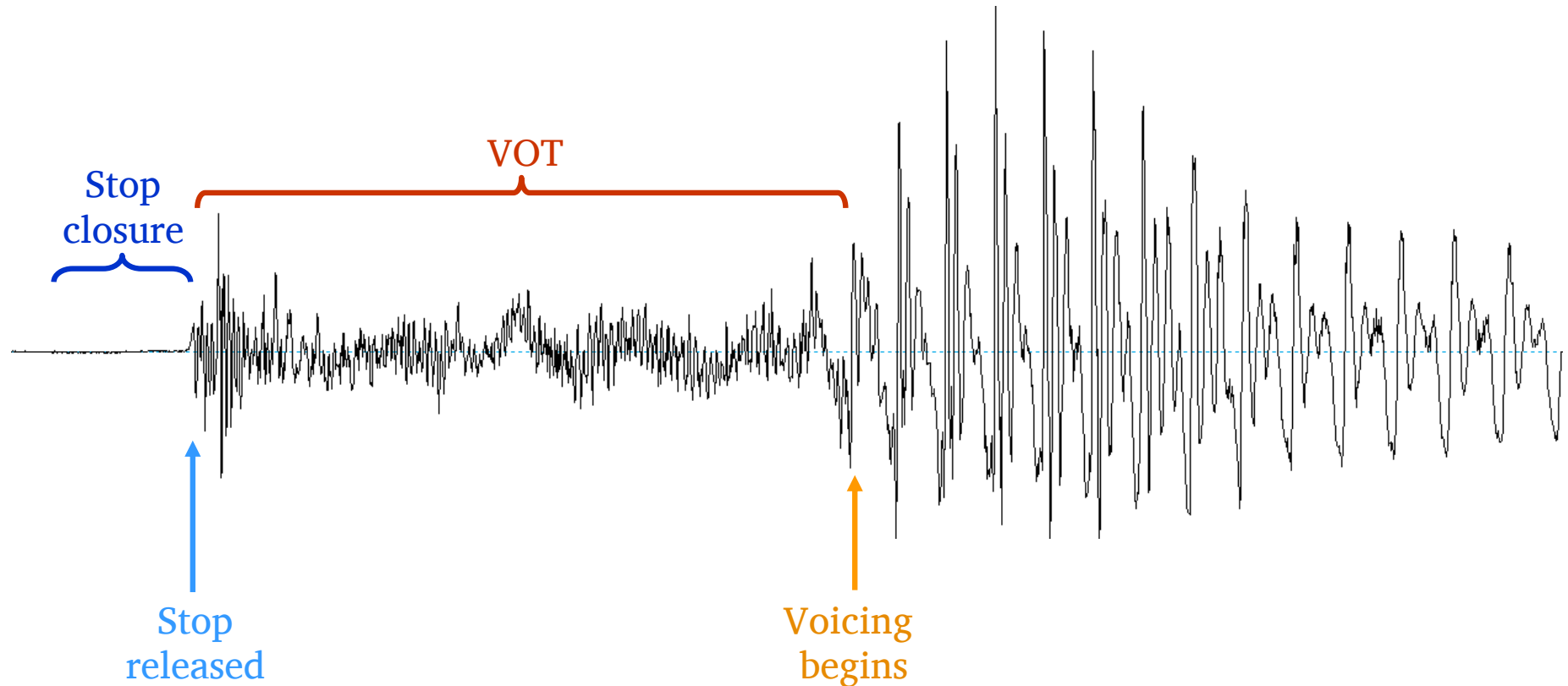


VOT = 20ms

Scale: 50 ms

Voicing: Short positive VOT = Voiceless unaspirated

Estimating VOT from Waveforms



VOT = 95ms

Scale: 50 ms

Voicing: Long positive VOT = Voiceless aspirated

Review: Voice Onset Time (VOT)

- Modal voiced stops have negative VOT.
- Voiceless unaspirated stops have short positive VOT.
- Aspirated stops have long positive VOT.
- Breathy voiced stops (sometimes called “voiced aspirates”) have (long) negative VOT.

Lab 2 – Measuring VOT

- Download the materials from Canvas (Lab 2 files) to practice measuring VOT values.
 - Endpoints:
 - release burst
 - Onset of voicing