A phonetic description of Chemehuevi

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Introduction

- Chemehuevi is a southern Numic language of the Shoshonean branch of Uto-Aztecan.
- Spoken in:
  - Western Arizona at the Colorado River Indian Tribes Reservation
  - Eastern California at the Chemehuevi Valley Indian Reservation
- Approximately 5 speakers of the Chemehuevi, all over the age of 50.
- Children are no longer learning Chemehuevi as a first language.

Introduction

Previous Work:

- Press (1974, 1979) The Grammar of Chemehuevi
  - A 20 page SPE-style analysis of the sound system
- Major (2005) Chemehuevi Phonology
  - A general description of phonology (phonemes) of Chemehuevi, based on his 1969 field work
- Sapir (1930a, b; 1931) worked on Southern Paiute, which he claims is closely related
  - Detailed description of the sounds as he perceived them
- Little phonetic data/description of other Uto-Aztecan languages.

Issues in the literature

- How are final stops realized?
- What is the relation between alveolar fricatives and affricates?
- How are vowels distributed across speakers?
- Are there word-final voiceless vowels?
- Does Chemehuevi have an /e/ phoneme?

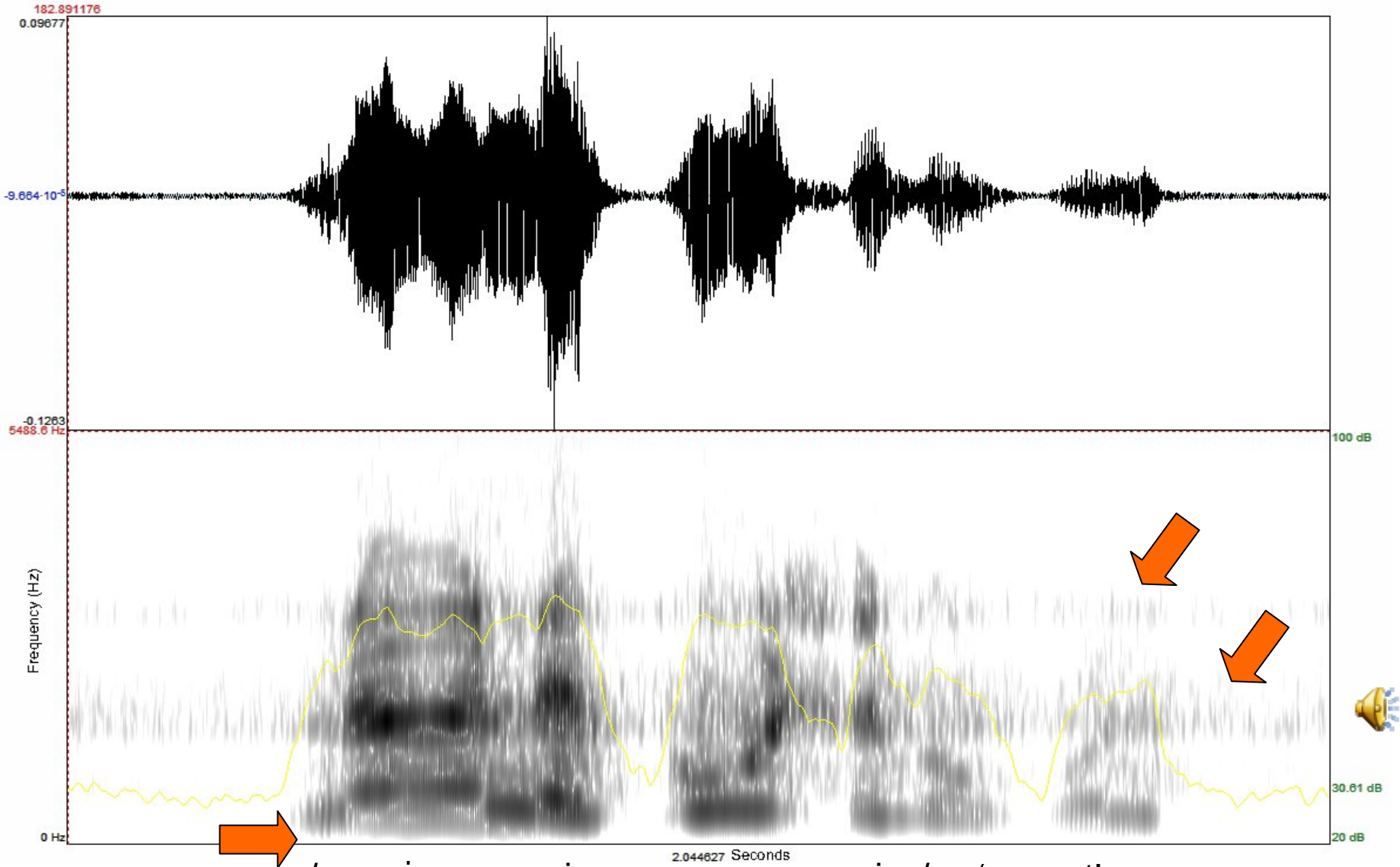
Recordings

Digitized Recordings

- Roy Major (1969)
  - Two speakers (BW,female; PE,female)
- Guy Tyler (1972)
  - One speaker (BW,female)
- Margaret Press (1973-74)
  - One speaker (MHM,female)

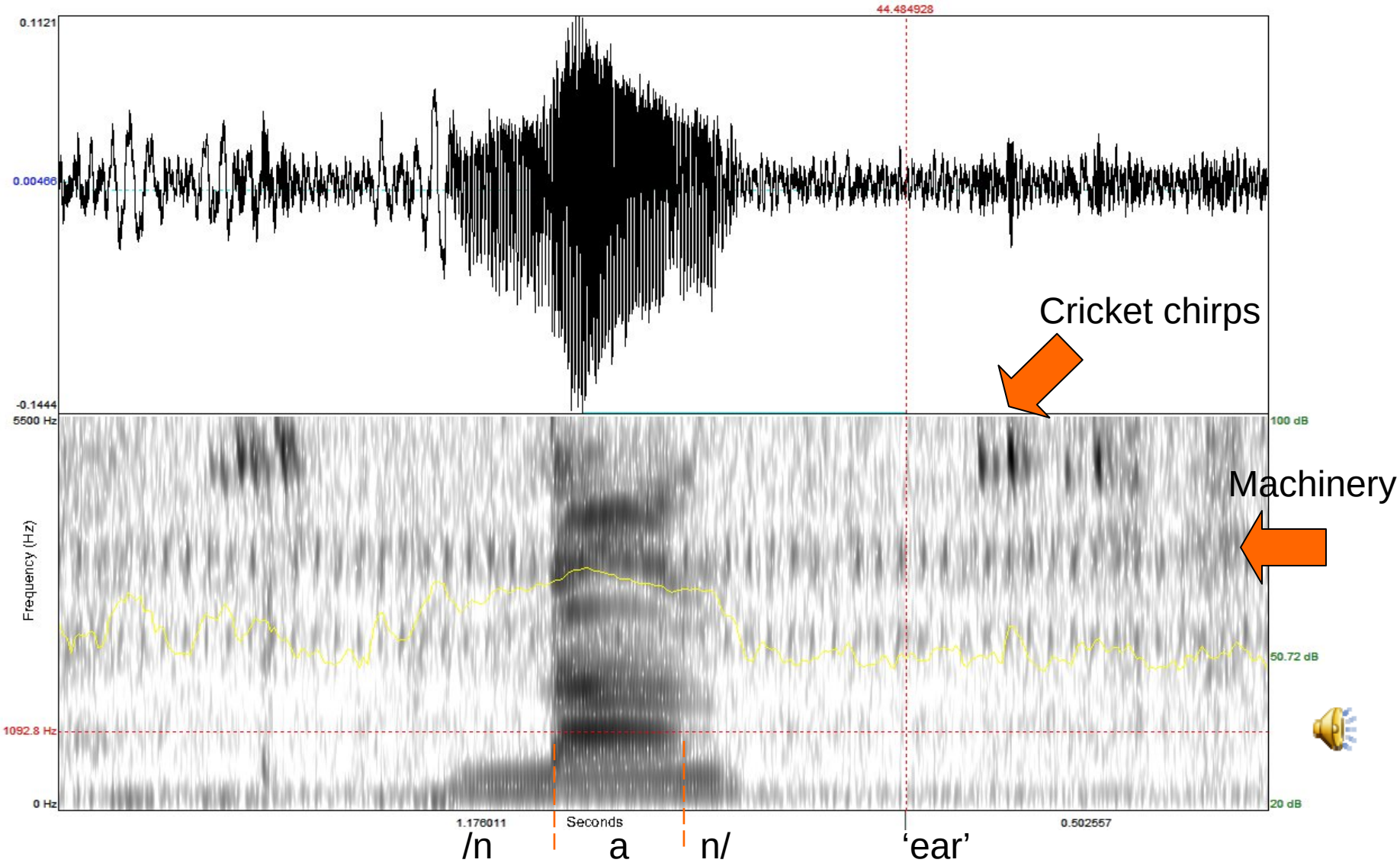
- Quality varies on the above recordings, for example:
  - Frequency range of one recording missing lower and higher frequencies
  - Crickets in the background

Sample recording: BW



/n ɨ n i p uu s i…/ ‘my cat’

Crickets in the background: MHM



Recordings

Digitized and Digital Recordings

- Penfield, Serratos, & Tucker (2005-06) and JHJ (2006) self-recorded elicitation.
  - One speaker (JHJ,male)

Summary

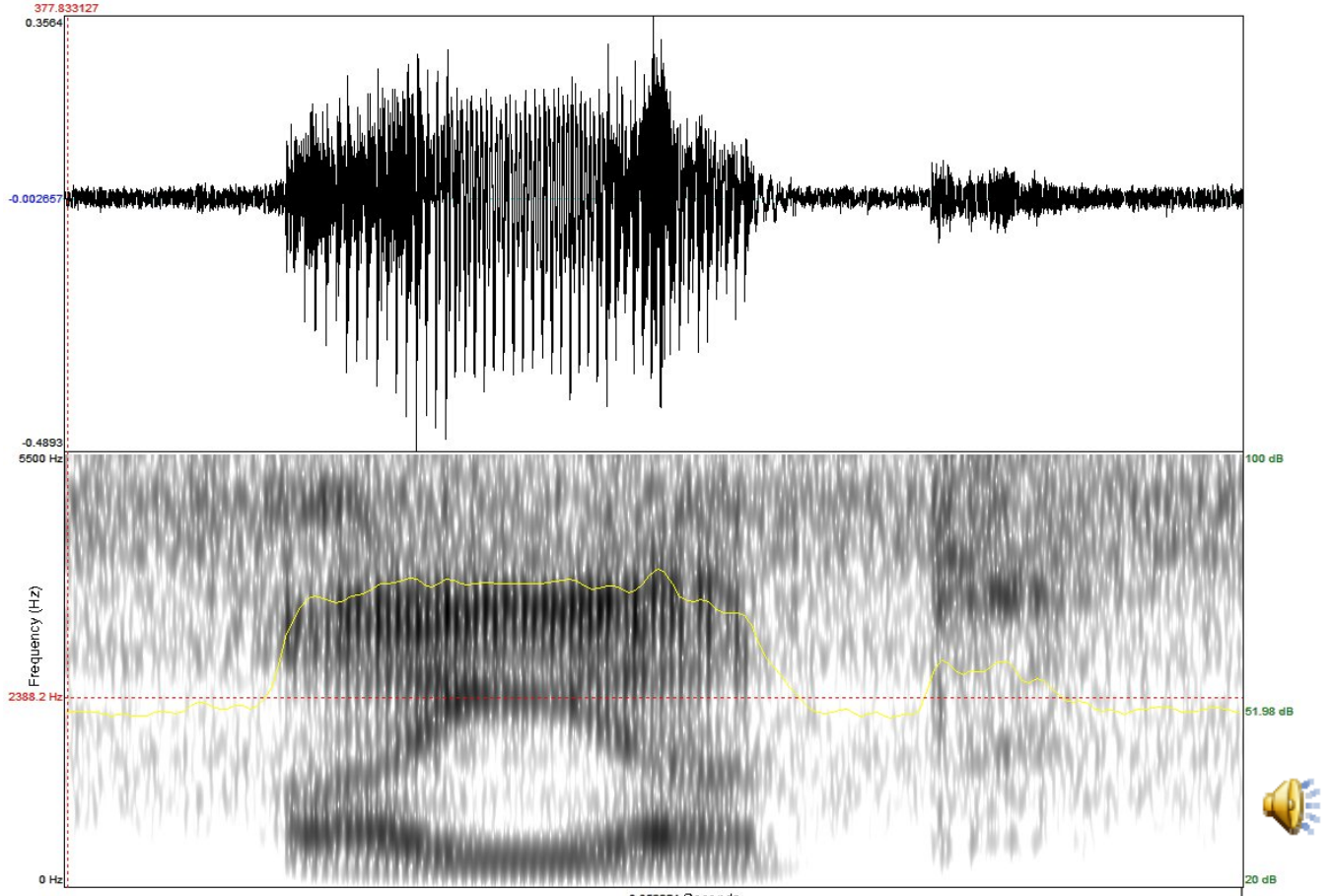
- 5 different recordings of 4 different speakers
- One of the four speakers still alive

Sound inventory: Consonants

	Bilabial	Alveolar	Velar	Labialized Velar	Glottal
Plosive	**p**	**t**	**k**	**k^{w}**	**ʔ**
Fricative	**β /v**	**s**	**ɣ**	**ɣ^{w}**	**h**
Affricate		**ts tʃ**			
Nasal	**m**	**n**	**ŋ**		
Flap		**ɾ**			
Approximant	**w**	**j**			

Word final stops

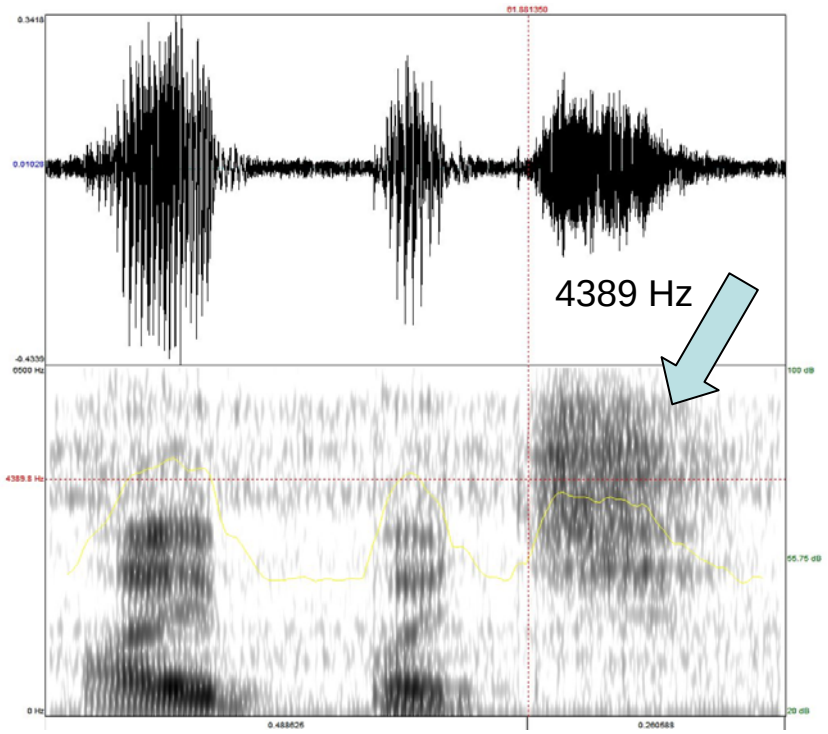
- Word final stops may occur aspirated word finally.
- Vowel elision (Sapir 1930a) may contribute to aspiration



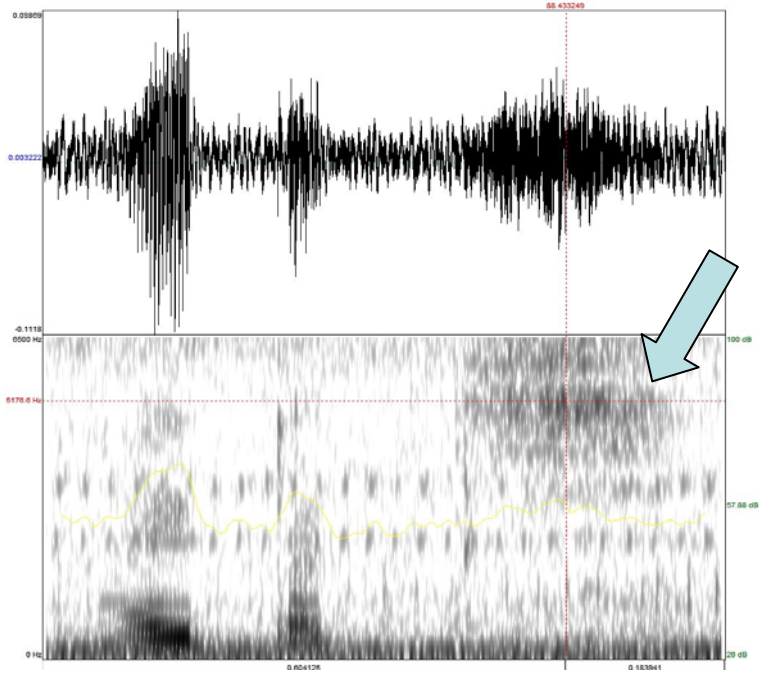
/ a j a t ^{h} / ‘Mohave’

/s/ vs./ʃ/ and /ts/ vs. /tʃ/

- Speakers vary in use of alveolar fricatives and affricates
  - MHM /s/ and /ts/
  - JHJ /s/ and /tʃ/
  - BW /s/ and /ts/
- /s/ and /ʃ/ are also reported to
- May be dialectal variation

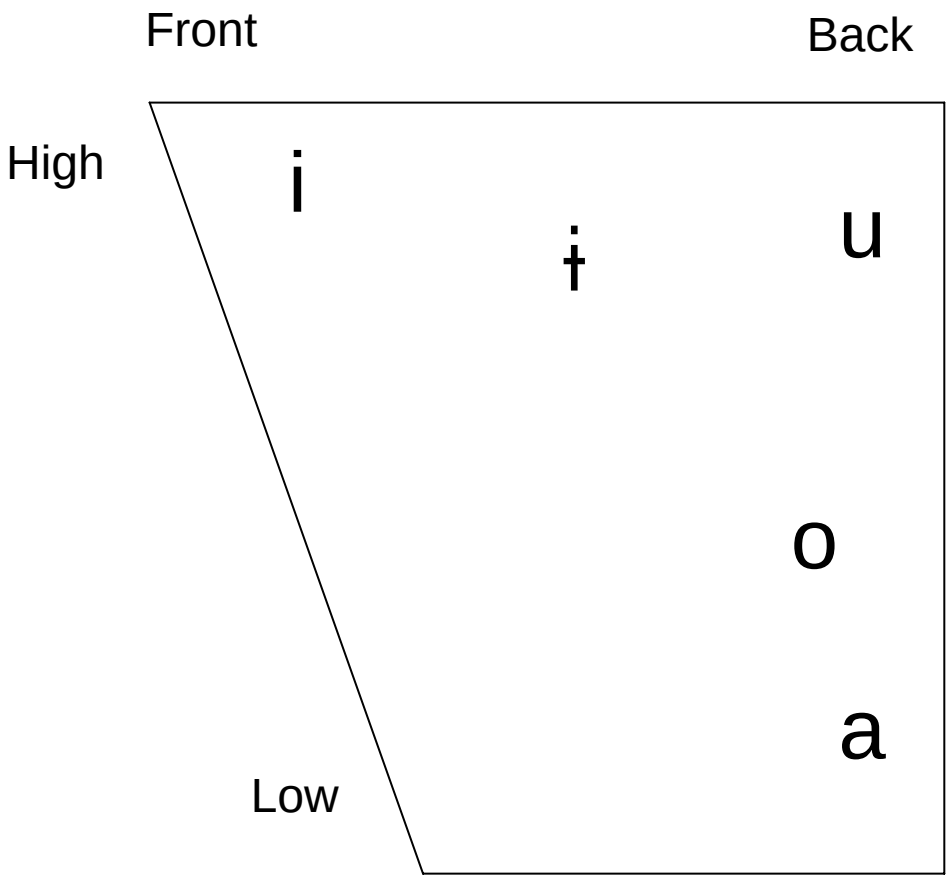


JHJ /aipɨtʃi/ ‘little boy’



MHM /aipɨtsi/ ‘little boy’

Sound Inventory: Vowels



Chemehuevi also has a vowel length distinction

Vowel Measurements

- Measured stressed vowels
  - Second syllable in polysyllabic words (Major, 2005)
  - First syllable in bisyllabic words with vowel elision (monosyllabic)
- Measured duration, intensity of vowel, intensity of preceding vowel, and frequency of first three formants.

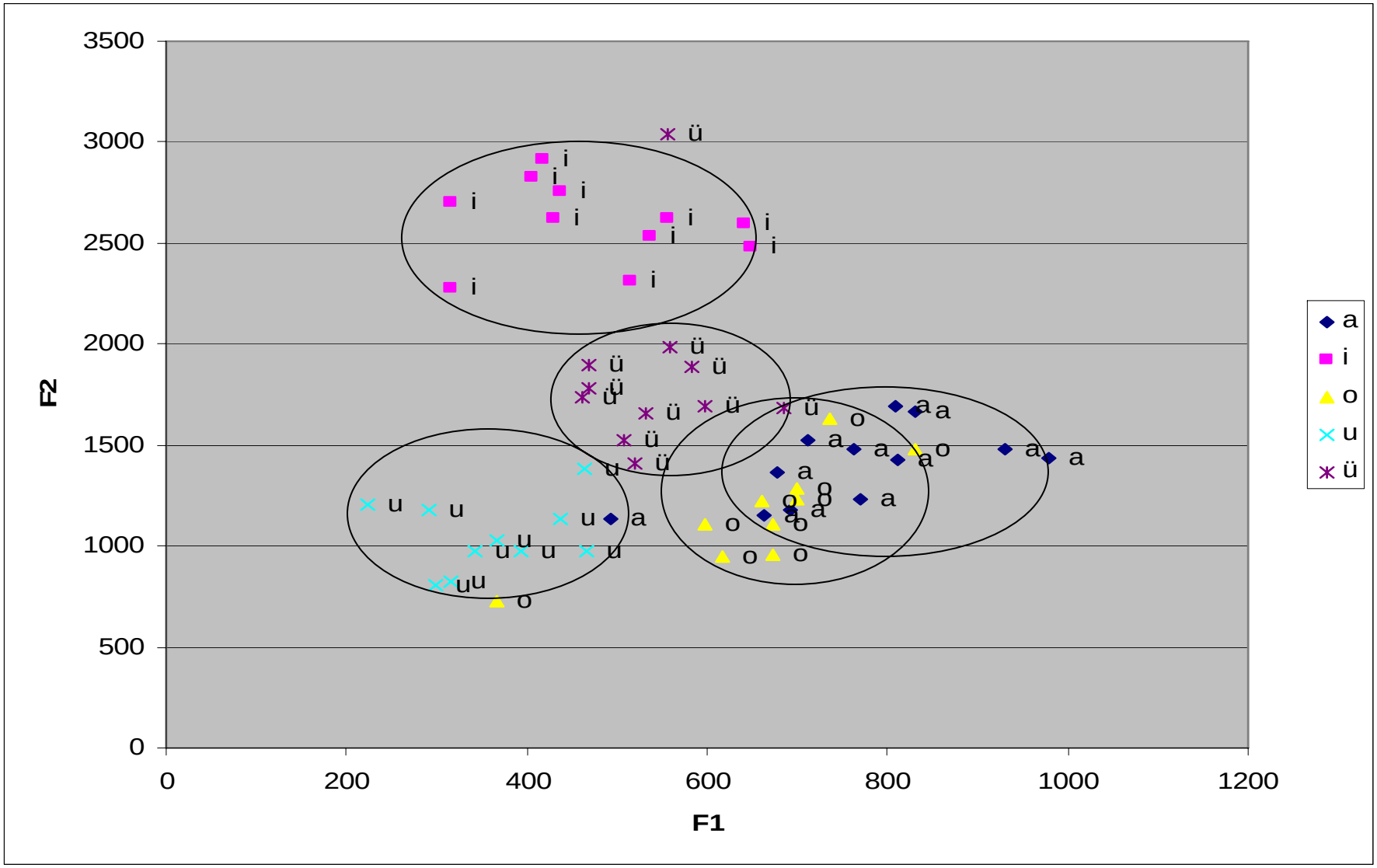
Vowels: Stress

- As a check for stress the intensity of the stressed vowel and the intensity of the preceding vowel were measured (in intensity units).

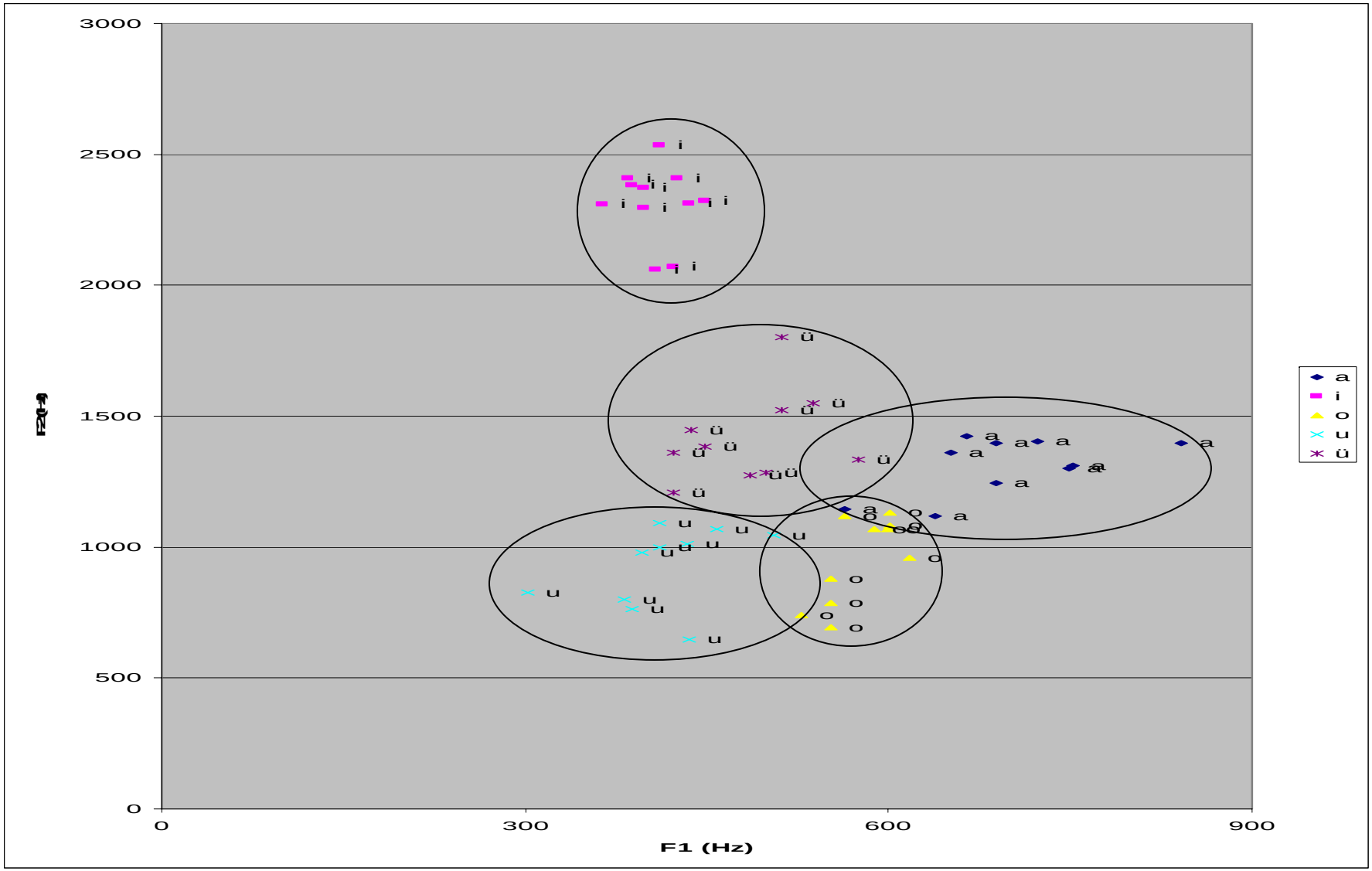
Speaker	Stressed vowel	Preceding vowel	Difference
MHM	72.63	67.73	3.9
JHJ	81.40	79.13	2.27
BW	72.32	69.48	2.84

- Supports previous claims of stress.
- F1 and F2 were also measured for each speaker.

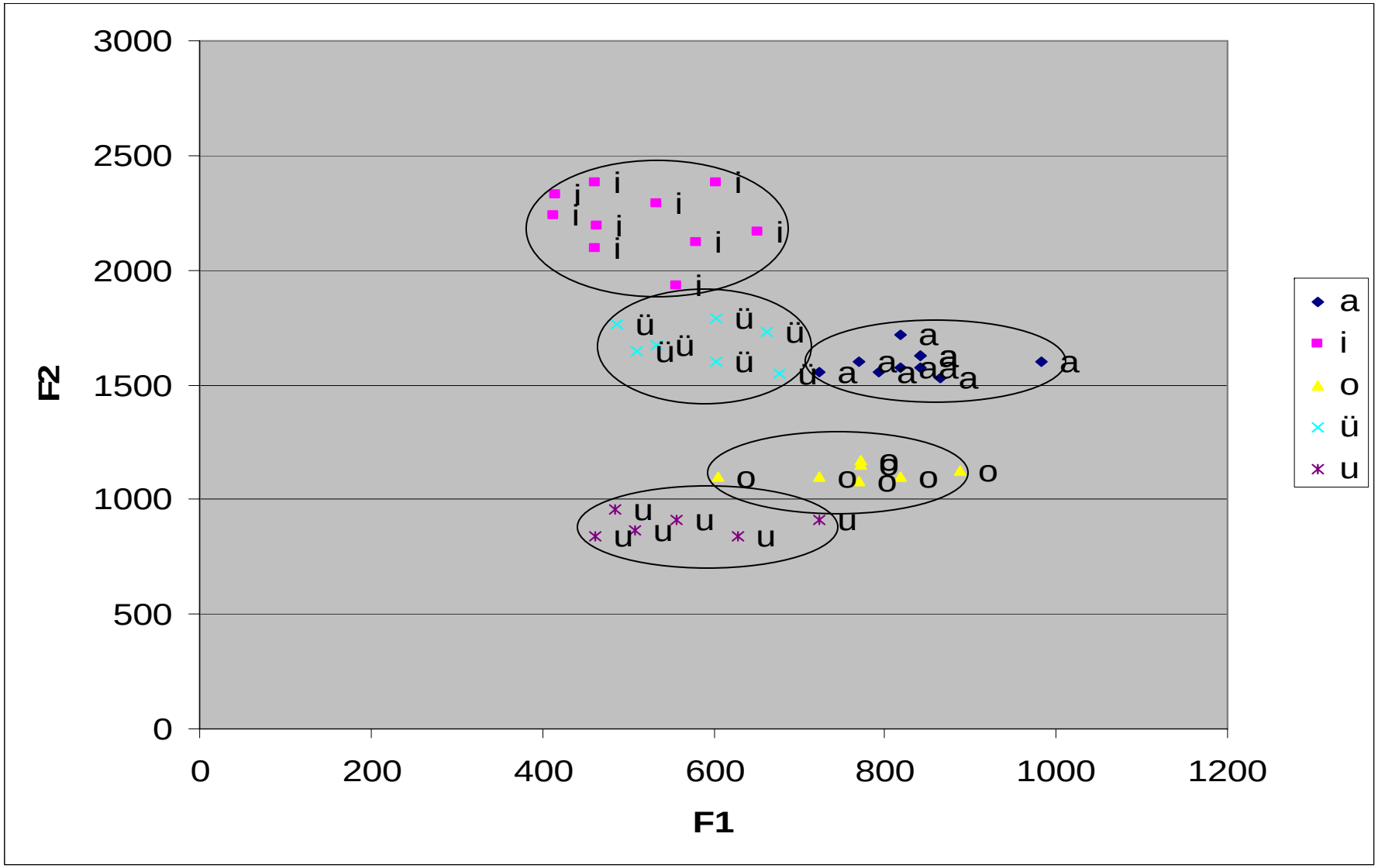
Vowel Chart 1: MHM



Vowel Chart: JHJ

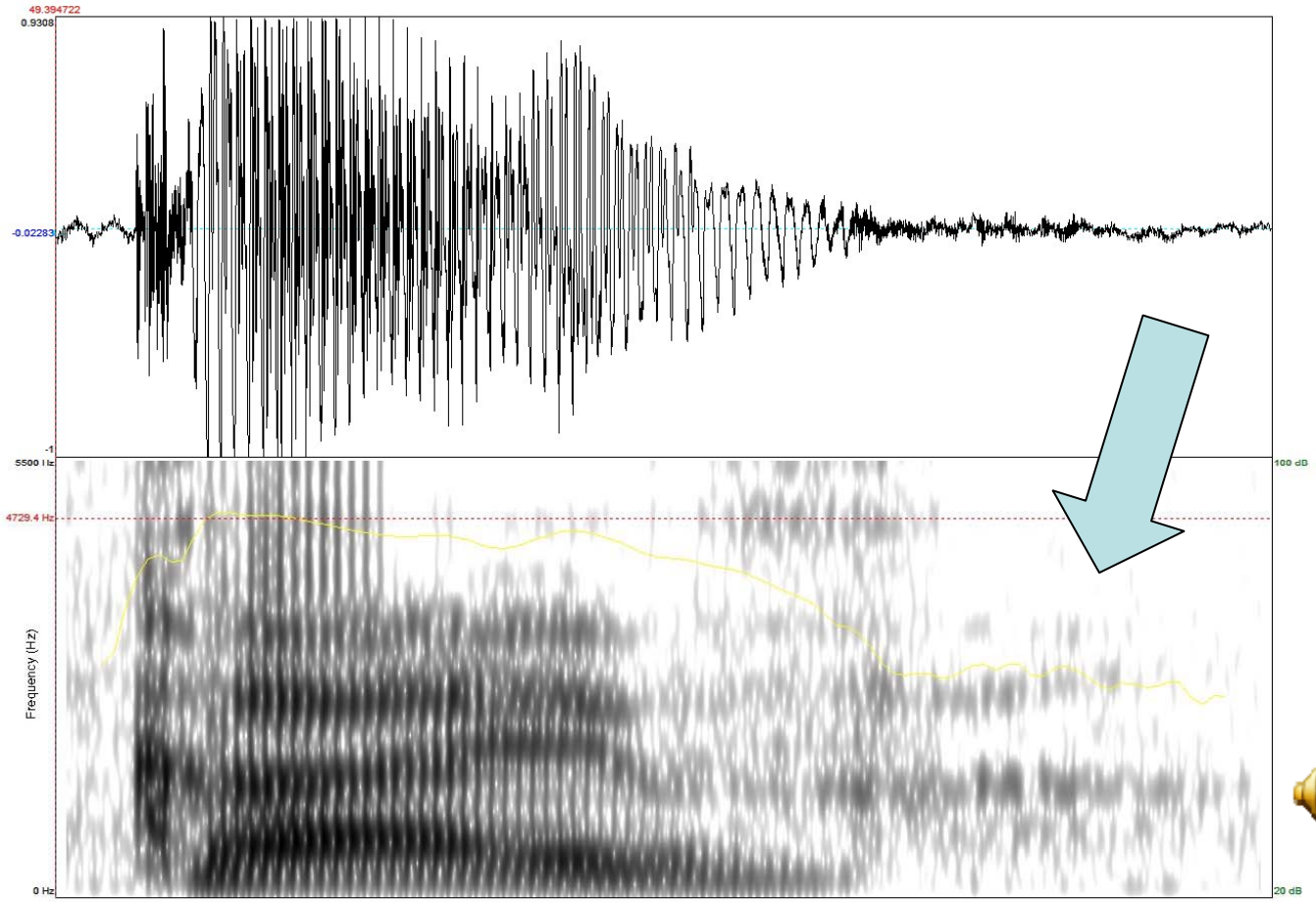


Vowel Chart: BW



Word final voiceless vowel

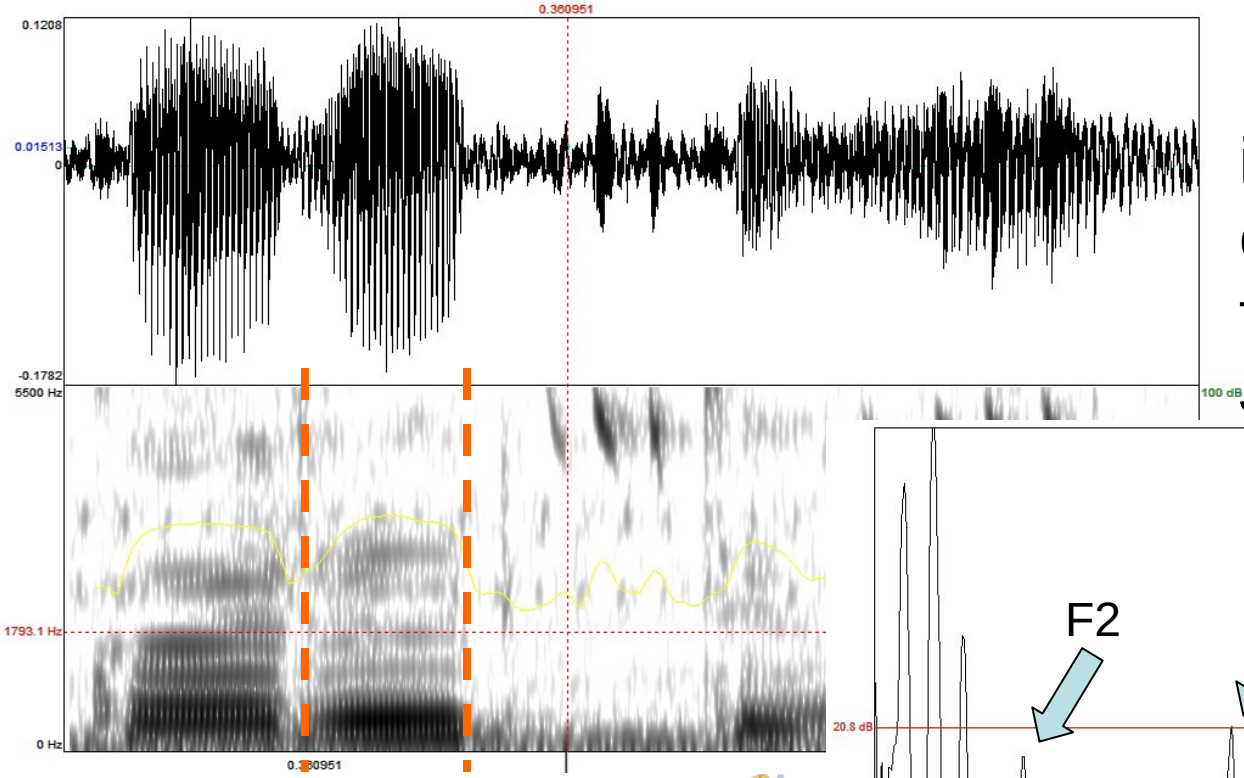
- Sapir (1930a) claimed that Southern Paiute has vowel elision.



Chemehuevi has word final voiceless vowels and vowel deletion

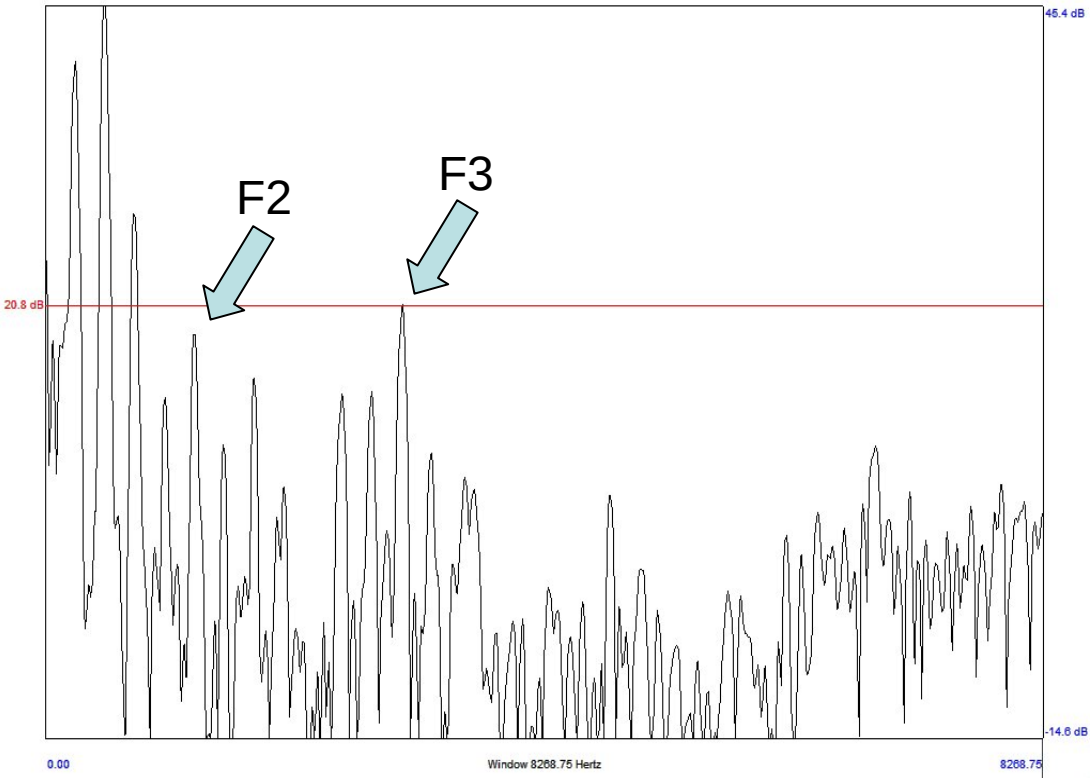
/ k a i v ḁ / ‘mountain’

F2 and /ɬ/



/karɬtɬga/ ‘chair’

F2 in Chemehuevi /ɬ/ is strangely weak compared to the other formants for MHM and JHJ

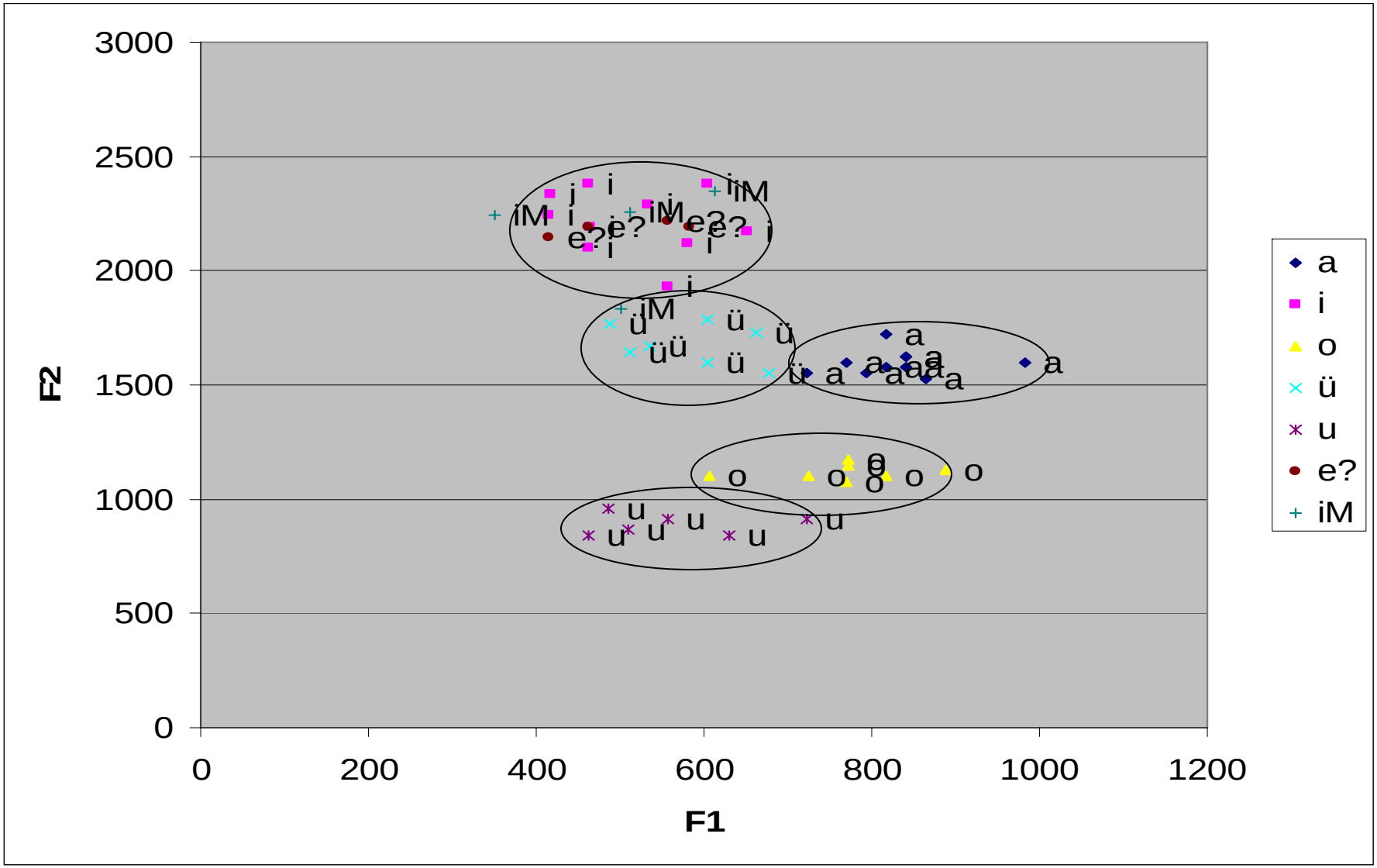


Peak F3 is slightly higher in this example then peak F2

Phoneme /e/?

- Major (2005) claimed that in his data the phoneme /e/ occurred.
- Press (1975, 1979) and (Laird 1976, 1984) do not indicate such a phoneme in their work on Chemehuevi.
- An analysis of BW a speaker recorded by Major (1969) shows that the examples of the phoneme /e/ indicated by Major (2005) fall well into BW's /i/ phoneme.
- To an American English speaker the phonemes may sound like an /e/, based on this phonetic analysis they are indeed /i/.

Vowel Chart: BW



Similarities to related languages

- Voiceless vowels and vowel elision:
  - Chemehuevi
  - Southern Ute (Oberly, p.c.)
  - Southern Paiute (Sapir, 1930a)
  - Tohono O’odham
- Other possibilities?
- Very little existing phonetic analysis of Uto-Aztecan languages to support many typological claims.

Phonetic Documentation

- Phonetics of Uto-Aztecan languages
- Why phonetics?
  - Physical description, not impressionistic
  - Interesting phonetic phenomena in Uto-Aztecan language
    - Lack of F2 in /ɨ/
    - Voiceless vowels
- Documenting Language
  - Grammar without phonetics?
  - Phonetic documentation for community use