'Ōlelo aku, 'ōlelo mai:

Building reciprocity into 'ōlelo Hawai'i pronunciation research

9th International Conference on Language Documentation & Conservation March 6-9, 2025 | Honolulu, HI

'O wai mākou? | Who are we?

Andrew

Lisa

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Kevin

Thomas

Haʻalilio

Ka papa hana | Agenda

Part 1: Linguists talk story.

What is Linguistics? What tools do linguists use to do research on 'ōlelo Hawai'i?

Part 2: Breakout groups.

Ask your community members what they think about ' \bar{o} lelo revitalization, linguistics research, and more.

Part 3: Community talk story.

Share thoughts from breakout groups; teach the linguists how to approach research and research application.

Linguistics Research & 'ŌH: Motivations & Principles

- → LR can/should/must support 'ŌH movement
- \rightarrow Research relies on participation
 - Participation on relationships
 - Relationships on trust
- \rightarrow Community > individual
- → ' $\overline{O}H$ rev. part of larger movement
- \rightarrow Linguists = stakeholders
- → Shared investment, shared vision, shared future



Kolekole 1: Transcription in ELAN – Ka hana palapala

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Kolekole 1: Transcription in ELAN – Ka hana palapala

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Acoustic analysis – Ke kālailai leo



Acoustic analysis – Ke kālailai leo → Low F

- Low F1 = high tongue
 - High F2 = low tongue
- \rightarrow Low F1 = back tongue

High F2 = front tongue





Acoustic analysis – Ke kālailai leo Low F1 = high tongue \rightarrow

AMAGA





A mānaleo vowel app-He pōkō woela mānaleo



A mānaleo vowel app – He pōkō woela mānaleo



Kolekole 2: Tools for linguistics research

- \rightarrow Praat = software to analyze speech
- \rightarrow 'OH has short and long vowels
- → Vowel length changes meaning of words!
 - ♦ kumu vs. kūmū
- → Is longer duration the only differentiating characteristic?
 - ◆ Louder in volume?
 - ♦ Higher in pitch?









Kolekole 3: 'Okina

Phonemes are speech sounds (consonants and vowels) in a language that make up words. Changing (or deleting) one phoneme can change the word. In Hawaiian, phonemes correspond closely to written letters:

kaka to rinsepaka raindropsaka shadow (no initial consonant)Hawaiian has a phoneme (a consonant) called
'okina, which is written with the symbol ':'aka to laughIt can occur at the beginning of a word
or in the middle of a word'aka to laugh
a'a small root

(Words in Hawaiian can't end in a consonant, so it can't occur there.)

'Okina as a speech sound: Glottal stop ?

'Okina is commonly referred to by linguists as a "glottal stop", represented in the International Phonetic Alphabet (IPA) as **?**.



The vocal folds be can be made to close completely, which has the result of stopping the flow of air through the vocal tract. This results in a very short period of time (milliseconds) without any sound coming out of the mouth. Thus, the term "stop".

Hawaiian is not unique in having glottal stop as a phoneme. Hebrew, many varieties of Arabic, Huatla Mazatec (Central America), also have this phoneme.

Given where this sound is produced in the vocal tract, it is practically very difficult to see what is going on when it is made. But we can use acoustic evidence to make inferences about articulation.

Acoustic analyses of 'okina'

ipo

pi'o

arch

koʻo

Linguists use computer programs (like Praat) to look at the acoustics of speech.

We can infer a lot about the articulation from the acoustics.

Silence corresponds to a complete closure of the vocal tract.

We also look at what frequencies have the most energy associated with them.

If 'okina is a stop, then there should be silence like during p...



When is 'okina a glottal stop?

Davidson (2021) looked at recordings of the Ka Leo Hawai'i (KLH) radio program.

There was a great variety of ways in which speakers produced 'okina.

Based on the acoustics, these speakers produced a true glottal stop

only an average of 7% of the time.



They were most likely to do so when 'okina was word-initial and occurred between two vowels that were the different: ka 'ohana ("the family").

This suggests that 'okina isn't really a stop. However...

When is 'okina a glottal stop?

What happens when 'okina is at the very beginning of a word when there is no speech before it (utterance initial)?

If this phoneme is important for knowing what word is being said,

(how) do Hawaiian speakers differentiate words that start with 'okina from those that don't?

It looks like they do. 'Okina-initial words tend to have more acoustic energy in the initial vowel, a more abrupt start, and higher fundamental frequency (pitch).

This suggests that 'okina is a stop utterance-initially.





What makes 'okina 'okina??

Figuring out how 'okina is produced shows that this "simple" question isn't really that simple. Lots of question arise:

- It seems that how 'okina is produced depends on the position of 'okina in the word and in the utterance.
- What can we learn about how these sounds are articulated from the acoustics?
- Are there individual (speaker-specific) differences in how this sound is produced?
- How good are Hawaiian speakers at perceiving these differences?
- How is this relevant to understanding other languages that also use this sound?

Our purpose today is to ask:

How can we use what we are studying to help learners of Hawaiian?

Part 2: Breakout Groups

Nā Hui Li'ili'i (Lāpule)

He hapalua hola paha, e kūkā kamaʻilio ʻoukou no nā nīnau o lalo. Hiki nō ke kākau noka ma nā puʻu pepa nui, i mea e hōʻike ākea aku ai i ko ʻoukou mau manaʻo i ko waho, i ko ke kaiāulu hoʻi.

- 1. He aha kekahi mau mea e 'oko'a ai ka 'ōlelo o kekahi hanauna i ko kekahi hanauna aku? Ka 'ōlelo ma kekahi mokupuni i ka 'ōlelo ma kekahi aku?
- 2. No ka po'e kumu: He aha nā ālaina e 'ōkupe ai 'oe ma ke a'o 'ana i ka 'ōlelo Hawai'i?
- 3. No ka po'e a haumanā 'ŌH ho'i: He aha nā mea ki'ina a'o i waiwai loa i kou a'o 'ia 'ana i ka 'ōlelo Hawai'i? (He app? He kahua pūnaewele paha?)
- 4. Pehea e kākoʻo ai ka poʻe kālaiʻōlelo i ka poʻe ʻōpio a ʻakahiʻakahi paha e ʻimi ana i ʻoihana?
- 5. No nā kānaka maoli: He aha nā mea 'ano nui a ko'iko'i loa a ka po'e kālai'ōlelo e ho'omana'o a e mālama ai ho'i i ka wā 'imi noi'i?
- 6. No nā papahana 'imi noi'i e a'o aku a e a'o mai ai kākou, ma hea nā wahi kūpono no ia mau 'ano hana?

For about thirty minutes, please discuss any of the questions below as you see fit. Please feel free to use the large easels to take notes in order to share your ideas with the community.

- 1. Do you have any experience connecting linguists with marginalized/endangered languages? What recommendations do you have for us?
- 2. What pedagogical tools (especially for pronunciation) have been developed that have had success for language learners?
- 3. What language learning/pronunciation difficulties have you observed in your environment?
- 4. Are there tools or information that linguists could provide that would be helpful for language teaching in your community?
- 5. What factors, if any, might exist that discourage speakers'/community's participation in formal linguistics research?

Mahalo i kēia hui 'ana!