Lin3201 Reinaldo Cabrera Perez

Field Work Project: Phonemic Statement Paper

I. Acknowledgment and Background information:

Pamir Gogoi is 28 years old. She was born in Assam; a state located in northeastern India. Assamese is Gogoi's first language and according to her the most dominant and confident language she feels speaking. She currently resides in the United States pursuing her Ph.D. in Linguistics at the University of Florida. Pamir started learning English at the age of six in school after learning Assamese in a classroom setting for two years. She mentioned that her English was different in India from the one she uses in the United States (two different dialects). She started learning/using Hindi at the age of ten with friends and family members. Around the same age, she had an interest in the Bangla/Bengali language, which made her curious to learn the language, but she does not have a conscious knowledge of the language.

She speaks, texts, and uses Assamese twice a week with family for two hours. Sporadically, Pamir watches films, listens to traditional Assamese music, and reads newspaper articles. In her parents' household, the prominent language is Assamese, but they also speak Hindi as well as English. The Assamese language has two regional varieties that are separated by the Brahmaputra river (upper and lower dialects according to Pamir). Pamir's family dialect may alternate depending on their geographic location in the Assam state. She speaks the same variety of Assamese the media and newspapers use—the upper Assam dialect.

Since Pamir's arrival in the U.S., she started using more English in academic settings because of her studies. Occasionally, she struggles to communicate with family members about her academic career in Assamese because her career is primarily in English. There are complex concepts/terms that are difficult to explain. As a result, she incorporates various English words in conversation under these circumstances. Pamir disclosed that she tends to swear unspokenly (in her head) in Assamese during

moments of frustration. Pamir uses English characters set (keyboard in English) to communicate with her family and friends, and sometimes she uses applications that have the Assamese writing script. She feels comfortable using both writing systems, but using the English keyboard is more convenient for her. Pamir thinks that Assamese is her dominant language and that she does not struggle with using the language. Gogoi said that there are words or phrases that are difficult to translate, but she always finds a way to convey her thoughts.

This field method project is being conducted fully online using Zoom; an online services application that helps connect people around the world. There will be three scheduled meetings of 50 minutes each with Pamir Gogoi (a native speaker of Assamese). The goal of this project is to conduct a phonemic analysis of Assamese and have a better understanding of the structure of the language. The Swadesh list is composed of 99 words and allows researchers to find phonemic segments and sounds that have minimal pairs and are in complementary distribution. A combination of substitution elicitation and corrective elicitation will be used to determine the environment and patterns of sounds in the Assamese language.

II. Phonetic Segments:

Consonants

	Bilabial	Alveolar	Post-alveolar	Palatal	Velar	Glottal
Stop (Unaspirated)	p b	t t̠ d			k g	
Stop (Aspirated)	pɦ bɦ	tɦ dɦ			kɦ gɦ	
Nasals	m	n			ŋ	
Fricatives		s z			x	h ɦ
Affricates		f*	d͡ʒ			
Approximant		ɹ		j		
Tap		ɾ				
Lateral Approximant		l				

Continuant-Approximant	w					

[w] is co-articulated (labial-velar) and it is not found in most IPA charts and that it is why the consonant has its own row. [f] is used instead of [pɦ] by young Assam speakers but the phoneme is not part of the Assamese language.

Vowels and Diphthongs

	Front		Central		Back	
	Unround	Round	Unround	Round	Unround	Round
Close	i ĩ ia io iu			u ui ua		
Near-close			ʊ			
Close-mid	e eu ei			o oi ou		
Open-mid	ɛ ɛa			ɔ ɔi ɔu		
Open		ä ạ		ɒ		
		ai ao au aʊ				

I noticed that the production and perception of the vowel [ä] is more centralized.

The diphthongs in red are found in the Assamese language but are not present in the Swadesh list.

Statement of Suspicious Pairs:

List of Suspicious Pairs	Pairs
Voiceless/voiced and aspirated pairs of stops	p/b, t/d, k/g, pɦ/bɦ, tɦ/dɦ, kɦ/gɦ
Voiceless/voiced pairs of fricatives	s/z
Consonants with different place of articulation but same manner of articulation	p/t, p/d, p/k, p/g, b/t, b/d, b/k, b/g, n/ŋ, m/n, m/ŋ, t/n, t/s, t/z, t/ɹ, t/ɾ, t/l, t/k, t/g, d/n, d/s, d/z, d/ɹ, d/ɾ, d/l, d/k, n/s, n/z, n/ɹ, n/ɾ, n/l, s/x, s/ɦ, x/ɦ, w/ɹ, w/j, ɹ/j, s/ɹ, s/l,
Consonants with different manner of articulation but same place of articulation	l/ɹ, k/x, p/m, b/m, t/n, d/n, k/ŋ, g/ŋ, t/ɾ, t/ɹ, t/s, t/z, d/s, d/z, d/ɹ, d/l, n/l, z/ɹ, z/l, p/w, b/w, m/w, g/x, ŋ/x
Vowels with different backness but same height	i/u, e/o, ɛ/o, a/ɒ,
Vowels with different height but same backness	i/e, i/ɛ, i/ɪ, ɪ/e, ɪ/ɛ, ɛ/e, u/o, u/ɔ, u/ɒ, o/ɔ, o/ɒ, ɔ/ɒ,

12 pairs: (8 minimal pairs) e/a, p/b, k/s, p/m, k/g, t/n, i/ɔ, t/g, and (4 complementary distribution) t/t̄, m/n, o/u, i/u, (possible pair if language evolves and adds [f]) p/f

III. Presentation of evidence of phonemic structure:

Suspicious Pairs List	**Minimal Pairs**	**Analysis**
e/a	[beli] ‘sun’ [bali] ‘sand’	[b**e**li] and [b**a**li] differ in meaning, height (close-mid/open), and backness (front/central). This demonstrates that two sounds are allophones of different phonemes in Assamese.
p/b	[pa̚t] ‘leaf’ [ba̚t] ‘trail’	[**p**a̚t] and [**b**a̚t] differ in meaning and in voicing [p] voiceless and [b] voiced. This demonstrates that two sounds are allophones of different phonemes in Assamese.
k/s	[muk] ‘mouth’ [mus] ‘rub’	[mu**k**] and [mu**s**] differ in meaning, place (velar/bilabial), manner (plosive/nasal) and voicing (voiceless/voiced). This demonstrates that two sounds are allophones of different phonemes in Assamese.
p/m	[pas] ‘five’ [mas] ‘fish’	[**p**as] and [**m**as] differ in meaning, manner (plosive/nasal) and voicing (voiceless/voiced). This demonstrates that the two sounds are allophones of different phonemes in Assamese.
k/g	[kaː] ‘eat’ [gaː] ‘sing’	[**k**aː] and [**g**aː] differ in meaning and in voicing [k] voiceless and [g] voiced. This demonstrates that the two sounds are allophones of different phonemes in Assamese.
[t/n]	[tez] ‘blood’ [nez] ‘tail’	[**t**ez] and [**n**ez] differ in meaning, manner (plosive/nasal), and voicing (voiceless/voiced). This demonstrates that the two sounds are allophones of different phonemes in Assamese.
[i/ɔ]	[piti] ‘back’ [pɔti] ‘husband’	[p**i**ti] and [p**ɔ**ti] differ in meaning, height (close/open-mid), backness (front/back). This demonstrates that the two sounds are allophones of different phonemes in Assamese.
[t/g]	[bota̤] 'wind' [boga̤] 'white'	[bo**t**a̤] and [bo**g**a̤] differ in meaning, place (alveolar/velar), and voicing (voiceless/voiced). This demonstrates that the two sounds are allophones of different phonemes in Assamese.
	Complementary Distribution	
		[pa**t**] and [pa̚t] differ in unreleased [t]. [t] and [t̚] are allophones of

t/t̄	[pat] 'leaf' [pat̄]	the phoneme /t/ and they have an overlapping distribution. This demonstrates that the two sounds are in free variation and are allophones of the same phoneme in Assamese.
m/n	[m] – [**m**uk] '**m**outh', [**m**a**n**u] 'people' [n] – [**m**aiki**m**a**n**u] 'woman', [pɦa**n**i] 'water'	[m] and [n] have similar environments. [m] tends to be found word-initial but also intervocalic [maikimanu] and followed by front [i], central [a], and back [u] vowel, whereas [n] tends to be found word-initial, word-final, or intervocalic and followed by front [i], central [a], and back [o/u] vowels (see examples in the left column). Analyzing this data from the Swadesh list, one can conclude that the two sounds are allophones of the same phoneme. (see attachment for the environment analysis)
o/u	[o] – [[p**o**t̄ni] 'wife', [k**o**la] 'black', [g**o**s] 'tree', [pɦoi] 'blood' [u] – [b**u**ra] 'old', [atɦ**u**] 'knee'	[o] and [u] have similar environments. [o] tends to be found between two consonants (most likely: word-initial plosive – [p, b, k, g]), whereas [u] tends to be found between two consonants (most likely: word-initial nasal [m, n] and word-final (see examples in the left column). Analyzing this data from the Swadesh list, one can conclude that the two sounds are allophones of the same phoneme. (see attachment for the environment analysis)
i/u	[i] – [bal**i**] 'sand', [[ɹat**i**] 'night' [nod**i**] 'river' [u] – [man**u**] 'people', [hoɾ**u**] 'small'	[i] and [u] have similar environments. [i] tends to be found word-final before plosives, nasals, and fricatives or between two consonants, whereas [u] tends to be found between two consonants (most likely: nasals [m,n] and word-final (see examples in the left column). Analyzing this data from the Swadesh list, one can conclude that the two sounds are allophones of the same phoneme. (see attachment for the environment analysis)
p/f	[pula] 'blow' [fula] [pas] 'five' [fas]	[p] and [f] differ in place (bilabial/labio-dental), manner (plosive/fricative). [f] is not part of the Assamese phonemic inventory. Younger generations use [f] to produce certain sounds but it is not recognizable in the Assamese language. [p] alternates with [f] creating different pronunciations but with the same meaning. One can assume that the two sounds are allophones of

		the same phoneme taking into consideration that in the future the language might evolved adding [f] to its phonemic repertoire.

IV. Statement of the phonemes

1. The phoneme [e] is found between two consonants (plosives and fricatives). For example, [beli] ‘sun’, [tez] ‘blood’, and [dek] ‘see’ have similar environments. [e] occurs after a plosive consonant. The data analyzed is limited and no further conclusions could be made.
2. The phoneme [a] is found in various environments, such as word-initial, between two consonants or word-final. Some examples are [kola] ‘black’, [dɦat] ‘tooth’, and [akɦax] ‘sky’. The previous examples appear in different environments and word positions; this is due to the large data sample from the Swadesh list. One must take into consideration that many of the two-syllable words end in [a]. (see the environment analysis table for further clarifications)
3. The phoneme [p] is found in word-initial in words like [pɔɾi] 'leg', [pɔti] 'husband', [pani] 'water' and intervocalic, between open-front vowel [i] and between consonant-vowel. [p] is always followed by a front [i, ɛ], central [a], or back [o, u, ɔ] vowel. The phoneme [b] is found word-initial and followed by a front [i], central [a], or back [u, o, ɔ] vowel. For example, the words [buku] ‘chest’, [bat] ‘trail’, and [bandɦi] 'tie' follow the same pattern in the Swadesh list for the phonemes [b]. (see the environment analysis table for further clarification.)
4. The phoneme [k] is found in word-initial [kɦand] 'dig', word-final [muk] 'mouth' [ak] 'one', or intervocalic [maikimanu] 'woman', [buku] 'chest'. The environment of [k] can be before and/or after front [i, e], central [a], or back [o, u] vowel(s) and the sound varies depending on the word position. (see the environment analysis table for further clarifications)
5. The phoneme [s] is found in word-initial [sal] ‘skin’, [soku] ‘eye’ and word-final [mas] ‘fish’, [pas] ‘five’. The environment of [k] is before and after a central [a] or back [o] vowel. The data from the Swadesh list for [s] is limited and no further details/environments could be analyzed. (see the environment analysis table for further clarification)

6. The phoneme [m] is found in word-initial [mas] ‘fish’, [mus] ‘rub’, [ma] ‘mother’, and intervocalic [bomi] ‘vomit’, [kamuɾ] ‘bite’. [m] can be found before a front [i], central [a], or back [o] vowel and after front [i], central [a], and back [u, o]. (see the environment analysis table for further clarifications)
7. The phoneme [n] is found in word-initial [nak] ‘nose’, [nior] ‘dew’, word-final [d͡ʒun] ‘moon’, [din] ‘day’ and intervocalic [manu] ‘people’, [ukoni] ‘louse’. The environment for [n] is before front [i], central [a], back [o, u], and after front [i, e], central [a], and back [o, u]. In some words, such as [kand] ‘dig’ or [nga] ‘sing’, [n] is not followed by a vowel. (see the environment analysis table for further clarifications)
8. The phoneme [g] is found in word-initial [guti] ‘seed’, [goɾom] 'hot', between consonant-vowel, [ⁿgos] ‘tree’, and between vowels, [boga] ‘white’. [g] is followed by a central [a] or back [u, o] vowel, and it is found in a syllable or two-syllable word according to the Swadesh list. Therefore, the environment for [s] is limited and no further conclusions could be made. (see the environment analysis table for further clarifications)
9. The phoneme [t] is found in word-initial [tan] ‘pull’, [tɛɬ] 'push', [teɬ] 'grease', word-final [dat] 'tooth', [d͡ʒokɾit] 'liver', and intervocalic [biti] 'back', [pɔti] 'husband' [botą̈] 'wind'. [t] appears before a front [I, ɛ], central [a], or back [u, o, ɔ] vowel and after front [i, e, ɛ], central [a], and back [u] in the Assamese Swadesh word list. The phoneme [t̄] is found in word-final [hat̄] 'arm/hand', [pat̄] 'leaf', and between vowel-consonant [poṭ̄ni] 'wife'. The environment of [t̄] is before central [a] or back [o]. The environments for [t̄] are limited and no further conclusions could be made. (see the environment analysis table for further clarifications)
10. The phoneme [i] is found in word-final [[dĩni] 'neck', [nodi] 'river', [ɾati] 'night', between consonants (plosive, fricative, nasal, lateral approximant, etc.) [koliza] 'heart', [hipa] 'root' and after consonant [pi] ‘drink’. The environment for [i] varies depending on the word position. (see the environment analysis table for further clarifications)

11. The phoneme [ɔ] is found in word-final [pɔti] 'husband', and in between consonants [pɔri] 'leg'. [ɔ] appears before voiceless bilabial plosive [p]. The data is limited, and no further analysis could be made from the Swadesh list. (see environment analysis table for further clarifications).
12. The phoneme [o] is found between two consonants (plosive/nasal/fricative/affricate). For example [koliza] ‘heart’ (word-initial velar plosive), [nodi] ‘river’ (word-initial alveolar nasal), [soku] ‘eye’ (alveolar fricative), [d͡ʒokrit] 'liver' (palate-alveolar affricate). [o] has a consistent pattern between consonants and its environment can be predictable. (see environment analysis table for further clarifications.
13. The phoneme [u] is found in word-initial [uŋkɦ] ‘lip’, [ukoni] ‘louse’, word-final [maikimanu] ‘woman’, [atɦu] ‘knee’, between consonants [muk] ‘mouth’, [mul] ‘head’, [dɦuwa] 'smoke'. The words from the Swadesh list show that [u] occurs more between two consonants. (see environment analysis table for further clarifications.

V. Charts of the Phonemes

Consonants

	Bilabial	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Stop	p pɦ b	t t̄ tɦ d dɦ			k kɦ g	
Nasal	m	n			ŋ	
Fricative		s z			x	h ɦ
Affricate			d͡ʒ			
Approximant		ɹ				
Tap		ɾ				
Lateral Approximant		l				
Continuant - Approximant	w					

Vowels and Diphthongs

	Front		Central		Back	
	Unround	Round	Unround	Round	Unround	Round
Close	i ĩ			u ui ua		
Near-close				ʊ		
Close-mid	e eu			o		
Open-mid	ɛ			ɔ		
Open			ä ạ	ɒ		
			ai au aʊ			

VI. Comments

Assamese has unique phonological features compared to other Indo-Aryan languages. For example, the velar nasal [ŋ] is used extensively in Assamese and Bengali (Pamir mentioned that she has knowledge of the language). In various languages, [ŋ] is attached to a homorganic sound, but in Assamese, it can occur intervocalically. If I had a corpus of data from Assamese and languages from the same family, I would have a tailored analysis of the environment of certain phonemes. Due to the limited word data from the Swadesh list, it was difficult to find certain phonemes under various environments. Some of those phonemes are: [e, s, t̄, ɔ]. I would have liked to do further research on voiceless and voiced aspirated/unaspirated stop consonants. It is fascinating that Assamese has this feature in its language. For example: [bɦal] 'fruits', [bɦitaɾ] 'interior', [tɦɛɾ] 'narrow', [dɦeɾ] 'large quantity', [kɦel] 'game', [agɦat] 'injury' Comparing each consonant next to each other, one can see how the perception of [pɦ, bɦ, tɦ, dɦ, kɦ, gɦ] can be confusing for a non-native speaker of Assamese. Environment analysis cannot be completed without having more words/data to analyze. The evidence provided is a generalization based on the Swadesh list and the speaker's intuitive knowledge of Assamese. There are multiple possibilities of suspicious pairs in the Assamese language but not many of them could be proven because the data is limited. Having the field project sessions online impede the transcriptions of words at times due to the acoustics and difficulties in hearing the speaker.

Vowel length and stress affect the meaning and perceptions of words in Assamese. By using the corrective elicitation method, I noticed that multiple words sounded wrong to the speaker and/or had a different meaning depending on the vowel length. For example words like [sal] 'skin' and [saːl] 'net'

(fishing) have different meanings because vowel length determines the environment and perception of words. I used the substitution method to test whether a cluster of sounds was possible in Assamese. One of the examples is [pɦ, bɦ, tɦ, dɦ, kɦ, gɦ] + [al] meaning split, good, rhythm, inclination, drainage, cheek, respectively. These methods allowed me to elicit information from a limited frame of words to an endless possibility of combinations. Many of the phonemes that I combined did not exist in Assamese but some of them were successes.