Visual Cues and Reconstruction in Austronesian Historical Linguistics

Hugh Paterson III, University of North Texas i@hp3.me

The role of visual cues as well as aural cues (sounds) has only recently been included as part of language evolution (Havenhill and Do 2018). Articulatory evidence for both visual and aural cues should be considered when proposing reconstruction within the Austronesian language family. The interdental approximant [ð̞] is attested in nine languages across the north and south of the Philippines Butbut Kalinga, Lubuagan Kalinga, Kagayanen, Southern Catanduanes Bicolano, Kalagan, Limos Kalinga, Lower Tanudan Kalinga, Karaga Mandaya, and Sangab Mandaya (Olson et al. 2010). Video and ultrasound recordings show it has prominent visual cues because it comes out of the mouth and extends beyond the lower lip (Mielke et al. 2011; Olson et al. 2010; Mielke et al. 2011; Olson et al. 2008). Contrary to previous proposed reconstructions (e.g., Blust 2019), the interdental approximant as used today is a retention from Proto-Malayo-Polynesian (PMP) through Proto-Philippine (PPh), not an innovation. Its loss in many other languages is best explained by extralinguistic (social) factors. Geographical distribution, common negative social stigmas, the diversity of reflexes in other Philippine languages, as well as a similarity of phonological environments related to reflexes suggest that the articulation is a retention rather than a series of independent innovations, yet the historical linguistic literature is silent on how this articulation came to be or what role it should have in language family subgrouping or even lexical reconstructions.

The interdental approximant occurs in PMP words where one finds *l. For example, the second consonant in *zalan 'path, road' as shown in Table 1. For some purposes this consonant is referred to as PMP *l; however it is generally also reconstructed for Proto-Austronesian (PAn) *l as well (Blust and Trussel 2013). Given the Formosian Origin Hypothesis (Bellwood 1984), Philippine languages are weighted highly for assertions about reconstructed PMP (e.g., see discussions in: Ross 2005; Reid 2016; Liao 2011; Blust 2019). The articulatory nature of the interdental approximant challenges the assumption that *l is a voiced alveolar lateral approximant [l] (or even a velarized approximant [lʲ]), as the reconstruction literature suggests (e.g., Ross 1992; Blust 2009; Wolff 2010).

The interdental approximant is rare in the world's languages, but not unattested (e.g., Brazil: Everett 1982; Nigeria: Harley 2012; Kenya: Olson et al. 2018). Based on language-internal evidence in Kagayanen, Olson et al. (2010) suggest that the interdental approximant has only recently become phonemic having previously existed in allophonic distribution with synchronic [l]. A two allophone distribution aligns with Paz's (1981, 1982) bottom up approach to reconstructed sounds in PPh. However, it is also possible that in the Kagayanen case that [ð̞] was the older pronunciation.

Two possible alternative hypotheses to historical retention of [ð̞] via PMP are: substrata from pre-Austronesian (Agta) languages (Reid 1994), or independent innovations around the periphery of an archipelago in nine different Philippine languages. Both alternatives face challenges. First, none of the Agta languages are attested to have retained the interdental approximant. Second, the periphery is the location one finds less innovative forms (Hock 2021: 816). Nine separate innovations of an extra-labial articulation is statistically unlikely.

In defending her reconstruction of PPh, including two articulations for *l, Paz (1982) characterizes previous reconstructions and their sources as "hardly reliable sources for comparative work because the compilers were foreigners who were most likely influenced or were confined by the orthography and phonological systems of their own languages". I concur with Paz and specifically point out that the interdental approximant and its historical significance in reconstructing PPh/PMP is overlooked. Scholars such as Reid (1971) and Tryon (1995) make phonological and orthographic assumptions which mask the full articulatory evidence. Considering visual and aural evidence should cause us to carefully reconsider how we reconstruct words and correspondence sets.

Scholars have long debated the validity of correspondence sets across the Philippine languages (Conant 1911, 1912; Blake 1911; Dempwolff 1934, 1937, 1938; Dyen 1971; Tsuchida 1976; Dahl 1976; Blust 2009). In some languages the interdental approximant can align with the proposed correspondence R-G-H-l-y-Ø (Conant 1911). Comparative wordlists across Philippine languages indicate that languages which don't have the interdental approximant have diverse reflexes (ɻ, l, d, Ø, ʔ, n, ŋ, y, ɣ/ɰ). Scholars such as Zorc (1975: 264-6) acknowledge the irregular correspondences involving liquids has left the diversity unexplained.

To Zorc's observation, I propose a possible motivation for the sound change—visual quirkiness and related negative social stigmatization. Gallman (1997: 75), when reporting on eliciting a wordlist from a language user who used the interdental approximant, wrote the following: "[T]here is strong pressure to identify with the Cebuanos and drop this allophone. While I gathered a wordlist from a Mandayan in Sangab, I observed this change. While we were alone, the speaker used the [interdental approximant]. But when several Cebuano speakers gathered around and began to laugh each time he used it, he quickly dropped the allophone where it normally occurred." Everett (1982: 96) wrote of the articulation in Pirahã as having " a high possibility of being replaced completely by [its] phonological alternatives because of derisive remarks from outsiders (usually rubber workers or traders)."

Social conditions related to the visual cues produced by the articulation describe the reason for the sound change but they don't fully describe the many possible reflexes. For that explanation I turn to ambiguity and sound similarity. The diverse reflexes are all strategies to bring the tongue inside the mouth due to social pressures while maintaining an auditory or perceptual cue which fits within the required metrical structure. Studies like those conducted by McGurk and colleagues (1976) show that visual and aural cues are processed simultaneously. Visual cues have been shown to play a significant role in the perceptibility of articulatory segments (Havenhill and Do 2018). Language evolution is not just a process of sound change but one of communicative signal change which includes visual characteristics of articulatory gestures.

I propose that articulatory changes related to *l in Austronesian languages are based on strong social constraints against visual cues with a strong metrical motivation to produce some acoustic cue in the specific communicative context(s). This analysis, similar to that of Boersma (2011), brings both the aural and visual cues together to illustrate how language evolution is dependent on understanding language as a multi-modal experience (Vigliocco 2014; Ambrazaitis and House 2017; Perniss 2018). Language evolution is a multi-modal cue-based change where salient cues are reassigned and re-interpreted during the communication process. A multi-modal approach to PMP *l allows us to interpret the evidence of the interdental approximant, bringing motivation and articulatory clarity to unanswered questions in Austronesian reconstructions.

English	Butbut	Lubuagan	Madokayang	Minangali	Kagayanen	Kalagan	Southern Catanduanes Bicolano	PAn Blust (1999)
[eng]	[kyb]	[knb]	[kmd]	[kml]	[cgc]	[kqe]	[bln]	
three	tuˈð̞u	tiˈð̞u	tuˈð̞u	tuð̞u	ˈtallo	toð̞o	tuð̞u	*telu
moon	ˈhʷuð̞an	ˈbuð̞an	sɔˈð̞ag	soð̞ag	ˈbuð̞an	boð̞an	buð̞an	*bulaN / *qiNas
path	ˈʧað̞an	ˈkeð̞sa̠	ˈqað̞sa	ʔað̞sa	ˈdað̞an	dað̞an	dað̞a	*zalan

Table 1: Correspondences for the interdental approximant and PAn *l. Olson et al. (2010) lists 30 terms across various word categories in Kagayanen. Minangali words are present in Olson et al. 2008.

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