

**Exploring unusual sound change:
The prenasalised and plain bilabial trills in the languages of Malekula Island (Vanuatu)**

Tihomir Rangelov

Max Planck Institute for Evolutionary Anthropology, Leipzig

Keywords: unusual sound change, bilabial trill, Oceanic, Vanuatu, prenasalisation

Bilabial trills are cross-linguistically uncommon sounds. Twenty-three Southern Oceanic languages spoken on Malekula Island in Vanuatu have a prenasalised voiced bilabial trill ^mb; 11 of them also have a plain voiceless bilabial trill ɸ. While bilabial trills are easy to articulate in isolation, they are rarely found as regular sounds in languages because they are difficult to integrate into connected speech (Maddieson 1989); they also appear to have a low functional load, at least in the Malekula context (Rangelov 2019). In this talk, we explore the factors that counteracted these forces to allow ^mb and ɸ to emerge and persist in Malekula languages.

Previous research on ^mb (Maddieson 1989; Lynch 2016) showed that it developed from a historical *mbu sequence. Our own comparative historical analysis, based on 40 cognate sets from Malekula languages, confirms this and also shows that ɸ developed from a *ɸu sequence. Both of these historical environments meet the aerodynamic conditions proposed by Maddieson (1989) that allow for bilabial trilling to occur spontaneously: low intraoral pressure, protruded lips and narrow lip aperture. These historical sequences alone, however, cannot explain why this unusual sound change took place in a select group of languages and not in many other languages in which such sequences are attested. Furthermore, while these aerodynamic conditions are met in the synchronic ^mb sound, they are likely not met in ɸ where a long complete obstruction of the oral and nasal airflow (125 ms on average) suggests relatively high intraoral pressure at the time of release (Rangelov 2019). This constitutes an additional constraint on the persistence of ɸ.

We propose a number of factors that supported the emergence and persistence of ^mb and ɸ in Malekula languages. The distribution of ^mb and ɸ on Malekula suggests that ^mb developed first. ^mb emerged fuelled by the favourable historical [mbu] sequence and by the presence of trilling, prenasalisation and bilabial articulations as salient features in these languages. More specifically, the existence of a prenasalised alveolar trill ^r, whose distribution in Malekula and in other Austronesian languages, overlaps considerably with the distribution of ^mb, suggests spread of its manner of articulation to the bilabial place. Contact with Papuan languages, for which there is both linguistic and genetic evidence (Blust 2005b, 2008; Donohue & Denham 2008; Posth et al. 2018), likely also played a role at this stage. Later, final-vowel loss resulted in ^mb becoming contrastive word-finally (Lynch 2016) and establishing itself as a salient sound in at least some languages. The forces to fill the gap that opened at the plain bilabial trill slot in an otherwise balanced consonant inventory characterised by a prenasalisation contrast in trills and plosives, together with the favourable aerodynamic conditions in *ɸu, led to the emergence of ɸ. Sociolinguistic factors, such as identity attachment (e.g. Crowley 2006), likely also played a role in the emergence of ɸ and the persistence of both sounds in some languages.

The proposed pathway for the emergence and persistence of ^mb and ɸ on Malekula shows that unusual sound change can be explained by taking into account both language-internal and external factors of various types – phonetic, structural, and social (Blust 2005a).

References:

Blust, Robert. 2005a. Must sound change be linguistically motivated? *Diachronica* 22(2). 219-269.
<https://doi.org/10.1075/dia.22.2.02blu>

Blust, Robert. 2005b. The Oceanic languages (review). *Oceanic Linguistics* 44(2). 544-558.
<https://doi.org/10.1353/ol.2005.0030>

- Blust, Robert. 2008. Remote Melanesia: One history or two? An addendum to Donohue and Denham. *Oceanic Linguistics* 47(2). 445-459. <http://www.jstor.org/stable/20542824>
- Crowley, Terry. 2006. *The Avava language of central Malakula (Vanuatu)*. Canberra: Pacific Linguistics. Edited by John Lynch.
- Donohue, Mark & Tim Denham. 2008. The language of Lapita: Vanuatu and an early Papuan presence in the Pacific. *Oceanic Linguistics* 47(2). 433-444. <http://doi.org/10.1353/ol.0.0021>
- Lynch, John. 2016. Malakula internal subgrouping: Phonological evidence. *Oceanic Linguistics* 55(2). 399-431. <http://doi.org/10.1353/ol.2016.0019>
- Maddieson, Ian. 1989. Aerodynamic constraints on sound change: The case of bilabial trills. *UCLA Working Papers in Phonetics* 72. 91-115.
- Posth, Cosimo, Kathrin Nägele, Heidi Colleran, Frédérique Valentin, Stuart Bedford, Kaitip W. Kami, Richard Shing, Hallie Buckley, Rebecca Kinaston, Mary Walworth, Geoffrey R. Clark, Christian Reepmeyer, James Flexner, Tamara Maric, Johannes Moser, Julia Gresky, Lawrence Kiko, Kathryn J. Robson, Kathryn Auckland, Stephen J. Oppenheimer, Adrian V. S. Hill, Alexander J. Mentzer, Jana Zech, Fiona Petchey, Patrick Roberts, Choongwon Jeong, Russell D. Gray, Johannes Krause & Adam Powell. 2018. Language continuity despite population replacement in Remote Oceania. *Nature ecology & evolution* 2(4). 731-740. <https://doi.org/10.1038/s41559-018-0498-2>
- Rangelov, Tihomir. 2019. The bilabial trills of Ahamb (Vanuatu): Acoustic and articulatory properties. In Sasha Calhoun, Paola Escudero, Marija Tabain & Paul Warren (eds.), *Proceedings of the 19th International Congress of Phonetic Sciences (ICPhS), Melbourne, Australia 2019*, 1292-1296. Canberra: Australasian Speech Science and Technology Association Inc. https://assta.org/proceedings/ICPhS2019/papers/ICPhS_1341.pdf