

‘Phoneme Fluctuation’ in low-resource languages:

Theoretical problems and practical prospects

In the description of a number of under-resourced languages, there is a tradition of observing patterns of so-called ‘phonemic fluctuation’. These are cases where a phonemic contrast appears not to hold in particular lexical items, such that two or more otherwise-contrasting segments are permitted in the same environment without creating a minimal pair. An example of this type of alternation can be found in Arabela (ARL, Zarapoan, Peru), as described in Rich (1963) and exemplified in (1). Here we see that, although minimal pairs contrasting /n/ and /r/ are common (1a-b), there are also lexical items where the phonemes alternate in what appears to be a free manner (1c-d).

- (1) a. /'ninju/ ‘to come’ c. /'nɲurjuku/ ‘egg’
b. /'rinju/ ‘to breathe’ d. /'rɲurjuku/ ‘egg’

In this paper, we survey a series of phenomena that have been described as ‘phoneme fluctuation’ in languages ranging from North to South America, and from Africa to Australasia. We also trace the intellectual roots of the concept, from its main practitioners — the SIL missionary/language-documentation tradition — to its origin in the work of Kenneth Pike (1947), and its elaboration by Mary Ritchie Key (1968, 1979) and the French functionalists (Martinet 1969, 1983, Clairis 1991). Throughout this initial review, we point out a number of the empirical and theoretical perils of the notion and look into reasons that have conspired to keep it in place. These include the fact that the theoretical availability of such free variation likely produced confirmation biases, precluding further investigation into the potential conditioning factors of the alternation, or into other theoretical frameworks that would account for them. We ultimately argue that the alleged unconditioned alternations we find in these languages are descriptively inadequate and can be accounted for by more parsimonious means, compatible with analyses of better-understood languages. We conclude that *phoneme fluctuation* is epiphenomenal and pernicious insofar as it creates a veneer of ‘exoticism’ or ‘simplicity’ around the languages so described.

Beyond the intrinsic interest this concept may hold for the history of linguistic ideas, we hope to show that, inasmuch as it is still part of the descriptive tradition of many languages, ‘phoneme fluctuation’ provides a gateway to some of the more revealing phonological patterns of said languages. Our main case study is the phonology of Mapudungun (ARN, isolate, Chile/Argentina) which has a long tradition highlighting these kinds of unconditioned alternations (Key 1978, Croese 1980, Salas 1992, Smeets 2008, Urrea and Salamanca 2021, among others).

Drawing upon the existing literature and novel fieldwork data, we show ‘phoneme fluctuation’ patterns in Mapudungun which, upon closer inspection, reveal instances of:

- Incomplete neutralisation: The regular /o/-/u/ contrast, as evidenced in [koʒi] ‘soup’ v. [kuʒi] ‘black’, disappears in word-final position, giving alternations like [wentʂo]~[wentʂu] ‘man’. The phonological regularity is confirmed by Spanish loanwords such as [paβo] > [pafu]~[pafo] ‘turkey’. This data is better accounted for by neutralisation of height features in word-final position, where the phonetic target is unspecified and variable.
- Sounds-symbolic alternations: The four-place coronal place contrasts of Mapudungun (e.g. /t̪/-/t̪ʲ/-/t̪ʲʲ/-/t̪ʲʲʲ/) can be overridden by sound symbolic or ‘affective’ processes (Catrileo 1986) whereby palatalisation produces diminution and positive affect (e.g. [naʒki] ‘cat’

→ [nɔfki] ‘(sweet/ little) cat’; [foɟim] ‘son (of a man)’ → [foɟim] ‘sonny’), and — more surprisingly — dentalisation produces augmentation and negative affect (e.g. [nazki] ‘cat’ → [nɔθki] ‘big/damned cat’; [katɟu] ‘grass’ → [kɔɟu] ‘damned grass’).

- Language attrition: In Huilliche, a severely endangered dialect, the /i/-/u/ contrast disappears in many lexical items, with the phonetic target fluctuating between both. This seems to result from imbalanced Spanish-Mapudungun bilingualism, where the contrast is absent from the dominant language (Alvarez-Santullano 2016). A similar pattern is the sporadic loss of dental-alveolar contrast, which is better conceptualised as a phonological consequence of loss of linguistic vitality (cf. Dressler 1972).
- Observational shortcomings: A number of ‘fluctuations’ of the type described above are also the result of descriptive misapprehensions. These include the pooling of data from distinct dialect areas as in realisations like [ɲolife] (North/West) *vis-a-vis* [molife] (South/East) ‘drunkard’. Similarly, the boundaries between phonological categories are often misperceived or conflated by non-native observers such that /i/-/i/ or /e/-/i/ are perceived as overlapping for speakers lacking the contrast.

While ‘phoneme fluctuation’ is problematic as a phonological concept, it is worthy of attention, as it points to descriptively challenging and theoretically interesting aspects of the segmental makeup of low-resource languages.

References

- Alvarez-Santullano, Maria Pilar. 2016. Descripción fonético-fonológica del sistema consonántico del mapuche hablado en territorio huilliche en los albores del Siglo XXI: a propósito de la noción de continuum. *Revista de Lingüística Teórica y Aplicada* 54(1). 101–127.
- Catrileo, María. 1986. La variación estilística en el nivel fonológico del mapudungun. *Revista de Lingüística Teórica y Aplicada* 2. 1–19.
- Clairis, Christos. 1991. Identification et typologie des fluctuations. *Bulletin de la Société de Linguistique de Paris* 86(1). 19–35.
- Croese, Robert. 1980. Estudio dialectológico del mapuche. *Estudios Filológicos* 15. 7–38.
- Dressler, Wolfgang. 1972. On the phonology of language death. In *Papers from the Eighth Regional Meeting of the Chicago Linguistic Society*, 448–457. Chicago: Chicago Linguistic Society.
- Key, Mary Ritchie. 1968. Phonemic pattern and phoneme fluctuation in Bolivian Chama (Tacanan). *La Linguistique* 4(2). 35–48.
- Key, Mary Ritchie. 1978. Araucanian genetic relationships. *International Journal of American Linguistics* 44(4). 289–293.
- Key, Mary Ritchie. 1979. Phoneme fluctuation and minimal pairs in language change. In Mortéza Mahmoudian (ed.), *Linguistique fonctionnelle: débats et perspectives*, 305–310. Paris: P.U.F.
- Martinet, André. 1969. Réalisations identiques de phonèmes différents. *La Linguistique* 5(2). 127–129.
- Martinet, André. 1983. Ce que n’est pas la phonologie. *Langue française* 60. 6–13.
- Pike, Kenneth. 1947. *Phonemics: a technique for reducing languages to writing*. Ann Arbor: University of Michigan Press.
- Rich, Furne. 1963. Arabela phonemes and high-level phonology. In Benjamin Elson (ed.), *Studies in Peruvian Indian languages*, vol. I, chap. 6, 193–206. Oklahoma: SIL of the University of Oklahoma.
- Salas, Adalberto. 1992. *El mapuche o araucano*. Madrid: MAPFRE.
- Smeets, Ineke. 2008. *A grammar of Mapuche*. Berlin: Mouton de Gruyter.
- Urrea, Paulina and Gastón Salamanca. 2021. Fonemas segmentales del mapudungun hablado en icalma y configuración de un perfil fonético-fonológico del cordón cordillerano de habla mapuche-pewenche. *Logos, Revista de Lingüística, Filosofía y Literatura* 31(2). 220–236.