

Closure voicing in Danish stops: Phonetics, phonology, variation, and history

Rasmus Puggaard-Rode, Camilla Søballe Horslund & Henrik Jørgensen

Voicing during stop closures is phonetically marked (e.g. Ohala 1983). This is reflected in Modern Standard Danish, where voicing is even actively blocked during stop closures (Hutters 1985; Puggaard-Rode et al. 2022). There is a laryngeal contrast between voiceless unaspirated stops /b d g/ and voiceless aspirated stops /p t k/. In spite of this, Danish /b d g/ are often characterized as having a [voice] feature in their underlying representation (Keating 1984; Kingston and Diehl 1994); we have previously argued that voice plays no role in the phonological representation of Danish stops (Horslund et al. 2022; Puggaard-Rode et al. 2022). In this presentation, we discuss the past and present of stop voicing in Danish.

Proto-Germanic is usually not considered to have had distinctive stop voicing (e.g. Honeybone 2002), and the few synchronic Germanic languages which display this feature (e.g. Dutch, Yiddish, and Afrikaans) are often considered to have innovated or borrowed it at a later stage (Iverson and Salmons 2003). Contrary to this, we propose that stop voicing was historically more widespread in Danish, and that the present sole reliance on aspiration in managing the laryngeal contrast is a recent innovation. There are two significant advantages to this proposal: 1) It helps explain synchronic consonant gradation whereby /b d g/ in certain contexts alternate with semivowels [ʋ ɣ ɹ]. The development from stops to semivowels in some prosodic contexts can be explained with a sequence of consecutive sound changes if we assume that /b d g/ were voiced in a previous stage of the language, but is much more difficult to explain if /b d g/ have always been voiceless. 2) It helps explain why there are several traditional regional varieties of Danish with more widespread stop voicing than Modern Standard Danish, as we will demonstrate with data from a traditional legacy corpus (Goldshtein and Puggaard 2019); this has typically gone unmentioned in the dialectological literature. Consonant gradation had very different outcomes in regional varieties without stop voicing, cementing that Modern Standard Danish likely had more widespread stop voicing in a previous stage of the variety. This does not necessarily mean that voicing used to be distinctive in Danish; another option is that there was historically a contrast between voiced and voiceless aspirated stops, as in Modern Standard Swedish (Helgason and Ringen 2008). We will discuss the relative likelihood of either scenario on the basis of typology and dialectal variation.

In summation, we argue that in previous stages of the Modern Standard Danish variety, and in several other varieties of Danish, closure voicing played a role in /b d g/ – either as a distinguishing feature or as phonetic enhancement of the phonological contrast between /b d g/ and /p t k/. This affected the phonological development of the language and resulted in the synchronic patterns of consonant gradation. At present, voicing is actively blocked in /b d g/ in essentially all contexts, and plays no role in the phonology of Danish stops.

References

- Goldshstein, Yonatan & Rasmus Puggaard. 2019. Overblik over danske dialektoptagelser. *Ord & Sag* 39, 18–28.
- Helgason, Pétur & Catherine Ringen. 2008. Voicing and aspiration in Swedish stops. *Journal of Phonetics* 36(4), 607–628. doi:[10.1016/j.wocn.2008.02.003](https://doi.org/10.1016/j.wocn.2008.02.003).
- Honeybone, Patrick. 2002. *Germanic obstruent lenition. Some mutual implications of theoretical and historical phonology*. PhD dissertation, University of Newcastle upon Tyne.
- Horslund, Camilla Søballe, Rasmus Puggaard-Rode & Henrik Jørgensen. 2022. A phonetically-based phoneme analysis of the Danish consonant system. *Acta Linguistica Hafniensia* 54(1), 73–105. doi:[10.1080/03740463.2021.2022866](https://doi.org/10.1080/03740463.2021.2022866).
- Hutters, Birgit. 1985. Vocal fold adjustments in aspirated and unaspirated stops in Danish. *Phonetica* 42(1), 1–24. doi:[10.1159/000261734](https://doi.org/10.1159/000261734).
- Iverson, Gregory K. & Joseph C. Salmons. 2003. Laryngeal enhancement in early Germanic. *Phonology* 20(1), 43–74. doi:[10.1017/S0952675703004469](https://doi.org/10.1017/S0952675703004469).
- Keating, Patricia A. 1984. Phonetic and phonological representation of stop consonant voicing. *Language* 60(2), 286–319. doi:[10.2307/413642](https://doi.org/10.2307/413642).
- Kingston, John & Randy L. Diehl. 1994. Phonetic knowledge. *Language* 70(3), 419–454. doi:[10.1353/lan.1994.0023](https://doi.org/10.1353/lan.1994.0023).
- Ohala, John J. 1983. The origin of sound patterns in vocal tract constraints. In Peter F. MacNeilage (ed.), *The production of speech*, 189–216. Springer. doi:[10.1007/978-1-4613-8202-7_9](https://doi.org/10.1007/978-1-4613-8202-7_9).
- Puggaard-Rode, Rasmus, Camilla Søballe Horslund & Henrik Jørgensen. 2022. The rarity of intervocalic voicing of stops in Danish spontaneous speech. *Laboratory Phonology* 13(11). doi:[10.16995/labphon.6449](https://doi.org/10.16995/labphon.6449).