The aerodynamic puzzle of Scottish Gaelic nasalized fricatives

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Scottish Gaelic is sometimes described as having nasalized fricatives (/\ fundraiser/ distinctively, and [ɾ, ʀ, ɾ̩] etc. triggered by assimilation). However, there are claims in the phonetic literature that it is not aerodynamically possible to open the velum for nasalization while maintaining frication noise.

We present aerodynamic data from 14 native Scottish Gaelic speakers to determine how the posited nasalized fricatives in this language are realized. Most tokens demonstrate loss of the nasalization distinction, but some productions include nasalization with the consonant realized as an approximant, nasalization of [ɾ̩], nasalization on the vowel preceding the consonant, or sequential frication and nasalization, none of which pose an aerodynamic conflict. A very few tokens do contain nasalization and frication at the same time with a trade-off in airflow.

We also present perceptual evidence showing that Gaelic listeners can hear this distinction significantly better than chance, but not well. Thus, instrumental phonetic data from this language, one of the few in the world described as having nasalized fricatives, confirms that such a distinction is possible, but not through producing strong nasalization concurrently with clear frication noise. Furthermore, although speakers most often neutralize the distinction, when they maintain it they do so through a variety of phonetic mechanisms, even within a single language.