What, whence, and whither?

The initial sound in many ‘wh’ words (why, what, whether).
Derives historically from Old English <hw> and Indo-European *kw

‘What’ depends on who you ask:
- a) voiceless labial-velar fricative
- b) voiceless labial-velar approximant
- c) voiceless /w/ (a or b? sometimes used synonymously)
- d) /hw/ cluster

These not mutually exclusive – usual phonological interpretation is /hw/.

What and whence (from /hw/?) matter to the question of whither.

‘wh’ (whatever it is) > /w/, but how to characterise that change?

- if /hw/, then > /w/ is cluster simplification, change in phonotactics
- if [w], then > /w/ is voicing assimilation (change in articulation?)
- if [ʍ], then > /w/ is lenition (stricture change + voicing?)

Aims
1) To characterise Scottish ‘wh’ by cross-linguistic comparison
2) To investigate relationship with /w/ via data on lip aperture

Acoustic analysis of manner

Method
6 subjects (4 f, 2 m), all native Scottish (Glasgow, Edinburgh, Aberdeen)
acoustic analysis of word white in phrase ‘Say white again’ (5 or 6 reps, + fillers)
Now to the second aim, relationship with /w/. Is the fricative /w/ + higher airflow (compatible with /hw/ analysis), or is there a change in aperture?

**Video analysis of lip aperture**

**Method**

Same subjects as in acoustic analysis
3 successive repetitions each of words white and wide (plus fillers)
portrait (coronal) video data, 30 Hz sampling rate (33 ms between frames)
for now: pixels within lip aperture in frame of maximum constriction counted
and (in 4 cases) converted to mm².

**Results**

All subjects show same trend for wider aperture with ‘wh’ than with /w/ (fig. 2):

**Figure 2:** Pixel count in lip aperture for ‘wh’ (lighter left-hand bars) and /w/ (darker right-hand bars) averaged for all subjects plus group average.

Greater standard deviation (generally) for /w/ than for ‘wh’

**Conclusions**

The relationship to /w/ not straightforward – there is a supralaryngeal difference with a wider aperture for ‘wh’, so /hw/ cannot be assumed from phonetic data.

**Discussion**

The what:
a labial-velar fricative, voiceless for most subjects

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