Vowel length in Dutch verbs: A case of iconicity?

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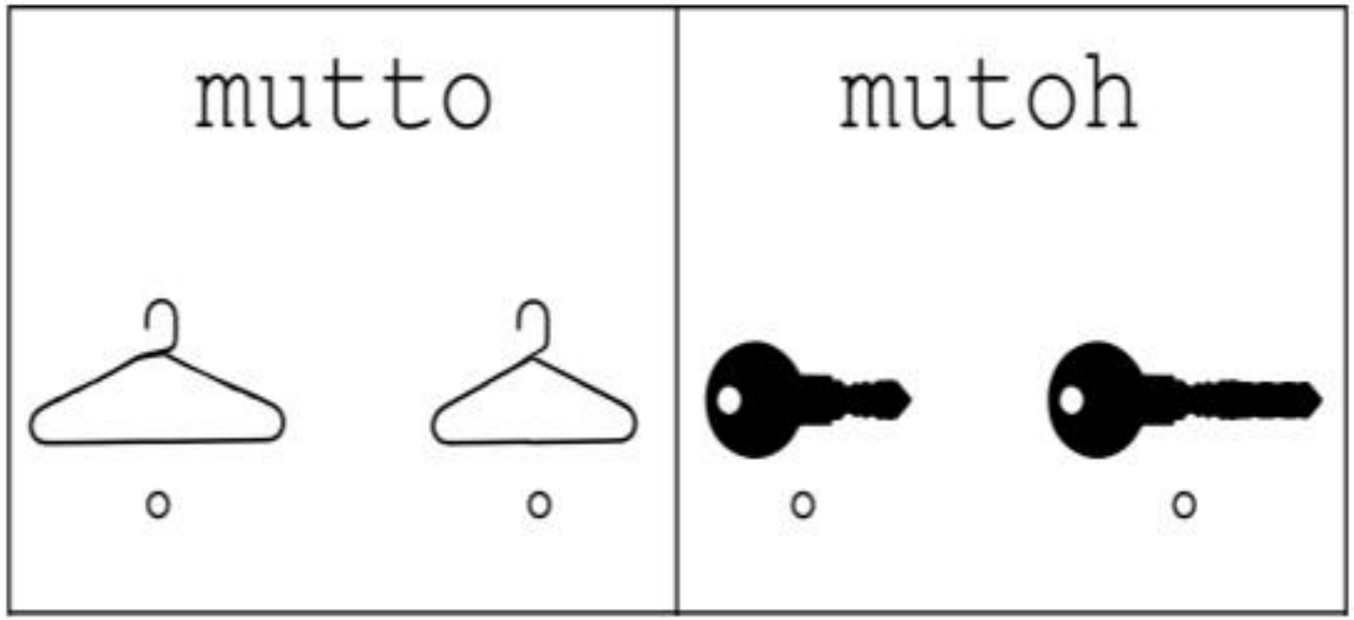
Overview

1. Sources of inspiration: Iconicity literature (slide 3-6)
2. My own research on vowels in Dutch verbs (slide 7-21)
3. Interpretation of the findings in three different frameworks (slide 22-34)

Fabian Bross (2018) Vowel length and length of object: Forced choice task



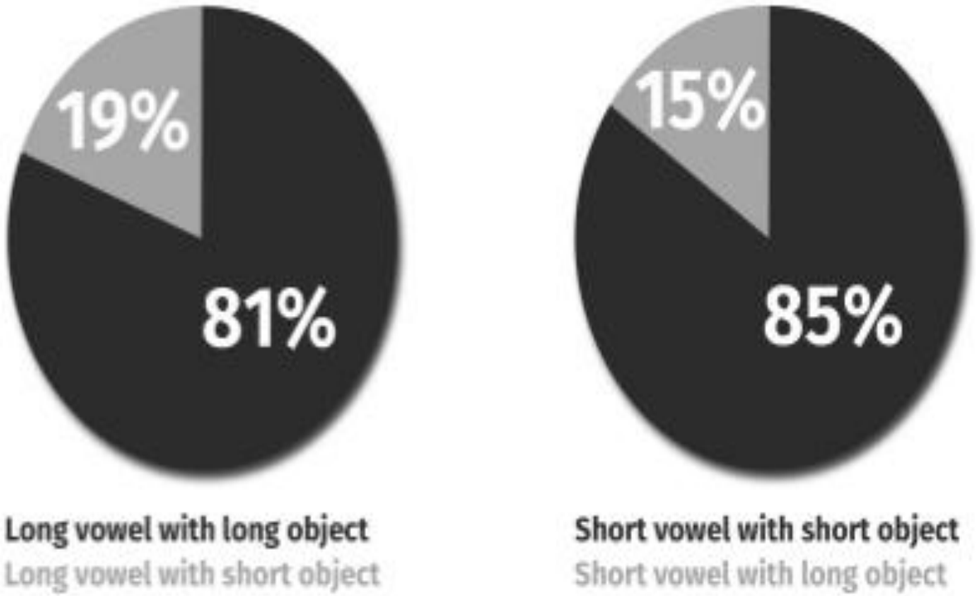


Figure 1: Example stimuli from Experiment 1 (left) and results of Experiment 1 (right)

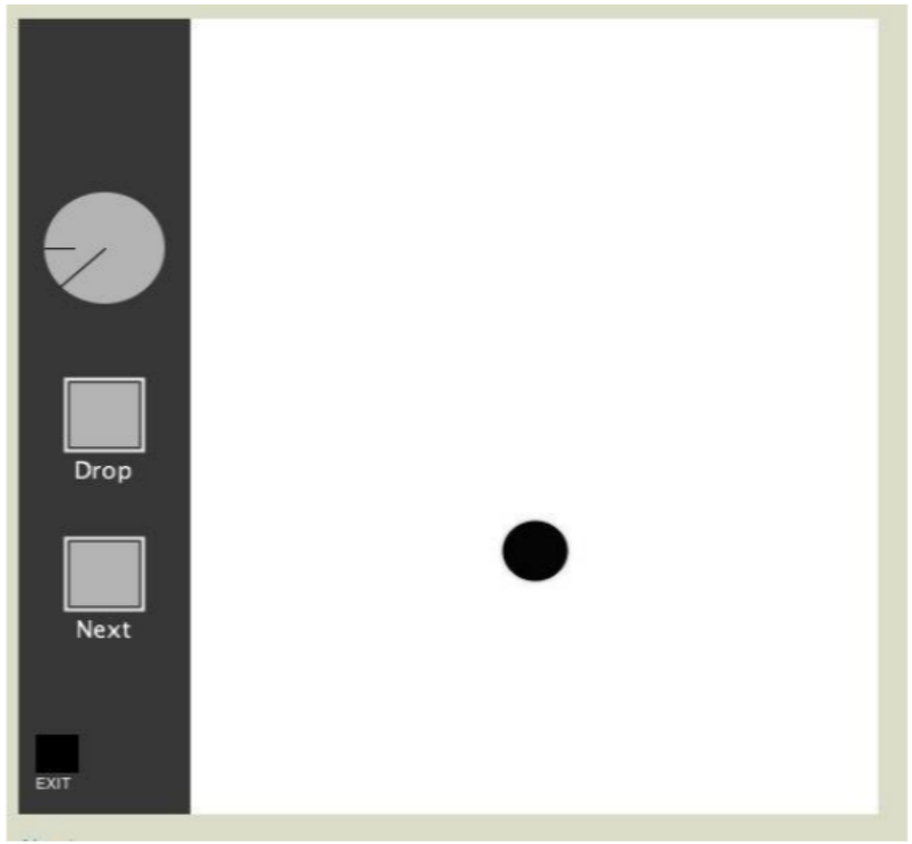
Christine Cuskley (2013) Mappings between sound and motion

	Voiced	Voiceless	Mixed
Voicing	gigi, gugu, gigu, gugi	kiki, kuku, kiku, kuki	kigi, kugu, kigu, kugi, giki, guku, giku, guki

	Front	Back	Mixed
Vowel Quality	kiki, kigi, gigi, giki	kuku,kugu,gugu, guku	kiku, kuki, gigu, gugi, kigu, kugi, giku, guki

	Total	Consonant Only	Vowel Only	None
Reduplication	kiki, kuku, gigi, gugu	kiku, kuki, gigu, gugi	kigi, kugu, giki, guku	kigu, kugi, giku, guki

Cuskley (2013): Experimental task: vary speed of ball



Participants were given nonsense words that varied in terms of their voicing of consonants, reduplication, and vowel quality, and asked to change the movement of a ball to match a given word.

Cuskley (2013) Vowels and speed: Findings

- Results show that back vowels (*kuku, gugu*) are mapped onto slower speeds, and consonant reduplication with vowel alternation (*kiku, kuki, gigu, gugi*) is mapped onto faster speeds.

Dutch vowels, diphtongs and vowel combinations

a	aa	aai	ai	au	auw	e	ee	eeuw
[ɑ/aː]	[aː]	[aːi̯]	[ɑi̯]	[ɑu̯]	[ɑu̯]	[ɛ/ə/eː/ə]	[eː]	[eːu̯]
ei	eu	i	ie	ieuw	ij	o	oe	oei
[ɛi̯]	[øː]	[ɪ/ə/iː]	[i(ː)]	[iu̯]	[ɛi/i(ː)/ə]	[ɔ/oː]	[u(ː)]	[ui̯]
oi	oo	ooi	ou	ouw	u	ui	uu	uw
[ɔi̯]	[oː]	[oːi̯]	[ɑu̯]	[ɑu̯]	[ʏ/y(ː)]	[œy̯]	[y(ː)]	[yu̯]

Dutch verbs and their vowels

1. Short vowel: short process and/or clear endpoint, as in *vallen, stoppen, meppen, bonken, klappen*
2. Long vowel: Long process, open ended, as in *slapen, lezen, roken, duren*
3. Diphtong: Long process, open ended, as in *dweilen, huilen, bouwen, kauwen*
4. Long vowel followed by i or u: *draa-i-en, gloo-i-en, boe-i-en, gee-u-wen*

Inventory of group 4

AA + I

- *1. Aaien* ‘caress’, *2. Waaien* ‘to blow’
- *3. Draaien* ‘to turn’, *4. Graaien* ‘to grab’
- *5. Laaien* ‘to flutter’ *6. Maaien, 7. Naaien, 8. Paaien, 9. Snaaien, 10. Zaaien, 11. Zwaaien*

OO + I

- *12. Glooien, 13. Gooien, 14. Hooien, 15. Klooien, 16. Plooien, 17. Rooien, 18. Strooien, 19. Tooien, 20. Vlooien, 21. Looien*

Group 4 continued

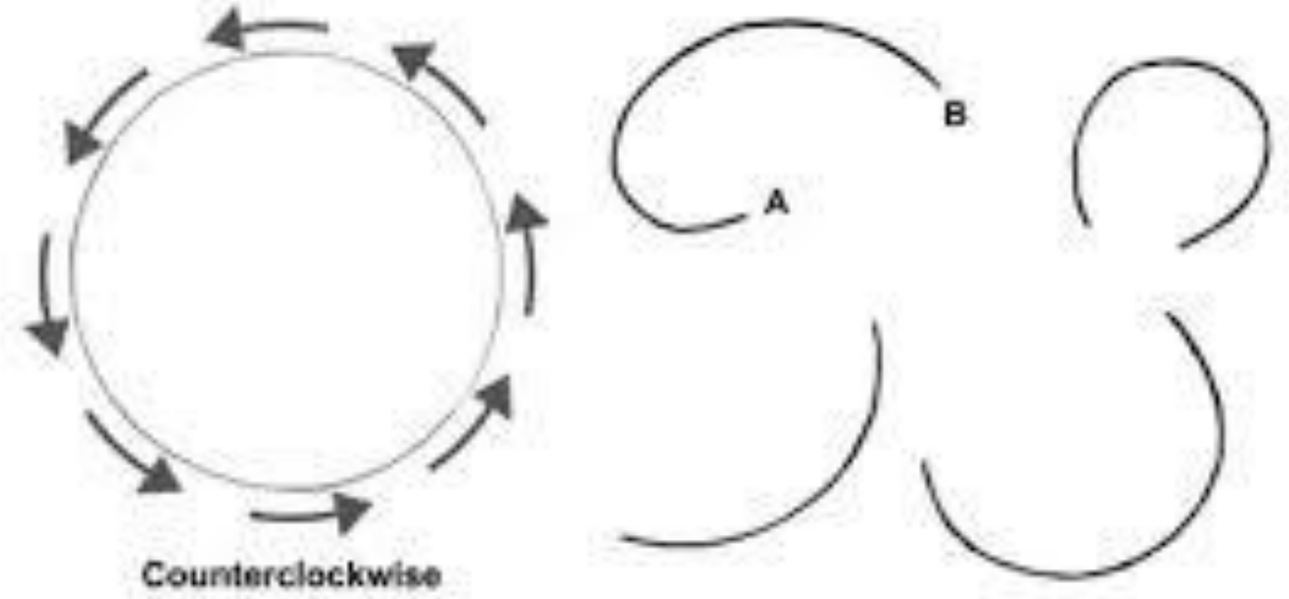
OE + I

- *22. Bloeien, 23. Boeien, 24. Gloeien, 25. Groeien, 26. Loeien, 27. Roeien, 28. Snoeien, 29. Sproeien, 30. Stoeien, 31. Vloeien, 32. Knoeien*

EE + U

- *33. Geeuwen, 34. Schreeuwen, 35. Sneeuwen* ‘to snow’

Claim for group 4: Curved movement involved



Methods to check this claim

1. Features in Dictionary definitions
    - Problem: the curved movement is not always a central feature of the meaning. In *draaien* ‘turn’ yes, but in *gooien* ‘throw’ no. In the latter case, the curved movement is an unintended feature of the process, both of the arm and of the thrown object.
2. Ask native speakers to act out verbs with the hand.
3. Google pictures

Corpus of Google Pictures: short and long vowels

Botsen ‘bump’

Vullen ‘fill’

Hollen ‘run’

Slapen ‘sleep’

Lezen ‘read’

Huilen ‘weep’

Zwaaien ‘wave’

Graaien ‘grab’

Paaien ‘spawn’

Draaien ‘turn’

Snaaien ‘snatch’

Strooien ‘sprinkle’

Plooien ‘fold’

Boeien ‘enchain’

Stoeien ‘playing around’

Sproeien ‘spray’

Loeien ‘moo’

Geeuwen ‘yawn’

Schreeuwen ‘shout’

For the sceptics (*sneeuwen* ‘to snow’)

- “Onomatopeia will ignite only when the expressive possibilities latent in a given sound are, as it were, brought to life by contact with a congenial meaning.” (Ullmann 1962: 86, quoting A. Sieberer 1947)

- You can always find counterexamples: English: *small, big,* Latin: *parvus* ‘little’, Dutch: *dik* ‘thick’*, dun* ‘thin’

Interpretation of observations in three different frameworks

- 1. John Rupert Firth (1930) Phonaesthemes
- 2. Mimetic theory (default theory of iconicity)
- 3. Richard Paget (1930): Mouth-gesture theory

First framework: Phonaesthemes: From Firth (1930) via Abelin (1999) to Willett (2015)

- Willett (2015: 8): “Phonaesthemes are defined as prosodic forms (‘prosodies’) which acquire connotations by virtue of recurring in a number of different words that are experientially linked.”
- P. 29: Phonaesthemes are conceptualised as gestalts rather than as sequences of phonemes.
- P. 37: Phonaesthemic pattern need not necessarily extend to all words bearing the same phonetic form.
- Phonaesthemes are ‘arbitrary’: There does not appear to be any natural reason why onset /sl/ recurs with the meaning ‘pejoration’ in English, or gl- with ‘light’ (*gloom, glimmer, glow, …*)

Firth against Humboldt

- Firth (1964 [1930]: 187): “The above remarks are not to be interpreted as a theory of inherent sound symbolism. There is no suggestion whatever of Humboldts’s ‘impression on the ear resembling the effect of the object on the mind’. Humboldt’s *stehen, statig, starr*, etc., do not show that these sounds directly symbolize firmness.”

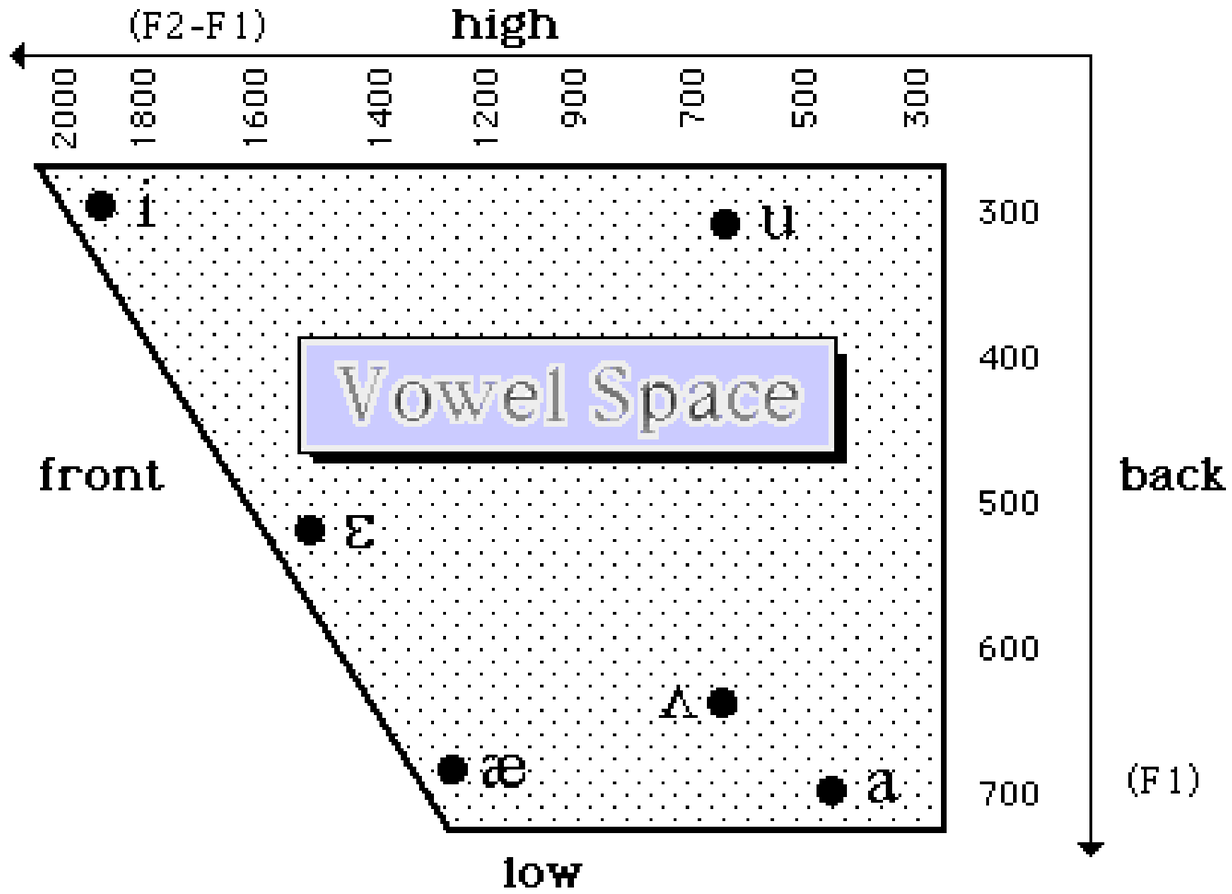
Wilhelm von Humboldt (1836: 79) *Über die Verschiedenheit …*

For example stehen, statig, starr give the impression of fixity; the Sanskrit li, 'melt' or 'disperse', suggests melting a-way; nicht, nagen, Neid sharp severence. In this way objects that produce similar impressions obtain words with predominently the same sounds, such as wehen, Wind, Wolke, wirren, Wunsch; in all of these the rest-less motion confusedly passing before the senses is expressed by the letter w, hard-ened from the letter u, which is inherently dull and hollow sounding. (GS VII: 76)[87]

Second framework: Iconicity

- Analogy
- Mimicry
- Mimesis
- Metaphor
- Similarity
- Depiction
- Resemblance

Movement in vowel space <u>resembles</u> movement in process referred to



Third framework: Mouth –Gesture theory: From Darwin (1872) via Paget (1930) to Vainio (2019)

- Darwin (1872: 43): “Thus persons cutting anything with a pair of scissors may be seen to move their jaws simultaneously with the blades of the scissors. Children learning to write often twist about their tongues as their fingers move, in a ridiculous fashion.
- Paget (1930: 133): Originally man expressed his ideas by gesture, but as he gesticulated with his hands, his tongue, lips and jaw unconsciously followed suit in a ridiculous fashion, ‘understudying’ (…) the action of the hands. The consequence was that when, owing to pressure of other business, the principal actors (the hands) retired from the stage (…) their understudies – the tongue, lips and jaw – were already proficient on the pantomimic art.

Lari Vainio (2019) Connection between movements of mouth and hand

- Vainio (2019: 220): “… this mimicking process operates mostly implicitly through neural connections that link grasp-related motor process to articulatory motor processes rather than intentionally attempting to copy these hand actions with articulatory organs.”
- (P 212): Areas: F5 = Brodmann area 44 … not only provides a core system for speech processes but might also provide a neural basis for processes that integrate manual movements with the movements of lips, mouth and tongue.

Mouth-gesture theory and fitting phonetic/phonological theories

- Gestural phonology (Haskins laboratories)
  - Browman, C. P., & Goldstein, L. (1986). Towards an articulatory phonology. *Phonology Yearbook* 3, 219-252.
  - Khalil Iskarous (2005) Patterns of tongue movement. *Journal of Phonetics* 33, 363-381.

- Motor theory of perception:
  - Liberman, A. M.; Mattingly, I. G. (1985). The motor theory of speech perception revised. *Cognition* 21(1), 1–36.

Khalil Iskarous (2005) Patterns of tongue movement

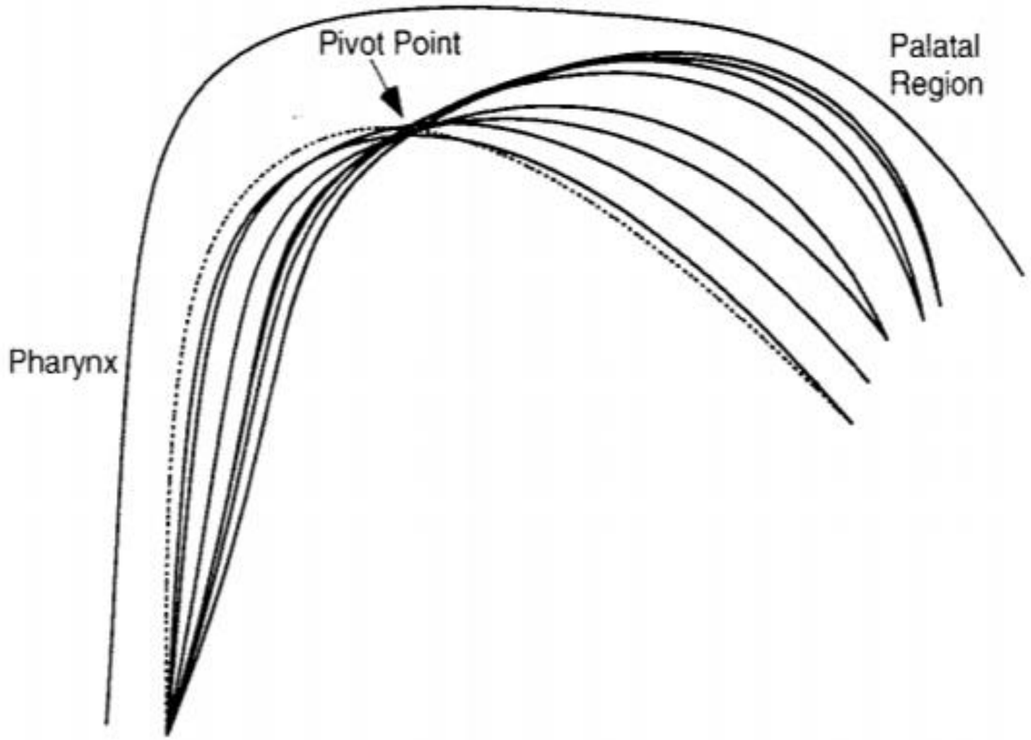


Fig. 3. Superimposed splines for [ai]. First frame is dotted.

Iskarous (2005)

- P. 364: … the search for principles of tongue dynamics has beome entangled with the search for an explanation for curved paths.
- P. 364: … curvature is due to tongue motion itself.
- P. 377: Pivoting can naturally be seen as the overlap of two dynamic gestures from different phonetic segments.

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Rounding off

- The observations on vowels in Dutch verbs do not provide arguments to decide clearly between the 3 different frameworks:
- The 35 Dutch verbs with *aai* etc. can be seen as phonaesthemes: They share a form and a meaning.
- They can also be seen as iconic: The vowel length and change show a similarity with an aspect of the process that the verbs refer to: curved movement.
- Moreover, the words easily fit a gesture-mouth theory: a curved movement gesture is a typical part of gestures which act out the meaning of these verbs. In *aai* etc., the tongue also makes a curved movement.

References

Abelin, Åsa (1999). *Studies in sound symbolism*. PhD Göteborg University.

Bross, Fabian (2018).. Cognitive associations between vowel length and object size: A new feature contributing to a Bouba/Kiki effect. *Proceedings P&P13*, 17-20.

Cuskley, Christine (2013). Mappings between linguistic sound and motion. *Public Journal of Semiotics* 5(1), 39-62.

Darwin, Charles (1872). *The expression of the emotions in man and animals.* Penguin Classics 2009.

Firth, John Rupert (1930). Speech. Reprinted in Peter Strevens (ed.) (1964). *The Tongues of Men and Speech*. London: Oxford University Press.

Iskarous, Khalil (2005). Patterns of tongue movement. *Journal of Phonetics* 33, 363-381.

Paget, Richard (1930) *Human Speech*. London: Kegan Paul.

Ullmann, Stephen (1962). *Semantics. An introduction to the science of meaning.* Oxford: Basil Blackwell.

Vainio, Lari (2019). Connection between movements of mouth and hand: Perspectives on development and evolution in speech. *Neuroscience and Biobehavioral Reviews* 100, 211-223.

Willett, Michael (2015). *A study of the productivity of twelve English onset phonaesthemes.* PhD Cardiff.

Thank you for your attention!