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Pre-motor and motor activities in early medieval handwriting - it looks Flemish

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Introduction; stating the problem

Although medieval literati convincingly reported on “movements” of inner organs related to sudden emotional states e.g. love at first sight (Alighieri, \pm 1292), few attempts were made to interpret such records by comparing them to current data as acquired by modern-day imaging. Further, though teaching of handwriting has been criticised lately (Trubek, 2009), behavioural studies still make use of handwritten letters’ characteristics like strokes, roundedness, etcetera. In consequence, Fisher *et al.* (2010) studying brain activation during rejected love, noticed typical pre-motor activity patterns, as suggested by irregular writing patterns as well, due to basal ganglia dysfunction (Mergl *et al.*, 2004).

Materials and methods

In view of this, a short 11th century Flemish poem was checked on such characteristics in the light of hypothesised finger-, and hand movements possibly related to pre-motor activities in e.g. unrequited love. Our analysis concerned compact types of Carolingian Minuscule / Early Gothic (Kilmon, 1999) in: “Hebban olla uoga__ nestas _agunna hinase hi _nda thu uu__ unbiadan __e nu” (van Kruining, 1997; Weel, 2005; Kobayashi, 2003; Zanone *et al.*, 2005). Qualities of quill-sharpening or ink fluency were not taken into account, mainly because the scribbling itself pretends to serve as their testimony. Especially in the last decade, extensive research was performed concerning the language, history, identity, nationality and / or gender of the scribe who wrote this sentence (Kwakkel, 2005; De Grauwe 2004; van Oostrom, 2006).

Results and conclusions

Each Carolingian Minuscule / Early Gothic displays fluent, regular down-strokes and up-strokes. Ten of the characters show rounded forms. Down-strokes in particular require coordination of extrinsic, but especially intrinsic hand- and finger- muscles. Rounded forms ask for well-coordinated interphalangeal joint motion. We thus conclude that no basal ganglia dysfunction was present. Instead, the *probatio pennae* might be a first Flemish (hemi-) pangram because all individual characters together represent exactly half our present alphabet.

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