MICHAEL SCHULTE

The transformation of the older fuþark

Number magic, runographic or linguistic principles?

Introduction

Despite untold explanatory efforts, the development from the older twenty-four-grapheme fuþark to the younger sixteen-grapheme fuþark still remains disputed. In his brief discussion, Düwel (2001: 88 f. [based on Birkmann 1995]) mentions four overall factors, which — in isolation or combination — contributed to the change from the older to the younger fuþark: (1) number magic (including gematrics), (2) graphological simplification, (3) linguistic factors (particularly language change) and (4) the alteration of the rune names (i.e. the acrophonic principle coupled with Nordic sound changes). A further issue to be addressed here is (5) language contact both with Latin and with the Fennougric languages. In reassessing these five factors, the present paper

---

Schulte, M., dr. phil., Institutt for nordisk og mediefag, Høgskolen i Agder, Kristiansand. "The transformation of the older fuþark: Number magic, runographic or linguistic principles?", *ANF 121* (2006), pp. 41–74.

Abstract: The present paper addresses different approaches to the younger fuþark. Taking the Ribe cranium (ca 725 AD) as primary evidence, I argue that the reduction in the number of runes predates certain graphic simplifications by a considerable span of time. The crucial factor which paves the way for the sixteen-grapheme fuþark is multifunctionality. In brief, the failure to invent new runic symbols to accommodate the new phonemes is partly based on the lack of contact with other scripts in the transitional period. Thus in contradistinction to the augmented Anglo-Frisian rune row, the Scandinavian fuþark is a fundamentally conservative writing system. In conclusion, the loss of eight runes (including the consonant symbols **g** and **d**) is not a groundbreaking reform — rather a logical recognition of the widespread multifunctionality that already obtained in Scandinavian runic writing before 700 AD.

Keywords: Anglo-Frisian fuþorc, Scandinavian fuþark, older fuþark, younger fuþark, Fennougric-Nordic contact, Latin-Nordic contact, Roman script, transitional inscriptions, Ribe cranium, Eggja stone, Blekinge group, multifunctionality, acrophonic principle

intends to shed new light on the problem. Wide-ranging inferences can be drawn from the inscription on the Ribe cranium, which will be scrutinized in the following.

Methodologically, the present focus rests on the long-branch runes alone, thus leaving the short-twig runes aside (cf. Birkmann 1995: 217).[1] There are two reasons for doing so. Firstly, in a typological perspective, the long-branch types of the younger fuþark directly continue the older rune shapes, and secondly, in a chronological perspective, the period under investigation is confined to the 6th and 7th centuries, where no short-twig runes are attested yet. For graphological and/or linguistic reasons, this period has been labelled 'transitional' (see Barnes 1998, also Schulte 2006a, forthcoming). On the basis of its dendrochronological dating to 725 AD, the above-mentioned cranium inscription from Ribe indicates an upper time limit for the rise of the younger fuþark (see section 2 below).

1. The Nordic restructuring of the older fuþark: a general outline

The evidence suggests that the marginal runes were falling out of use in a chronological succession. In particular the runes **ᛈ** (ᛕ), **ᛇ** (ᛁ), **ᛝ** (ᛜ) were used on a limited basis already in the older runic inscriptions including the so-called fuþark inscriptions (see Düwel 1998; Düwel and Heizmann 2006). Briefly, the reduction in the number of runes from the older to the younger fuþark can be sketched as follows. Note that this classification involves certain overlaps.

1.1. The three above-mentioned older runes ᛕ ᛁ ᛜ (**ᛈ**, **ᛇ**, **ᛝ**) were falling out of use early on. On their marginal status in the older fuþark, see Derolez (1998) and Schulte (2004) with further references.

1.2. The voice contrast with the plosives /p, t, k/ vs. /b, d, g/ was filtered out of the system: ᚴ (**ᚴ**) in the younger fuþark represents /k, g, nk, ng, ᛉ/, ᛏ (**ᛏ**) represents /t, d, nt, nd/, and conversely (due to point 1.1

[1] In this regard, the present approach differs from Liestøl (1981a, 1981b) and Barnes (1987) who include the short-twig runes and the inscription on the Rök stone for methodological reasons. However, taking the Ribe cranium as an upper time limit (ca 725 AD), all runic data postdating this inscription will be regarded merely as secondary evidence in the following presentation. On the evaluation of the short-twig runes, see particularly Barnes (2001) and Fridell (2000).

above) ᛒ (**b**) represents /p, b, mp, mb/. This part of the restructuring, which has puzzled many researchers, attracts the particular attention of Fennougrists (cf. 6.2 below).

1.3. The semi-vowels /j, w/, formerly written ᛃ and ᚹ, are designated by the vowel runes ᛁ (**i**) and ᚢ (**u**), respectively (see section 5.5 below).

1.4. The mid-high vowels /e, o/, formerly written ᛖ and ᛟ, are represented by the runes for high vowels ᛁ (**i**) and ᚢ (**u**), such that the old **e**- and **o**-rune are lost (see again section 5.5 below).

1.5. Mutated vowels are generally represented by their etymological counterparts, which means that phonemic umlauts remain unmarked, e.g. the initial ᚨ in Stentoften's and Bjørketorp's **ᚨᚱᚨgeu** in relation to ON *ergi* īn-stem fem. 'baseness' (see Schulte 2004: 47 f.). It may be noted that Stentoften's **-gestumʀ** apparently conflicts with this 'etymological notation principle', although this form is probably due to an erroneous segmentation of the sequence **niuhagestumʀ** (cf. below note 13 and 15 with literature).

1.6. With respect to its internal structuring, the older fuþark contains thrice eight runes. This tripartite structure, later known as *ættir*, is found on certain bracteates, viz. IK 260 Grumpan-C and IK 377,1 Vadstena-C (see (1)–(2) below). However, the fuþark on the Kylver stone, which is datable to the early 5th century, shows no such divisions (see (3) below).

(1) Grumpan C-bracteate (Västergötland, Sweden; dating ca 475–500)[2]
fuþarkgw.....hnijị̈p??[...]....tbemlŋo̤d.....

(2) Vadstena C-bracteate (Östergötland, Sweden; dating ca 500–530)[3]
tuwatuwa.fuþarkgw:hnijị̈b[sic]**ʀs:tbemlŋod:**

[2] IK 260; see Düwel and Heizmann 2006: no. 5 with references.
[3] IK 377,1–2; see Düwel and Heizmann 2006: no. 15 with references.

Fig. 1: Drawing of the Grumpan bracteate IK 260. (From IK II, p. 47)

Fig. 2: Drawing of the Vadstena bracteate IK 377,1. (From IK II, p. 157)

(3) Kylver stone (Gotland, Sweden; dating early 5th century)[4]
[I] **ᚠᚢᚦᚨᚱᚲᚷᚹᚺᚾᛁᛃᛈᛇᛋᛏᛒᛖᛗᛚᛜᛞᛟ** [fir-tree like figure] [II] **sueus**

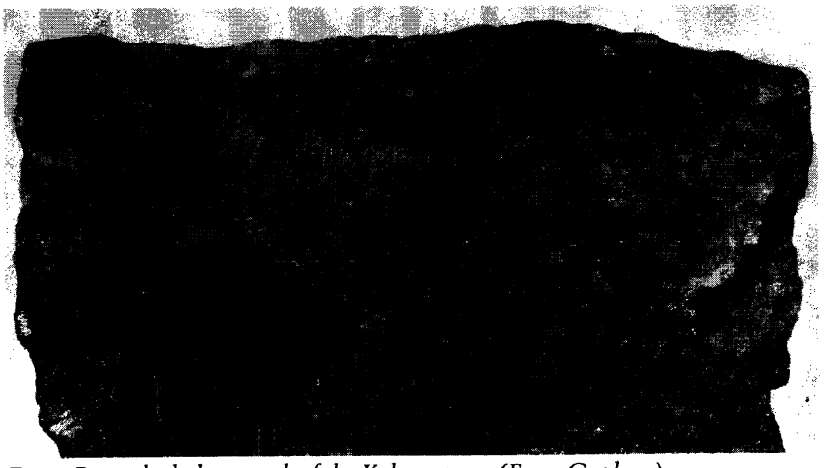


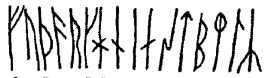
Fig. 3: Retouched photograph of the Kylver stone. (From G, pl. 15)

1.7. To sum up, the younger fuþark excluded the runes ᚷ (**g**) and ᚹ (**w**) from the first *ætt*, the runes ᛁ (**ï**)and ᛈ (**p**) from the second *ætt*, and the ᚱ(**z**)-rune (ᛉ) was moved to the end of the third *ætt*, such that only five runes remained in what was originally the second group. In the third *ætt*, the runes ᛗ ᛜ ᛞ ᛟ (**e ŋ d o**) were excluded and the ᚱ(**z**)-rune which is a 'word-final marker' was attached at the very end,

[4] KJ 1; see Düwel and Heizmann 2006: no. 9 with references.

meaning that this group was likewise reduced to five runes.

But the resulting ratio 6:5:5 was odd and in theory interpretable as 8:8 with the primary focus on the number 'eight' (cf. section 3 on number magic approaches). It remains to be investigated whether the number 'eight' continued to be the lowest common denominator of the younger fuþark which would link it up with its precursor, the older one. However, as far as I can see, bipartite structures are neither attested directly by the fuþark inscriptions, nor indirectly by the various systems of cryptic runes, the so-called *lønnruner*. Therefore, it seems that despite the new uneven ratio, the tripartite fuþark was unchallenged (for the attested tripartite fuþarks, see section 3). In general, divisions and spacing like those of the older fuþark inscriptions on the Grumpan and Vadstena bracteates are not met on a regular basis. See, for instance, the younger fuþark inscriptions on the Gørlev stone (4) and on the Malt stone (5).



f u þ ą r k h n i a s t b m l ʀ

Fig. 4: Drawing of the Gørlev fuþark. (From DR, col. 770; fig. 576)

(4) Gørlev stone (Sjælland, Denmark; dating 9th century)[5]
fuþąrkhniastbmlʀ

(5) Malt stone (Middle-Jutland, Denmark; dating 9th century)[6]

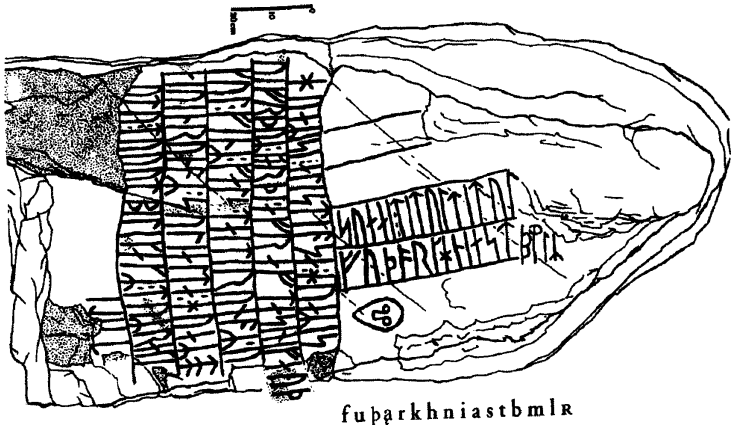


Fig. 5: Drawing of the Malt stone. (From Stoklund 1994: 180)

[5] See DR no. 239; also Birkmann (1995: 356–60).
[6] See Stoklund (1994: 180); also Birkmann (1995: 361–72).

2. The central role of the Ribe cranium

The Danish inscription on the skull fragment from Ribe, which was not discovered until 1973, plays a prominent role in this discussion. It has previously been felt that the hole in line B (between rune 23 ᚾ **n** and rune 24 ᛒ **b**) indicated use as an amulet, but after Benner Larsen's technical examination of the cranium and casts of it made in 1973, this can be safely dismissed:

> It can in fact be rejected that the skull fragment was worn by someone as a kind of amulet hanging from the bored hole. High magnifications of the upper edge of the hole show a slight upward curling of the *lamina externa* and there is no indication of wear or polishing as a result of the passage of a cord through the hole. (Benner Larsen 2004: 45)

The fact that the Ribe cranium was deposited in the soil in 725 AD means that the inscription must be prior to that date. This upper time limit on a dendrochronological basis ensures its central position in a historical perspective. The inscription reads as follows (see (6)):

(6) Ribe cranium inscription (South Jutland, Denmark; dating ca 725 AD)[7]

[A] **ulfuʀaukuþinaukʜutiuʀ ʜialbburiisuiþʀ**
[B] **þaimauiarkiauktuirkunin** [hole] **buur**

[A] *Ulfr auk Ōðinn auk Hō-***tiur**. *Hjalp* **buri** *es viðr*
[B] *þæima værki. Auk dverg unninn. Bōurr.*

[A] 'Ulfr (=Fenrir?) and Odin and High-**tiur** (=Týr?).
buri is help against
[B] this pain. And the dwarf [nom. sg.?] (is) overcome. Bóurr.'

Chronologically, the Ribe cranium marks the end of the transitional period. In his monograph *Von Ågedal bis Malt*, Birkmann (1995: 230 f.) suggested that we are dealing here with a Common Scandinavian prototype of the younger fuþark with 15/16 runes ("Gemeinnordisches jüngeres Fuþark"),[8] whereas Stoklund (1996) was more reserved as to

[7] See Stoklund (1996: 201, 205); also Stoklund (2003).

[8] See Birkmann (1995: 207, 231): "Wenn man die archäologische Datierung des Knochens akzeptiert, dann hätten wir hier wie vielleicht auf Skabersjö und dem Kupferblech von Hallbjäns einen der frühesten Beleg [sic] für das ausgebildete Jüngere Fuþark

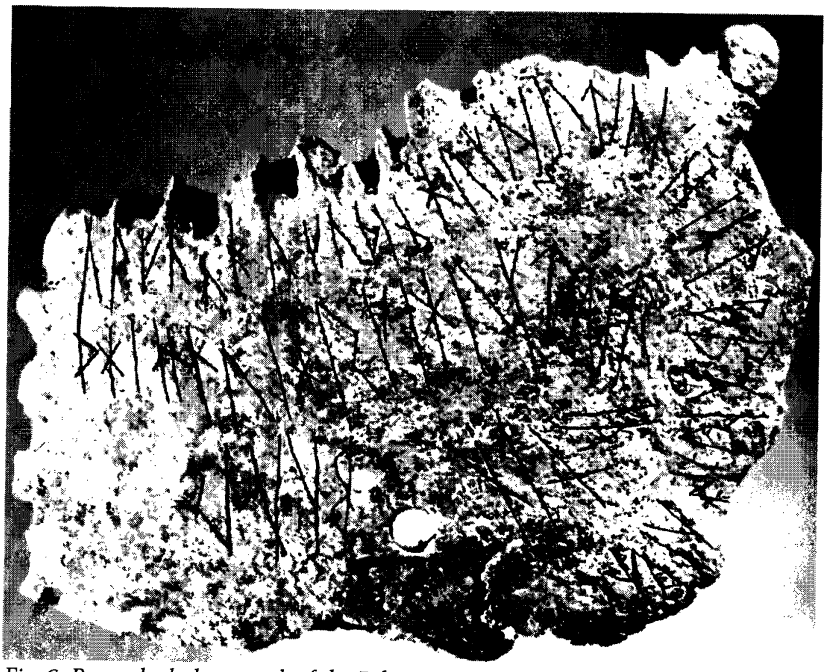


Fig. 6: Retouched photograph of the Ribe cranium. (From Moltke 1985: 346)

Ribe's actual graphological status (see also Stoklund 2003; McKinnell and Simek 2004: 50 f. with further references). As might be expected, the diagnosis depends on reading and interpretation, where at least three different levels must be kept apart in terms of a linguistic, phonemic-graphemic and runographic/graphological assessment (see 2.1–2.4).

2.1. Regarding its general linguistic status, Ribe represents a post-transitional inscription since it has undergone several Nordic sound changes (for detail, see Nielsen 2000: 257–63). Most importantly, it shows the loss of /w/ before /u/ (**unin**, **ulfuʀ** as compared to the name element °**wulf-/wolf-** in the Blekinge group), *i*-umlaut (digraphic spelling **-iA-** for /æ/ in **uiarki** /wærki/ < */warki-/, cf. ON *verk-r* 'pain')[9], breaking (**hialb** = ON *hiǫlp* *ō*-stem 'help' with *u*-umlaut), and last but not least syncope (e.g. **uþin** < Gmc. */wo:ðinaz ~ °anaz/, ON *Óðinn*). It may be

in der von von Friesen postulierten gemeinnordischen Form [...]" (Birkmann 1995: 231; my emphasis).

[9] Following DR (col. 945), Grønvik (1999: 112 f.) regards **-iA-** in **uiarki** as an incidence of breaking. For a critical discussion, however, see Stoklund (2001: 114, 119 f.).

noted that **ulfuʀ** 'wolf' furnishes an early example of vowel epenthesis; cf. Icel. *ulf-u-r* in relation to ON *ulf-r* (cf. Birkmann 1995: 180, 230; Marold 2003: 405).

2.2. With regard to the phoneme-grapheme relationships, Ribe reflects the multifunctional system of the younger fuþark (on this issue, see section 5.6 below). Obviously, the runographer of the cranium inscription used only 15 runes: **b** designates /p/ and /b/, **t** designates /t/ and /d/, **k** represents /k/ and /g/ (**tuirk**, ON *dverg-* 'dwarf'), **þ** represents voiceless /θ/ as well as voiced [ð] (see Nielsen 2000: 258 f.), **i** stands for /i/, but possibly also for mid-high /e/ in **is** aux. 'is' (ON *er, es*) and **tuirk** (ON *dverg-*), **u** designates /u/ as well as long /o:/ (e.g. **uþin**, ON *Óðinn*) and the semi-vowel /w/ (**uiarki**, ON *verk-r* 'pain', **uiþʀ** as opposed to Danish Runic **wiþr** Valby, Gothic *wiþra*, G *wider* 'against'), **-ia-** is a breaking diphthong in **hialb**, but most probably a digraphic spelling for umlauted /æ/ in **uiarki**, ON *verk-* 'pain' (cf. point 2.1 with note 9). Thus, despite several interpretational problems at hand (in particular the alleged endingless form **tuirk** = *dverg* lacking the masculine nominative marker **-ʀ**), the phoneme-grapheme relationships point to an early representative of the younger fuþark with the older runes **g**, **d**, **e**, **o**, **w** (as well as **ï**, **ŋ** and **p**) removed. In addition, the *ansuz*-rune ᚨ (**ą**) is not present in the Ribe inscription, such that the grapheme inventory consists of only 15 (instead of 16) used symbols.[10]

2.3. In terms of the runographic diagnosis as presented by Barnes (1998), Ribe is definitely post-transitional. Barnes' main criterion for a 'transitional inscription' is the use of the starlike rune (ᚼ) with the primary value /a/ (as opposed to its original value /j/) in conjunction with the presence of one or more older runes that are lost in the younger fuþark (Barnes 1998: 450; also Schulte 2006a; cf. section 1.7). As Barnes points out, this yields a clear result with respect to Ribe and other Danish inscriptions like Helnæs, Flemløse I and Snoldelev: "None of the above conform to my explicit criteria for transitional inscriptions, and several (e.g. Ribe, Helnæs, Flemløse I, Snoldelev) exhibit forms or usages that indicate they are written in the younger fuþark" (Barnes 1998: 454).

[10] But this may be a coincidence because Ribe (at least in Stoklund's interpretation, see (6) above) exhibits no instance of nasal /ą/, whether in stressed or unstressed position.

2.4. Last but not least, regarding the graphic shapes, Ribe still has the complex forms for **h**, **m** and **A**, viz. ᚺᛗᚼ, predating the transitions ᚺ → ᚼ (**h**), ᛗ → ᛘ (**m**), and ᚼ → ᚾ (**A**). It may also be noticed that the further developments of the runes ᚺ (**h**) and ᚼ (**A**) must be interlinked to avoid graphemic merger. This indicates that the establishment of multifunctional runes, as discussed in section 5.6, predates particular simplifications of rune shapes and that both processes in principal are independent of one another. In this light, the Ribe skull fragment invalidates the claim of a graphologically driven process urging the reduction of the older fuþark by aiming to ease the writing process (e.g. Odenstedt 1992). I am aware that this conclusion depends to a great extent on the exclusion of the short-twig runes from consideration as primary evidence. (See the introduction with note 1 above.) For further discussion of the graphological argument, see section 4.

3. Magico-numerical approaches

Arguments in terms of number magic, numerology and cryptography have been put forward by some scholars to explain the structure of the younger sixteen-grapheme fuþark in relation to its forerunner, the older fuþark.[11] Among the classic works in this field is Olsen's *Om Troldruner* from 1917. Incidentally, Düwel (1998: 275) mentions five approaches to the fuþark involving magic elements: 1. number magic, 2. gematrics (numerical structure), 3. rune name magic, 4. astro-magic, and 5. symbol magic.

Inferences have been drawn from the fact that the older and the younger rune row contain multiples of the number eight: thrice or twice eight respectively (cf. point 1.7 above). Magnus Olsen, for instance, argued that the numbers 24 and 16 (possibly 8 itself) "predominantly belonged to runic inscriptions that were intended to have supernatural, magic connotations" ["... vorzugsweise Inschriften angehört haben, in die man eine übernatürliche, magische Kraft hineinlegen wollte"] (Olsen 1908: 21; my translation).

In a later study on the Setre comb, Olsen characterizes the common feature of the older and younger fuþark as follows:

[11] For a research report, see Nielsen (1985: 79 f.); cf. critically Morgenroth (1961) and McKinnell and Simek (2004: 36 f.). The pioneering work in refuting the magical theory is Bæksted (1952). For further discussion, see Birkmann (1995: 217–19).

> To all appearances, the runic reform was radical. But the vital element of the old runic script remained unchanged: the usefulness of the fuþark for magic purposes was not affected because the fuþark in its new shape (cf. the intended numerical structure of younger inscriptions based on the number 16) continued to contain the products of the number eight. (Olsen and Shetelig 1933: 85 f.; my translation and emphasis)[12]

According to Olsen, the magic value of the number 'eight' and its products is vital not only for meaningful (i.e. semantically readable) runic inscriptions like Setre, but also for the fuþarks themselves. This view is supported by the fact that several fuþarks are embedded in magic formulaic texts or spells (see, for instance, the Gørlev stone, fig. 4 above). Apart from readable inscriptions and fuþarks, a third category is provided by enigmatic sequences like **g͡ag͡ag͡ag͡inug͡a** on the Kragehul spearshaft (KJ 27) which makes up the number eight by counting each bind-rune **g͡a** as one unit. Different numerical and gematric approaches have been put forward by other scholars like Agrell (1932) and Klingenberg (1973); for a more detailed account, see Nielsen (1985) as well as Düwel and Heizmann (2006).

In essence, the fuþark in its entire representation with 24 (or later 16) runes symbolizes completeness as well as order, and by means of the object which the runes were inscribed on, this notion was passed on to the human (also dead) or non-human addressee in order to take effect *in bonam* or *in malam partem* (cf. Düwel 1998: 275 with reference to Flowers 1986: 348 and Düwel 1992: 97 f.).

However, one problem with the number 'eight' is that the medieval fuþarks directly continue the three-*ætt*-system of the older fuþark: **fuþąrk:hnias:tbmlʀ**, in particular B17 rune stick [side B] **f·uþork:hnias·tbmly** and B490 cattle shoulder bone **fuþork·hnias·tblmy (e)** as well as B26 rune stick [side B] **f̣uþ⟨o⟩rk|hnisæ|tb⟨m⟩ly** (for the material from Bryggen in Bergen, see Knirk 1994: 179; furthermore Seim 1999: 88 f., 114 with B26 as an additional possible example). Mention must also be made of the early Danish inscription from Schleswig 12 (19), published by Lerche Nielsen *et al.* (2001: 220 f.); a correct interpretation

[12] "Reformen var, utvortes betraktet, radikal, men der blev ikke rørt ved det som var livsnerven i den gamle runeskrift: futharkens anvendelighet i magisk øiemed led intet avbrekk, idet den også i sin nye skikkelse (jfr. senere innskrifters 'tilsiktede tallforhold' bygget på 16-tallet) kom til å inneholde et multiplum av 8. Ad indirekte vei får vi således en bekreftelse på at ikke bare 24-tallet, men også 8-tallet fra gammelt har vært hellig" (my emphasis).

of this inscription (it is incorrect in Moltke 1976: 383 f., 1985: 479) was published by Stoklund (1997). The significance of the inherited *ætt*-structure is also supported by the use of cryptic runes (including the later Rök inscription) which are not based on an alleged bipartite (or four-part) system of 8:8 runes, viz. **fuþąrkhn:iastbmlʀ**, *vel sim.*

Another objection concerns the status of 'eight' in Germanic. The holy number in Old Germanic would not be the 'eight' but rather the 'nine', as for instance twice mentioned in the introductory line of the Stentoften inscription from Blekinge and in the Eddic poem of *Vǫlospǫ́*.[13] As McKinnell and Simek critically remark in their *Sourcebook*,

> [a]part from the number nine, which does not feature prominently in these speculative calculations, no number can be shown to have had religious/magical importance in heathen Germanic antiquity. (McKinnell and Simek 2004: 37)

Still, this general observation does not preclude the possibility of a structuring principle by means of the number 'eight'. Düwel and Heizmann (2006), in their recent contribution, focus on the magic function of the older fuþark inscriptions, with number lore playing a subordinate role. But even if it was true that number magic could explain the attested tripartite and later (allegedly) bipartite structure of the runic alphabet, its explanatory force must be doubted when it comes to a diachronic assessment. Strictly speaking, this approach cannot contribute to the historical dimension because there is no reason why the perfect numerical order of the older fuþark should have been abandoned. To put it differently, the number magic element, if valid at all, cannot be considered a driving force in the process of alphabet reduction, whereas it may well be a concomitant of the systematic restructuring.

[13] The opening lines [I–II] of the Stentoften inscription invoke the 'holy' number nine (**niu**) as follows:

[I] **niuhaborumʀ** [II] **niuhagestumʀ** [III] **haþuwolafʀgaf j** (=ᛃ)

'with nine rams, with nine stallions Haduwolf gave a [good] year'; note the ideographic use of the rune ᛃ = Gmc. *jāra* 'year' (for a research report, see McKinnell and Simek 2004: 54 f., also Schulte 2006c, forthcoming). On the numerical significance of the number nine (*nío*) in the texture of *Vǫlospǫ́*, see Schulte (2005a: 208–13).

4. Graphological driving forces?

In the course of research history, several scholars made the claim that graphic simplification plays a major role as a process in its own right. Andersen (1947; 1984), Moltke (1985; 1986) and Odenstedt (1992), among others, invoked the immanent tendency towards simpler graphic shapes with the removal of several runes as a by-product (for more detail, see Birkmann 1995: 200–06).

It may be recalled that the discovery of the Ribe cranium in 1973 was a touchstone of the graphological claim, but in fact it took decades to acknowledge the significance of the Ribe skull fragment in this debate (see section 2 above). Advocates of the graphological approach stress the need to ease the runic writing process in solid material (particularly stone) by using simpler and more standardized graphic forms. This would explain the general tendency to write all runes with only one vertical staff, viz. ᚼ for ᚺ (**h**) and ᛘ for ᛗ (**m**), but also ᚴ for ᚲ (**k**). Accordingly, ᚪ (**a**) had to be simplified to ᛏ with only one crossing sidestaff to avoid graphemic merger with the new star-rune ᚼ (**h**) for older ᚺ.[14] It may also be noticed that the shape of the **s**-rune is standardized with respect to the vertical line: ᛊ (ᛋ)→ ᛋ.

In brief, the complex graphic shapes are said to entail the removal of the following eight runes (see (7)):

(7) Removal of eight older runes with complex shapes[15]

ᛜ ᛈ ᛇ

ᛞ **d** ᚷ **g** ᚹ **w**

ᛖ **e** ᛟ **o**

This would be the general reason why these eight runes were abandoned. But obviously the argument involves an oversimplification. Although the graphic claim is valid in a general perspective, I want

[14] In this connexion, further simplifications with the short-twig runes, particularly concerning the runes **s**, **b** and **z**(**ʀ**), are entirely disregarded here as they are beyond the scope of this investigation (cf. note 1 above).

[15] Note that the older runes **d**, **g**, **w**, **e** and **o** are still present in the Stentoften-Björketorp group (ca 600–650 AD) as well as in the Eggja inscription (ca 700 AD), while **ŋ**, **p**, **ï** do obviously not occur. In particular, note **hagestumʀ** dat. pl. 'stallions' for /haŋgestumR/ and **sbᴀ** for /spɔ:/, ON *spǫ́* 'prophecy' in the Stentoften inscription (cf. note 13 with references).

to contest it being a triggering factor or a driving force for the loss of runes. The objection must be made that it would certainly have been possible to simplify all the shapes rather than to abandon these particular runes.

In a general assessment, the graphic approach cannot explain why certain complex runes are abandoned (viz. **ŋ**, **p**, **ï**, **d**, **g**, **w**, **e**, **o**), while others are only reshaped and partly restructured with respect to their phoneme-grapheme relationships. This applies in particular to the starlike rune **ᛅ** (*) which takes over several new values in the transitional inscriptions.[16] It may also be noticed that the complex rune ᛒ withstands its removal and even the tendency towards reshaping. This triggers the question: Is the shape ᛒ really simpler than ᛓ?

More specifically, as noted already in section 2.4, the Ribe skull fragment invalidates the graphological claim since it reveals complex forms in the case of ᚺ ᛗ * (instead of modernized * ᛘ ᛏ) coupled with the parsimonious grapheme-inventory of the younger fuþark and its typical multifunctionality, e.g. ᚴ denotes /k/, /g/, /ɣ/ as well as /nk, ng/ (with the nasal omitted before obstruents). In principal, the graphic developments stand in their own right, such that a general tendency toward simpler shapes cannot explain the reduction in number of the graphemic system from twenty-four to sixteen units.

5. The linguistic dimension: internal factors

As demonstrated, neither magico-numerical nor purely graphic arguments can be made responsible for the rise of the parsimonious younger fuþark. This is why most investigators turn to language-internal arguments (for a general account, see Schulte 2004 and 2006b). The crucial linguistic point is that the original fit between the runographic and the phonological system is disrupted by several sound changes. The period under investigation is the transitional period between 500 and 700 AD, which is characterized by processes like umlaut, breaking and reduction (including syncope) together with the introduction of new phoneme-grapheme relationships. This general notion is expressed by Elmer Antonsen:

> Not until there were major disruptions in this fit would the possibility of various spellings for the same phonological unit arise, and

[16] See section 5.6 with respect to multifunctionality.

> this is precisely what happened during the transitional period beginning around AD 500, which is graphically reflected in the peculiar renditions found in the Blekinge inscriptions [...] and which is the basic cause for the whole development of the parsimonious younger fuþarks. (Antonsen 1996: 11; cf. Antonsen 2002: 115 f.)

This concept is central as it provides the background for several more elaborate approaches that will be addressed in the following. Diverse linguistic arguments including structural (hierarchical) data have been invoked in this connexion (see 5.1–5.6).

5.1. The unstressed triangular vowel system of Old Norse

In a stimulating paper 'On the parsimony of the younger futhark', Einar Haugen (1969) took the unstressed phonological system as the point of departure (see also Haugen 1976a). In his view, a focus shift from the stressed to the unstressed system is responsible for the loss of several runes (cf. (7) above). As for chronology, there is a consensus that the triangular system of unstressed vowels /a, i, u/ is attested already in the Blekinge inscriptions around 600–650 AD (see also Nielsen 2000: 97 f.). This ties in nicely with the rise of the younger fuþark as attested on the Ribe skull fragment around 725 AD. But the crucial point is how such a new guiding principle should be motivated. Reviewing Haugen's concept, Barnes takes a rather critical stance; for further criticism, see Birkmann (1995: 198–200):

> Is it plausible that the attention of speakers and rune carvers was directed so firmly at the unstressed syllables that not only the vowel symbols of the younger *fuþark*, but, as Haugen also suggests, the consonant symbols too reflect this 'minimum phonemic system' (1969: 57)? The stressed syllables, after all, must still have conveyed the heaviest burden of information. One imagines it was at least as important to distinguish between, say, *tæma* and *dæma* as between (*hann*) *gørði* and (*þau*) *gørðu*, and yet Haugen would have us believe that ᛞ was dropped from the runic alphabet because only the system in unstressed syllables, with its simple two-way opposition between stop and spirant, was taken into account. (Barnes 1987: 36)

It may also be noted that the Eggja inscription which is dated to 700 AD conflicts with Haugen's approach since it shows both ᛁ (**i**) and ᛘ (**e**) in the endings, whether this variation is due to vowel harmony or not, cf. **wiltiʀ**, **huni**, **skorin** vs. **sʌkse**, **mʌde**, **gʌlʌnde**. For problems of

evaluation, see Barnes (1998: 458) with reference to Grønvik (1985: 175 f. and elsewhere).

Similarly, the somewhat earlier inscriptions from Blekinge (ca 600-650 AD) show both **i u** and **e o** as the representations of their thematic vowels (or reflexes thereof) such that the graphemes ᛁ and ᛟ are still in use (cf. also Nielsen 2000: 97). In summary, there are no good grounds to assume that the parsimony of the younger fuþark is motivated by the reduced phonological oppositions in unstressed syllables. This will further be illustrated by the process of final devoicing.

5.2. *Final devoicing*

Final devoicing in Proto-Norse is also regarded as a motivating factor by Haugen (1969) to account for the loss of the runes ᛞ and ᚷ for the mediae /d/ and /g/. A prominent role in this discussion plays the form **ląt** in the Eggja inscription. Barnes (1998: 452, 458), commenting on Grønvik (1985: 169 f. and elsewhere), expresses considerable concern about the diagnostic value of this form:

> If **ląt** does denote [lant], it is odd that no example of **latt* is to be found in later Scandinavian (cf. *binda – batt* < **bant*) — unless runic spellings such as **iklati**, **oklati** etc. show analogical extension of this form into the dative. But should Grønvik be wrong and Eggjum in fact have been written by someone with knowledge of the younger *fuþark*, it is still the case that we have here a rune carver using ᚹ for [w], ᛁ for [e] and ᛟ for /o/ at a time when, to judge by the language of the inscriptions he carved, the names of the first two cannot have begun with [w] and /e/ respectively [...], and the initial sound in the name of the third may have been mutated. (Barnes 1998: 458)

Other examples mentioned, for instance, by Makaev (1996: 75) are equally problematic. In particular, the form **warb** (ON *varp*) on the Eggja stone provides no direct evidence as it can be explained by the early substitution of the rune **p** by **b** as foreshadowed on the Vadstena bracteate (see fig. 2 above). On the marginal status of the **p**-rune in the older fuþark, see particularly Odenstedt (1990: 79, 93–94). Neither does the proclitic **ob** (in the sequence **ob kam**) form the expectation of signalling this neutralization process as clitics tend to 'lean' on their host, meaning that the word boundary is lost (see Schulte 2006d).

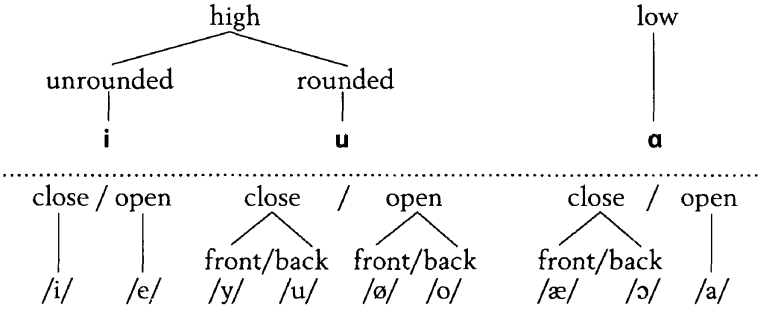
A more general concern regards the orthographic representation of final devoicing in a cross-linguistic perspective. In Modern German, for instance, this neutralization process is overshadowed in spelling

by a morphophonemic writing principle, e.g. G *Rat* 'council' [ra:t], gen. sg. *Rates* [ra:təs] vs. *Rad* [ra:t] 'wheel', gen. sg. *Rades* [ra:dəs] (cf. Brockhaus 1995; Schulte 2006d). As runic orthography too obeys morphophonemic spelling principles, it cannot adequately reflect this process. It follows that the direct impact of final devoicing on the younger fuþark remains unproven.

5.3. *The principle of maximum phonemic contrasts*

Imagining a deliberate runic reform, Rischel (1967/68) acknowledges an interplay between two or more decisive factors. His particular focus rests on the hierarchy of distinctive features which underwent restructuring in the younger fuþark. The relevant features of the graphemic system are to be ranked in a hierarchical order as follows: 1. [+/–high], 2. [+/–rounded] with the subordinate distinctions 3. [+/–close] and 4. [+/–back]. As a consequence, these two contrasts are not mirrored in the runography of the younger fuþark (see (8)).

(8) Hierarchical features of the younger fuþark (according to Rischel 1967/68: 12)



In Rischel's view, the outcome of this conscious repatterning is a system of maximum phonemic contrasts, which is a characteristic of broad morphophonemic scripts.[17] Antonsen too makes this point:

> The younger fuþark, to my mind, represents a unique solution to the dilemma of too many phonemes with too few symbols. This solution was a further simplification of the orthographic system which must have been based on the premise that since the five symbols available

[17] See Rischel (1967/68: 12 f. with fig. 3). For further discussion of this model, cf. Birkmann (1995: 196–98).

> did not accurately represent the sound system of the language in any case, that sound system could be expressed by an even simpler orthography in which only the crassest oppositions were taken into consideration. (Antonsen 1963: 201; my emphasis)

In brief, it must be objected that this approach is purely descriptive. Thus it remains unclear how this hierarchical restructuring should be motivated. Though valid from a synchronic (static) point of view, the model lacks explanatory force when it comes to the driving forces of what Antonsen and Rischel regard as a 'unique solution' or 'conscious reform' respectively. Besides, Rischel himself expresses some vagueness about this ideas when remarking: 'We are faced with a problem of considerable complexity, and we must not overestimate the explanatory power of structural statements' (Rischel 1967/68: 5).

5.4. *Phonotactic neutralization of voicing after /s/*

Another factor which is made responsible for the loss of the voice distinction /p, t, k/ : /b, d, g/ in runic script is phonotactics. The second element of **asu-gasdiz** on the Myklebobostad stone (KJ 77; 5th or 6th century) reflects the neutralization of the voice distinction /t/ : /d/ after /s/. For a parallel case in South Germanic epigraphy, see the belt buckle of Weimar II: **isd** for /ist/ is interpretable as an auxiliary verb 3rd sg. pres. ind. 'is' (see Nedoma 2004: 350 f.).

Miller (1994: 97) notices that the spelling **asu-gasdiz** 'Ansugasti-' captures the non-aspiration of stops after /s/, given that voiceless stops are usually aspirated in Germanic and other languages, while their voiced counterparts are not. Technically, [t] and [t^{h}] are positional variants or allophones and, therefore, usually not distinguished in spelling (cf. **hlewa-gastiz** on the Gallehus horn, ca. 400–450 AD, reflecting PGmc. */gastiz/, ON *gestr* 'guest').[18]

Likewise, the Björketorp form **sbA** (KJ 97; 7th century) in relation to ON *spǫ́* 'prophecy' (Gmc. */spahu/) is sometimes connected with this phonotactic rule (cf. Derolez 1998: 113; Williams 1992: 203). But apart from the fact that the runic evidence is only sporadic and late, the argument turns out to be circular because the **p**-rune is replaced by **b** early on in runic writing. On the fuþark inscriptions, see again Odenstedt (1990: 79, 93 f.). Thus, despite the suggestion made by Derolez (1998: 112), among others, there are no cogent reasons to link the early loss of the rune **p** (as well as the later substitutions of **d** and **g**) to this phonotactic rule.

[18] Cf. Krause (1971: § 20) and Antonsen (1975: § 4.6), also Antonsen (2002: 9 f.).

5.5. *The acrophonic principle*

Ever since Aslak Liestøl published two closely related papers in 1981, the acrophonic principle has been regarded as a determining factor for the shortening of the Nordic fuþark.[19] In fact, scholars had pointed at this principle already since Wimmer (1887: 218), but Liestøl's coherent approach was new. The basic arguments shall not be repeated here in detail (see, for instance, Barnes 1987; Schulte 2004). Historically, we are dealing with a common, cross-cultural principle to denote sounds by means of logographic or pictographic symbols (see Dürscheid 2004: 129, 279). This is widely applied in ancient writing, e.g. in Semitic and in the hieroglyphic script (cf. Coulmas 2003: 126, 194).

From the Nordic point of view, Barnes (1998: 458 f.) makes the following points in support of the 'acrophonic necessity':

1. The fate of the **jāra*-rune which comes to denote the primary value /a/ due to the transition **jāra* > *ār(a)* underpins the significance of this concept.
2. The fourth rune with the original name **ansuz* designates nasal /ą/ and partly /o/ which is in tune with the development **ansuz* > **ą̄ss* > *óss*.
3. The original fifteenth rune, which primarily stands for /ʀ/ (< /z/), later also denotes /y/ (coupled with its rune name *ýʀ*) as well as /æ/ and /e/ (due to the name forms **ælgr, elgr* 'elk, cervus alces' which are the expected developments of **algiz*).[20]
4. The younger seventh rune, *hagall* 'hail' from **hagalaz*, comes to denote /a/ in certain areas of Sweden where loss of initial /h/ was common (cf. the Sälna stone, U 323).

The very fact that ideographic runes or *Begriffsrunen* are attested at least from the 6th or 7th century on (notably in the Stentoften and Gummarp legends), underpins their relevance in the transmission process of the fuþark. In the manuscripts rune names are attested from the 8th century on. This is therefore no scholarly invention of the scribes of the later manuscript traditions, but rather part of a genuine tradition. (For different manuscript traditions and their rune names, see Nedoma 2003.) Another critical point mentioned by Makaev (1996: 55 f.) is that

[19] See Liestøl (1981a) and (1981b). Among his principal followers are Barnes (1987, 1998), Quak (1982) and Schulte (2004, 2006b). For a discussion, cf. also Birkmann (1995: 208–17).

[20] See particularly Larsson 2002.

the notion of initial ideographs has been invoked rather haphazardly when reading runic inscriptions.[21] Inscriptions that clearly convey this notion centre on the transitional group from Blekinge (see (9)).

(9) Use of ideographic runes in the Blekinge group
Gummarp, KJ 95: **haþuwolafa sate staba þriǫ fff**
(triple ᚠ = **fehu* n. 'cattle, wealth')
Stentoften, KJ 96 [line III]: **haþuwolafr gaf j**
(old shape ᛃ = **jāra* n. '[good] year')

When the initial sound of the rune-names **wunjō*, **ehwaz* and **ōþila* was altered by *w*-loss, breaking and umlaut, the formerly well-established phoneme-grapheme correspondences were gone: **wunjō* (G *Wonne*) > **yn* (cf. ON *yndi* 'bliss'), **ehwaz* > **johwr* (ON *jór* 'stallion'), and **ōþila-* (side-form of *ōþala*, ON *óðal* 'property, real estate') > **œþil*. Incidentally, relics of the form **ōþila* (with suffixal **-ila-*) survived both in North and West Germanic. Shetland Norn, in particular the Northern dialect of Unst, had the umlauted form *ødal* [ødal, ødəl], pointing at a precursor with the **ila*-suffix (see Jakobsen 1921: 944, s.v. *udal, udel*), and Old English too exhibits umlaut in *œþel, ēþel*. This is the strongest part of the acrophonic approach, as exemplified by several scholars (cf. Birkmann 1995: 217).

It has already been noticed that the runes **ï**, **ŋ** and particularly **p** were used to a limited extent in the older fuþark with the functional load, among other factors, playing a prominent role (see Derolez 1998; Schulte 2004). In particular, the low frequency of initial *p-* in Germanic (e.g. Kuhn 1961) coupled with the disputed name of the **p**-rune (e.g. Gmc. **perþō-* f. 'fruit tree' or **pezdō-* f. 'sinew'?) point at its marginal position in the older fuþark (see Nedoma 2003: 559). The possibility of a Celtic loan-word is considered by Birkhan (1970: 175–77); cf. also Birkhan (2006) where he now denies this derivation of the **p**-rune's name. As with **e**, **o** and **w**, the acrophonic principle may have sealed the fate of the runes **ï** and **ŋ** as well. These rune names were

[21] One basic problem with the alleged use of ideographs in readable inscriptions, e.g. Kragehul KJ 27, is their formal integration into compounds and case forms, e.g. **ᚷᚨ** for **g(ebō) *a(nsumz)* 'gift to the gods', or (as Antonsen 1980: 5 f. would have it) **ᚨᚷ** for **ansu-gebō* 'god-gift'. Thus, Williams (2001: 156) takes a critical stance to such an interpretation: 'Just because the name of the **ą**-rune was **ansuz*, could it therefore be used for any case form of that word, in the case of the Kragehul inscription probably **ansumz* [...]?' — But neither does this problem affect the instances mentioned under (9) below, nor does it invalidate the principal argument of acrophony.

affected by velar mutation: **ïwaz* > *ýʀ* (ON *ýr*, gen. pl. *ífa*) 'yew-tree'; **ingwaz* > *yngʀ* (ON *Yngvi*).

To conclude, while it is true that the 'acrophonic approach' evidently accounts for the destabilization of **w**, **e**, **o** (as well as **ï**, **ŋ**, **p**) in the Nordic fuþark, its direct impetus on the loss of the runes **d**, **g** is much less obvious; cf. Birkmann (1995: 212–14) commenting on Quak (1982). It is the loss of the consonantal runes **d** and **g** which has defied a sound phonological explanation and which led many scholars to the notion of a conscious runic reform as the final stage of the graphemic reduction. Alternatively, the possibility of language contact with the Fennougric languages will be addressed shortly in section 6.2.

5.6. *Systematic multifunctionality*

Another crucial issue is the early multifunctionality of runes (cf. Schulte 2004; 2006a). This is a common notion with respect to the younger fuþark, but it remains to be investigated when complex grapheme-phoneme relationships were first established. In a historical perspective, there is an increasing imbalance in the functional load between 'new' multifunctional runes (e.g. ᚼ **ᛅ**) and the 'old' place holders like **p**, **ï**, **ŋ** within the older fuþark already, particularly in the transitional period of the 6th and 7th centuries.

A case in point is the starlike rune (**ᛅ**) in the Blekinge inscriptions, which represents maximally five different sounds, i.e. the primary value /a/ (due to the transition **jāra* > **ār*; see 5.5 above), the secondary values (umlaut products) /æ/ and /ɔ/ as well as a central unit 'schwa', and finally the on-glide of the breaking diphthong **ᛅᛖ** in Istaby **haeru**-, Björketorp **haerama**- (ON *ia*, *iǫ* < tonic */e/). For the runic evidence concerning umlaut and breaking, see Schulte (2004: 50) and Nielsen (2000: 121, 261 f.). Despite the interpretational problems at hand, two important points must be made:

1. A reduced vowel unit 'schwa' reflecting original theme vowels */a, i, u/ (whether its status be phonemic or subphonemic at this stage) must be posited for the Blekinge group on internal grounds; see Boutkan (1995: 37) and Schulte (2003: 393 f.), both adducing different arguments. In support of schwa, see in particular Björketorp **gina**- 'mighty' < */gin:u-/, **falahak** 'I hid' < */falh-eka/. The Old Norse form suffered syncope on a regular phonological basis: ON *gin(n)*-, *fal-k*.

2. As for the phonemicization processes, this weakening of theme vow-

els */a, i, u/ (centralization) triggered phonemic umlauts and breaking since the inducing factors were no longer distinct from other units, and mergers occurred (see Schulte 1998: 237 ff.). Umlaut and breaking processes were thus phonemicized, b e f o r e the inducing elements */a, i, u/ were entirely lost. Nielsen (2000: 262 and elsewhere) mentions structural arguments in support of early phonemicizations.

It follows that the umlaut products /æ/ and /ɔ/ (both denoted as **ᚨ**) as well as the breaking product (denoted as **ᚨᛖ**), whatever its exact phonetic value, are phonemic at this stage (see Schulte 1998: 237; cf. also Nielsen 2000: 121). Besides, the syncopated form **ᛒᚨᚱᚢᛏᚱ** 'breaks' in the Björketorp inscription lends further support to the phonemic status of umlaut. The phonological form is /bry:tʀ/ from */breutiθ/ with the umlaut-inducing factor lost (cf. the older form **ᛒᚨᚱᛁᚢᛏᛁᚦ** in the Stentoften inscription). This yields the following complex phoneme-grapheme relationships of the **ᚨ**-rune in the Björketorp and Istaby inscriptions (see (10)).

(10) The multifunctional *jāra*-rune in two transitional inscriptions[22]

Indicated change:	Grapheme r loss of *j*	Basic phoneme r	r*i*-uml.	*u*-uml.	red.	break.	
Björketorp (KJ 97)	ᚼ ᚨ →	/a/	/æ/	/ɔ/	[ə]	[j]	ᚼᛖ
Istaby (KJ 98)	ᛋ ᚨ →	/a/	/æ/	/ɔ/	–	[j]	ᛋᛖ
	ᚴ �գ →	–	–	–	[ə]	–	

Given that vowel reduction, umlaut and other sound changes made persistent headway in the transitional period, it seems obvious that the 'ideal' 1:1-phoneme-grapheme relationships (corresponding to Derolez' 'perfect fit') were disrupted early on. This must have been a crucial factor for the rise of the younger fuþark. In Barnes' graphologically based model (Barnes 1998), inscriptions like Stentoften or Björketorp are central as they still show the older inventory of runes (though with the non-occurrence of **ᛈ**, **ᛇ**, **ᛜ**) together with the starlike rune used for **ᚨ** (i.e. Barnes' main criterion for 'transitional', see section 2.3 above). Yet, there are further indications that the grapheme-phoneme correspondences are disrupted. A case in point is the use of **ᛖ** in **ᚨᚱᚨᚷᛖᚢ**

[22] See Schulte (2004: 50, with fig. 6).

which — due to the 'acrophonic necessity' — points at breaking in the rune name **ehwaz* being complete (see Schulte 2004: 49). As mentioned above, breaking is directly evidenced by **haerama-** 'rest-' (Gmc. **herma-*) in the Björketorp inscription. This is apt to explain why **e** is used to denote /j/ in **arageu**: phonological form /ærgju/.

To conclude, the general inertia of writing systems, which was noted already in connexion with the Ribe cranium (in section 2.4), makes it likely that language change (coupled with the distortion of the 'perfect fit' and the establishment of multifunctional runes) predates the systematic restructuring of the grapheme inventory by a considerable span of time. In consequence, multifunctionalism at least from the 6th century on paves the way for the rise of the younger sixteen-grapheme fuþark.

5.7. *Phonetic awareness.*

Runic writing was not based on a strictly phonological consciousness, as has sometimes been claimed, but rather on a 'phonetic awareness'. Miller outlines as a general statement:

> writing systems are attempts at representing different 'competing' aspects of language (more specifically, language knowledge), some phonetic (noncontrastive), some phonemic (contrast and opposition), some lexical/morphological (root or affix unity), some morphophonemic (in the broad sense). Such competing goals are apt to yield discrepancies and irregularities in graphic conventions. (Miller 1994: xiv)

On closer inspection, the above-mentioned form **asu-gasdiz** 'Ansugasti-' on the Myklebostad stone (from the 5th or early 6th century) in contrast to **hlewa-gastiz** on the Gallehus horn (datable to the early 5th century) captures a phonetic, non-distinctive feature: the non-aspiration of /p, t, k/ after /s/ (cf. section 5.4). Miller (1994) compares to this English children's spellings like SBUN *spoon*, SDOV *stove*, SGIE *sky*, etc. (see Miller 1994: 97 with references).

Another proof of 'phonetic awareness' is furnished by the abundant representations of epenthetic vowels in the transitional inscriptions which I have dealt with in more detail elsewhere (see Schulte 2005b: 173 f.). Reverting to the problem of the multifunctional *jāra*-rune in the Blekinge inscriptions, this is a striking result of the runographers' phonetically based working methods. Intuitively, these rune carvers

realized the existence of a central vowel schwa, e.g. in **ginA-**, which is a remarkable fact (see 5.6 above). This gives us an idea of how strict the runographers' principles were (each operating in his own synchronic system) to establish adequate phoneme-grapheme (or phone-graph) relationships. On the whole, there is not much space for arbitrariness and even the notion of idiosyncratic spellings. Though this label is sometimes used in conjunction with the Blekinge inscriptions (e.g. Braunmüller, forthcoming), it is rather vacuous and even misleading, unless diagnostic criteria of idiosyncrasy are specified.

5.8. *Interim conclusion*

Summarizing the results so far, serious reservations have to be made about number-magic and graphological approaches. Despite the explicit claim made by Moltke (1986), among others, the notion of graphic driving forces is called much in question by the general inertia of writing systems. Graphologically, the moment of inertia was demonstrated with regard to the Ribe cranium (see section 2.4). Magico-numerical approaches to the fuþark, on the other hand, correlate with structuring principles centred on the number 'eight', even though its central status in the younger fuþark inscriptions remains unproven. Like the graphological argument, this concept cannot provide a direct impetus for the loss of runes.

Linguistic arguments turn out to be central, albeit that several structural approaches lack explanatory force. The crucial argument is unquestionably linked up with acrophony and the development of multifunctional runes in the late phase of the older fuþark (6th–7th centuries). But while it is true that these factors sufficiently account for the exclusion of vowel-symbols (incl. semi-vowels), the loss of **g** and **d** still defies a sound solution. This is even so when the restructuring between spirants and plosives in the Nordic consonant system is taken as a point of departure (e.g. Trnka 1939; Quak 1982; Barnes 1987; also Stroh-Wollin 2002). In search of further triggers, the discussion will finally focus on language contact, especially with the Finnic language group (see section 6.2).

6. Language contact: the 'external influence hypothesis'

Two possible sources for an 'external influence hypothesis' must be surveyed here: 1. Latin with its alphabet, and 2. the Fennougric languages. But as will be seen, neither of these two scenarios can be said

to provide a marked impetus for the transition from the older to the younger fuþark.

6.1. Latin and its alphabet

Language contact with Latin has been considered in several cases. The evidence suggests that Latin exerted an influence on the younger fuþarks during the Viking Age, e.g. in connexion with the dotted runes (cf. Haugen 1976b; Barnes 1996 and Derolez 1998). An example of clear influence is provided by the inversion of **ml** → **lm** which is a feature of younger fuþork inscriptions from the Middle Ages, e.g., the medieval fuþork from the church of Mønsted, North Jutland, which could be characterized as a bastard fuþark due to its corruptness (see (11)). Further examples are mentioned by Seim (1999) and Düwel (2001: 93 f. with references).

(11) Mønsted, windowsill (North Jutland; Middle Ages)
fuþorkhniastblmy

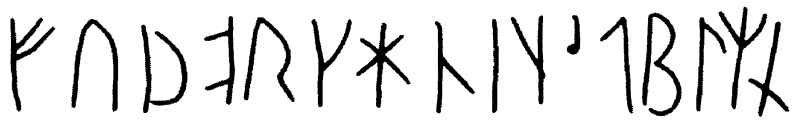


Fig. 7: Mønsted window stone. (From Moltke 1985: 399 [no. 5])

In his alphabet-historical framework, Moltke (1986) claimed that the rise of the younger fuþark was partly triggered by the Latin alphabet. In this scenario, an overall factor is the proximity of Denmark to the Carolingian Empire at around 800 AD, when according to him the younger fuþark came into existence (see Moltke 1985: 182 f.; 1986: 33). But as signalled by the Ribe cranium, the decisive changes must have occurred at least one hundred years earlier (see section 2). Equally important, the loss of **w** and **j**, which is one of Moltke's cornerstones, can be directly accounted for by internal factors, viz. changes of the rune names ***w***unjō* and ***j***āra* (see section 5.5).

Already Trnka (1939) argued that the support of Latin scribal traditions was a crucial factor for the extension of the Anglo-Frisian *fuþorc* in relation to the Nordic counter-movement. For Looijenga (2003: 273), too, "[r]unic writing in England became closely connected with the Latin scriptoria, demonstrated by ecclesiastical runic monuments and an abundant use of runes in manuscripts." On the whole, the situa-

tion in Scandinavia around 500–700 AD must have been fundamentally different. Following Düwel (1994: 232 ff.), a direct impact of the Latin script on runic epigraphy is hard to ascertain even on the continent. Thus, it seems unproven that Latin exerted a strong influence on runic writing in the transitional period which would have triggered the arrival of the younger fuþark. Moreover, as I have demonstrated elsewhere, Braunmüller's scenario of Latin-Nordic contact in this period does not stand close scrutiny.[23]

6.2. Fennougric languages

In view of the above, it remains to be seen, whether Nordic contact with Fennougric speaking people provides the missing link. As noted above, the loss of the runes **g** and **d**, which appears to be subsequent to the disappearance of **p** in the older fuþark, is hard to be accounted for in terms of a language-internal approach. There are however several immediate objections against this approach.

- First of all, Finnish-speaking traders probably did not use runes extensively, if at all. The earliest birch bark documents from Novgorod, datable between the end of the 12th and the middle of the 13th century, are written exclusively in Cyrillic script (see Laakso 1999; 2005).[24]
- Second, the Fennougric approach would necessitate an Eastern innovation centre. Yet, inscriptions such as the Ribe cranium (ca 725 AD) and the short-twig runes from Hedeby around one hundred years later indicate that Denmark played a prominent role in the transmission process and the rise of the younger fuþark (cf. Barnes 2001).
- Third, in a chronological perspective the alleged Eastern contacts, if directly relevant to the losses of runes, must be no later than, say,

[23] Cf. Schulte (2005b) in response to Braunmüller (2004). Unfortunately, it has to be noted that one of Braunmüller's basic arguments in favour of Latin-Nordic contact, viz. *eka*-cliticization, conflicts with Nordic grammar: passivization by means of *eka*-clitics in early and later Runic is an ad hoc assumption (see Schulte 2005b: 169 f.). It may further be noticed that Braunmüller (forthcoming) neglects any kind of oral traces in runic epigraphy. Needless to say, my present approach is incompatible with the general view expressed by Braunmüller. As mentioned already, I consider some of his arguments regarding runic spellings as vacuous or, what is worse, even as faulty. Cf. in particular sections 5.4–5.8 above and the conclusion.

[24] I owe the information to Prof. emeritus Jorma Koivulehto who provided me with the relevant literature in an e-mail dated 2005-05-18.

700 AD. This focus on the pre-Ribe period (6th and 7th centuries) implies that considerations concerning Birka-Swedish or Hedeby-Nordic have no bearing on the issue (for discussion, see Stoklund 2001 and Lerche Nielsen 2001, with further references).

This preliminary assessment points at severe difficulties when trying to put this external approach on a solid footing. Finally, there is an interesting detail to support East Scandinavian traces in the extended fuþarks after 1000 AD. The rune names (concerning **r**, **k**, **n**, **m**, and **l**) in the medieval manuscript traditions show particular features that point to an East Nordic provenance (for the acrophonic principle of rune names, cf. section 5.5). Page and Hagland remark on East Scandinavian traces in a manuscript from the early 1100s:

> The forms *reð, con, noð* can be looked upon as East Scandinavian monophongized forms contrasting with West Norse *reið, kaun*, and *nauð*. The form *mander* rather than *maðr* is a manifest expression of East Scandinavian — perhaps Old Swedish or Danish rather than unambiguously Danish as assumed by Wrenn (1932: 33) (cf. Brøndum-Nielsen 1928–74: §§ 241 Anm. 1, 350 and 467,2). The form *loer* for West Norse *lǫgr* might be explained as a loss of fricative /ɤ/ as in East Scandinavian (Brøndum-Nielsen 1928–74: §§ 309, 392). (Page and Hagland 1998: 67).

To sum up, language contact with Fennougric languages in the 6th and 7th centuries, though appealing at first sight, probably does not provide the key to the loss of the runes **g**, **d** in the younger fuþark. Rather, these restructurings must be assessed language-internally in a framework of early multifunctionalism, as outlined in section 5.6.

Conclusion

Surveying various approaches to the younger fuþark, it seems clear that phonological arguments centred on the rune name theory play the most important part (see section 5.5). On the whole, there are clear indications that runographers linked their spellings up with an underlying canon of rune names. This is what we sporadically still do today to ensure a correct spelling, e.g. stating '*a* as in *April*', or '*a* wie *Anton*', etc. In sum, the runographers did not undertake a strict phonemic analysis in the modern linguistic sense, otherwise they would have

aimed at close 1:1 correspondences between phonemes and graphemes and they would certainly have marked phonemic umlauts, which they did not do. This would, from necessity, have led them to the creation of an extended fuþark similar to the Anglo-Saxon *fuþorc*.

Obviously, other forces and principles prevailed. Neither did the Scandinavian runographers of the 6th, 7th and later centuries have the same theoretical skills as the First Grammarian, who was versed in classical grammar, nor did they have the same intentions as he had for early 11th century Icelandic (cf. Barnes 1987: 35). But it has often been noticed that runic orthography, both regarding the older and younger runes, is remarkably correct and reliable in many regards (cf., e.g., Williams 1994 and 2007, forthcoming). Thus, the luxury of two *a*-runes which at first arose out of purely 'acrophonic necessity' was obviously supported by the functional load of the distinction /a/ : /ą/ in the Nordic languages and by the later quality change /ą/ > /o/ over wide areas of Scandinavia (cf. also Icel. *óss* < ON *ǫ́ss* < **ansuz*). In the First Grammarian's phonology, the opposition between nasal and non-nasal (long) vowels (incl. *á*) is still reflected in the minimal pair *hár* 'hair' : *hą́r* 'shark'. (Originally, this contrast pertained both to the stressed and to the unstressed subsystem of vowels.)

To conclude, an interplay of several factors and guiding principles paved the way for the restructuring of the younger fuþark in relation to its forerunner, the older rune alphabet. In a long-term perspective, they were overriding the orthographic conservatism (cf. in particular the Eggja inscription from around 700 AD with its seemingly intact older fuþark). Most of these factors consisted in constant principles which were obeyed over the centuries:

1. the primary guiding principle of achieving an adequate and hence readable representation,
2. consistency of writing principles to establish regular phoneme-grapheme relationships,
3. the general reliance on the rune names within each given synchronic system,
4. the early use of multifunctional runes, initiated by etymological umlaut notations and vowel weakenings (see in particular Schulte 1998),
5. a general phonetic awareness,
6. the functional load as a supportive or eliminative force for the fate of runes,

7. the need for a memorizable, and thus ordered, fuþark which was in tune with the prevailing structuring principles, in particular numerical ones (e.g. Liestøl 1960).

In my view, this reliance on consistent principles largely determined the fate of the Scandinavian fuþark. Finally, the minimalist sixteen-grapheme solution, as depicted on the 9th century Gørlev stone or Malt stone (fig. 4–5), was not the result of a conscious reform, but rather the product of an established consensus over wide areas of Scandinavia of what had evolved stepwise in a long-term transformation process at least from the 6th century onward. Yet, the loss of the problematic runes **g** and **d** in the Scandinavian runic traditions is in need of further investigation (to be continued).

Acknowledgements

This is the enlarged and revised version of my paper "Motivations for grapheme loss: older and younger fuþarks", which was held at the workshop *The Futhark and the Fur Trade*, Umeå, 15th September of 2005. In addition to the audience at this meeting, I owe thanks to Klaus Düwel and James E. Knirk who reviewed this article. Jonas Norby kindly provided me with informations about his ph.d. project *Lønnruner: systemer og funksjon*. Finally, I would like to thank Prof. emeritus Jorma Koivulehto for kind remarks regarding Fenno-ugric-Nordic contacts. Needless to say, the usual disclaimers apply.

Bibliography

Agrell, Sigurd. 1932. *Die spätantike Alphabetmystik und die Runenreihe*. Lund.

Andersen, Harry. 1947. "Det yngre runealfabets oprindelse." *Arkiv för nordisk filologi* 62, 203–27.

— 1984. "Three controversial runes in the older fuþark [I–II]." *NOWELE* 4, 97–110 and 5, 3–22.

Antonsen, Elmer H. 1963. "The Proto-Norse vowel system and the younger fuþark." *Scandinavian Studies* 35, 195–207.

—. 1975. *A Concise Grammar of the Older Runic Inscriptions*. Tübingen.

—. 1980. "On the typology of the older runic inscriptions." *Scandinavian Studies* 52, 1–15.

—. 1996. "Runes and Romans on the Rhine." In: *Frisian Runes and Neighbouring Traditions. Proceedings of the First International Symposium on Frisian Runes at the Fries Museum, Leeuwarden, 26–29 January 1994*, ed. by T. Looijenga and A. Quak, 5–13. Amsterdam.

—. 2002. *Runes and Germanic linguistics*. Berlin.

Barnes, Michael P. 1987. "The origins of the younger Fuþark — a reappraisal." In: *Runor och runinskrifter. Festskrift till Sven B. F. Jansson*, 29–45. Stockholm.

—. 1996. "Native and foreign in the Scandinavian languages of the Viking Age and early medieval period." In: *Proceedings of the 10th Biennial Conference of the British Association of Scandinavian Studies, held at the University of Surrey, 9–12 April 1995*, ed. by G. Anderman and C. Banér, 16–27. Guildford.

—. 1998. "The transitional inscriptions." In: *Runeninschrift als Quellen interdisziplinärer Forschung. Abhandlungen des Vierten Internationalen Symposiums über Runen und Runeninschriften in Göttingen vom 4.–9. August 1995*, ed. by K. Düwel, 448–61. Berlin.

—. 2001. "The Hedeby inscriptions, the short-twig runes, and the question of early Scandinavian dialect markers." In: *Von Thorsberg nach Schleswig. Sprache und Schriftlichkeit eines Grenzgebietes im Wandel eines Jahrtausends*, ed. by K. Düwel *et al.*, 101–09. Berlin.

Benner Larsen, Erling. 2004. "The Ribe skull fragment — toolmarks and surface textures." In: *Ribe excavations 1970–76*, vol. 5, ed. by M. Bencard, 43–60. Esbjerg [publ. 2005].

Birkhan, Helmut. 1970. *Germanen und Kelten bis zum Ausgang der Römerzeit. Der Aussagewert von Wörtern und Sachen für die frühesten keltisch-germanischen Kulturbeziehungen*. Wien.

—. 2006 [forthcoming]. "Keltisches in germanischen Runennamen?" In: *The Fuþark and its Further Developments in Separate Linguistic Traditions. Das Fuþark und seine einzelsprachlichen Weiterentwicklungen. Akten der in Eichstätt abgehaltenen Tagung vom 20. bis 24. Juli 2003*, ed. by A. Bammesberger *et al.* Berlin.

Birkmann, Thomas. 1995. *Von Ågedal bis Malt. Die skandinavischen Runeninschriften vom Ende des 5. bis Ende des 9. Jahrhunderts*. Berlin.

—. 2004. "Der Codex Sangallensis 878 und die Entwicklung der Runenreihe im Jüngeren Fuþark." In: *Alemannien und der Norden. Internationales Symposium vom 18.–20. Oktober 2001 in Zürich*, ed. by H.-P. Naumann, 213–23. Berlin.

Boutkan, Dirk. 1995. *The Germanic 'Auslautgesetze'*. Amsterdam, Atlanta.

Braunmüller, Kurt. 2004. "Zum Einfluss des Lateinischen auf die ältesten Runeninschriften." In: *Verschränkung der Kulturen. Der Sprach- und Literaturaustausch zwischen Skandinavien und den deutschsprachigen Ländern. Festschrift Hans-Peter Naumann*, ed. by O. Bandle *et al.*, 23–50. Basel.

—. 2007 [forthcoming]. "The inscriptions of the older futhark: Imaging actual speech or a certain text type?" In: *The Futhark and the Fur Trade. International Workshop held at the University of Umeå, September 14–16, 2005*, ed. by P. Poussa and P. Ambrosiani. Stockholm.

Brockhaus, Wiebke. 1995. *Final Devoicing in the Phonology of German.* Tübingen.

Brøndum-Nielsen, Johannes. 1928–74. *Gammeldansk Grammatik i Sprog-historisk Fremstilling,* I–VIII. København.

Bæksted, Anders. 1952. *Målruner og troldruner. Runemagiske studier.* København.

Coulmas, Florian. 2003. *Writing Systems. An Introduction to Their Linguistic Analysis.* Cambridge.

Derolez, René. 1998. "On the 'otherness' of the Anglo-Saxon runes and the 'perfect fit' of the futhark." In: *Runeninschriften als Quellen interdisziplinärer Forschung. Abhandlungen des Vierten Internationalen Symposiums über Runen und Runeninschriften in Göttingen vom 4.–9. August 1995,* ed. by K. Düwel, 103–16. Berlin.

DR = Lis Jacobsen and Erik Moltke. 1941–42. *Danmarks runeindskrifter,* I–II. København [cited by column from the text volume, or by the inscription number in the corpus].

Dürscheid, Christa. 2004. *Einführung in die Schriftlinguistik.* 2nd ed. Wiesbaden.

Düwel, Klaus. 1992. "Runen als magische Zeichen." In: *Das Buch als magisches und als Repräsentationsobjekt,* ed. by P. F. Ganz, 87–100. Wiesbaden.

—. 1994. "Runische und lateinische Epigraphik im süddeutschen Raum zur Merowingerzeit." In: *Runische Schriftkultur in kontinental-skandinavischer und angel-sächsischer Wechselbeziehung. Internationales Symposium in der Werner-Reimers-Stiftung vom 24.–27. Juni 1992 in Bad Homburg,* ed. by K. Düwel, 229–308. Berlin.

—. 1998. "Futhark." In: *Reallexikon der Germanischen Altertumskunde,* ed. by H. Beck *et al.* (2nd ed.) vol. 10, 273–76. Berlin.

—. 2001. *Runenkunde.* 3rd ed. Stuttgart.

Düwel, Klaus and Wilhelm Heizmann. 2006 [forthcoming]. "Das ältere Fuþark – Überlieferung und Wirkungsmöglichkeiten." In: *The Fuþark and its Further Developments in Separate Linguistic Traditions. Das Fuþark und seine einzelsprachlichen Weiterentwicklungen. Akten der in Eichstätt abgehaltenen Tagung vom 20. bis 24. Juli 2003,* ed. by A. Bammesberger *et al.* Berlin.

Flowers, Stephen E. 1986. *Runes and Magic. Magical Formulaic Elements in the Older Runic Tradition.* New York.

Fridell, Staffan. 2000. "De stavlösa runornas ursprung." *Saga och sed.* Kungl. Gustav Adolfs Akademiens årsbok 2000, 85–100.

G = Sven B. F. Jansson and Elias Wessén. 1962. *Gotlands Runinskrifter,* 1. Stockholm.

Grønvik, Ottar. 1985. *Runene på Eggjasteinen. En hedensk gravinnskrift fra slutten av 600-tallet.* Oslo.

—. 1999. "Runeinnskriften fra Ribe." *Arkiv för nordisk filologi* 114, 103–27.

Haugen, Einar. 1969. "On the parsimony of the younger futhark." In: *Festschrift für Konstantin Reichardt*, ed. by C. Gellinek, 51–58. Bern.

—. 1976a. *The Scandinavian Languages. An introduction to their history*. London.

—. 1976b. "The dotted runes: from parsimony to plenitude." In: *Proceedings of the Seventh Viking Congress, Dublin 15–21 August 1973*, ed. by B. Almqvist and D. Greene, 83–92. Dublin.

IK = Karl Hauck et al. 1985–89. *Die Goldbrakteaten der Völkerwanderungszeit. Ikonographischer Katalog*, I–III. München.

Jakobsen, Jakob. 1921. *Etymologisk Ordbog over det norrøne Sprog på Shetland*, I–II. København.

KJ = Wolfgang Krause with contributions by Herbert Jankuhn. 1966. *Die Runeninschriften im älteren Fuþark*, I. Text, II. Tafeln. Göttingen.

Klingenberg, Heinz. 1973. *Runenschrift – Schriftdenken – Runeninschriften*. Heidelberg.

Knirk, James. 1994. "Learning to write with runes in medieval Norway." In: *Medeltida skrift- och språkkultur. Nio föreläsningar från ett symposium i Stockholm våren 1992*. Stockholm, 169–212.

Krause, Wolfgang. 1971. *Die Sprache der urnordischen Runeninschriften*. Heidelberg.

Kuhn, Hans. 1961. "Anlautend *p*- im Germanischen." *Zeitschrift für Mundartforschung* 28, 1–31.

Laakso, Johanna. 1999. "Vielä kerran itämerensuomen vanhimmista muistomerkeistä" [with an English summary]. *Virittäjä* 4, 531–55.

—. 2005. "Der gefangene Kämpfer, oder ein kleiner Nachtrag zu den osfi. Elementen in den Nowgoroder Birkenrindenschriften." In: *Lihkkun lehkos! Beiträge zur Finnougristik aus Anlass des sechzigsten Geburtstages von Hans-Hermann Bartens*, ed. by C. Hasselblatt, E. Koponen and A. Widmer, 219–25. Wiesbaden.

Larsson, Patrik. 2002. *Yrrunan. Användning och ljudvärde i nordiska runinskrifter*. Uppsala.

Lerche Nielsen, Michael. 2001. "Swedish influence in Danish runic inscriptions." In: *Von Thorsberg nach Schleswig. Sprache und Schriftlichkeit eines Grenzgebietes im Wandel eines Jahrtausends. Internationales Kolloquium im Wikinger Museum Haithabu vom 29. September – 3. Oktober 1994*, ed. by K. Düwel *et al.*, 127–48. Berlin.

Lerche Nielsen, Michael, Marie Stoklund and Klaus Düwel. 2001. "Neue Runenfunde aus Schleswig und Starigard/Oldenburg." In: *Von Thorsberg nach Schleswig. Sprache und Schriftlichkeit eines Grenzgebietes im Wandel eines Jahrtausends. Internationales Kolloquium im Wikinger Museum Haithabu vom 29. September – 3. Oktober 1994*, ed. by K. Düwel *et al.*, 201–80. Berlin.

Liestøl, Aslak. 1960. "Futharken." In: *Kulturhistorisk leksikon for nordisk middelalder* 5, 35–7.

—. 1964. "Runer frå Bryggen." *Viking* 27, 5–53.
—. 1981a. "The Viking runes: The transition from the older to the younger fuþark." *Saga-Book* 20, 247–66.
—. 1981b. "The emergence of the Viking runes." *Michigan Germanic Studies* 7, 107–16.
Looijenga, Tineke. 2003. *Runes: Around the North Sea and on the Continent AD 150–700, Texts and Contexts*. Leiden/Boston.
Makaev, Ènver A. 1996. *The Language of the Oldest Runic Inscriptions. A Linguistic and Historical-Philological Analysis*. Transl. by J. Meredig. Stockholm (Russ. original 1965).
Marold, Edith. 2003. "Die drei Götter auf dem Schädelfragment von Ribe." In: *Runica–Germanica–Mediaevalia*, ed. by W. Heizmann and A. van Nahl, 403–17. Berlin.
McKinnell, John and Rudolf Simek. 2004. *Runes, Magic and Religion. A Sourcebook*. Wien.
Miller, D. Gary. 1994. *Ancient Scripts and Phonological Knowledge*. Amsterdam / Philadelphia.
Moltke, Erik. 1976. *Runerne i Danmark og deres oprindelse*. København.
—. 1985. *Runes and Their Origin. Denmark and Elsewhere*. Copenhagen.
—. 1986. "Det yngre runealfabets tilblivelse og spaltning. Alfabethistorisk, lydhistorisk, kulturhistorisk." *Årbøger for Nordisk Oldkyndighed og Historie* 1985, 29–37.
Morgenroth, Wolfgang. 1961. "Zahlenmagie in Runeninschriften. Kritische Bemerkungen zu einigen Interpretationsmethoden." In: *Wissenschaftliche Zeitschrift der Ernst-Moritz-Arndt-Universität*, Jg. 10, Gesellschafts- und sprachwissenschaftliche Reihe 3, 279–83.
Nedoma, Robert. 2003. "Runennamen." In: *Reallexikon der Germanischen Altertumskunde*, ed. by H. Beck *et al.* (2nd ed.) vol. 25, 556–62. Berlin.
—. 2004. *Personennamen in südgermanischen Runeninschriften*. Heidelberg.
Nielsen, Hans Frede. 2000. *The early runic language of Scandinavia. Studies in Germanic dialect geography*. Heidelberg.
Nielsen, Karl Martin. 1985. "Runen und Magie. Ein forschungsgeschichtlicher Überblick." *Frühmittelalterliche Studien* 19, 75–97.
Odenstedt, Bengt. 1990. *On the Origin and Early History of the Runic Script. Typology and Graphic Variation in the Older Futhark*. Uppsala.
—. 1992. "Om uppkomsten av den yngre futharken. En diskussion av några huvudteorier." *Blandade runstudier* 1, 67–80.
Olsen, Magnus. 1908. *Tryllerunerne paa et vævspjeld fra Lund i Skaane*. Christiania.
—. 1917. *Om Troldruner*. Uppsala.
Olsen, Magnus and Haakon Shetelig. 1933. *Runekammen fra Setre*. Bergen.
Page, R. I. and Jan Ragnar Hagland. 1998. "Runica manuscripta and runic dating: the expansion of the younger fuþark." In: *Innskrifter og datering. Dat-*

ing Inscriptions, ed. by A. Dybdahl and J. R. Hagland, 55–71. Trondheim.
Quak, Arend. 1982. "Zur Entstehung des sogenannten jüngeren Futharks." *Amsterdamer Beiträge zur älteren Germanistik* 17, 145–56.
Rischel, Jørgen. 1967/68. *Phoneme, Grapheme, and the 'Importance' of Distinctions: Functional Aspects of the Scandinavian Runic Reform*. Stockholm.
Schulte, Michael. 1998. *Grundfragen der Umlautphonemisierung. Eine strukturelle Analyse des nordgermanischen i/j-Umlauts*. Berlin.
—. 2003. "Early Nordic language history and modern runology. With particular reference to reduction and prefix loss." In: *Historical linguistics 2001. Selected papers from the 15th ICHL, Melbourne, 13–17 August 2001*, ed. by B. J. Blake and K. Burridge, 391–402. Amsterdam/Philadelphia.
—. 2004. "Fonologisk baserte skriftendringer? Overgangen fra den eldre til den yngre fuþarken." *Maal og Minne* 2004, 41–55.
—. 2005a. "The classical and Christian impact on *Vǫlospǫ́*. Toward a topomorphical approach." *Arkiv för nordisk filologi* 120, 181–219.
—. 2005b. "Die lateinisch-altrunische Kontakthypothese im Lichte der sprachhistorischen Evidenz." *Beiträge zur Geschichte der deutschen Sprache und Literatur* 127, 161–82.
—. 2006a [forthcoming]. "Übergangsinschriften." In: *Reallexikon der Germanischen Altertumskunde*, ed. by H. Beck *et al.* (2nd ed.) vol. 31. Berlin.
—. 2006b [forthcoming]. "Älteres und jüngeres Fuþark – Phonologische Aspekte der Reduktion des Runenalphabets." In: *The Fuþark and its Further Developments in Separate Linguistic Traditions. Das Fuþark und seine einzelsprachlichen Weiterentwicklungen. Akten der in Eichstätt abgehaltenen Tagung vom 20. bis 24. Juli 2003*, ed. by A. Bammesberger *et al.* Berlin.
—. 2006c [forthcoming]. "Ein kritischer Kommentar zum Erkenntnisstand der Blekinger Inschriften." *Zeitschrift für deutsches Altertum* 135.
—. 2006d [forthcoming]. "Wortforschung." In: *Reallexikon der Germanischen Altertumskunde*, ed. by H. Beck *et al.* (2nd ed.) vol. 34. Berlin.
Seim, Karin Fjellhammer. 1998. *De vestnordiske futhark-innskriftene fra vikingtid og middelalder. Form og funksjon*. Ph.d. dissertation. Trondheim [publ. 1999].
—. 2003. "Runenreihen." In: *Reallexikon der Germanischen Altertumskunde*, ed. by H. Beck *et al.* (2nd ed.) vol. 25, 567–71. Berlin.
Stoklund, Marie. 1994. "Malt-stenen – en revurdering." In: *Proceedings of the Third International Symposium on Runes and Runic Inscriptions. Grindaheim, Norway, 8–12 August 1990*, ed. by J. E. Knirk, 179–202. Uppsala.
—. 1996. "The Ribe cranium inscription and the Scandinavian transition to the younger reduced futhark." In: *Frisian Runes and Neighbouring Traditions*, ed. by T. Looijenga and A. Quak, 199–209. Amsterdam/Atlanta.
—. 1997. "Futharken som nøgle til lønnrunesystem på Schleswig-benstykke 5." *Blandade runstudier* 2, 111–13.
—. 2001. "Die Inschriften von Ribe, Hedeby und Schleswig und die Bedeutung

der Schwedenherrschaft." In: *Von Thorsberg nach Schleswig. Sprache und Schriftlichkeit eines Grenzgebietes im Wandel eines Jahrtausends. Internationales Kolloquium im Wikinger Museum Haithabu vom 29. September – 3. Oktober 1994*, ed. by K. Düwel *et al.*, 111–26. Berlin.

—. 2003. "Ribe. § 5. Runologisches." In: *Reallexikon der Germanischen Altertumskunde*, ed. by H. Beck *et al.* (2nd ed.) vol. 24, 554–59. Berlin.

Stroh-Wollin, Ulla. 2002. "Den 15-typiga futharken", In: *Studier i svensk språkhistoria 6. Förhandlingar vid sjätte sammankomsten för svenska språkets historia, Helsingfors 11–12 maj 2000*, ed. by G. Harling-Kranck and H. Lehti-Eklund, 223–32. Helsingfors.

Trnka, B. 1939. "Phonological remarks concerning the Scandinavian runic writing." *Travaux de Cercle linguistique de Prague* 8, 1939, 292–96.

U = Elias Wessén and Sven B. F. Jansson. 1940–58. *Upplands runinskrifter*, 1–4. Stockholm.

Williams, Henrik. 1992. "Which came first: ᚿ or ᛗ?" [Review of Odenstedt 1990]. *Arkiv för nordisk filologi* 107, 192–205.

—. 1994. "The non-representation of nasals before obstruents." In: *Proceedings of the Third International Symposium on Runes and Runic Inscriptions, Grindaheim, Norway, 8–12 August 1990*, ed. by J. E. Knirk, 217–22. Uppsala.

—. 2001. "From Meldorf to Haithabu: some early personal names from Schleswig-Holstein." In: *Von Thorsberg nach Schleswig. Sprache und Schriftlichkeit eines Grenzgebietes im Wandel eines Jahrtausends. Internationales Kolloquium im Wikinger Museum Haithabu vom 29. September – 3. Oktober 1994*, ed. by K. Düwel *et al.*, 149–65. Berlin.

—. 2007 [forthcoming]. "Read what's there: interpreting rune-stone inscriptions." In: *The Sixth International Symposium on Runes and Runic Inscriptions, University of Lancaster, 11–16 August 2005*, ed. by M. Barnes *et al.*

Wimmer, Ludvig F. A. 1887. *Die Runenschrift*. 2nd ed. Berlin.

Wrenn, C. L. 1932. "Late Old English rune-names." *Medium Ævum* 1, 24–34.