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Runic Inscriptions in an Unrecognized Foreign Tongue?

Methodological Preliminaries to Language Identification*

Abstract

Some allegedly nonsensical runic inscriptions from the late Viking Age and the early Middle Ages in Scandinavia might appear to be written in an unencrypted natural language. This paper discusses prerequisites to determining their possible linguistic meaningfulness and to identifying the language or languages concerned. Major indications of meaningfulness, both linguistic and non-linguistic, are cross-inscriptional textual parallels, particularly if the inscription-carriers are geographically far apart. Clues which jointly suggest linguistic structure include the employment of essentially all the signs of the basic 16-symbol futhark, the occurrence of special 'rune-like signs' that appear to augment the futhark inventory, the linguistically natural frequency of graphs, linguistically natural graphotactics, the recurrence of specific runes or runic combinations e.g. in 'quasi-word-final' position, and seemingly natural usage of separators. A crucial pre-condition of identifying the language used consists of the establishment of a basis for the comparison of inscription and language, either through recourse to actual contemporary language data or through historical-comparative and language-internal reconstruction. Factors suggestive of successful language identification include (a) a high degree of inscription-internal structural and lexical consistency vis-à-vis the language under investigation (barring borrowings and code-mixing), (b) parallels with other internally consistent inscriptions, (c) a markedly better match to one particular language than to others, and (d) the applicability of the hypothesis to cases beyond the one for which it was originally devised. Due to the complex nature of the enterprise (highly impoverished runic script, brief texts, meager corpus of inscriptions, absence of contemporary records for many languages, lack of socio-cultural information etc.), the analyst normally operates with varying degrees of probability rather than definitive proof of language identification.

Keywords: Nonsense inscriptions, non-lexical inscriptions, inscription-internal consistency, cross-inscriptional parallels, comparison of inscription and language, internal reconstruction, historical-comparative reconstruction, accidental resemblances, language identification

1. The language of late Viking-Age and early medieval runic inscriptions in Scandinavia

A common tacit understanding in runology is that late Viking-Age and early medieval runic inscriptions in Scandinavia are, with one notable kind

* Due to restrictions of space, this paper develops only the first, methodological, section of my presentation at the Eighth International Symposium on Runes and Runic Inscriptions, Nyköping, Sweden, 2014. The material in the latter, more extensive, analytical section will be discussed elsewhere. I am greatly indebted to Mindy MacLeod for her extremely careful stylistic editing of my manuscript. Remaining imperfections are my own.

of exception, always written in Scandinavian. For commemorative stone inscriptions, this view has been made explicit in what we may call *the monolingual postulate for late Viking-Age runic epigraphy in Scandinavia*:

- (1) [L]ate Viking-Age rune-stones ... differ in size, shape, and design, but the content of the inscriptions is very uniform, and *everywhere the language is Old Scandinavian*. (Sawyer 2000: 7; italics added by SE)

Non-epigraphic runic inscriptions from the early Middle Ages, on the other hand, are sometimes written in Latin, or a mixture of Scandinavian and Latin. In addition to these three kinds of interpretable inscriptions, we have both non-epigraphic inscriptions as well as a few seemingly epigraphic inscriptions that are considered to be linguistically meaningless. On the basis of their linguistic character, Viking-Age and early medieval runic inscriptions in Scandinavia are therefore in practice grouped as in (2).¹

- (2) *Linguistic character of Viking-Age and early medieval runic inscriptions in Scandinavia*:
- (a) Scandinavian;
 - (b) Latin;
 - (c) Mixed Scandinavian-Latin;
 - (d) Linguistic nonsense.

Group (2d), linguistic nonsense, constitutes a residual category ranging from apparently random scribbles to strings of runes that are obviously systematically organized in some way. The customary designation for this category is 'nonsense inscriptions' or, more recently, 'non-lexical inscriptions'. Neither term is entirely felicitous. While nonsense inscriptions may constitute nonsense from a purely linguistic point of view, they may carry meaning in some other (non-linguistic) respect. The alternative expression 'non-lexical inscriptions' expressly excludes lexical features, although surprisingly not structural ones. By either name, group (2d) comprises all those inscriptions which the modern analyst cannot satisfactorily assign to groups (2a–2c). While category (2d) is quite heterogeneous, embracing extraordinarily diverse inscriptional types, a small subset of these is of particular interest to the linguist in that the inscriptions appear, at least superficially, to express a natural language.

¹ Sporadic occurrences of Greek and Hebrew elements may be treated as borrowings (Knirk 1998: 478). The mixture of sense and nonsense in a single inscription is not given a special category here.

This paper discusses some prerequisites to the task of determining whether certain nonsense inscriptions might be linguistically meaningful and of identifying the language potentially involved. The paper is organized as follows: Section 2 provides additional background on the notion of nonsense inscriptions, supplies illustrative examples of uninterpreted or allegedly nonsensical inscriptions in the younger futhark from Denmark and Norway, and describes three closely interconnected facets of the basic linguistic procedure for probing the linguistic or non-linguistic character of uninterpreted inscriptions. Section 3 lists properties that may point to linguistic structure in linguistically undetermined runic inscriptions and adduces a few striking instances of cross-inscriptional parallels in such inscriptions. Section 4 returns to the task of language identification, comments on the choice of language(s) for testing, addresses the varying documentation of the medieval stages of some conceivable language matches, and outlines three types of comparison between inscription and language. Section 5 sums up the preceding discussion and notes important considerations which may suggest successful language identification.

2. Nonsensicality, examples of presumed runic nonsense, and key facets of the language identification procedure

The idea that old inscriptions which analysts cannot interpret constitute linguistic nonsense is also met with outside Scandinavia. A notable case of this sort relates to inscriptions from the 6th–4th centuries B.C. in Ancient Greece, which have thus far not been given any undisputed, linguistically meaningful interpretation. In his *Corpus of Attic Vase Inscriptions* of well over eight thousand items (published as Immerwahr 2008), the American classicist Henry R. Immerwahr found that “about a third are without meaning”, i.e. “nonsense inscriptions” (Immerwahr 2006: 136). Reasons for writing nonsense are according to Immerwahr (2006) “sloppiness or haste” (139), “lack of writing competence” (142) including “knowledge [only] of individual letters” (154), “a fall-back technique for those who had difficulty writing properly” (140), mechanical copying “without proper comprehension” (146), non-familiarity with certain names and lack of knowledge of their spelling (141), the “desire to complete a visual picture” (139), the fact that “writing nonsense was respectable because writing letters had prestige in itself” (140), and so forth. Immerwahr (2006: 155) concludes:

This picture is what one might expect in a social group that consisted of citizens, metics and other foreigners and which did not have the advantage of formal schooling enjoyed by the aristocracy. They mostly learned writing from each other and were proud to adorn their products with inscriptions, whether meaningful or not.

Similar arguments have been put forth for ‘uninterpretable’ runic inscriptions in Scandinavia (e.g. Moltke 1985: 317–318). It remains open, however, whether an entirely different explanation might be offered for some of the more elaborate or technically more accomplished Scandinavian runic inscriptions that have been claimed to constitute nonsense. Beyond their unintelligibility, the evidence advanced for their nonsensicality is not always particularly profuse, and the analyses and argumentation in favor of categorization as nonsense are usually not pursued in great detail. Moreover, as Latin inscriptions in runes show, runic writing is not inherently restricted to Scandinavian or Germanic languages. Could it be the case that some of the ‘nonsense’ inscriptions in Scandinavia are written in an unidentified foreign language, or even that several unidentified languages might theoretically be discernible?

Before attempting to determine whether certain ‘uninterpretable’ inscriptions might be written in an unrecognized language, we must first identify exemplars that are especially amenable to analysis. That means that the text specimens should be fairly long and well preserved, undamaged at the beginning and end if possible, not obviously abbreviated (to the extent that this can be surmised), preferably employ ‘word’ dividers, and so on. Short inscriptions, still more obscure due to the poverty of Viking-Age runic script, can often be read in many different ways and matched to elements of many different languages; they may, however, on occasion be of use in the context of other longer inscriptions.

A small set of uninterpreted or allegedly nonsensical runic inscriptions is reproduced in Table 1. Three of the inscriptions in Table 1 (Bh 56, Fyn 47, N 647), all of which have been suspected of being largely or entirely nonsensical, are sufficiently lengthy to enable at least a tentative inquiry into their linguistic nature. The remaining two inscriptions (NJy 54 and N 863) are included because they pertain to two of the longer inscriptions (Bh 56 and Fyn 47).

A linguistic analysis of such uninterpreted inscriptions involves at least three closely interconnected procedures, (a) inscription-internal analysis, (b) cross-inscriptional analysis, and (c) comparison of inscription and language, as noted in Figure 1.

Table 1. Examples of uninterpreted Scandinavian late Viking-Age/early medieval runic inscriptions with symbol strings that might reflect unencrypted texts in one or more natural languages.

No.	Locality	Transliterated text	Date
Bh 56	Østermarie	× ḡubmt : nḡuski : uaku × hḡa : osu × airbrni : ḡupi : ḡub : msmiht : ionḡḡpn × +itḡi □ iki +?:(?)	1025–1075
Fyn 47	Sørup	ḡu · i ... ḡiḡ m · · srnesisn : urnukbh-āṣi □ snṛḡpmi : itsihḡi × li isifubṛlak · iseya · li	1050–1250
NJy 54	Suldrup	k : ḡiḡ :	1100–1300
N 647	Bergen	□- ḡṛḡḡḡ · ḡni : tsimutḡuinok : ioigannisabsicḡmsic	c. 1200
N 863	Trondheim	kui : ḡ - - □ li	1050–1200

Note: Subscript dot . = uncertain reading; hyphen - = unidentified but countable rune; ... = possible but uncountable runes; a superscript ligature sign $\overset{\sim}{}$ marks two or more runes united into a bindrune; □ = ornamentation interrupts inscription; □ = break of inscription carrier; □ = empty, possibly scaled, portion of surface with no clear trace of runes or dividers; || = new line or new side. The symbols **ḡ** **i** **ḡ** stand for reversed **k**, **l** and **n**-runes, respectively, while the symbol **ḡ** represents a dotted reversed **k**-rune. The question marks ??(?) in the transliteration of Bh 56 indicate three symbols often interpreted as golden numbers with some reservations for the last. Fyn 47 **is** is perhaps a so-called chair-**s**; **nuk** is an unusual multiple bindrune; **k** is an upside-down **k**. In N 647 the second **i** has also been read as **e**. Bh 56 **ḡiḡ** and NJy 54 **kḡiḡ** are written from right to left. To enhance readability, spaces are inserted before and after a separator such as ×, ·, and ·. Abbreviations (contractions and/or suspensions) may occur on Bh 56, Fyn 47, NJy 54, and N 863. For further information on the inscriptions, see DK whose sigla for Danish inscriptions have been used here, DR (cols. 454, 220–221, 175), NlyR 6 (95–96), Hagland (n.d.), and the *Scandinavian Runic-Text Database*. The dates for the Danish inscriptions follow DK.

Figure 1. Schematized connections between three facets of the basic linguistic procedure for identifying the potential language of a linguistically unidentified runic text.

3. Inscription-internal and cross-inscriptional analysis

The first step in the linguistic investigation of linguistically undetermined inscriptions is inscription-internal analysis. Indications that a (non-encrypted) natural language (NL) may be hidden in an allegedly nonsensical inscription include those in (3).

- (3) *Properties of runic ‘nonsense’ potentially suggestive of a (non-encrypted) text in a NL:*
- (a) The runic inventory used does not seriously contradict typical NL phoneme *inventories*;
 - (b) The frequency of individual runes does not entirely conflict with typical NL phoneme *frequencies*;
 - (c) The sequential distribution of runes (graphotactics) in the inscription approximates existing types of NL *phonotactics* (barring potential abbreviation);
 - (d) Separators (or, occasionally, spaces) divide the inscription into chunks potentially corresponding to linguistically meaningful elements in a NL;

- (e) A particular rune or runic combination recurs in specific positions such as chunk-final position, suggestive of inflectional suffixes in NLs;
- (f) Special ‘rune-like signs’ occur which might, under certain circumstances, suggest the need to express foreign phonemic distinctions not specified by the 16-rune futhark.

For instance, the clearly readable part of the Bergen inscription N 647 makes varied use of most of the runes of the basic futhark and some additional variants in a sequentially orderly fashion with occasional separators, and is more or less reminiscent of a text in a NL. The more intricate texts of Bh 56 and Fyn 47 also employ augmented symbol inventories, and Fyn 47 evinces a final element **li** on Side A as well as Side B, reminiscent, for example, of a morphological ending. It is evident, however, that the considerations in (3) offer loose guidelines rather than firm criteria.

The next step in the investigation is cross-inscriptional analysis. One of the aims of this kind of analysis is to compare different linguistically undetermined inscriptions with each other in order to ascertain whether they contain similar configurations of runes. Such cross-inscriptional similarities may in principle be (a) purely accidental, (b) conventional but linguistically meaningless, or (c) linguistically meaningful. Table 1 provides several intriguing examples. One of these is Østermarie Bh 56 **ku.i... || ŋiḱ** which has parallels in Suldrup NJy 54 **k:ŋiḱ:** and Trondheim N 863 **kui:ŋ--zli**. Moreover, both Bh 56 **ŋiḱ** and NJy 54 **k:ŋiḱ:** are written in reversed reading order from right to left, which may be important. Another potential correspondence is the element **li** that appears twice on the Sørup stone, separated from the preceding runes by a divider (**×li** and **·li**, respectively), which may also occur on Trondheim N 863 in the form **zli**. Finally, Østermarie **itḱi□ikḱi** may have a counterpart in Sørup **itcsihḱi**. Significantly, these three suspected cross-inscriptional parallels actually *interconnect* with each other in the way depicted in Figure 2.

The parallels are unlikely to represent mere random resemblances.² Moreover, since the four inscriptions are geographically far apart, it is improbable that the parallels are simply meaningless imitations of one another. In addition, the texts of the two stone inscriptions Bh 56 and Fyn 47 are otherwise quite varied and do not appear to constitute conventional though non-linguistic formulas. It is likely that something else underlies these NL-like inscriptions that we have not yet understood.

² Already DR (cols. 175, 454) points out that the similarity between the Bh 56 sequences **ku.i... || ŋiḱ** and NJy 54 **k:ŋiḱ:** cannot be accidental.

Figure 2. Interconnected cross-inscriptional parallels in four uninterpreted Danish and Norwegian inscriptions from the late Viking Age/early Middle Ages.

4. Language identification

It is, of course, possible that the five mysterious inscriptions in Table 1 are all encrypted. Hitherto, however, this has not been proved, and modern runologists have usually accepted that most of them are largely nonsensical. Yet neither encryption nor nonsense seems a likely explanation for the stately and elegantly designed Sørup stone.

Another traditionally overlooked possibility is that the language or languages of the inscriptions in question have not been satisfactorily identified (cf. Section 1). Language identification as a practical task and as a topic for scientific research is most familiar from computational linguistics. Within that research context, Lui & Baldwin (2012: 25) give the following definition:

Language identification ... is the task of determining the natural language that a document is written in. It is a key step in automatic processing of real-world data, where a multitude of languages may be present.

Automatic language identification, today a common procedure on the Internet, typically operates on longer modern texts commonly written in one specific language in a standardized orthography, mostly with overt marking of word boundaries (e.g. by means of spacing). Unfortunately, in the analysis

of older, linguistically unidentified inscriptions, few of these favorable conditions apply. Ancient inscriptions are often short, written in variable orthography, and frequently damaged; the corpora of inscriptions are comparatively small, and the contemporary bodies of text in languages to which they may be compared are commonly restricted or even non-existent. If, like in numerous Roman epitaphs, abbreviations occur, these will in runic script mostly be non-standard, will easily be able to be read in diverse languages, and will usually not aid in determining the language used. Theoretically, moreover, while the individual exemplars in any given corpus of natural-looking, linguistically unidentified inscriptions might all be written in the same language, they may also be written in different ones. Finally, some inscriptions might show instances of borrowing, code-mixing, or code-switching (cf. 2c above). In particular, the likelihood of sporadic borrowing must be considered during attempts at ancient language identification.

The first move in runic language identification proper is to choose a language against which the text can be compared. Caution in the study of allegedly nonsensical, yet natural-looking, presumably unencrypted, runic inscriptions requires a renewed and extremely thorough review of the Scandinavian option. Only if that fails should other languages be considered. Archaeological discoveries or historical documents might provide promising suggestions as for the choice of languages to be tested, although most often this is not the case. In general, nearby languages spoken by a large group of people customarily involved in foreign trade and exchange are more likely candidates than geographically distant minority languages spoken in a restricted locality by a sedentary population, but many different scenarios are imaginable.

One factor that substantially affects the reliability of the comparison of inscription and language is the record of the proposed language in written texts at the time of the inscription. Another one is the degree to which unattested properties of this language can be reconstructed. We discern three major possibilities of decreasing strength as in (4).

- (4) *Stage of proposed language contemporaneous with inscription under analysis:*
 - (a) Actually attested in comprehensible written documents from the time period in question;
 - (b) Only inferred through historical-comparative and internal reconstruction;
 - (c) Merely internally reconstructed (for language isolates).

Table 2. Approximate extent of documentation of four languages/language groups in the 10th–13th centuries.

<i>Language or language group</i>	<i>Documentation in 10th–13th century texts</i>	<i>Examples of further roughly contemporary evidence</i>	<i>Sample references for the language or language group</i>
<i>Old Russian (Old East Slavic)</i>	Ample	Recorded onomastics	Schmalstieg (1995) Zaliznjak (2004) Schaeken (2019)
<i>Medieval Baltic</i>	None	Recorded onomastics	Eckert et al. (1994) Zinkevičius (1996)
<i>Medieval Fennic (Baltic Finnic)</i>	None (exception: Novgorod birch bark letter #292)	Recorded onomastics	Laanest (1982) Schaeken (2019: 133)
<i>Medieval Basque</i>	None (except two brief glosses, together comprising five distinct words). (No homeland monuments from this time inscribed with texts in Basque)	A few 12th c. lexical items (noted by the French traveller Aimery Picaud). Recorded onomastics (anthroponyms and toponyms)	Orpustan (1999) Trask (1997)

Examples of these three situations from northeastern and western Europe are shown in Table 2.

While Old Russian, i.e. Old East Slavic, is amply documented for the period in question, medieval Baltic is not textually documented at all, and medieval Fennic is textually attested only through a mid-13th century birch bark letter. Similarly, the entire corpus of 10th–13th century Basque texts consists of two short glosses (the so-called Emilian Glosses) of no more than six word tokens constituting five distinct words, two of which are highly obscure, in a Latin manuscript from circa A.D. 950–1050 (Trask 1997: 42). The chances of successful language identification are immeasurably better when the stage of the language concerned is documented in text and can be comparatively and internally reconstructed than when the language stage is essentially only comparatively and internally reconstructible, and dramatically reduced for a stage of language such as 10th–13th century Basque, where the analyst is dealing primarily with internal reconstruction, modern dialectal evidence and recorded onomastics. Thus, the reliability of results obtained will be successively weakened as we proceed from situation (4a) to (4c). Especially in the case of a possible match to a language isolate without medieval textual documentation, the impossibility of matching the inscription to alternative languages is, therefore, an important consideration in the appraisal of the inscription.

The types of comparison of inscription and language are those found in (5).

- (5) (a) Structural comparison (morphology, phonology, syntax);
- (b) Lexical comparison (vocabulary);
- (c) Onomastic comparison (particularly of possible personal names).

The component of overall comparison that is absolutely crucial to language identification is structural comparison, as languages are generally defined by structural traits rather than by their lexicons or onomastics.

5. Summary and concluding remarks

A common assumption in Scandinavian runology is that, excepting the occasional use of Latin, late Viking-Age and early medieval runic inscriptions in Scandinavia are always written in Scandinavian (Section 1). While the monolingual postulate for late Viking-Age epigraphy in (1) above generally holds true, a few apparent epigraphs remain that do not easily lend

themselves to a Scandinavian reading, such as Bh 56 and Fyn 47 (Section 2). In addition, there are a number of non-epigraphic inscriptions that are not readily interpretable as ordinary Scandinavian or Latin. Analysts assign both groups to the broader class of nonsense or non-lexical inscriptions. Yet some of these inscriptions have the *prima facie* appearance of texts in a natural non-encrypted language (Section 3). Some, furthermore, display complex systematic cross-inscriptional parallels, which in fact precludes the idea that these particular inscriptions are simply meaningless gibberish. The determination of their exact character is exceedingly difficult, however. One possibility is that they might be written in a previously unrecognized language (Section 4).

Considerations which suggest that an attempt to identify the language of an inscription might have some validity include the following:

- (6) (a) In the absence of code-mixing, the comparison of the inscription and a specific language yields a large measure of inscription-internal structural and lexical consistency relative to that language;
- (b) Cross-inscriptional parallels with other inscriptions can be adduced, similarly fulfilling condition (6a);
- (c) The inscription shows a much better match to the hypothesized language than to others (although the match may not be perfect due to unrecorded dialect variation, impact of language contact etc.);
- (d) The hypothesis explains additional cases, i.e. cases beyond the ones for which it was originally devised.

The considerations in (7) are highly important:

- (7) (a) The emergent interpretation of the inscription is reasonable from extra-linguistic communicative considerations (e.g. a foreign-language replica of the Scandinavian Viking-Age commemorative formula might conceivably appear on a runic memorial stone);
- (b) Geographical distance, historical circumstances, cultural factors etc. do not preclude any chance of contact;
- (c) Language-external evidence in the form of archaeological finds, genetic data, documentary attestations, cultural influences etc. suggests direct contacts to the general region where the assumed language is/was spoken.

The value of individual pieces of putative evidence varies greatly. In isolation, a given piece of evidence normally proves little. Only in combination and when a reasonably coherent pattern emerges do the individual pieces of evidence begin to carry weight. Ultimately, as we have seen, attempts to determine the nature of inscriptions suspected of being written in a foreign tongue encounter a multitude of practical obstacles such as purely material difficulties in runic analysis, the extremely impoverished Viking-Age runic writing system, the brevity of text specimens and limited corpus of inscriptions, huge diversity of content in non-epigraphic inscriptions, absence of contemporary texts in many potential language matches as well as possibly unknown dialect diversification in these and lack of dialect data. Further difficulties concern the limitations of internal and historical-comparative reconstruction, the possibility of borrowing, the dearth of socio-cultural information, and finally the ever-present risk of accidental resemblance. Reasons such as these generally compel the analyst to operate with varying degrees of probability rather than definitive proof of language identification.

Bibliography

- Bh = inscription from Bornholm in DK.
 DK = *Danske runeindskrifter*. <http://runer.ku.dk>
 DR = Jacobsen, Lis & Moltke, Erik (eds.), 1941–1942. *Danmarks runeindskrifter. Atlas. Text. Registre*. Copenhagen: Ejnar Munksgaards Forlag.
 Eckert, Rainer, Bukeyičiūtė, Elvira-Julia & Hinze, Friedhelm, 1994: *Die baltischen Sprachen: Eine Einführung*. Leipzig: Langenscheidt/Verlag Enzyklopädie.
 Fyn = inscription from Funen in DK.
 Hagland, Jan Ragnar, n.d.: *Runer frå utgravingane i Trondheim bygrunn 1971–94. Med eit tillegg av nyfunne innskifter elles frå byen (N774–N894)*. <https://www.arild-hauge.com/PDF/Runer%20fra%20utgravingane%20i%20Trondheim%20bygrunn%201971-94.pdf>
 Immerwahr, Henry R., 2006: Nonsense inscriptions and literacy. In: *Kadmos. Zeitschrift für vor- und frühgriechische Epigraphik* 45 (1–2). Pp. 136–172.
 — 2008: *Corpus of Attic Vase Inscriptions*. Online version: <http://www.unc.edu/~hri/Inscriptions.pdf> (2014-12-08).
 Knirk, James E., 1998: Runic inscriptions containing Latin in Norway. In: Düwel, Klaus (ed.), *Runeninschriften als Quellen interdisziplinärer Forschung: Abhandlungen des Vierten Internationalen Symposiums über Runen und Runeninschriften in Göttingen vom 4.–9. August 1995*. (Ergänzungsbande zum

- Reallexikon der Germanischen Altertumskunde 15.) Berlin/New York: Walter de Gruyter. Pp. 476–507.
- Laanest, Arvo, 1982: *Einführung in die ostseefinnischen Sprachen*. Hamburg: Buske Verlag.
- Lui, Marco & Baldwin, Timothy, 2012: langid.py: An off-the-shelf language identification tool. In: *50th Annual Meeting of the Association for Computational Linguistics, Proceedings of the System Demonstrations, Jeju Island, Republic of Korea, 10 July 2012*. Stroudsburg, PA: Association for Computational Linguistics. Pp. 25–30. <http://www.aclweb.org/anthology/P/P12/P12-3000.pdf>
- Moltke, Erik, 1985: *Runes and their Origin: Denmark and Elsewhere*. Copenhagen: The National Museum of Denmark.
- N = inscription from Norway in NIyR 6 or Hagland (n.d.).
- NIyR 6 = *Norges innskrifter med de yngre runer*. Vol. 6, 1980–1990. Oslo: Norsk historisk kjeldeskrift-institutt.
- NJy = inscription from North Jutland in DK.
- Orpustan, Jean-Baptiste, 1999: *La langue basque au Moyen Age (IX^e–XV^e siècles)*. Saint-Étienne-de-Baïgorry: Éditions Izpegi.
- Sawyer, Birgit, 2000: *The Viking-Age Rune-Stones: Custom and Commemoration in Early Medieval Scandinavia*. Oxford: Oxford University Press.
- Scandinavian Runic-Text Database/Samnordisk runtextdatabas*. Uppsala: Institutionen för nordiska språk, Uppsala universitet. <http://www.nordiska.uu.se/forsk/samnord.htm>
- Schaeken, Jos, 2019 [2018]: *Voices on Birchbark: Everyday Communication in Medieval Russia*. Leiden/Boston: Brill.
- Schmalstieg, William R., 1995: *An Introduction to Old Russian*. (Journal of Indo-European Studies, Monograph 15.) Washington, DC: Institute for the Study of Man.
- Trask, Robert Lawrence, 1997: *The History of Basque*. London/New York: Routledge.
- Zaliznjak, Andrej Anatol'evič, 2004: *Drevnenovgorodskij dialekt*. 2nd ed. Moscow: Jazyki Slavjanskoj Kul'tury.
- Zinkevičius, Zigmas, 1996: *The History of the Lithuanian Language*. Vilnius: Mokslo ir enciklopedijų leidykla.