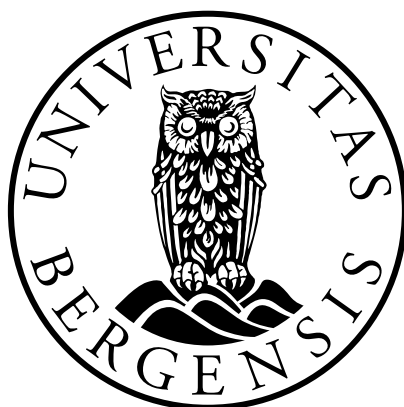# The *EMROON* Referential System

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Chapter 4

The ᴇᴍʀᴏᴏɴ referential system

4.1   Problems with describing historical written languages

When one tries to make sense of a historical language that is transmitted in alphabetic writing only, one faces the problem of how to describe and judge the regularities and irregularities in spelling, i.e. that language's orthography. There is no *a priori* way to know whether orthographic differences between two sources reflect a difference in the spoken language they represent (be it the spoken language of the scribe or some norm he or she adheres to in writing), or whether those differences are representative of a difference in the phonographic rules employed by the scribes, or both.

An additional problem is judging what actually constitutes a difference in spelling: such a difference can only be identified once it has been ascertained that the two difference written entities actually refer to the same thing. How do we know that what scribe A spells |ѵærðr| actually refers to same word as what scribe B spells |ѷþ₂|? How do we even know that the same scribe refers to the same entity even though he or she might spell it differently throughout the same manuscript?

We know so by referring to our experience: a seasoned researcher knows Old Norse and what manuscript letters can represent what sound. Thus, the researcher will identify both words as representing Old Norse *verðr*. The context will further clarify whether we have to do with an adjective (*verðr* "worth") or a verb (*verðr* "becomes"); and because our researcher is very experienced, he or she will actually be able to identify the individual word that both manuscripts represent.

Now the researcher can describe manuscript orthography: apparently scribe A may write initial /v/ as |ѵ|, /e/ as |æ|, /r/ as |r|, and the voiced allophone [ð] of /þ/ as |ð|. Scribe B on the other hand may spell initial /v/ as |v| and the voiced allophone [ð] of /þ/ as |þ|; he or she may use round |₂| after |þ|, and the sequence /er/ may be abbreviated by |◌̇|.

The researcher may describe and analyze more of the manuscript in a similar way. However, it remains an open question whether these observed differences reflect different spelling systems or different represented phonological systems. The researcher may again rely on his or her experience to assume that B's |þ| probably represents a voiced allophone [ð] of /þ/, even though the letter also represents the voiceless allophone [θ]. Also from his or her experience, the researcher may assume that A's |æ| represents a somewhat lowered /e/, since such a development has been described for some dialects of Old Norse. We see that interpreting the phonology and orthography of a historical written language is an equation with many

unknown variables: a priori, we do not know the contents or the language represented, nor do we know its phonological system. We do not know the rules for how it was graphically represented. All these variables, however, are not completely unknown, but only partially unknown. By filling in the gaps in our knowledge, we can step by step draw a more and more narrow hermeneutic circle and more accurately pinpoint the variables of our equation (Dyvik 1996, p. 15).

Once we have identified the writing as the Latin alphabet, we know how it is usually employed, and even though e.g. ⟨c⟩ may represent anything from [k] to [s] to [θ] and [ʧ], it probably does not represent [u] or [m]. Once we have identified the language as Old Norse, we have other sources to draw on: there are related languages (the other Gmc. languages like Gothic, German, English, or Dutch) and languages derived from Old Norse (the Nordic languages, especially Modern Icelandic) that can be and have been mined for comparative evidence. Skaldic and Eddic poetry gives us hints as to the relative phonology (rhyme) and syllabic structure of (one stage of) the language. In the case of Old Norse we even have excellent contemporary descriptions of the language.[1] Last but not least, extensive research has been undertaken on the history of the Old Norse language, and even though some of the results of it were arrived at through the use of questionable or outdated methods (see **??**), there can very little doubt that Old Norse phonology has already been described correctly, at the very in least in broad strokes.

There is another problem dealing with historical languages, even if we have precise descriptions of them (be it from contemporary sources or by reconstructive research): We do not know which variant of the language is represented. As I have shown (**??**), a written language may show variation along a number of axes. However, our knowledge of the Latin alphabet and the Old Norse language enables us to safely assume that the above examples |ʋærðr| and |v̊þ₂| represent something along the lines of [werðɽ], [ˈværðəɽ], or [ˈvɛrðʏ̥r̥], but hardly [ʌnˈlaɪklɪ] or [ˌsʌmθɪŋˈɛls].

Since we already know a lot more than nothing about the Old Norse language, its phonological system and the writing system used to represent it, it makes sense to refer to this knowledge in the analysis of manuscript material. Accordingly, all approaches to interpreting Old Norse writing do so in some way or another. Even so called "autonomous" graphematic analyses refer to the referential background of existing external philological knowledge: they try to define graphemes in terms of minimal pairs and differences in meaning. But this presumes that the content of the text is understood, and since we are dealing with alphabetic writing, this is hardly possible without first deciphering the phono-referential glyphs of the writing system.[2]

However, most orthographic descriptions of Old Norse manuscript material refer (explicitly or − most often − implicitly) to some sort of phono-referential background. This background is usually identified as "normalized Old Norse" or something similar. Often no attention is given to the fact that there are a number of variants of "normalized Old Norse" floating around. These differences are often minute and insignificant (such as the use of 'ǿ' or 'œ' for /ǿ/), but especially when it comes to consonant clusters overlapping morpheme boundaries, more significant differences occur.[3] As long as all researchers use the same frame

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[1] The so-called *Grammatical Treatises*, especially the first one (*FGT*), ed. i.e. by Benediktsson 1972.

[2] Dyvik 1996, p. 15. Linear A is an example of a historical written language about whose lexicon, contents and phonology close to nothing is known. Interpreting it requires a truly autonomous analysis.

[3] Is the preterite of *byggja* "to build" spelled *bygði* or *byggði*? Even more importantly: is it *vanði* or *vandi* for

of reference, this does not pose a problem. In fact, the *ONP* orthography enjoys growing popularity in this function.[4] However, many researchers do not clarify exactly which normalization they employ, which may decrease the comparability of their results.

Another problem arises when spellings in the source material in question display phonological phenomena that are not represented in the referential orthography. *ONP* orthography, e.g., is largely designed to represent early 13th century Icelandic and thus does not, for instance, differentiate between 'á' and 'ǫ́' since /á/ and /ǫ́/ are believed to have merged at that stage of the development of Old Norse (Nedoma 2006, p. 26).[5] However, manuscripts from other times and places may very well reflect a difference between the rounded and the unrounded long low back vowel. In order to judge these spellings correctly, a researcher using *ONP* orthography as a frame of reference must rely on his or her knowledge of historical linguistics. By doing so, he or she will inevitably have to modify his or her referential system: assume /ǫ́/ where labial umlaut can be expected, /á/ where it cannot. This is often done implicitly and silently (Dyvik 1996, pp. 15f; Kjeldsen 2013, p. 103).

Yet another problem of using a specific phonology as a referential framework in the analysis of historic written languages has to do with the methodology of the approach itself: one will automatically commit to a specific phonological background for the depicted language. Insights into the orthographic regularities may lead one to modify the referential phonology. But when this modified phonology becomes the referential framework, one will again commit to an interpretation that might be premature. I will illustrate this with two examples:

1. The *ONP* orthography is used as referential system for the orthographic description of a manuscript A. We find that the referential phoneme /e/ is represented either by ⟨e⟩ or ⟨æ⟩. Our intuition and knowledge of historical linguistics tells us that the distribution roughly corresponds to the two main etymological origins of /e/: ⟨e⟩ is used for PG *e*, while ⟨æ⟩ corresponds to PG *a* affected by palatal umlaut. So we modify our referential phonology to include two phonemes /e/ and /æ/. But do we know that these two actually were separate phonemes in the represented language? The scribe may just have used them according to historically conditioned spelling conventions that he had learned. They may have been allophones of one phoneme that were distributed along the lines of an earlier phonological difference.[6] The spellings ⟨e⟩ and ⟨æ⟩ seem to be connected to etymological origin, but we do not know how, i.e. whether they reflect a phonological difference or something else.

2. The same problem also affects individual referential types. In manuscript A we find the spellings ⟨ræðſk⟩, ⟨ræðz⟩, and ⟨ræz⟩ for normalized *ráðsk* (the 3rd person singular indicative present form of the reflexive verb *ráðask* "to consider"). Do we refer these

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"custom", i.e. is it a homonym of *vandi* "problem, difficulty; responsibility" or not?

[4]Using the *Ordbog over det norrøne prosasprog* as a frame of reference is advantageous because of its ubiquitous availability and the precise description of its orthography given here: http://onp.ku.dk/adgang_til_ordliste_etc/ortografi1/.

[5]More precisely, ONP orthography is meant to represent early 13th century Old Norse (Old Icelandic and Old Norwegian), with the more archaic features of either dialect being represented in the normalization, cf. footnote 4. Since Old Icelandic may be said to be overall more archaic and certainly more homogenic than Old Norwegian, and the number of Norwegian manuscripts from that period is even smaller than the number of Icelandic ones, the ONP standard is often readily identified with the Icelandic dialect of Old Norse.

[6]In normalized Old Norse (as described by Haugen 2001) there are very few pairs of homonyms including /e/ of different etymological origins. See also Benediktsson 1964.

to phonological structures /rǽþsk/, /rǽþst/, and /rǽst/ respectively? Or do we choose only one of them? The ⟨ð⟩ of the manuscript may represent a morphological spelling (keeping the verb's root graphically intact even though it might not be phonologically) or a phonological reality (/þ/ was in fact pronounced in this position). The ⟨ſk⟩ may represent a historic spelling or an archaism in the scribe's language. Again, the etymological background clearly influences manuscript orthography, but we do not know in what way exactly.

Most researchers are aware of these problems, but use implicit *ad hoc* solutions for them or use confusing and complicated language to deal with them appropriately, instead of taking them on in a methodologically and theoretically sound way.

4.2   Separating orthographic description and phonological interpretation

The idea behind EMROON (the *Etymologically and Morphologically defined Referential Orthography for Old Norse*) is to provide a diachronically and diatopically robust frame of reference for the orthographic description of Old Norse manuscript sources. This means that manuscript orthography can be described against the background of EMROON, regardless of when and where the manuscript was written − as long as the language is Old West Norse, i.e. Old Norwegian or Old Icelandic.

First of all, I propose a notation convention or citing forms belonging to the referential orthography: Instead of referring to a normalized orthography in italics (*borð*) or to a proposed sequence of phonemes (/borþ/), I will use a notation using curly brackets when referring to entities of the referential orthography ({borþ}). Whatever is quoted between curly brackets a referential form that does not represent any specific phonology or normalization, but rather hyper-normalization that is supposed to reflect any elements that might play a role in a word's graphic appearance, i.e. its spelling, be it etymological or morphological features. This leaves the other notation possibilities open for other uses, especially the slash-notation (/borþ/) for speculations about the represented phonological structure.

The idea of relating to such an etymologically defined referential system is not new. As mentioned above, the project on *Niederrheinische Sprachgeschichte* has established such a system for the analysis of stressed vowel systems in West-Germanic dialects.[7] As for Old Norse, it was already in his written opposition to Terje Spurkland's (1991) doctoral dissertation that Helge Dyvik (1996, p. 16) suggested that such a system would be most suitable for orthographic descriptions and − by extension − phonological interpretations of source material whose orthographic system and represented phonology are not completely known. According to Dyvik, such a system should be based on a maximal Proto-Norse phonological system. It should, for instance, distinguish between orginal Germanic **e* and the *i*-umlaut product of **a*, and also between /y/ from *i*-umlauted **u* and /y/ from *w*-umlauted **i*:

> Dette kunne gjøres ved å ta et annet system som utgangspunkt enn det tradisjonelle fonemsystemet for norrønt, nemlig et idealisert system som trekker et historisk maksimalt antall distinksjoner. Med det mener jeg et system der alle eller

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[7]Cf. discussion on Elmentaler (??). I have adopted the use of curly brackets from Elmentaler (2003, p. 101).

> de fleste fonemer som vi normalt antar er falt sammen i norrønt siden urnordisk tid, er skilt fra hverandre [...] *Dette ville egentlig ikke være et synkront fonemsystem, men et system av diakront etablerte fonologiske enheter*.[8]

This would allow the researcher to describe spelling regularities in any given Old Norse manuscript − and thus the orthographic system at hand − without making premature assumptions about the phonology of the language represented in the manuscript. Any such phonological interpretation is then possible as a secondary step without being biased by the choice of a specific referential phonology.

As I have exemplified (cf. also **??**), not only phonology may be represented in writing, but also etymology and morphology.[9] Since synchronic phonology can be derived from diachronic phonology by sound laws, the referential orthography needs to based in etymologically defined phonology only. To include morphology in the referential orthography, I have chosen to represent any and all morphemes that are combined to form an individual word in the referential type, even though it can be argued that they do not appear as such in any version of Old Norse. By combinational replacement rules, however, any graphical realizations of the word that are in any way governed by (synchronic or diachronic) phonology or morphology can be described and thus classified.[10]

Let me exemplify this: The supinum *beizk* of the reflexive verb *beiðask* "to demand" appears as both ⟨bæizt⟩ and ⟨bæiðzt⟩ in our manuscript A. The ᴇᴍʀᴏᴏɴ referential type for this is {beiþ-þ-t-sk}. This obviously does not directly reflect any phonological reality, but the morphological structure: {beiþ} represents the verbal root; {þ} represents the suffix of the weak preterite and the resultative[11]; {t} represents the pronominal (and adjectival) neuter nominative/accusative singular ending; {sk} represents the reflexive exponent. The orthography can now be described as such: in both tokens {b} corresponds to ⟨b⟩ and {ei} to ⟨æi⟩, while the consonant cluster {°þ-þ-t-sk} corresponds to ⟨zt⟩ in one token and to ⟨ðzt⟩ in the other. This accurately describes the orthography without referring to any specific phonology. We can now go on to interpret the situation: ⟨ð⟩ most likely reflects the final {°þ} of the verbal root, which might be a morphological spelling (/beitst/, /beist/) or reflect an analogical restitution (/beiþst/) as in Modern Icelandic *beiðst*.[12] The first case is more likely if one takes into consideration the lack of ⟨ð⟩ in the first token. However, the point is that manuscript orthography becomes precisely describable without referring to specific phonology but rather to an abstract referential system.

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[8] Dyvik 1996, p. 16, my emphasis. "This could be done by taking a different system as a starting point than the traditional phoneme system of Old Norse, i.e. an idealized system that draws a historically maximal number of distinctions. By that I mean a system where all or most of the phonemes that we normally assume to have merged in Old Norse since Proto-Norse, are kept apart [...] This would not actually be a synchronic phoneme system, but a system of diachronically established phonological units."

[9] These are, of course, only represented indirectly through the use of traditional spelling in scribal practise. I do not assume that medieval scribes were actively aware of any etymologies or tried to come with them in order to spell.

[10] This includes phonological transcriptions and normalized orthography. I will elaborate on that in the next chapter.

[11] I prefer this term to "past participle".

[12] See here: http://bin.arnastofnun.is/leit/?q=bei%C3%B0a.

4.3   Internal structure

As mentioned before, the referential system I have designed must not be confused with some sort of reconstructed proto-language. It is not that; it is an abstract, partially anachronistic referential framework. Its basic units are sound-positions. They are defined etymologically, taking into account all historically made distinctions that might possibly play a role in the graphic appearance of a specific token.

    The EMROON database is thus built upon three levels of referential units: etymologically defined sound positions form a basis of phono-referential units. These are combined to form referential morphemes, which in turn are combined to create referential types (i.e. morphologically distinct Old Norse words).

4.3.1   Sound positions

A system of so called sound positions (cf. Elmentaler 2003, pp. 97ff) stands at the base of the EMROON framework. They are etymologically defined referential units intended as a background against which manuscript orthography can be described. However, they are not meant to represent any historical stage of the phonological development of Old Norse. This system is − on the contrary − in part intentionally anachronistic and ahistoric.

Vocalic sound positions

The vowel sound positions correspond to the post-umlaut vowel system proposed by Antonsen (1963, p. 200; see also above). I have, however, somewhat simplified it: the distinction between {ü} and {ï} is made only in the short vowels, whilst nasality is only indicated in the long low-back vowels.

| | | front | | back | |
		spread	round	spread	round
long	diphthong	ei	øy		au
	high	í	ý		ú
	mid	é	ǿ		ó
	low	ǽ		á/ã	ọ́/ọ̃
short	diphthong	e͜i			
	high	i	ü	ï	u
	mid	e	ö	ë	o
	low	æ	ọ̈	a	ǫ
unstressed	high	ɪ			ʊ
	low			ᴀ	

Table 4.1: Vocalic sound positions (overview)

    Additionally, there are a number of half-stressed vowels that appear especially in derivational suffixes. This subsystem has never been systematically researched or described for Old Norse, so I will only ascribe them tentative sound-positions that will not be part of the primary orthographic description. I will, however, use my findings to interpret the account given by the manuscript at hand in terms of a structural phonology of half-stressed vowels.

Etymological information on each of the derivational suffixes containing a half-stressed vowel will be given in the online archive.[13] As a rule of thumb, I have assumed half-stressed vowels in derivational suffix that are a heavy syllable (e.g. superlative {-(à)st-} in *sterkastr* "strongest") and/or whose vowels not represented by *i*, *u*, or *a* in *ONP* orthography (e.g. {-(ọ̀)g-} in *heilǫg ritning* "holy scripture").

(ì)	(ỳ)		(ù)
(è)	(ǿ̀)		(ò)/(ô)
(æ̀)		(à)/(â)	(ọ̀)/(ộ)

Table 4.2: Tentative half-stressed vocalic sound positions

Some sound positions are described as being derived from another. This means that they represent all etymological origins of the sound position referred to, but are affected by certain contact phenomena. In the case of the vowel system, these phenomena have to do with umlaut and breaking:

- **Raising umlaut** may have affected PG stressed *⋆e* and raised it to {i}, see Noreen (1970, §§ 63:3, 68:3).

- **Lowering umlaut** may have affected the PG stressed short high vowels *⋆i* and *⋆u* and lowered them to {e} and {o} respectively.

- **Fronting umlaut** may have affected the PN stressed back vowels (*⋆u, ⋆ū, ⋆o, ⋆ō, ⋆a, ⋆ā/ã*) and fronted them (to {ü}, {ý}, {ö}, {ø}, {æ}, {æ̃} respectively), see Noreen (1970, §§ 63, 68, 71, 73).

- **Rounding umlaut** may have affected the PN stressed unrounded vowels (*⋆i, ⋆ī, ⋆e, ⋆ē, ⋆æ, ⋆ǣ, ⋆a, ⋆ā/ã*) and rounded them (to {ü}, {ý}, {ë}, {ø}, {ö}, {ø}, {ǫ}, {ǫ́/ǫ̃} respectively), see Noreen (1970, §§ 77, 81, 82).

- ***a*-breaking** may have affected PG stressed *⋆e* and diphthongized it to {ja}, see Noreen (1970, § 88).

- ***u*-breaking** may have affected PG stressed *⋆e* and diphthongized it to {jǫ}, see Noreen (1970, § 89).

A quick overview over the stressed vocalic sound positions and their etymology is given in Table 4.3. Below it, they and their etymological background are exemplified and described in greater detail.

ᴇᴍʀᴏᴏɴ	PG		PIE	Example	
			⋆o	*bar*	{bar}
{a}	*⋆a*		*⋆a*	*af*	{af}
			⋆H̥	*faðir*	{faþ-ır}

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	*ǣ	*eh₁	sáð	{sáþ}
{á}		*ē	???	{???}
	?*ah		???	{???}
	*aih		átti	{áʰ-þ-ɪ}
	*ai /_r		sár	{sár}
{ã}	*ǣ /N		nám	{nãm}
	*anh		fá	{fã-ᴀ}
{e}	*e	*e	bera	{ber-ᴀ}
	*i (lowering umlaut)		neðan	{neþ-ᴀn}
	*i /_NT > TT		spretta	{sprett-ᴀ}
{æ}	*a (fronting umlaut)		ketill	{kæt-ɪl-r}
{ei}	*ai (in some super-heavy forms)		engi	{ei̯n-r-gɪ}
	PNWG *ē		hér	{hér}
			lét	{lét}
{é}	VLat /ē/		bréf	{bréf}
	*ī(n)h /_T (and similar)		léttr	{létt-r}
	*aig#		sté	{sté}
{i}	*i	*i	fiskr	{fisk-r}
		*e /_NC	binda	{bind-ᴀ}
	*e (raising umlaut)		sitja	{sit-j-ᴀ}
{í}	*ī	*ei̯	bíða	{bíþ-ᴀ}
		*iH	???	{???}
	*in		í	{í}
{o}	*u (lowering umlaut)		boð	{boþ}
	? *ve /_N		koma	{kom-ᴀ}
		*oH	dómr	{dóm-r}
	*ō	*aH	móðir	{móþ-ɪr}
		*ō	fótr	{fót-r}
{ó}	*ūh		þótti	{þóʰ-þ-ɪ}
	*uh		sótt	{sóʰ-þ}
	*auh		þó	{þó}
	*aug#		ló	{ló}
{u}	*u	*u	buðu	{buþ-ᴜ}
		*R̥	fullr	{full-r}
{ú}	*ū	*uH	mús	{mús}
		*u	lúka	{lúk-ᴀ}
{ü}	*u (fronting umlaut)		fylla	{füll-ᴀ}
{ï}	*i (rounding umlaut)		syngva	{sïng-v-ᴀ}

{ý}	*ū (fronting umlaut) *iu (fronting umlaut) *īw		mýss brýtr Týr	{mýs-r} {brýt-r} {tý-r}
{ǫ}	*a (rounding umlaut)		bǫrn	{bǫrn}
{ó}	PN *ā (rounding umlaut)		átum	{ót-ʊm}
{ṍ}	PN *ã (rounding umlaut)		námu	{nṍm-ʊ}
{ǽ}	PN *ā (fronting umlaut) PN *ā (fronting umlaut) *ai / _w		ráðr mǽla ǽvi	{rǽþ-r} {mǽlʰ-ᴀ} {ǽ-v-ɪ}
{ö}	PN *o (fronting umlaut)		kømr	{köm-r}
{ë}	*e (rounding umlaut) *i (lowering/rounding umlaut)		røkkva søkkva	{rëkk-v-ᴀ} {sëkk-v-ᴀ}
{ö̈}	*a (rounding/fronting umlaut)		øx	{ö̈ks-r}
{ǿ}	{ó} (fronting umlaut)		dǿma	{dǿm-ᴀ}
{au}	*au	*ou̯/au̯	naut	{naut}
{ei}	*ai	*oi̯/ai̯	beið	{beiþ}
{øy}	*au (fronting umlaut)		neyta	{nøyt-ᴀ}
{ja}	*e (a-breaking)		hjarta	{hjart-ᴀ}
{jǫ}	*e (u-breaking)		jǫrð	{jǫrþ}
{jó}	*eu (before dentals) *aiw *?	*eu̯	njóta snjór hljóp	{njót-ᴀ} {snjó-r} {hljóp}
{jú}	*eu (before non-dentals)	*eu̯	krjúpa	{krjúp-ᴀ}

Table 4.3: Etymology of stressed vocalic sound positions

{a} corresponds to Old Icelandic stressed /a/, normalized as 'a'. As such, it continues PG *a and either PIE *o (e.g. *bar* {bar} "carried" < PG *bar < *bʰór-e ←PIE *(bʰe-)bʰór-e, cf. Skt. *babhā́ra*), PIE *a (e.g. *af* {af} "from" < PG *aba < PIE *h₂apó, cf. Gr. *ἀπό*), or PIE *H̥ (e.g. *faðir* {faþ-ɪr} "father" < PG *fader < PIE *ph₂-tḗr, cf. Skt. *pitár-*, Gr. *πατήρ*, Lat. *pater*; Kroonen 2013, p. xvii; Noreen 1970, § 174).

For PG *a affected by umlaut phenomena, see {ǫ}, {ǽ}, and {ö̈}. For Old Icelandic unstressed /a/, see {ᴀ}. For PG *e affected by breaking, see {ja} and {jǫ}.

{á} corresponds to Old Icelandic stressed /á/, normalized as 'á'. As such, it usually continues PG *ǣ and PIE *eh₁ (e.g. *sáð* {sáþ} "seed" < PG *sǣd-ą < PIE *seh₁-tóm, Kroonen 2013, p. 429) or PIE *ē (e.g. ???), see Ralph 2002, p. 705, Noreen 1970, § 175, Holthausen 1948, p. 94.

The sound position {á} also corresponds Old Icelandic /á/ continuing (? PG *a / _h and) PG *ai / _h, r (e.g. *átti* {áʰ-þ-ɪ} "owned" < PG *aihtā, *sár* {sár} "wound" < PG *sair-ą, cf. Got. *sair*), see Noreen (1970, § 54)).

For nasalized /á/ and /ǻ/ affected by rounding umlaut, see {ã̓}, {ǫ̓}, and {ǫ̃} respectively. For /á/ affected by fronting umlaut, see {ǽ}.

{ã̓}   corresponds to Old Icelandic /á/, normalized as 'á', when it continues earlier nasalized /ã́/. Largely, this encompasses Old Icelandic /á/ following or preceding a nasal (e.g. *nám* {nãm} "acquisition; study").

Early Old Icelandic /ã/ was also nasalized when it continued nasalized PN *ã from PG *anh (e.g. *fá* {fã̓-ᴀ} "to get" < PG *fanhan-), see Noreen (1970, § 175), Ralph (2002, p. 710).

For {ã̓} affected by rounding umlaut, see {ǫ̃}.

{e}   corresponds to Old Icelandic /e/, normalized as 'e', when it continues PG *e and PIE *e (cf. *bera* {ber-ᴀ} "to carry" < PG *ber-aną < PIE *bʰér-e-, Gr. φέρω "I carry", see Noreen 1970, § 176) or PIE *i affected by lowering umlaut, either caused by PG *a in the following syllable (cf. *neðan* {neþ-ᴀn} "from under" with *niðr* {niþ-r} "down", see Ralph 2002, p. 706) or by a following cluster PG *NT > TT (cf. *spretta* {sprett-ᴀ} "leap up" with Sw. *sprinta*, Engl. *to sprint*, see Noreen 1970, § 110).

For PG *e affected by breaking, see {ja} and {jǫ}. For PG *e affected by raising umlaut, see {i̧}. For Old Icelandic /e/ in the preterites of class III reduplicating verbs, see {é}.

{æ}   corresponds to Old Icelandic /e/, normalized as 'e', when it continues PG *a affected by fronting umlaut. As such, it has the same etymology as {a} (cf. *ketill* {kæt-ɪl-r} "kettle" with *katlar* {kat-l-ᴀʀ} "kettles" and Got. *katils*, *katilos*), see Ralph (2002, p. 707), Noreen (1970, § 188).

For Old Icelandic /e/ continuing PG *e, see {e}.

{ei}   corresponds to Old Icelandic /e/, normalized as 'e', when it continues an earlier diphthong *ei shortened in some super-heavy syllables. As such, it has the same etymology as {ei}, e.g. in the words *eldr* {e̝ild-r} "fire", *helgi* {he̝il-g-ɪ} "holy (def)", cf. *heilagr* {heil-(à)g-r} "holy (idf)"), in some superlative stems (*mestr* {me̝i-st-r} "most", cf. *meiri* {mei-r-ɪ} "more", Ge. *meist*), and pronominal forms (*engi* {e̝in-r-gɪ} "none", cf. *einn* {ein-r} "one"), see (Noreen 1970, § 128, § 188).

{é}   usually corresponds to Old Icelandic /é/, normalized as 'é'. As such, it is of a complicated etymological origin (Noreen 1970, § 111, § 177):

- PNWG *ē (i.e. so-called PG *ē₂), e.g. *hér* {hér} "here", cf. Got. *her*, Ge. *hier*.

- The preterite root vowel of originally reduplicating verbs, e.g. *lét* {lét} "(he) let" ← PG *lelōt. In class III reduplicating verbs, the root vowel was shortened in "classical" Old Icelandic, thus corresponding to /e/, normalized as 'e' (e.g. *heldu* {héld-ʊ} "(they) held", cf. Ge. *(sie) hielten*).

- Vulgar Latin /ē/ in a number of early loanwords (e.g. *bréf* {bréf} "letter" < VLat *brēvis*, cf. Ge. *Brief*).

- PG *i preceding PG *z in pronominal forms (e.g. *mér* {mér} "me (dat)" < PG *miz, cf. Ge. *mir*, Got. *mis*), see Noreen (1970, § 110).

- Old Icelandic /é/ also originates in any PG non-low front vowel preceding *(n)hT (e.g. *réttr* {rétt-r} "straight" < PG *rehta-* < PIE *h₃reǵ-to-*, cf. Gr. ὀρεκτός, Lat. *rectus*; *þéttr* {þétt-r} "tight" < PG *þinhtu-* < PIE *tenk-tu-*, cf. Lith. *tankùs* "dense"), see Kroonen (2013, pp. 408, 543).

- Finally, /é/ originates in word-final PG *aig (e.g. *sté* {sté} "ascended" < PG *staig* [staix]), but in the appropriate cases it has often been analogically restituted in line with comparable paradigms (*steig* {steig}), see Haugen (2001, p. 183).

The clusters {é-ᴀ} and {é-ᴜ} correspond to Old Icelandic /já/ and appear as 'já' in normalized orthography.

{i} usually corresponds to Old Icelandic stressed /i/, normalized as 'i'. As such, it continues PG *i and PIE *i (cf. *fiskr* {fisk-r} "fish" < PG *fisk-az* < PIE *pisk-* with Lat. *piscis*) or PG *e before a tautosyllabic nasal (cf. *binda* {bind-ᴀ} "to bind" < PG *bind-aną* < PIE *bʰéndʰ-e-*, with ???), see Noreen (1970, § 178). Old Icelandic [i] also continues (pre-)PG *e affected by raising umlaut (cf. *sitja* {sit-j-ᴀ} "to sit" < PG *sit-janą* (< *set-janą*) < PIE *sed-i̯é-*, cf. Gr. ἕζομαι), see Kroonen (2013, pp. xix, 434), Noreen (1970, § 63:3). The sequence {vi} is represented by 'y' in some roots, then corresponding to Old Icelandic /y/ (e.g. *kyrr* {kvirr-r} "calm" < PG *kwirru-*, cf. Got. *qairrus*).[14]

For the development of PG *i affected by lowering umlaut, see {e}. For the development of *i preceding *NT or *h and {é}. For the development of PG *i affected by rounding umlaut, see {ï}. For Old Icelandic unstressed /i/, see {ɪ}.

{í} corresponds to Old Icelandic /í/, normalized as 'í'. As such, it continues PG *ī and PIE *ei̯ (cf. *stíga* {stíg-ᴀ} "to ascend" < PG *stīg-aną* < PIE *stéigʰ-e-*, cf. Gr. στείχω "I step") or PIE *iH (*svín* {svín} "pig" < PG *swīn-ą* < PIE *suH-iHna-*). It may also represent PG *i before tautosyllabic *n (e.g. *í* {í} "in"), and generally any PG *i in an Old Norse stressed open root-syllable cf. (Noreen 1970, § 179).

In a number of paradigms, PG *ī was shortened in super-heavy syllables (cf. *minn* {mín-r} "my (m.sg.nom)" with *mín* {mín} "my (f.sg.nom)" and *lítill* {lít-ɪl-r} "little (m.sg.nom)" with *litlir* {lít-l-ɪr} "little (m.pl.m)", Noreen 1970, § 127:2). In these cases, {í} corresponds to Old Icelandic /i/, which is normalized as 'i'.

The clusters {í-ᴀ} and {í-ᴜ} correspond to Old Icelandic /já/ and appear as 'já' in orthography (Kroonen 2013, p. xxii).

For the development of PG *ī before *h, see {é}.

{o} corresponds to Old Icelandic /o/, normalized as 'o'. As such, it continues PG *u affected by lowering umlaut and has the same etymology as {u} (i.e. *boð* {boþ} "offer", cf. Noreen 1970, § 180).

Possibly, Old Icelandic /o/ also continues PG *ve preceding a nasal in light syllables (e.g. /o/ < *ve if *koma* {kom-ᴀ} "to come" < PG *kʷem-aną* < PIE *gʷém-e-*, otherwise /o/ < *u if *koma* < PG *kum-aną* < PIE *gʷm̥-e-*, cf. Got. *qiman*, OHG *queman, cuman*, OE *cuman*, Gr. βαίνω "I go", Lat. *veniō* "I come" < PIE *gʷm̥-i̯e-*, Kroonen 2013, p. 316; /o/ < *ve if *kona*

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[14]This might be caused by rounding umlaut, cf. Noreen 1970, § 77:12, § 82:10; if this is true, the sequence should rather be referred to as {vï}.

{kon-ᴀ} "woman" < PG *kwen-ōn-, otherwise /o/ < *u if kona < PG *kun-ōn- ← PIE *gʷén-h₂ (nom), *gʷn-áh₂-s (gen), cf. OIr. ben (nom), mná (gen), Skr. jáni- "wife", gnā́- "goddess"), see Kroonen (2013, p. 317), Ralph (2002, p. 706).

Some roots seem to have been affected by lowering umlaut in some (mainly Western) dialects of OWN, but not in others (mainly Eastern dialects). In these cases forms with or without lowering umlaut were generalized throughout the paradigm in either dialect group. Many normalized orthographies reflect this situation, e.g. klokka besides klukka, sonr besides sunr. In these cases, I assume two allomorphs each (respectively corresponding to spellings with ⟨o⟩ or ⟨u~v⟩), one with and one without umlaut, but I mark the vowels as uncertain and exclude them from the primary orthographic description (e.g. {kl(o)kk-} and {kl(u)kk-}, {s(o)n-} and {s(u)n-}, cf. Ralph 2002, p. 706, Noreen 1970, § 61).

For {o} affected by palatal umlaut, see {ö} and {ü}.

{ó}   corresponds to Old Icelandic /ó/, normalized as 'ó'. As such, it continues PG *ō and either PIE *oH (cf. dómr {dóm-r} "verdict" < PG *dōm-az < PIE *dʰóh₁-mos, cf. Gr. θωμός "heap"), *aH (cf. móðir {móþ-ɪr} "mother" < PG *mōder- < PIE *mah₂-tér, cf. Skt. mātā́, Gr. μήτηρ, Lat. māter), or *ō (cf. fótr {fót-r} "foot" < PG *fōt-uz < PIE *pṓd-s, cf. Gr. πούς < PIE *pod-s; Kroonen 2013, p. xxii; Noreen 1970, § 181).

Old Icelandic /ó/ also continues PG *u, *ū (< *un), or *au preceding *h (e.g. sótt {sóʰ-þ} "sickness" < PG *suht-, Ge. Sucht; henni þótti {þóʰ-þ-ɪ} "she thought" < PG *þunhtā, Got. þūhta; þó {þó} "though", Got. þauh, Ge. doch, cf. Noreen 1970, § 98, § 112:2, § 113, § 122).

Furthermore, it continues PG *o (< *u by lowering umlaut) before a lost *n (e.g. Þórr {þór-r} "(the deity) Thor" < PG *þunr-az, cf. Noreen 1970, § 112:1).

Old Icelandic occurs for word-final PG *aug (cf. hann ló {ló} "he lied" < PG *laug [laux]), but in the appropriate cases it has often been analogically restituted in line with comparable paradigms (laug {laug}), cf. Noreen (1970, § 98).

For {ó} affected by fronting umlaut, see {ǿ}.

{u}   corresponds to Old Icelandic stressed /u/, normalized as 'u'. As such, it continues PG *u which goes back to PIE *u (cf. buðu {buþ-u} "(they) offered" < PG *bud- < PIE *(bʰe-)bʰudʰ-, cf. Gr. πεύθω "I give notice", πυνθάνομαι "I find out") or arose as a result of the development of the PIE syllabic consonants *l̥, *m̥, *n̥, *r̥ (cf. fullr {full-r} "full" < PG *fulla- < PIE *pl̥h₁-nó-, cf. Skt. pūrṇa-), see Kroonen (2013, pp. xx, 61, 159), Noreen (1970, § 182)).

For the development of PG *u affected by lowering or before *h, see {o} and {ó} respectively. For {u} affected by fronting umlaut, see {ü}. For Old Icelandic unstressed /u/, see {ᴜ}.

{ú}   corresponds to Old Icelandic /ú/, normalized as 'ú'. As such, it continues PG *ū and PIE *uH (cf. mús {mús} "mouse" < PG *mūs- < PIE *muHs-, cf. Gr. μῦς, Skt. mū́ṣ-), see Noreen (1970, § 183)).

PG *ū may also have arisen from PIE *u analogically, e.g. in súga {súg-ᴀ}, lúka {lúk-ᴀ}, see Kroonen (2013, pp. xxii, xxxv);

For the diphthong {jú}, see there. For {ú} affected by fronting umlaut, see {ý}.

{ü}   corresponds to Old Icelandic /y/, normalized as 'y', when it continues PG *u affected by fronting umlaut. As such, it has the same etymology as {u} (cf. fylla {füll-ᴀ} "to fill" with fullr

{full-r} "full" and Got. *fulljan, fulls*), see Kroonen (2013, p. xx), Ralph (2002, p. 707), Noreen (1970, § 184)

Many roots with PG *⋆u* only occur showing either the effects of lowering umlaut or those of fronting umlaut (e.g. *folk* {folk} "people" and *fylki* {fülk-ɪ} "district"). Thus, {ü} effectively also functions as fronting umlaut for {o} in these roots (see also {ö}, however).

For Old Icelandic /y/ as the result of rounding umlaut of PG *⋆i*, see {ï}.

{ï} corresponds to Old Icelandic /y/, normalized as 'y', when it continues PG *⋆i* affected by rounding umlaut. As such, it has the same etymology as {i} (cf. *syngva* {sïng-v-A} "to sing" < PG *⋆sing^w-aną* < PIE *⋆séng^{wh}-e-* with Gr. ὀμφή "divine voice" < PIE *⋆song^{wh}-áh₂-*), see Kroonen (2013, pp. xix, 437), Noreen (1970, § 184).

Some normalizations reflect the typically EN forms displaying so-called breaking in some lexemes, i.e. *þjukkr* or *þjokkr* instead of *þykkr* "thick", which are occasionally also observable in the manuscript at hand (cf. 53v4 ⟨þyckr⟩ {þïkk-r} but 21r2 ⟨þiuct⟩ {þïkk-t}), see Kroonen (2013, p. 537), Noreen (1970, § 92). In these cases {ï} may be represented as 'ju' or 'jo' in some normalized orthographies.

For Old Icelandic /y/ as the result of fronting umlaut of PG *⋆u*, see {ü}.

{ý} corresponds to Old Icelandic /ý/, normalized as 'ý'. As such, it mainly continues PG *⋆ū* or *⋆iu* (*⋆eu*) affected by fronting umlaut and has the same etymologies as these (cf. *lýkr* {lýk-r} "shuts" with *lúka* {lúk-A} "to shut"; *sýki* {sýk-ɪ} "sickness" with *sjúkr* {sjúk-r} "sick"; and *brýtr* {brýt-r} "breaks" with *brjóta* {brjót-A} "to break"), see Ralph (2002, p. 707), Kroonen (2013, p. xxiii), Noreen (1970, § 185)).

Furthermore, Old Icelandic /ý/ continues the (post-synkope) tautosyllabic sequence PN *⋆īw* (cf. *Týr* {tý-r} "(the deity) Tyr" < PG *⋆tīwaz* < PIE *⋆deiu̯-ós* with *tívar* {tí-v-Ar} "gods" and OE *Tīw*, Lat. *dīvus* "divine", Skt. *devás* "god"), see Noreen (1970, § 77:6).

{ǫ} corresponds to Old Icelandic /ǫ/, normalized as 'ǫ'. As such, it continues PG *⋆a* affected by rounding umlaut and has the same etymology as {a} (cf. *mǫgr* {mǫg-r} "son" with Got. *magus* and *barn* {barn} "child" with *bǫrn* {bǫrn} "children"), see Ralph (2002, p. 708), Noreen (1970, § 186).

In some OWN (especially Old Norwegian) manuscripts, both {ǫ} and {a} are graphically represented by ⟨a⟩, i.e. rounding umlaut is not reflected in spelling.[15] This might reflect a lack of rounding umlaut also in the underlying spoken language (or a merger of {a} and {ǫ}) or an orthographic rule allowing for both /a/ and /ǫ/ to be written as ⟨a⟩. Since no final solution for this problem has been found yet, I have excluded spellings that do not reflect expected labial umlaut from the primary orthographic description by tagging their vowels as uncertain, e.g. 13v6 ⟨kallaðo⟩ *kǫlluðu* {k(a)ll-(A)þ-ʊ} "(they) called".

After I have established grapho-phonemic rules based on such a primary description, I will use the observed spelling regularities to contribute to the discussion regarding graphically unrepresented labial umlaut.

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[15]The same is true for the pairs {á}/{ǫ́} and {ā̃}/{ǭ} (all of these merge into one phoneme /á/ in Icelandic and Norwegian around 1200, except for the cases were {ǭ} merges with /ó/ - which is one of the reasons I assume these different sound positions), as well as unstressed {A}/{ʊ} and {ā̀}/{ǫ̀}.

{ǫ́}   corresponds to Old Icelandic /á/, normalized as 'á', when it continues earlier /ǫ́/, i.e. PN *ā̃* affected by rounding umlaut. As such, it has the same etymology as {á} (cf. *átum* {ǫ́t-ʊm} "(we) ate" with *át* {át} "(I) ate" and Ge. *(wir) aßen*), see Ralph (2002, p. 708), Noreen (1970, § 107, § 187).

{ǫ̃}   corresponds to Old Icelandic /á/, normalized as 'á', when it continues earlier /ǫ̃/, i.e. PN *ā̃* affected by rounding umlaut. As such, it has the same etymology as {ã} (e.g. *námu* {nǫ̃m-ʊ} "(they) acquired"). In normalizations based on Icelandic, {nǫ̃tt} "night" regularly occurs as *nótt* instead of *nátt*, with {ǫ̃} corresponding to /ó/, see Noreen (1970, § 107, § 181, § 187).

{ǽ}   corresponds to Old Icelandic /ǽ/, normalized as 'ǽ' (or 'æ' or 'ę́' in some normalizations). As such, it mainly continues PN *ā* or *ā̃* affected by fronting umlaut and thus has the same etymologies as {á} and {ã} (cf. *ráðr* {rǽþ-r} "(he) rules" with *ráða* {ráþ-ᴀ} "to rule", and *mǽla* {mǽlʰ-ᴀ} "to speak" with *mál* {málʰ} "speech"), see Ralph (2002, p. 707), Noreen (1970, § 189).

Old Icelandic /ǽ/ also continues PG *ai/_w* (e.g. *ǽvi* {ǽ-v-ɪ} "life time" < PG *aiwīn-*, cf. Got. *aiweins*), see Noreen (1970, § 97)

{ö}   corresponds to Old Icelandic /ø/, normalized as 'ø', when it continues PN *o affected by fronting umlaut. As such, it has the same etymology as {o} (and {u}), cf. Noreen (1970, § 190). Since fronting and lowering umlaut exclude each other historically, {ö} can only occur in analogically created forms (and those possibly originating in PG *ve).

Note that the development of the sound positions {ë}, {ö}, and {ǫ̈} (i.e. Old Icelandic /ø/) is highly problematic: {ö} from umlauted potential PG *ve usually appears as 'e' (/e/) in Modern Icelandic (e.g. *kemur* {köm-r} "comes", *sefur* {söf-r} "sleeps")[16], while the analogous forms have mostly disappeared in favor of the historically better motivated forms with 'y' (/i/) (e.g. *nyrðri* "more north", *synir* "sons" instead of *nørðri*, *sønir*, cf. Noreen 1970, § 63:4, § 71:3, § 190). The sounds represented by {ë} and {ǫ̈}, on the other hand, have usually merged with /ǫ/ in /ö/ ('ö'), e.g. Modern Icelandic *rökkur* {rëkk-r} "darkness", *öx* {ǫ̈ks-r} "axe", *börn* {bǫrn} "children". At the very least, this suggests a possible phonological distinction, and the referential system will have to be refined when applied to the research of this development.

In cases where analogical 'ø' and historically motivated 'y' occur alongside each other in the same lexeme, I assume two allomorphs each, one with and one without lowering umlaut, but I mark the vowels as uncertain and exclude them from the primary orthographic description (e.g. {s(ü)n-} and {s(ö)n-}).

{ë}   corresponds to Old Icelandic /ø/, normalized as 'ø', when it continues PN *e affected by rounding umlaut. As such, it has the same etymology as {e} (e.g. *støkkva* {stëkk-v-ᴀ} "to leap" < PG *stinkwan-* < PIE *sténgʷ-e-*, cf. Lith. *sténgti* "to exert oneself"), see Kroonen 2013, p. 480, Noreen 1970, § 190.

{ǫ̈}   corresponds to Old Icelandic /ø/, normalized as 'ø', when it continues PG *a affected by both fronting and rounding umlaut. As such, it has the same etymology as {a} (cf. *øx* {ǫ̈ks-r}

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[16]See here: http://bin.arnastofnun.is/leit/?id=434272 and here: http://bin.arnastofnun.is/leit/?q=sofa.

"axe" with Got. *aqizi*, OHG *ackus* < PG *⋆akwesī*), see Kroonen (2013, p. 19), Ralph (2002, p. 708), Noreen (1970, § 190).

{ǿ} corresponds to Old Icelandic /ǿ/, normalized as 'ǿ' ('œ' in some normalizations). As such, it has the same etymology as {ó}, and is affected by fronting umlaut (cf. *dǿma* {dǿm-ᴀ} "to judge" with *dómr* {dóm-r} "verdict" and Got. *domjan* "to judge"), see Ralph (2002, p. 707) Noreen (1970, § 191).

{au} corresponds to Old Icelandic /au/, normalized as 'au'. As such, it continues PG *⋆au* and PIE *⋆ou̯* or *⋆au̯* (e.g. *auka* {auk-ᴀ} "to increase" < PG *⋆aukan-* < PIE *⋆h₂au̯g-e-*, cf. Lat. *augere*), see Kroonen (2013, p. xxiii), Noreen (1970, § 192).

Old Icelandic /au/ may also originate in *⋆awu* < PG *⋆a(r)bu* (e.g. *haukr* {hauk-r} "hawk" < *⋆?*, cf. Ge. *Habicht*; *haust* {haust} "autumn" < *⋆?*, cf. Ge. *Herbst*, Engl. *harvest*), see Noreen (1970, § 132).

For PG *⋆au* preceding primary or secondary *⋆h*, see {ó}.

{ei} corresponds to Old Icelandic /ei/, normalized as 'ei'. As such, it continues PG *⋆ai* and PIE *⋆oi̯* or *⋆ai̯* (e.g. *einn* {ein-r} "one" < PG *⋆ainaz* < PIE *⋆Hoi̯n-ó-s*, cf. Lat. *ūnus*; *beið* {beiþ} "(he) waited" < PG *⋆baid* < PIE *⋆(bʰe-)bʰoi̯dʰ-e*, cf. Gr. πέποιθε "trusts"), see Kroonen (2013, p. xxiii), Ralph (2002, p. 710), Noreen (1970, § 193).

For PG *⋆ai* preceding primary or secondary *⋆h*, see {á} or {é} respectively. For PG *⋆ai* shortened in super-heavy syllables, see {e̜i}.

{øy} corresponds to Old Icelandic /ey/, normalized as 'ey'. As such, it has the same etymology as {au}, but is affected by palatal umlaut (cf. *lauss* {laus-r} "loose" with *leysa* {løys-ᴀ} "to loosen"), see Noreen (1970, § 194).

{ja} corresponds to Old Icelandic biphonematic /ja/, normalized as 'ja'. As such, it continues PG *⋆e* affected by *a*-breaking (e.g. *hjarta* {hjart-ᴀ} "heart" with Ge. *Herz* < PG *⋆hert-an-* < PIE *⋆ḱerd-*), see Ralph (2002, pp. 709f), Noreen (1970, § 195).

{jǫ} corresponds to Old Icelandic biphonematic /jǫ/, normalized as 'jǫ'. As such, it continues PG *⋆e* affected by *u*-breaking (cf. *jǫrð* {jǫrþ} "earth" with Ge. *Erde*), see Noreen (1970, § 103), Ralph (2002, pp. 709f). For the purposes of this referential system, it is considered to be the same as {ja} affected by labial umlaut, even though its actual phonological history may very well have been different.

{jó} corresponds to Old Icelandic biphonematic /jó/, normalized as 'jó'. As such, it mainly continues PG *⋆eu* and PIE *⋆eu̯* word-finally and preceding any dental/alveolar consonant (cf. *kjósa* {kjós-ᴀ} "to choose" < PG *⋆keus-anǫ* < PIE *⋆ǵéu̯s-e-*, with Gr. γεύομαι "I taste"), see Kroonen (2013, p. xxiii), Ralph (2002, p. 706), Noreen (1970, § 101:2, § 200).

Additionally, Old Icelandic /jó/ originates in *⋆ǽw* < PG *⋆aiw*, especially when − after syncope − preceding a consonant (cf. *snjór* {snjó-r} "snow" < PG *⋆snaiwaz* < PIE *⋆snoigʷ-o-s* with Ge. *Schnee*). In these cases, paradigms originally showed a systematic alternation

between the root vowels /ǽ/ or /jó/ (preceding endings starting in a vowel or a conso-
nant respectively). Both versions could be spread analogically and may appear throughout
the paradigm (Noreen 1970, 106).

Finally, Old Icelandic /jó/ occurs as the root vowel in the preterites of class II reduplicating
verbs (e.g. *hljóp* {hljóp} "(he) leapt").

{jú}   corresponds to Old Icelandic biphonematic /jú/, normalized as 'jú'. As such, it continues
PG *iu (*eu) and PIE **eu̯* preceding any non-dental/alveolar consonant (cf. *ljúfr* {ljúf-r} "dear,
beloved" < PG **leuba-* < PIE **leu̯bʰ-o-*, with Ge. *lieb* and OCS *ljubъ* "sweet, pleasant"), see
Kroonen (2013, p. xxiii), Ralph (2002, pp. 706, 710), Noreen (1970, § 202).

{ᴀ}, {ɪ}, {ᴜ}.   The suffix vowels {ᴀ}, {ɪ}, and {ᴜ} correspond to Old Icelandic unstressed /a/,
/i/, and /u/ which are represented by 'a', 'i', and 'u' in normalized orthography. They are of
too diverse etymological origins for them to be discussed here briefly. However, detailed ety-
mologies are given in description of the relevant referential morphemes,[17] see Noreen (1970,
§§ 215ff).

Consonant sound positions

These consonant sound position are the same as the ones used by Kjeldsen (2013, p. 102),
except that I have added the semi-vowels {v} and {j} to the scheme.

	labial		dental	alveolar		palatal/velar	
	unvoiced	voiced		unvoiced	voiced	unvoiced	voiced
plosive	p	b		t	d	k	
fricative		f	þ	s		h	g
nasal		m			n		
lateral approximant				l			
vibrant				r			
semi-vowel		v					j

Table 4.4: Consonant sound positions (overview)

Table 4.5 gives a quick overview over the consonant sound positions and their etymology.
Below it, they and their etymological background are exemplified and described in more de-
tail.

In the etymological description of the sound positions, a number of diachronic develop-
ments and historic phonological environments are referred in a kind of short-hand. These
are:

- **Verner position I (V1)** indicates that in PIE, the first vowel to the left of the medial con-
  sonant in question *carried* the word accent. If the consonant in question was voiceless,
  it developed into a *voiceless* fricative in this position.

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[17]These will become available online. A preliminary version can be accessed here: http://folk.uib.no/
rpa021/emroon/v2-4-1/xml/morphemeList.xml.

- **Verner position II (V2)** indicates that in PIE, the first vowel to the left of the medial consonant in question *did not carry* the word accent. If the consonant in question was voiceless, it developed into a *voiced* fricative in this position.

- **PG word final position** indicates that in PN, the consonant in question was not followed by another vowel. Final devoicing occurred in this position.

I have distinguished three basic contexts in which consonants may occur: *initial* in the beginning of radical and prefix morphemes, *medial* in the coda of radical and prefix morphemes as well as in suffix morphemes, and *geminate*, i.e. as long consonants in the coda of radical and some derivational morphemes (prefixes do not end in long consonants).

EMROON	position	PG	PIE	example	
{p}	initial	$*p$	Lat. p	*pund*	{pund}
	medial	$*p$	$*b$	*hlaupa*	{hlaup-A}
	geminate	$*mp$		*kappi*	{kapp-I}
		$*pp$	$*Bn$	*hoppa*	{hopp-A}
	cluster {°pt}	$*ft$		*hepta*	{hæpt-A}
	cluster {sp}	$*sp$	$*sp$	*springa*	{spring-A}
{t}	initial	$*t$	$*d$	*taka*	{tak-A}
	medial	$*t$	$*d$	*láta*	{lát-A}
	geminate	$*ht$		*réttr*	{rétt-r}
		$*nt$		*detta*	{dett-A}
		$*nd\#$		*batt*	{batt}
		$*tt$	$*Dn$	*skattr*	{skatt-r}
	cluster {°lt}	$*lt$		*holt*	{holt}
		$*ld\#$		*galt*	{galt}
	cluster {st}	$*st$	$*st$	*stíga*	{stíg-A}
{k}	initial	$*k$	$*g/\acute{g}$	*kenna*	{kænn-A}
		$*k^w$	$*g^w$	*kveða*	{kveþ-A}
				kona	{kon-A}
	medial	$*k$	$*g/\acute{g}$	*aka*	{ak-A}
		$*k^w/C\_,/\bar{V}\_$	$*g^w$	*myrkvi*	{mïrk-v-I}
		$*nk$		*drekka*	{drekk-A}
	geminate	$*nk^w$		*sǫkkva*	{sǫkk-v-A}
		$*ng\#$		*sprakk*	{sprakk}
		$*k^w/\breve{V}\_$		*røkkva*	{rëkk-v-A}
		$*k/\breve{V}\_j$		*???*	{???}
		$*kk$	$*Gn$	*bokkr*	{bokk-r}
	cluster {°ks}	$*hs$		*vaxa*	{vaks-A}
	cluster {sk}	$*sk$	$*sk/sk/sk^w$	*skip*	{skip}
{b}	initial	$*b$	$*b^h$	*bera*	{ber-A}
			$*g^{wh}$	*bani*	{ban-I}
	geminate	$*bb$		*krabbi*	{krabb-I}
	cluster {°mb}	$*mb$		*lamb*	{lamb}

{d}	initial	*d	*dʰ	dagr	{dag-r}
	geminate	*ẓd		rǫdd	{rǫdd}
	cluster {ᵒld}	*ld	*ldʰ *lt (V2)	halda	{hald-ᴀ}
	cluster {ᵒnd}	*nd	*ndʰ *nt (V2)	land fundu	{land} {fund-ᴜ}
{g}	initial	*g	*gʰ/ǵʰ	geta	{get-ᴀ}
	medial	*g	*gʰ/ǵʰ *k/ḱ (V2)	dagr slegit	{dag-r} {slæg-ɪn-t}
	geminate	*gj *jj *ww *gg		liggja tveggja hǫggva ???	{ligg-j-ᴀ} {tvægg-j-ᴀ} {hǫgg-v-ᴀ} {???}
	cluster {ng}	*ng *ngʷ	*ngʰ/nǵʰ *nk/nḱ (V2) *ngʷʰ *nkʷ (V2)	??? fengit syngva ???	{???} {fæng-ɪn-t} {sïng-v-ᴀ} {???}
{f}	initial	*f	*p *kʷ	fara fjórir	{far-ᴀ} {f(jó)r-ɪr}
	medial	*f *b	*p (V1) *kʷ (V1) *bʰ *p (V2)	hefja ulfr ljúfr ?	{hæf-j-ᴀ} {ulf-r} {ljúf-r} {?}
	cluster {fs}	*f+s *p+s *b+s		refsa ? ufs	{ræfs-ᴀ} {?} {ufs}
	geminate	only in loanwords		offra	{offr-ᴀ}
{þ}	initial	*þ	*t	þola	{þol-ᴀ}
	medial	*þ *þ-þ *d	*t (V1) *dʰ *t (V2)	bróðir eða ríða faðir	{bróþ-ɪr} {eþᴀ} {ríþ-ᴀ} {faþ-ɪr}
{s}	initial	*s	*s	sitja	{sit-j-ᴀ}
	medial	*s	*s	kjósa	{kjós-ᴀ}
	geminate	*ss < *D-sD		vissi	{viss-ɪ}
{h}	initial	*h *hʷ	*k/ḱ *kʷ	horn hvat	{horn} {hvat}
{m}	initial	*m	*m	móðir	{móþ-ɪr}
	medial	*m	*m	nema	{nem-ᴀ}
	geminate	*mm		vamm	{vamm}

{n}	initial	*n	*n	nátt	{nǫtt}
	medial	*n	*n	bani	{ban-ɪ}
		*nn	*nu̯	brinna	{brinn-ᴀ}
	geminate	*nþ		finna	{finn-ᴀ}
		*zn		rann-	{rann}
{l}	initial	*l	*l	langr	{lang-r}
	medial	*l	*l	ala	{al-ᴀ}
	geminate	*ll	*ln	fullr	{full-r}
		*lþ	*lt (V1)	gull	{gull}
{r}	initial	*r	*r	ríða	{ríþ-ᴀ}
	medial	*r	*r	bera	{ber-ᴀ}
		*z	*s (V2)	heyra	{høyr-ᴀ}
	geminate	*rz		þurr	{þurr-r}
		*rr		kyrr	{kvirr-r}
{j}	medial	*j	*i̯	biðja	{biþ-j-ᴀ}
	diphthongs	{ja}, {jǫ}, {jó}, {jú}: see vowels above			
	cluster {°gg-j}	see {g}			
{v}	initial	*w	*u̯	verða	{verþ-ᴀ}
	medial	*w	*u̯	???	{???}
			*gʷʰ	???	{???}
	cluster {kv°}	see {k}			
	cluster {hv°}	see {h}			
	cluster {°k(k)-v}	see {k}			
	cluster {°gg-v}	see {g}			
	cluster {°ng-v}	see {g}			

Table 4.5: Etymology of consonant sound positions

{p} generally corresponds to Old Icelandic /p/, normalized as 'p' (Noreen 1970, § 323).

- Initial {p°} continues PG *p which (almost?) exclusively occurs in loanwords (e.g. *pund* {pund} "pound" < Lat. *pondus* "weight").

- Medial {°p} continues PG *p and PIE *b (e.g. *hlaupa* {hlaup-ᴀ} "to leap").

- The geminate {°pp} continues either PG *mp (cf. *svǫppr* {svǫpp-r} "mushroom" with MLG *swamp*) or PG *pp < PIE *Bn by Kluge's law (e.g. *knappr* {knapp-r} "button"), see Noreen (1970, § 324).

- The cluster {sp} ('sp') continues PG *sp < PIE *sp (e.g. *springa* {spring-ᴀ} "explode").

- The cluster {°pt} ('pt') continues PG *ft (cf. *hepta* {hæpt-ᴀ} "to keep back" with Got. *haftjan*), see Noreen (1970, § 240:2). This cluster is represented by 'ft' in some normalizations, and there was probably no phonological difference between /p/ and /f/ preceding /t/ in Old Norse.

For the cluster written 'ps' in some normalizations, see {fs}.

{t}   usually corresponds to Old Icelandic /t/, normalized as 't' (Noreen 1970, § 325).

- Initial {tᵒ} continues PG *t < PIE *d (cf. *tré* {tré} "tree" < PG *trew-ą̄- < *dréu̯-om ← PIE *dóru (*dreu̯-) with Gr. δόρυ, see Ringe 2006, p. 46).

- Medial {ᵒt} continues PG *t < PIE *d (e.g. *eta* {et-ᴀ} "to eat" < PG *et-aną < PIE *h₁ed-, cf. Lat. *edō,* "I eat").

- The geminate {ᵒtt} originates in either PG *nt (e.g. *detta* {dett-ᴀ} "fall down" < PG *dint-aną, see Noreen 1970, § 266:2, § 326), in PG word-final *nd (cf. *batt* {batt} "he bound" < PG *band with *binda* {bind-ᴀ} "to bind"), in PG *ht (cf. *dóttir* {dótt-ɪʀ} "daughter" < PG *duhtǣr- < PIE *dʰugʰ₂-tḗr with G *Tochter* and Gr. θυγατήρ, see Noreen 1970, § 267), or in PG *tt < PIE *Dn by Kluge's law (cf. *skattr* {skatt-ʀ} "treasure" < PG *skatt-az with Got. *skatts,* G *Schatz*).

- The cluster {ᵒlt} ('lt') either originates in PG *lt (e.g. *holt* {holt} "wood" < PG *hult-ą̄) or in PG word-final *ld (cf. *galt* {galt} "paid" < PG *gald with *gjalda* {gjald-ᴀ} "to pay"), see Noreen (1970, § 220).

- The cluster {st} ('st') continues PG *st < PIE *st (cf. *stíga* {stíg-ᴀ} "to ascend" < PG *stīg-aną < PIE *steigʰ-e- with Gr. στείχω "I step").

The cluster {t} + {s} /ts/ is normalized as 'z' when both sounds belong to the same morpheme, or when {s} belongs to a conjugational or close derivational suffix, otherwise it is spelled 'ts' (e.g. *brauzk* {braut-sk} "broke himself", *veizla* {veit-sl-ᴀ} "feast", but *ástsemð* {ãst-sæ̀m-þ} "friendship", *spjóts* {spjót-s} "spear (gen)").

For Old Icelandic /t/ and /tt/ originated in *d or *þ by synchronically transparent assimilations, see {d} or {þ}.

{k}   usually corresponds to Old Icelandic /k/, normalized as 'k' (Noreen 1970, § 328).

- Initial {kᵒ} continues PG *k/kʷ < PIE *g/ǵ/gʷ, with the labio-velar being continued as the cluster {kv} before non-round vowels (e.g. *kenna* {kænn-ᴀ} "to teach", *kveða* {kveþ-ᴀ} "to say", *kona* {kon-ᴀ} "woman").

- Medial {ᵒk} continues PG *k/kʷ < PIE *g/ǵ/gʷ, with the labio-velar being continued as the cluster {k-v} before vowels (cf. *aka* {ak-ᴀ} "to drive" < PG *ak-aną < PIE *h₂aǵ-e- with Lat. *agere*; *myrkvi* {mïrk-v-ɪ} "darkness").

- The geminate {ᵒkk} either originates in PG *nk (or *nkʷ; cf. *drekka* {drekk-ᴀ} "to drink" < PG *drink-aną with G *trinken*), in PG word-final *ng (cf. *sprakk* {sprakk} "(it) exploded" < PG *sprang with *springa* {spring-ᴀ} "to explode", see Noreen 1970, § 266:3), or in PG *kk < PIE *Gn by Kluge's law (e.g. *bokkr* {bokk-ʀ} "buck"). In some cases, PN *k was lengthened after a short vowel before a PG semi-vowel (e.g. *rekkja* {rækk-j-ᴀ} "bed", *røkkva* {rëkk-v-ᴀ} "to become dark", see Noreen 1970, § 279:2).

- The cluster {ᵒks} originates in (post-apokope) *ks (e.g. *øx* {ö̈ks-ʀ} "axe" < PG *akʷesī-) or in PG *hs (cf. *vaxa* {vaks-ᴀ} "to grow" < PG *wahs-aną with G *wachsen,* Got. *wahsan*), see Noreen (1970, § 222:2). In either case, /ks/ ({ᵒks} without an intervening morpheme boundary) is normalized as 'x'.

- The cluster {sk} ('sk') continues PG *sk/skʷ* and PIE *sk/sk/skʷ* (e.g. *skip* {skip} "ship").

For /k/ originating from earlier *ᵍ* by synchronically transparent assimilations, see {g}.

{b}   corresponds to Old Icelandic /b/, normalized as 'b' ([Noreen 1970](#), § 329). As such, it continues the plosive allophone [b] of PG *ᵇ*.

- Initial {bᵒ} continues PG *ᵇ* and PIE *bʰ* (cf. *bera* {ber-ᴀ} "to carry" < PG *ber-anǫ* < PIE *bʰer-e-* with Gr. φέρειν, Ved. *bhárati* "carries") or PIE *gʷʰ* (cf. *bani* {ban-ɪ} "death" with ἔθανε "he died", Ved. *ghnánti* "they slay" < PIE *gʷʰén-/gʷʰon-/gʷʰn-*).

- The geminate {ᵒbb} continues PG *bb* (e.g. *krabbi* {krabb-ɪ} "crab").

- The cluster {ᵒmb} ('mb') continues PG *mb* (e.g. *lamb* {lamb} "lamb"), see [Ralph](#) ([2002](#), p. 713).

Otherwise, {b} only occurs in loanwords. The fricative allophone [β] of PG *ᵇ* merged with *ᶠ* and is represented by {f} in this referential system.

{d}   generally corresponds to Old Icelandic /d/, normalized as 'd' ([Noreen 1970](#), § 331). As such, it continues the plosive allophone [d] of PG *ᵈ*.

- Initial {dᵒ} continues PG *ᵈ* < PIE *dʰ* (e.g. *dagr* {dag-r} "day" < PG *dag-az* < PIE *dʰóǵʰ-os*).

- The geminate {ᵒdd} continues either PG *zd* (cf. *rǫdd* {rǫdd} "voice" < PG *razd-ō* with Got. *razda*, see [Noreen 1970](#), § 224:2) or PG *dd* (cf. *koddi* {kodd-ɪ} "pocket" with OE *codd*, see [Noreen 1970](#), § 332).

- The cluster {ᵒld} continues PG *ld* and either PIE *ldʰ* or PIE *lt* in Verner position II.

- The cluster {ᵒnd} continues PG *nd* and either PIE *ndʰ* (e.g. *hǫnd* {hǫnd} "hand" < PG *hand-uz* < PIE *kóndʰ-us*) or PIE *nt* in Verner position II (cf. *fundu* {fund-ʊ} "(they) found" < PG *fund-un-* < PIE *pe-pn̥t-ér* with *fann* {fann} "(he) found" < PG *fanþ* < PIE *pe-pónt-e*), see [Ralph](#) ([2002](#), p. 713).

Otherwise {d} only occurs in loanwords. The fricative allophone [ð] of PG *ᵈ* merged with *ᵖ* and is represented by {þ} in this referential system. For /d/ originating from earlier *ᵖ* or *ᵈ* [ð] by synchronically transparent assimilations, see {þ}.

When it is followed by a conjugational or close derivational suffix starting in {s}, the sequence {ᵒd-s} appears as 'z' in normalized orthography, ortherwise it appears as 'ds' (e.g. *útlenzkr* {út‿lænd-sk-r} "foreign", but *gjalds* {gjald-s} "payment (gen)").

The cluster {d-t} appears as 't' in normalized orthography: Old Icelandic /d/ is assimilated to a following inflectional ending starting in /t/. Since medial {d} only occurs in the clusters {ld} and {nd}, the resulting geminate /tt/ is further simplified to /t/ (e.g. *blint* {blind-t} "blind (n.sg)").

{g}   generally corresponds to Old Icelandic /g/ (both the plosive allophone [g~ǧ] and the fricative [ɣ~x]), normalized as 'g' (Noreen 1970, § 333).

- Initial {gᵒ} continues PG *g and PIE *gʰ/ǵʰ (e.g. *geta* {get-ᴀ} "to beget").

- Medial {ᵒg} continues PG *g (its fricative allophone [ɣ~x]) and thus either PIE *gʰ/ǵʰ (e.g. *dagr*) or PIE *k/ḱ in Verner position II (cf. *slegit* {slæg-ɪn-t} "beaten" with *slá* {slá ʰ-ᴀ} "to beat" < PG *slah-aną), see Ralph (2002, p. 713), Noreen (1970, § 344).

- The geminate {ᵒgg} corresponds to Old Icelandic /gg/. As such, it continues the PG geminate semi-vowels *jj (cf. *tveggja* {tvægg-j-ᴀ} "two (gen)" with Got. *twaddje* and OHG *zweiio*) and *ww (cf. *hryggva* {hrïgg-v-ᴀ} "to sadden" with OHG *hriuwan*), see Noreen (1970, § 227). Old Icelandic /gg/ also originates in PG *g between a short vowel and *j (cf. *liggja* {ligg-j-ᴀ} *to lie (down)* < PG *lig-janą with G "liegen") or, finally, in PG *gg (cf. *vagga* {vagg-ᴀ} "cradle" with ME *waggin*).

- The cluster {ᵒng} ('ng') continues PG *ng (i.e. [ŋg]) and thus either PIE *ngʰ/ńǵʰ/ngʷʰ (cf. *langr* {lang-r} "long" < PG *lang-a- < PIE *longʰ-ó- with Lat. *longus*; *syngva* {sïng-v-ᴀ} "to sing" < PG *singʷ-aną < PIE *séngʷʰ-e-) or PIE *nk/ńḱ/nkʷ in Verner position II (cf. *fengit* {fæng-ɪn-t} "gotten" with *fá* {fã-ᴀ} "to get" < PG *fanh-aną).

A close derivational suffix starting in {g} is partially assimilated by a directly preceding {t} and appears as /k/ ('k'). In pronominal forms, the {t} is assimilated by this /t/ and the resulting geminate /kk/ is simplified following a consonant (e.g. *almátkan* {al‿mǫtt-g-ᴀn} "almighty (m.sg.acc)"; *ekki* {ei̯n-t-gɪ} "nothing"; *hvárki* {hvár-t-gɪ} "neither one (n.sg)", see Noreen 1970, § 274:1).

{f}   corresponds to Old Icelandic /f/ and /v/ (where it originates in earlier *f or *b, i.e. [f] or [β]), both normalized as 'f' (Noreen 1970, § 335, § 342).[18]

- Initial {fᵒ} continues PG *f which normally developed from PIE *p (cf. *faðir* {faþ-ɪr} "father" < PG *fadǣr- < PIE *ph₂tḗr with Lat. *pater*, Skt. *pitā́*). In the numeral *fjórir* {fjór-ɪr} "four", /f/ is derived from PIE *kʷ (cf. Lat. *quattuor*, Gr. τέτταρες).

- Medial {ᵒf}, on the one hand, continues PG *f and thus PIE *p in Verner position I (cf. *hefja* {hæf-j-ᴀ} "to begin" with Got. *hafjan*). Occasionally, it can be traced back to PIE *kʷ in Verner position I (cf. *ulfr* {ulf-r} "wolf" < PG *wulf-az < PIE *u̯ĺ̥kʷ-os with Skt. *vŕ̥k-as*), see Noreen (1970, § 240:1). On the other hand, it continues PG *b (its fricative allophone [β]) and thus PIE *bʰ (cf. *ljúfr* {ljúf-r} "dear, beloved" < PG *leub-az < PIE *léu̯bʰ-os with OCS *ljubъ* "sweet, pleasant") or PIE *p in Verner position II (e.g. ?).

  While PG *f and *b [β] were distinguished in early rune inscriptions, they merged completely and are not kept apart in this referential system (Ralph 2002, p. 713).

- The cluster {ᵒfs} continues earlier (post-apokope) *fs. Its labial element continues PG *f (cf. *refsa* {ræfs-ᴀ} "to punish" with OHG *refsan*), PG *b (cf. *ufs* {ufs} "TRAUFDACH?" with Got. *ubizwa*) or PG *p (e.g.?).

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[18]I assume a stage of Old Icelandic at which voiced /f/ (normalized 'f') and the former semi-vowel /w/ (normalized 'v') had already merged in /v/ (Nedoma 2006, p. 29).

- The geminate {°ff} only occurs in loanwords (e.g. *offra* {offr-ᴀ} "to sacrifice" < Lat. *offerre*), see Noreen (1970, § 336).

For the cluster written 'ft' in some normalizations, see {pt}. The cluster sometimes normalized as 'fn' belongs here (cf. *jafn* {jafn-r} "even" with G *eben*) or under {m} (cf. *samna* or *safna* {sam-n-ᴀ} "to collect" with *saman* {sam-ᴀɴ} "together").

{þ} largely corresponds to Old Icelandic /þ/, which is normalized as 'þ' (initially) or as 'ð' (medially), see Noreen (1970, § 337, § 343).

- Initial {þ°} continues PG **þ* and thus continuing PIE **t* (cf. *þurr* {þurr-r} "dry" < PG **þurzu-* with Skt. *tr̥ṣú-* "greedy" < PIE **tr̥s-ú-*, Holthausen 1948, p. 322).

- Medial {°þ} continues either PG **þ* or **d* (its fricative allophone [ð]). PG **þ* continues PIE **t* in Verner position I (cf. *bróðir* {bróþ-ɪr} "brother" with G *Bruder* < PG **brōþ̄ar* < PIE **bʰráh₂-tēr*, Holthausen 1948, p. 26), while **d* continues PIE **t* in Verner position II or PIE **dʰ* (cf. *faðir* {faþ-ɪr} "father" with G *Vater* < PG **fad̄ar* < PIE **ph₂-tḗr* and *ríða* {ríþ-ᴀ} "ride" < PG **rīd-anǫ* with G *reiten*), see Holthausen (1948, pp. 54, 228).

  Medial {°þ} also continues PG **þ-þ*, especially following a vowel that is not fully stressed (cf. *eða* {eþᴀ} "or" with Got. *aíþþáu*, OE *eðða*, OHG *eddo*), see de Vries (1962, p. 93), Noreen (1970, § 241).

Initial {þ°} is represented by 'þ' in normalized orthography and regularly corresponds to Old Icelandic /þ/. Medially, it is usually represented by 'ð' and corresponds to /þ/ as well. However, medial {°þ} is affected by various assimilatory processes: The clusters {°þ-þ} and {°d-þ} appear as 'dd' /dd/ (*fǿddr* {fǿþ-þ-r} "born (m.sg)", *sendi* {sænd-þ-ɪ} "(he) sent" with further simplification), and {°þ} appears as 't' /t/ when directly neighboring {t} (e.g. *brátt* {bráþ-t} "quickly", *setti* {sæt-þ-ɪ} "(he) set", *fǿtt* {fǿþ-þ-t} "born (n.sg)"). Furthermore, {°þ} appears as *d* /d/ when directly following {n} or {l} after a long syllable or an unstressed syllable (*týndisk* {týn-þ-ɪ-sk} "was lost", *sigldu* {sigl-þ-ʊ} "(they) sailed"),[19] and as *t* /t/ directly following {s} (*lýsti* {lýs-þ-ɪ} "(he) announced"),[20] see Noreen (1970, § 238:1b, § 268:2, § 276)

In some paradigms, the suffix {-þ} appears as /d/ or /t/ (instead of /þ/) throughout the Old Norse manuscript tradition for historical reasons only. Roots that trigger such unexpected behavior are marked with {ᵈ} or {ʰ} respectively (see below 4.3.1: High-positioned letters).

For some of the clusters normalized as 'ðr' (e.g. *maðr*), see {nn-r}.

{s} corresponds to Old Icelandic /s/, usually normalized as 's' (Noreen 1970, §§ 338f).

- Initial {s°} continues PG **s* and thus PIE **s* (cf. *sitja* {sit-j-ᴀ} "to sit" < PG **sit-janǫ* < PIE **sed-i̯e-* with Lat. *sedēre*, Gr. *ἕζεσθαι*).

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[19] According to some normalizations, {°þ} appears as 'd' following *any* {l}, {m}, or {n}: *talði* or *taldi* {tal-þ-ɪ} "(he) told, counted", *dǿmði* or *dǿmdi* {dǿm-þ-ɪ} "(he) judged", *vanði* or *vandi* {van-þ-ɪ} "(he) trained", cf. Haugen (2001, p. 174).

[20] According to some normalizations, {°þ} also appears as 't' /t/ following {p} and {k}: *ǿpði* or *ǿpti* {ǿp-þ-ɪ} "(he) yelled", *merkði* or *merkti* {mærk-þ-ɪ} "(he) marked", cf. Haugen (2001, pp. 174f).

- Medial {ᵒs} continues PG *s and thus PIE *s in Verner position I (cf. *kjósa* {kjós-ᴀ} "to choose" < PG *keus-anǫ with Engl. *choose*).

- The geminate {ᵒss} continues PG *ss, which was developed when an epenthetic *s was introduced between a root final dental plosive and a suffix starting in a dental plosive: *D-D > *t-st > *ss (cf. *vissi* {viss-ɪ} "(he) knew" with *vita* {vit-ᴀ} "to know").

When {ᵒd} or {ᵒt} are directly followed by a conjugational or close derivational suffix starting in {s}, the clusters {d-s} or {t-s} are normalized as 'z'.

{h}   corresponds to Old Icelandic /h/, normalized as 'h'. It only occurs initially and continues PG *h and PIE *k/ḱ (cf. *hjarta* {hjart-ᴀ} "heart" < PG *hert-an- ←PIE *ḱerd- with Lat. *cor, cordis*, Skt. *śṛd-*) or − in the cluster {hvᵒ}, PG *hʷ − PIE *kʷ or *ḱu̯ (cf. *hvat* {hvat} "what" < PG *hʷat-a ← PIE *kʷó-d with Lat. *quod*, Skt. *kád*). In all other positions, PG *h was lost in Old Norse (often with lowering and/or lengthening of the preceding vowel), see Noreen (1970, §§ 340f).

{m}   corresponds to Old Icelandic /m/, normalized as 'm' (Noreen 1970, §§ 345f).

- Initial {mᵒ} continues PG *m and PIE *m (cf. *móðir* {móþ-ɪr} "mother" < PG *mōdǣr < PIE *mah₂tḗr with G *Mutter*, Lat. *māter*, Ved. *mātā́*).

- Medial {ᵒm} continues PG *m and PIE *m (cf. *nema* {nem-ᴀ} "to acquire" < PG *nem-anǫ < PIE *ném-e- with Gr. *νέμειν* "to distribute").

- The geminate {ᵒmm} continues PG *mm (e.g. *vamm* {vamm} "disgrave").

The cluster {m(-)n} may be spelled 'fn' in some normalization (others have 'mn').

{n}   usually corresponds to Old Icelandic /n/, normalized as 'n' (Noreen 1970, §§ 347ff).

- Initial {nᵒ} continues PG *n and PIE *n (cf. *nátt* {nǭtt} "night" < PG *naht-uz ←PIE *nókʷt- with Lat. *nox*, Gr. *νύξ*).

- Medial {ᵒn} continues PG *n and PIE *n (cf. *bani* {ban-ɪ} "death" < PG *ban-an- < PIE *gʷʰon- with Gr. *ἔθανε* "he died", Skt. *ghnánti* "they slay").

- The geminate {ᵒnn} continues PG *nn and PIE *nu̯ (cf. *brinna* {brinn-ᴀ} "to burn" < PG *brinn-anǫ < *gʷʰré-nu̯-e- ← PIE *gʷʰṛ-néu̯- with Ved. *ghṛṇóti* "(it) burns"), PG *nþ (e.g. *finna* {finn-ᴀ} "to find" < PG *finþ-anǫ), or PG *zn (cf. *rann* {rann} "house" < PG *razna-* with Got. *razn*), see Noreen (1970, § 224:2), Rix et al. (2001, p. 219f).

Old Icelandic /n/ (or /nn/) is assimilated to the /t/ of a following suffix in a number of paradigms (cf. *satt* {sann-t} "true (n.sg)" with *sannr* {sann-r} "true (m.sg)"). This development always takes place following unstressed vowels − with further simplification to simple /t/ (cf. *farit* {far-ɪn-t} "gone (n.sg)" with *farin* {far-ɪn} "gone (f.sg)").

The cluster {nn-r} corresponds to /þr/ ('ðr') in a number of paradigms (e.g. *maðr* {mann-r} "man (nom)", *suðr* {sunn-r} "South").

{l} corresponds to Old Icelandic /l/, normalized as 'l' (Noreen 1970, §§ 350f).

- Initial {lº} continues PG *l* and PIE *l* (cf. *langr* {lang-r} "long" < PG *lang-a-* < PIE *lóngʰ-o-* with Lat. *longus*).

- Medial {ºl} continues PG *l* and PIE *l* (e.g. *ala* {al-ᴀ} "to raise" < PG *al-aną*).

- The geminate {ºll} continues, on the one hand, PG *ll*, which partly originates in PIE *ln* (cf. *fullr* {full-r} "full" < PG *full-a-* < PIE *pl̥h₁-nó-* with Ved. *pūrṇa-*), partly in PIE *ll* REALLY?! (e.g. ???). On the other hand {ºll} continues PG *lþ* < PIE *lt* in Verner position I (cf. *gull* {gull} "gold" < PG *gulþ-ą* with Got. *gulþ*), see Noreen (1970, § 275).

{r} largely corresponds to Old Icelandic /r/, normalized as 'r' (Noreen 1970, §§ 352f).

- Initial {rº} continues PG *r* < PIE *r* (e.g. *ríða* {ríþ-ᴀ} "to ride" < PG *rīd-aną*).

- Medial {ºr} continues either PG *r* < PIE *r* (cf. *bera* {ber-ᴀ} "to carry" < PG *ber-aną* < PIE *bʰér-e-* with Gr. φέρειν) or PG *z* < PIE *s* in Verner position II (e.g. *heyra* {høyr-ᴀ} "to hear" < PG *hauz-ijaną*).

- The geminate {ºrr} continues either PG *rr* (cf. *kyrr* {kvirr-r} "calm" < PG *kʷirr-u-* with Got. *qairrus*) or PG *rz* (cf. *þurr* {þurr-r} "dry" < PG *þurz-u-* < PIE *tr̥s-ú-* with Ved. *tr̥ṣ-ú-*).

In Old Icelandic, the {r} of an inflectional or close derivational suffix is assimilated to a preceding {s} or − if the preceding syllable is long or unstressed − single {l} or {n} (e.g. *fúss* {fús-r} "eager", *farinn* {far-ɪn-r} "gone", *stóll* {stól-r} "chair", but *dylr* {dül-r} "(he) conceals").

The verbal ending {-r} disappears phonologically and orthographically when preceding the reflexive formant {-sk} (e.g. *býsk* {bý-r-sk} "(he) prepares himself").

{j} largely corresponds to Old Icelandic /j/, normalized as 'j' (Noreen 1970, § 354). As such, it always precedes a vowel. It occurs initially (i.e. in a stressed syllable) in the rising diphthongs discussed above (4.3.1: Vocalic sound positions). Medially (i.e. in an unstressed syllable), it continues PG *j* after a light syllable (cf. *velja* {væl-j-ᴀ} "to elect" < PG *wal-janą* with Got. *waljan*); following a velar (or rather palatal sound), it continues PG *ij* after a heavy syllables as well (e.g. *merkja* {mærk-j-ᴀ} "to mark" < PG *mark-ijaną*), see Noreen (1970, § 263).

Preceding unstressed Old Icelandic /i/, /j/ is not represented graphically in most normalizations, and it is not assumed to have existed phonologically in this position. Since Modern Icelandic, however, has /j/ also before unstressed /i/, I have included this sequence in this referential system (e.g. Old Icelandic *siti* {sit-j-ɪ} "(he) may sit", but Modern Icelandic *sitji*).

For the cluster {ºgg-j}, see {g}.

{v} largely corresponds to Old Icelandic /v/ (when it continues PG *w*), normalized as 'v'. (Noreen 1970, § 355). As such, it always precedes a vowel.

- Initial {v} continues PG *w* and PIE *u̯* (cf. *verða* {verþ-ᴀ} "to become" < PG *werþ-aną* < PIE *u̯ért-e-* with Lat. *vertere* "to turn").

- Medial {v} continues PG *w and thus either PIE *u̯ (e.g. *vǫlva* {vǫl-v-ᴀ} "seeress") or PIE *g^wh (e.g. *snǽvar* {snǽ-v-ᴀr} "snow (gen)").

For the development of PG *w originating in other PIE labio-velars, see the cluster {k}, {g}, {h}.

PN *w was lost in Old Norse when preceding a round vowel. I have included {v} preceding round vowels in this referential system when the inflectional (or derivational) paradigm shows forms with /v/ preceding a non-round vowel, because /v/ could be analogically restituted in these cases, especially in Old Norwegian (e.g. 41r26 ⟨vorðet⟩ *orðit* {vorþ-ɪn-t} "become (spn)"). In these cases {v} is not represented in normalized orthography.

Preceding unstressed Old Icelandic /u/, /v/ is not represented graphically after a consonant in most normalizations, and it is not assumed to have existed phonologically in this position. Since Modern Icelandic, however, has /v/ also before unstressed /u/, I have included this sequence in this referential system (e.g. Old Icelandic *vǫlu* {vǫl-v-ʊ} "seeress (acc)", but Modern Icelandic *völvu*).

High-positioned letters

Additionally, I use high-positioned {ʰ} and {ᵈ} in order to indicate the special behavior of {þ} suffixes following certain morphemes.

For instance, the phonological realization of the preterite suffix {-þ} is largely governed by the preceding sound: in classical Old Norse[21] it generally appears as /þ/, but as /d/ following /l, m, n/, as /t/ following /k, p, s, t/ and as /dd/ with preceding /þ/ (see above). However, with certain verbs there are exceptions that are not synchronically motivated: *mǽla* "to speak" has the irregular preterite *mǽlti*, while *mǽla* "to measure" has regular *mǽldi*. Rather than assuming different preterite suffixes that are used together with different roots (this would be quite legitimate as well), I have chosen to treat the trigger for this suffix irregularity as an implicit feature of the preceding root morpheme: {mǽlʰ-ᴀ} "speak" and {mǽl-ᴀ} "measure".[22]

4.3.2 Referential morphemes

These sound positions are combined to create referential morphemes. I have divided the morphemes into classes, depending on their function and how they combine with other morphemes:

- **Radical morphemes** are at the core of any verbal, nominal or adjectival form. They typically contain one stressed vowel. Prefixes and especially suffixes may be attached to them, but they may also be a word's only morpheme (e.g. {bjóþ-} in *bjóða* "to offer", {bauþ} in *bauð* "offered", {namn-} in *nafn* "name" and *nafni* "name (dat)").

- **Prefixes** are bound morphemes that only occur only in combination with a following radical morpheme. They often display somewhat irregular, unclear, or disputed phonological developments and are then excluded from the primary orthographic analysis (e.g.

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[21]As described by Haugen (2001, pp. 173f).

[22]It is also there that the cause for it can be found − albeit only diachronically: after syncope, the PG suffix *d was devoiced following the voiceless cluster in PN *mahl-ī/ija- < PG *maþl-ī/ija-, but not following PN *māl-ī/ija- < PG *māl-ī/ija- (cf. Got. *maþljan*, but *meljan*, Haugen 2001, p. 174).

{and‿} in *andsvar* "answer", {al‿} in *alþýða* "the general public", {(ú)‿} in *úspakr* (or *óspakr*) "unwise").

- **Close derivational suffixes** are bound morphemes that occur only in combination with a preceding radical morpheme (e.g. {-þ-} in *stulðr* "theft", {-ɪg-} in *kunnigr* "knowledge-able". They contain only an unstressed vowel (if any) and only simple consonants. They may be followed by further derivational as well as by declensional and conjugational suffixes. In addition to typical derivational morphemes, I have included the comparative and superlative suffixes (e.g. {-st-} in *størstr* "biggest") for technical and semantic reasons.

- **Loose derivational suffixes** are bound morphemes that function in the same way as the Close derivational suffixes, except that they contain half-stressed vowels and may contain geminates (e.g. {-sàm-} in *skynsamr* "knowledgeable").

- **Declensional suffixes** are bound morphemes that constitute the endings of nominal, adjectival and pronominal inflection (e.g. {-r} in *hugr* "thought (nom)", {-ʊm} in *ǫðrum* "others (dat)").

- **Conjugational suffixes** are bound morphemes that constitute the endings of verbal inflection (e.g. {-ᴀ} in *bera* "to carry", {-ɪr} in *heyrir* "hears").

- **Enclitic morphemes** are used to represent clitics like {-þ(u)} in *ertu* "are you (sg)". They often display somewhat irregular, unclear, or disputed phonological developments and are then excluded from the primary orthographic analysis.

- **Isolated morphemes** are unbound and do not combine with other morphemes except in compounds and with clitics. They appear most prominently in conjunctions, subjunctions, and pronominal paradigms (e.g. {(o)k} in *ok* "and", {mér} in *mér* "me (dat)").

Some morphemes are only assigned tentative sound positions, since their etymology is unclear or their phonological development is irregular. These cases are excluded from primary orthographic description and its phonological interpretation and indicated by parentheses around the respective sound position. I will rather try to interpret their spellings phonologically after orthographic rules have been established on the basis of the more diachronically unambiguous cases. A complete list of all the referential morphemes used in this dissertation will be available online. A preliminary version of this list can already be accessed here: http://folk.uib.no/rpa021/emroon/v2-4-1/xml/morphemeList.xml.

4.3.3 Morphological types

The referential morphemes are combined to create morphological types. These represent each morphologically distinct Old West Norse word and each token in the manuscript corpus is assigned such a type. In the referential database, each morphological type is annotated with information regarding its place in the lexicon (lemmatization), its part-of-speech and a morpho-syntactic analysis in addition to its ᴇᴍʀᴏᴏɴ form. This database will be available online. A preliminary version is available here: http://folk.uib.no/rpa021/emroon/v2-4-1/xml/lemmaList.xml.

Thus, the morphological type with the identifying code L0109–F16 is defined by its ᴇᴍʀᴏᴏɴ form {all-ʀᴀr}, as the feminine genitive singular of the quantifier *allr*, usually normalized as *allrar*.

Bibliography

Antonsen, E. H. (1963). The Proto-Norse vowel system and the younger Fuþark. *Scandinavian Studies* (35), 195–207. 6

Benediktsson, H. (1964). Old Norse short *e*: one phoneme or two? *Arkiv för nordisk filologi* (79), 133–153. 3

Benediktsson, H. (Ed.) (1972). *The First Grammatical Treatise*. Reykjavík: Institute of Nordic Linguistics. 2

de Vries, J. (2000 [1962]). *Altnordisches etymologisches Wörterbuch* (4. [2.] ed.). Leiden, Boston, Köln: Brill. 23

Dyvik, H. (1996). Terje Spurkland: En fonografematisk analyse av runematerialet fra Bryggen i Bergen. *Maal og Minne*, 3–21. 2, 3, 4, 5

Elmentaler, M. (2003). *Struktur und Wandel vormoderner Schreibsprachen*. Berlin/New York: De Gruyter. 4, 6

Haugen, O. E. (2001). *Grunnbok i norrønt språk* (4th ed.). Oslo. 3, 11, 23, 26

Holthausen, F. (1948). *Vergleichendes und etymologisches Wörterbuch des Altwestnordischen*. Göttingen. 9, 23

Kjeldsen, A. S. (2013). *Filologiske studier i kongesagahåndskriftet Morkinskinna*. Copenhagen: Museum Tusculanum Press. 3, 16

Kroonen, G. (2013). *Etymological Dictionary of Proto-Germanic*. Leiden/Boston. 9, 11, 12, 13, 14, 15, 16

Nedoma, R. (2006). *Kleine Grammatik des Altisländischen* (2nd ed.). Heidelberg. 3, 22

Noreen, A. (1970). *Altnordische Grammatik I. Altisländische und altnorwegische Grammatik (Laut- und Flexionslehre)* (5th ed.). Tübingen. 7, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25

Ralph, B. (2002). Phonological and graphematic developments from Ancient Nordic to Old Nordic. In O. Bandle et al. (Eds.), *The Nordic Languages - An International Handbook of the History of the North Germanic Languages*, Volume 1, pp. 703–719. Berlin/New York: De Gruyter. 9, 10, 12, 13, 14, 15, 16, 21, 22

Ringe, D. (2006). *From Proto-Indo-European to Proto-Germanic*. A Linguistic History of English I. Oxford: Oxford University Press. 20

Rix, H., M. Kümmel, T. Zehnder, R. Lipp, and B. Schirmer (2001). *Lexikon der indogermanischen Verben* (2. ed.). Wiesbaden: Reichert. 24

Spurkland, T. (1991). *En fonografematisk analyse av runematerialet fra Bryggen i Bergen*. Ph. D. thesis, University of Oslo. 4