Chapter 4: Changes of Stressed Vowels in Germanic

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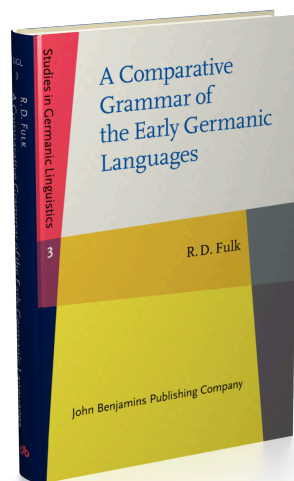
Changes of Stressed Vowels in Germanic

4.1 Compensatory lengthening upon loss of a nasal consonant

In the PGmc. consonant group *-ŋx- the nasal consonant was lost, with compensatory lengthening of the preceding vowel. The vowels *e* and *o* did not occur in this environment. The lengthened vowels may have remained nasalized for a considerable time, well past the close of the NWGmc. period, since $ā^n$ produced this way developed to $ō$ in Anglo-Frisian (as in OE pret. sg. *þōhte*, OFris. *thȭchte* 'thought') and did not fall together with OE $ā < ai$ or OFris. $ā < ai$, *au* (§4.12). In ON the usual reflex of $ā^n$ is *á*. Examples: Go. *þeihan* 'thrive' < PGmc. $*þī^nxana^n < *þiŋxana^n <$ PIE *tenk-* (cf. OE pp. *þungen* 'successful' and Lith. *tenkù, tèkti* 'have enough'); Go. *þreihan* 'throng' < PGmc. $*þrī^nxana^n < *þriŋxana^n$ (cf. OE *þringan* 'crowd upon', Lith. *treñkti* 'strike'); Go. *fāhan* 'take' < PGmc. $*fā^nxana^n < *faŋxana^n <$ PIE *pa-n-k-* (cf. OE pp. *fangen* and Lat. *pangō* 'compose'); Go. *brāhta* 'brought' < PGmc. $*brā^nxtē < *braŋxtēþ$ (cf. inf. *briggan*); Go. *þūhta* 'seemed' < PGmc. $*þū^nxtē < *þuŋxtēþ <$ PIE *tŋg-* (cf. inf. *þugkjan*, OE *þyncan*, also Lat. *tongeō* 'know'); OE OHG *fūht* 'damp' < PGmc. $*fū^nxtaz < *fuŋxtaz <$ PIE *pŋk-t-* (cf. Skt. *paŋka-* 'slime').

4.2 Shortening in closed syllables

In most IE languages a long vowel followed by a sonorant plus another consonant was shortened, and in PGmc. the same happened. Examples: Go. *faírzna*, OE *fiersn*, OS *fersna*, OHG *fersana* 'heel' < PIE *pērsn-* (cf. Skt. *pārṣniḥ* 'heel', with shortening in Lat. *perna* 'ham'); Go. *winds*, ON *vindr*, OE OFris. OS *wind*, OHG *wint* 'wind' < PIE *u̯ēntos* (cf. Skt. *vānt-* 'blowing', with shortening in Lat. *ventus* 'wind').[1]

1.   Such shortening is not uncommonly regarded as of a piece with the shortening of long PIE diphthongs in PGmc. (§3.4), e.g. by Hirt (1931–4: §29.7) and Prokosch (1939: §46c). That is, *ēn, ēr*, etc., are to be regarded as diphthongs, the way they are treated, for instance, in PDE, where shortening of diphthongs before voiceless consonants applies also to the sequence vowel + sonorant consonant, as in *grant* (vs. *grand*), like *lout* (vs. *loud*).

4.3 Redistribution of the Proto-Germanic short mid and high vowels: lowering

After the development of PIE *o* to PGmc. *a*, there was no short phoneme /o/ in the Germanic protolanguage (but see §5.5 on the seeming retention of /o/ beyond the PGmc. period in certain noninitial syllables). This elimination of /o/ created an imbalance in the phonemic inventory of Gmc. vowels, because the result was that there was no back vowel corresponding to front /e/ (but see below on this), and it is an oft-observed characteristic of phonological systems across languages, and especially vowel systems, that

they tend to change in symmetrical fashion, and asymmetrical systems tend to be un-stable (see, e.g., McMahon 1994: 28). Unsurprisingly, then, there is abundant evidence that [o] arose again at a fairly early date, as a result of distance assimilation in vowels: when *u* stood before a mid or low vowel in the next syllable (i.e., /ɑ/ or /o(ː)/, since /e/ had been virtually eliminated in unstressed syllables: see §5.5), it was lowered to *o*. That this is a relatively early development is shown by a form like OE *scolu*, OS *skola* 'troop, shoal' < **skulō*, since final -*ō* became -*u* in the fifth century, to judge by the evidence of Runic inscriptions.[1] Lowering of *u* is also discernible in some early Runic inscriptions, e.g. **horna** (Gallehus horn 2, ca. 400 CE; see Stiles 2012). The change is not demonstrable in Gothic, where *u* is retained everywhere except before /r/ and /x/ (§4.5), but it is plainly evident elsewhere in Gmc. It is particularly plain in the past par-ticiples of strong verbs of the fourth class, but it is evident in many other grammatical categories, as well. Examples: OIcel. *stolinn*, OHG OS *gi-stolan*, OE *stolen* 'stolen' < PGmc. **stulanaz* < **stₑl-*; OHG *tor*, OE OS *dor* 'door' < PIE **dhuron* (cf. Gk. *πρόθυρον* 'front door'); OHG *bodam*, OIcel. *botn*, OE *botm* = Gk. *πυθμήν* 'bottom' < **bhudh-men-*; OIcel. *ok*, OE *geoc*, OHG *joh* beside *juh* and OS *juk*[2] = Gk. *ζυγόν*, Lat. *jugum* 'yoke' < PIE **i̯ugom*; OHG OS OE OFris. *gold*, OIcel. *gull* beside *goll* 'gold' < PGmc. **ȝulþaⁿ*. This lowering is prevented before a tautosyllabic nasal consonant, e.g. in OE pp. *wunden* 'wound' < **wundanaz* and OIcel. *sund* 'swimming' < **sundaⁿ*. It appears that it was also prevented by a heterosyllabic nasal, as in OE *fruma* 'beginning', *guma* 'man', *cuman* 'come', though OS and OHG show instances of *o* beside *u*, e.g. OS *gomo* beside usual *gumo*; lowering in OIcel. *koma* 'come' (cf. OIcel. oblique *guma*) is due to *a*-umlaut, a specifically Norse development (§4.8). Lowering is prevented also when *j* preceded the non-high vowel conditioning the change: cf. OE *cnyssan* 'knock', *trymman* 'strengthen' (not †*cnessan*, †*tremman*) < **knusjanaⁿ*, **trumjanaⁿ*.

It is plain, as well, that PGmc. *i* might be lowered to *e* in parallel fashion before a mid or low vowel in the next syllable.[3] Undeniable examples are OE OHG *nest* 'nest' < PIE **nizdos* (cf. Skt. *nīḍáḥ*, Lat. *nīdus*, Middle Irish *net*, Lith. *lìzdas* 'nest'), from **ni-* as in OE *niþer* 'down' plus **-zd-* as in full-grade Lat. *sedeō* 'sit'; and OS OFris. OE *wer(-)* 'person, man', OIcel. *verr* 'man' (cf. Lat. *vir*, Welsh *gŵr* 'man'). Gothic, once again, stands apart, since PIE *i* in that language is reflected as *aí* (probably /ɛ/ or /e/) before /r, x, xʷ/, otherwise *i* (§4.5). The only other secure example in OE is *spec* 'bacon' beside *spic*,[4] but the change is well attested outside of Anglo-Frisian, e.g. OIcel. *heðan* 'hence' (note the absence of *a*-fracture (§4.8), and cf. early *hiðra* 'here' = OE *hider*, later OIcel. *heðra* by analogy); OHG *quec*, OS *quec-* (beside usual *quik*) 'live', OFris. *quec* (beside usual *quik*) 'cattle' (cf. PIE ** gʷih₃u̯-* in OE *cwicu* 'live', OIr. *bith* 'world, life'); rare OIcel. *stegi* beside *stigi* 'ladder' (cf. *stíga* 'step', Gk. *στείχω* 'walk' < **steigh-*); OHG *lebara*, MLG *lever* (cf. OIcel. *lifr*, OE *lifer*, OFris. *livere*) 'liver' = Gk. *λιπαρός* 'fat, greasy'. The change is most regular in High German (see Braune 2004a: §31), least regular in English (A. Campbell 1977: §114). Plainly, the results of the lowering of *i* are much less systematic than those for the lowering of *u*, and in NWGmc., *i* and *e* alternated in many words, depending on whether or not a high vowel appeared in the following syllable. This created a situation ripe for analogical change on either an inter- or an intraparadigmatic basis, with leveling away of *e* being the commonest result.[5] Because the distribution of /i/ and /e/ is so different in Gothic, methodologically it is best to assume that the change of *i* to *e* is a development of NWGmc., but it is not impossible that the change should have taken place in PGmc.,[6] and indeed, it may have been the irregularities produced by this change that prompted

the redistribution of the short mid and high vowels in Gothic, though the distribution of the two types there is so nearly perfectly regular (see §4.5) that a purely phonological explanation does seem more probable.

It should be added that it has sometimes been argued that there was no asymmetry in the PGmc. short vowels, rather that *e* and *i* were allophones, just as *o* and *u* were (so Trager & Smith 1950: 67, 70; Marchand 1957a; see also Hock 1973). Beeler (1966) shows that this assumption creates problems for the analaysis of ON, since there *e* cannot have been raised before *u* in the next syllable (and thus it stood in phonemic constrast with *i* in that environment), given the facts of *u*-fracture (§4.8). For discussion and references to further studies pro and con, see Durie 1996, with further evidence against the merger.

1.   On the other hand, it would appear that lowering has not yet occurred in the divine name *Hludana* of Ubian dedicatory inscriptions of ca. 200 CE (Polomé 1994: 9). Ringe, with extensive discussion and copious examples in various grammatical classes, dates this lowering before the loss of WGmc. *-*az*, since it is common in *a*-stem nouns but not root-stems (Ringe & Taylor 2014: 27–34, at 29).

2.   The coöccurrence of forms with *o* and *u* is presumably due to alternation within the original paradigm, e.g. acc. sg. **joka*ⁿ beside gen. pl. *jukum.

3.   Kock (1898: 545) argues that this lowering of *i* is prevented in North Germanic when *g* or *k* immediately precedes the vowel, as in *gin* 'maw' and *skip* 'ship'. It is also prevented when *j* or nasal + consonant intervenes (§4.4).

4.   A rather probable example, however, is OE *gewegan* 'fight' (beside *wīgan*; cf. OIcel. *vega*), pp. *forwegen* 'killed'. The voicing under Verner's law (cf. Go. *weihan*) suggests the PGmc. suffixal accent characteristic of aorist presents, hence PGmc. **wiȝana*ⁿ (Seebold 1966b: 3–4). Another possible example is ME *steken* 'pierce' (Seebold 1970: 467–8). On these, see Lloyd 1966: 743–4.

5.   Ringe (Ringe & Taylor 2014: 34–6) takes the position that this lowering is a Franconian change that spread northward irregularly in WGmc., and that in OFris. the change is unrelated, choosing to leave exceptions like OE *nest*, *wer* unexplained. By contrast, Lloyd (1966) argues that an allophone [e] of /i/ arose occasionally in Gmc. on the basis of systemic analogy. Cercignani (1980b) explains the rarity of the change outside of High German as due to avoidance of merger of /e/ with /i/; cf. Kylstra 1983.

6.   So, e.g., Streitberg 1896: §68; cf. Krahe & Meid 1969: I, §36; for further references, see Kock 1898: 544 and Hirt 1931–4: I, §34.1.

4.4   Redistribution of the Proto-Germanic short mid and high vowels: raising

PIE *e* > PGmc. *i* under at least two, possibly three, conditions: (a) before *ĭ* or *j* in the next syllable; (b) before a tautosyllabic nasal consonant; (c) before *u* in the next syllable. The change represented by (c) is not now widely credited as a development of Proto-Germanic: see the discussion below. These changes cannot be illustrated in Gothic, since PGmc. *e* always yields *i* in that language (but is lowered again to *e*, or prevented from rising, before /r, x, xʷ/: §4.5). Examples:

(a) PIE **u̯en-i-s* > OIcel. *vinr*, OE *wine*, OS OHG *wini* 'friend' (cf. PIE **u̯en-* in Lat. *Venus*); PIE *bher-e-ti > PGmc. *beriþi > *biriþi > OE *birð*, OS *birid,* OHG *birit* 'bears'; PIE **me̸ǵ-el-* > PGmc. **mek-il-* > **mikil-* > OIcel. *mikill*, OE *micel*, OS *mikil*, OHG *mihhil* 'large' (cf. PIE **me̸ǵ-* in Lat. *magnus* 'large'); PIE **medh-i̯o-* > Lat. *medius*, OIcel. *miðr*, OE *midd*, OHG *mitti* 'middle'; PIE **sed-i̯o-* > OIcel. *sitja*, OE *sittan*, OS *sittian*, OHG *sitzen* 'sit'; PIE **u̯eǵh-i̯o-* > Skt. *vahyá-* 'vehicle', OIcel. *vigg*, OE *wicg*, OS *wigg* 'horse'.

(b) PIE **(-)bhendh-* in Avestan *bandayaiti* 'binds', Gk. πενθερός 'father-in-law' (*'bound by marriage'), Lat. *dēfendō* 'defend' (*'release from bonds'), Go. OE OS

bindan, OIcel. *binda*, OHG *bintan* 'bind'; PIE **klem-* (plus consonant) in Skt. *krándati* 'bellows', OE *hlimman* 'make a noise', OHG *limmit* 'makes a noise'; PIE **renĝ-* in Lith. *rễžiu, rễžti* 'tighten, elongate', OE OHG *rinc*, OS *rink* 'man'; PIE **tenk-* > Lith. *tenkù, tèkti* 'have enough', PGmc. **þeηxana^n > *þiηxana^n > *þīxana^n* (§4.1) in Go. *þeihan*, OE *þēon*, OS *thīhan*, OHG *dīhan* 'thrive'.

(c) PIE **pelh₂u* 'many' > OIr. *il*, OS OHG *filu* (but cf. OIcel. *fjǫl*, OE *fela*);[1] PIE **medhu-* in Skt. *mádhu-* 'honey', Gk. *μέθυ* 'wine', OIr. *mid* 'mead', OHG *mito* 'mead' (1×, beside *meto*, OIcel. *mjǫðr*, OE *medu, meodo*); PIE **gʷetu-* in Skt. *játu* 'lacquer, gum', OE *huuīt-quidu* (Épinal Glossary) > *hwīt-c(w)udu* (cf. inflected *cwidue(s)*, Bald's Leechbook) 'mastic'; PIE **su̯edh-* 'custom' in Skt. *svadhā́*, Gk. *ἔθος*, and probably OIcel. *siðr*, OE OS *sidu*, OFris. *side*, OHG *situ* (but with **sedh-* rather than **su̯edh-*); PIE **septm̥* '7' underlying PGmc. **sibun* (§10.2), reflected in early OE forms with *i*, e.g. Mercian *sifun-* (A. Campbell 1977: §682).[2]

The evidence of Gmc. names in Latin and Greek texts and inscriptions is neither unambiguous nor consistent, but some attestations suggest that (a) and (b) had not yet been completed by the first centuries CE, e.g. inscriptional *Nehalennia* in the second century, and *Segimerus, Segimundus* in Tacitus (Polomé 1994: 5–6, 8–9). The evidence for (c) is secure almost exclusively in OHG and OS, where the change applied (or continued to apply) at a relatively late date, since it is found in the 1st pers. sg. ind. of some verbs, e.g. *biru* '(I) bear', *stilu* '(I) steal', though *-u* here developed from *-ō*, probably in the course of the fifth century (§4.3). There do not appear to be any examples of the change in OIcel. or in Anglo-Frisian other than the possible ones presented here.[3] According to the older view, revived by Collitz (1905) and Prokosch (1939: §38), PIE *e* yields Gmc. *i* except before a non-high vowel in the next syllable, and except when there is later lowering before a non-high vowel. The result would have been extensive alternation of *e* and *i* within paradigms and among related forms, as with *o* and *u* (§4.3), with the consequence that *e* was restored in most instances in OIcel., OE, and OFris., as it is to some extent in OHG and OS (e.g. OHG *fehu* np. 'cattle. property' beside *fihu*). An advantage of this analysis is that the change of /e/ to /i/ in Gothic comes to seem less anomalous; another is that developments of the front and back vowels are made more symmetrical, at least in theory; a third is that it explains the change of PIE *ei* to Gmc. *ī* (§3.4).[4] The chief disadvantage is that the replacement of *i* by *e* in OIcel. and Anglo-Frisian must be regarded as uncommonly regular for an analogical development. Hirt (1931–4: I, 46; similarly Lloyd 1966) objects that if there is lowering of *i* to *e* in OHG *gigeban* 'given' and other verbs of the fifth strong class, it cannot be explained why there is no lowering in *gistigan* 'risen' and other verbs of the first strong class. Therefore, the *e* in *gigeban* cannot ever have been raised. But this is surely irrelevant, since the evidence for the lowering of *i* before a non-high vowel in the next syllable is rather solid, especially for OHG: see §4.3. It is nonetheless true that the failure of lowering in *gistigan* still demands to be explained, and Krahe & Meid (1969: I, §36) plausibly argue that *ī* in the present system of verbs of the first class exerted sufficient analogical influence to prevent or reverse the effects of lowering in the participle.[5] That there did at one time exist alternation between *e* and *i* in the past participle in the first class is suggested by the OIcel. participle *beðinn* (to *bíða* = PDE *bide*). This seems rather probable, given the high token frequency of *bíða*, which is perhaps the commonest verb of the first class in OIcel., and given the resistance of forms with high token frequency to regularizing analogical changes.[6] Another possible example is OE *forwegen* 'killed' (cf. *wīgan*

'fight' beside *gewegan*, §4.3 n. 4). There is frequent lowering of *i* to *e* in the pret. pl. and pp. of verbs of class I in OFris. See further Polomé 1994: 28–9 n. 10.

Just as PGmc. *e* was raised to *i* before *i* or *j* in the next syllable, so under the same conditions *eu* changed to *iu*. In ON and Anglo-Frisian, under normal circumstances *iu* would subsequently undergo front umlaut (§4.7). The further developments of *eu* are discussed under the treatment of vowels and diphthongs in the individual languages.

1.   On this analysis, OE *fela* (cf. Northumbrian *feolu*, Gk. πολύς 'many') has final *-a* probably from an oblique case-form of the original *u*-stem adjective (so A. Campbell 1977: §666), e.g. PGmc. nom. pl. fem. **felôz*, in which there would have been no raising of /e/ (or later reversal of that raising). If this is correct, OIcel. *fjǫl* must show fracture of **e* due to original final *-u* (as in the nom. acc. sg. of the adjective), with restoration of *e* in the root, prior to fracture, from oblique cases.

2.   Possibly also OE *nigon* '9' < PGmc. **ne(w)un(-)* (with intrusive *ȝ*, §10.2), though Ross & Berns (1992: 589) explain the raising as originating in the *i*-inflected stem **niwuni-*.

3.   A possible exception is OIcel. OE OS *wit* 'we two', which Prokosch (1939: §98d) plausibly explains as having developed from **we-tu* (see §8.2 *infra*); but the raising of **e* in this word may instead be due to unstressed use of the pronoun (§5.5).

4.   Implicit in this analysis is the assumption that these changes also affected the diphthong *eu*: Prokosch (1939: §39a) thus maintains that "*eu* appears normally as *eo* before *a*, as *iu* elsewhere." The change of *ei* to *ī* was not yet completed in the third century CE if the evidence of *Alateiviae*, the name of a deity from Xanten, is to be trusted (Polomé 1994: 6).

5.   That the vowel *ī* of the present system was able to exert influence of this sort is also the premise behind all the most convincing explanations for the long *ū* (for expected *u*) in the so-called aorist presents of verbs of the second strong class, such as *brūcan* 'enjoy', *būgan* 'bend', and *dūfan* 'dive': see §12.18.

6.   Seebold (1966b: 3 & n. 4) supposes that *beðinn* is due to confusion with the pp. of *biðja* 'bid', a confusion paralleled in OE (though only in manuscripts of the late tenth and eleventh centuries, and never in the pp. of the verb). This would be a more convincing analysis if there were other evidence in ON of confusion of *bíða* and *biðja* and from an early date, seeing as †*biðinn* does not occur.

4.5   Changes of stressed vowels in Gothic

PGmc. *e* and *i* fell together as *i* in Gothic, except that both appear before *r*, *h*, *hv* as *aí* (/ɛ/), in a process commonly referred to as 'breaking', as in *stilan* 'steal' (OE OS OHG *stelan*), *baíran* 'bear' (OE OS OHG *beran*), pp. *laíhvans* 'lent' (OHG *gi-liwan*).[1] Similarly, PGmc. *u* appears as *u* in Gothic, but as *aú* (/ɔ/) before *r*, *h*, *hv*,[2] as in pret. 3 pl. *-budun* 'offered' (OE *budon*, OS *budun*), pp. *-budans* 'offered' (OE *boden*, OHG *gi-botan*), pret. 3 pl. *waúrþun* 'became' (OE *wurdon*, OS *wurdun*).

Before a vowel, PGmc. *ē* and *ō* develop to /ɛ:/ and /ɔ:/, transcribed as *ai* and *au*, without any acute, to distinguish them from the vowels identified in §3.4. Examples: PGmc. **sēanⁿ* > Go. *saian* 'sow'[3] and PGmc. 3 sg. pret. **stōiðē(þ)* > Go. *stauida* 'judged'.

The diphthongs *eu* and *iu* (§4.4) fell together as *iu* in Gothic, e.g. **keusanⁿ* > Go. *kiusan* 'choose' (cf. OE *cēosan*) beside **liuxtijanⁿ* > Go. *liuhtjan* 'give light' (cf. OE *līehtan*).

1.   Exceptions are *waíla* 'well' (OE OS *wel*, OHG *wela*), *aíþþáu* 'or' (OE *eþþa* beside usual *oþþe*, OHG *ed(d)o*), and *hiri*, *hirjats*, *hirjiþ* 'come here!', on which see Cercignani 1984, and on *hiri* in particular, van der Hoek 2007. Raising also fails in reduplicative syllables in verbs of strong class VII, e.g. pret. *faífalþ* 'fold', usually explained as due to the analogical influence of preterites like *haíháit* 'call', or to weak stress. For alternative explanations, see Cercignani 1979 (with refs.), Ebbinghaus 1991.

2. It cannot be determined whether *u* had been lowered to *o* in PGmc. before a non-high vowel (see §4.3), but if so, the change of PGmc. *o* and *u* in Gothic would be entirely parallel to that of the equivalent front vowels.

3. Such is the view, e.g., of Braune (2004b: §22). It is sometimes assumed instead that *verba pura* such as this should be reconstructed with a medial *j* (so, e.g., Wright 1954: §77, Krause 1968: §58), thus **sējanan*, but see §12.22, where it is argued that such verbs had intervocalic hiatus due to loss of a laryngeal consonant. Even if they did contain *j* in PGmc., the sound must have been lost in Gothic, as otherwise spellings with *j* should be expected there, e.g. †*sējiþ* rather than the attested *saiiþ* 'sows' (beside *saijiþ*, which is rare and likelier to contain an inorganic insertion than an inherited segment), like *bajōþs* beside *bái* 'both' (see d'Alquen 1974: 148–54). The same reasoning applies, *mutatis mundandis*, to assumed *ō* rather than *ōw* in *stauida*, etc., where *w* is never inserted: see Fulk 1993a: 249–51.

4.6   Changes of stressed vowels in the Northwest Germanic protolanguage

Whereas PIE *ē* appears as *ē* in Gothic, in most of the NWGmc. languages it is reflected as *ā*, though in WS as *ǣ* and in the remaining OE dialects and OFris. as *ē*. As remarked above (§3.3), the PGmc. sound is sometimes reconstructed as *ǣ*, though also (as in this book) as *ē* (i.e., $\bar{e}_1$). Its reflex in NWGmc. and/or WGmc. is usually posited as either *ā* or (as in this book) *ǣ*. The uncertainty cannot be eliminated conclusively, but the preponderance of evidence suggests *ǣ* rather than *ā*. For example, when **swa* 'so' undergoes vowel lengthening on the basis of Prokosch's law (§2.5), the result is OS OHG *sō*, not †*sā*, and in OE and OFris., the languages in which there was fronting of low vowels (§4.12), the result is *swā* and *sā*, respectively.[1] Thus, in no instance does this new lengthened *ā* coalesce with the WGmc. reflex of $\bar{e}_1$, rendering *ǣ* the likelier reconstruction for the latter.[2] On the other hand, the development of the reflex of $\bar{e}_1$ to *ō* before a nasal consonant in Anglo-Frisian (§4.12) would seem to favor the reconstruction *ā* as the reflex of $\bar{e}_1$, but it is hardly impossible that in Anglo-Frisian, $\bar{æ}^n$ as the reflex of $\bar{e}_1$ before a nasal consonant should have coalesced with the nasalized reflex of *a* lengthened by the loss of a nasal consonant before a voiceless fricative in North Sea Germanic (§4.11).[3] The names of Angles and Frisians in Latin sources of the first and second centuries CE are spelt with ⟨e⟩ (which presumably may represent either *ē* or *ǣ*). Elsewhere in West Germanic the change of *ē* to *ā* begins in Upper German (the earliest instances in names being from the second half of the first century CE for Bavarian) and spreads northward, the earliest Franconian evidence for the change dating to ca. 500, with a few ⟨e⟩ spellings persisting as late as the eighth and ninth centuries, whereas PGmc. $\bar{e}_1$ is reflected as *ā* already in the earliest North Germanic inscriptions (see Bremer 1886: 12–29).[4] The assumption of WGmc. *ā* rather than *ǣ* leads to some difficulties in reconstructing the chronology of Anglo-Frisian sound changes, as illustrated by A. Campbell 1977: §132. The asymmetry between long and short vowel systems that results from the assumption of *ǣ* as the reflex of $\bar{e}_1$ plausibly explains the divergent developments respecting *a* and *ǣ* in Anglo-Frisian and elsewhere in NWGmc. (§4.12).

1. OE *swǣ* and *swē* do occur in some dialects, but they can be explained as due to lengthening of re-stressed **swæ* < *swa*, with Anglo-Frisian Brightening (§4.12), whereas *swā* must result from lengthening before that change. See §8.13 n. 6.

2. Stiles (2004) argues that because the vowel of PGmc. **þar* 'there', **xʷar* 'where', when lengthened in WGmc., coalesced with the reflex of PGmc. $\bar{e}_1$, the latter must already have developed to *ā* in WGmc. This argument proves inconclusive because if there was no *ā* in WGmc. at the time of the lengthening, presumably the lengthened vowel would have been identified with the nearest preëxisting equivalent in value, which may

have been *ǣ*. Similar reasoning pertains to the borrowing of Lat. *strāta* as OE *strǣt*. At all events, Bremer's evidence (see below) forbids the assumption of a general WGmc. *ā* at the time of the lengthening.

3.   Or, perhaps likelier, *ǣ* became *ā* before a nasal consonant, as might be expected on the basis of comparison to the short vowels, where there was no sequence *æ* plus nasal in Anglo-Frisian, only *an* (§4.12).

4.   Contradicting the observations of Bremer, however, is the Runic name-element **-mariʀ** (< PGmc. **mēriz*) on the Thorsberg chape from nothern Germany (Anglia, ca. 200). Possibly, though, the chape is of NGmc. origin (see Stiles 2004: 390), or ⟨a⟩ represents *ǣ*. That Gmc. *ē₁* continued to be spelt either ⟨e⟩ or ⟨a⟩ for some time (e.g. ca. 500–ca. 700 in Franconian names) could indicate that the sound was *ǣ* during that period, though it could also be due to conservative spelling traditions. Scholarship on the development of PGmc. *ē₁* (e.g. Hollifield 1980: 145–50) seems generally unacquainted with Bremer's findings. See further Polomé 1994: 7, Stiles 2004, Kortlandt 2006a. Ringe (in Ringe & Taylor 2014: 10–13) regards the assumption of NWGmc. *ā* as simpler, but that is a matter of perspective, as the supposition of a change PGmc. *ē* > NWGmc. *ā* > OE *ǣ* is not as simple as the assumption that OE *ǣ* reflects the NWGmc. vowel unchanged.

4.7   Front mutation

Long after the PGmc. change of *e* to *i* before *ĭ* or *j* in the next syllable (§4.4), under the same conditions most other vowels underwent fronting and/or raising in a process of front mutation, more commonly referred to as front umlaut or *i/j*-umlaut, or simply umlaut (a term originating with Jacob Grimm). The process is an assimilatory one inasmuch as it eases articulation: in anticipation of the following high front vowel or glide a vowel takes on some of its qualities, requiring less movement of the tongue at the onset of *ĭ* or *j*. Alternatively, the process has not infrequently been analyzed as assimilation not of the qualities of *ĭ* or *j* itself but of the palatal quality lent an inter- vening consonant by the mutating sound.[1] There are some disadvantages, though, to this alternative formulation, chief of which is that palatalization of consonants other than velars does not normally lead to phonemic distinctions in the early Gmc. languages, e.g. no **/ɲ/ : /n/*, so that the assumption of non-phonemic palatalized variants seems speculative.[2] Likewise, the parallel development of back mutation (§4.8) can hardly be thought to depend upon rounding/backing of intervening consonants. Further alterna- tives to the theory of distance assimilation include the supposition of epenthesis, e.g. **-ati-* > **-aⁱti-* > **-eti-*; the supposition of a process of vowel harmony (interpreting that term broadly); and the theory of umlaut as a result of language contact: on these, see Krygier 1997, with references.[3]

The general trend represented by the umlaut process may be expressed by Fig. 5, wherein it will be seen that the vowels affected all trend toward the high front position of *ĭ/j*. New vowels created by umlaut are placed in round brackets, and of course the change of *e* to *i* took place much earlier (§4.4).

Only East Germanic (including Crimean Gothic) shows no evidence of the effects of umlaut, but the process applied at various times and with varied effects in the
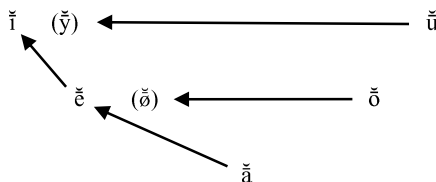

Fig. 5. The general direction of front mutation in the early Germanic languages.

remaining Gmc. languages, so that it is necessary to assume either a change proceeding across NWGmc. in waves or a change originating in various places due to similar linguistic conditions (see §1.2). In WGmc., umlaut must have occurred earliest in North Sea Gmc., as the southward spread of the change can be observed in High German (see below). In OE the change is perhaps to be dated to the first half of the sixth century (Luick 1914–40: §350), whereas in Runic there is no reliable evidence for umlaut in the Older Futhark.[4] In WGmc., outside of Ingvaeonic (i.e., in all dialects of OHG and OLF), only the umlaut of *a* to *e* is expressed in the orthography of the older languages; though other vowels must have been umlauted, as well, the change does not affect spelling until the MLG and MHG periods.

Old Icelandic. Two discrete patterns of umlaut are discernible in NGmc.,[5] (1) one in which the change was caused by *i* or *j* lost in the early period, and (2) one in which it was caused by preserved *i* or *j*. In the former pattern (1), umlaut regularly applies to heavy syllables but not usually light, e.g. heavy *bekkr* 'bench' < **baŋkiz* and pret. *heyrði* 'heard' < **xauziðē* : light acc. sg. *stað* 'place' < **staðin*, nom. *nár* 'corpse' < **nawiz*, and pret. *gladdi* 'gladden' < **ʒlaðiðē*. In the latter pattern (2), umlaut applies to both heavy and light syllables, e.g. heavy *kerling* '(old) woman' < **karlingō* : light *ketill* 'cauldron' < **katilaz*. In pattern (1) the umlauted vowel was (apparently) phonemicized upon loss of *i* or *j*, and this explains the different results for heavy and light stems, since presumably *i* was lost earlier after heavy stems than light, just as in WGmc., e.g. OE *giest* 'guest' < **ʒastiz* but *wine* 'friend' < **winiz*. Such is the groundbreaking analysis of Kock (1888, though of course without reference to phonemicization), who posited three historical periods:

A. Umlaut in heavy syllables when *i* (but not *j*) disappeared, ca. 600–700;
B. Umlaut in light syllables by a following *iʀ* (> *ʀ*; see below) or *j*, ca. 700–850;
C. Umlaut by preserved *i* after both heavy and light syllables, ca. 900–1000.

Implicit in this analysis is thus the assumption that umlaut should have taken place in heavy stems but not light on a purely phonological basis, and this seems unlikely, as there is no apparent phonetic basis for the distinction.[6] It would therefore seem natural to assume instead that between the loss of *i/j* in heavy and light stems there was paradigm regularization: in heavy-stem paradigms, where umlaut was no longer phonologically conditioned, the umlauted stem was commonly extended throughout the paradigm, e.g. from the masc. nom. sg. to the gen. sg. and dat. pl.,[7] whereas in light-stem paradigms, where the conditioning remained, the unumlauted stem was extended throughout. That there was indeed umlaut at one time in light stems is shown by the appearance of umlaut in a number of words in which analogical restoration of the unumlauted vowel was not possible, such as *gegn* 'against' < *gegin* < **ʒaʒina* and *mylna* 'mill' (borrowed from Lat. *molina*), as well as mass nouns, which had no plural, e.g. *gnýðr* 'murmur', *kylr* 'gust of cold air'.[8] On this assumption, however, it is difficult to account for light-stemmed preterites of the first weak class without umlaut, e.g. *vakði*, *vakti* 'roused' (to *vekja*) < **wakiðē*, since there were no forms anywhere in the paradigm that did not originally contain either *i* or *j*. Conversely, light roots bearing the PGmc. suffix **-iþō* always have umlaut, e.g. *spekð*, *spekt* 'wisdom', *lemd* 'lameness' (cf. *spakr* 'wise', *lami* 'lame person'), and they, too, would have had suffixal *i* throughout the paradigm. Yet this latter type could be due to the analogical influence of related forms: cf. *speki* 'wisdom' < **spakīn-* and *lemja* 'to lame'.[9] Perhaps, then, verb forms like *vakði* may be explained on the assumption that the reduction and lowering of unstressed *i* (§5.6) took place before the vowel was lost after light syllables, and the

umlauted vowel, its fronting no longer conditioned, reverted.[10] Alternatively, and intriguingly, Liberman (2001: 88) suggests that the failure of umlaut after light stems is related to their different syllabification under Prokosch's law (§2.5; see also Kylstra 1983, Kleiner 1999a), an idea pursued at greater length in Schulte 2004.[11] Since verbs of the first weak class are usually derived from other parts of speech, Kiparsky (2006) argues that analogy to related forms induced reversion in preterites like *talði* 'told' beside the noun *tal* 'talk'. More persuasive is the explanation of Iverson & Salmons (2012: 115) that after the earlier syncope, the preterite suffix in heavy stems was no longer *-ið-* but *-ð-*, and this was extended to the light stems. Yet this account, too, leaves some questions unanswered.[12] To date, no consensual view of these matters has emerged, and this remains a topic that invites further investigation.

Note that *i* from earlier *ē* developed too late to cause umlaut, e.g. *faðir* 'father' < *faðēr*. The specific results of *i/j*-umlaut in ON are these:

a > *e*: PGmc. *sandi(j)iz(i)* > *sendir* 'send' (2 sg.; cf. Go. *sandeis*); PGmc. *satjana^n* > *setja* 'set' (cf. Go. *satjan*).

ā (from PGmc. *ē₁* and *ā^n*) > *æ* (i.e., /æː/): PNorse 2 sg. *lātir* > *lætr* 'let' (cf. inf. *láta*); PNorse *ājan* > *æja* 'bait (a horse)' (cf. pret. *áði*); PGmc. 2 sg. pres. *fā^{n}xiz* > *fær* 'get'.

o > *ø*: As *o* is to be derived from *u* by lowering before a non-high vowel in the next syllable, a lowering prevented by *j* (§4.3), *o* was not commonly in a position to undergo umlaut. It might be introduced analogically into the relevant position, however, as in nom. pl. *dœtr* 'daughters' < *døhtr* < PNorse *doxtrir* (cf. Runic **dohtrir**).

ō > *œ* (i.e., *ø̄*): PGmc. *sōki(j)iz(i)* > *sœkir* 'seek' (2 sg.; cf. Go. *sōkeis*); PGmc. *dōmijana^n* > *dœma* 'judge' (cf. Go. *dōmjan*).

u > *y*: PGmc. *spurjana^n* > *spyrja* 'track' (cf. *spor* 'footprint' < *spura^n*); PGmc. *brunjō* > *brynja* 'coat of mail' (cf. Go. *brunjō*).

ū > *ý*: PGmc. *mūsiz* > *mýss* 'mice' (cf. sg. *mús*); PGmc. *funsijana^n* > *fýsa* 'urge' (cf. *fúss* 'willing').

au > *ey*: PGmc. *xlaupiz(i)* > *hleypr* 'leap' (2 sg.; cf. inf. *hlaupa*); PGmc. *xauzijana^n* > *heyra* 'hear' (cf. Go. *háusjan*).

iu > *ý*: PGmc. *briutiz(i)* > *brýtr* 'break' (2 sg.; cf. inf. *brjóta*); PGmc. *þiujōz* > *þýjar* 'bondwomen' (nom. pl.; cf. Go. *þiujōs*).

A similar but somewhat later change, though still pre-literary, is the so-called *ʀ*-umlaut. *ʀ* was apparently a palatal consonant (§6.14), and it mutated an immediately preceding back vowel or diphthong, as in *gler* 'glass' < *glaʀ*, *kýr* 'cow' < *kūʀ*, *eyra* 'ear' < *aurōn*, *hlýr* 'cheek' < *hleuʀa^n* (OE *hlēor*), and fem. pl. *þær* 'they' < *þāʀ*. This change is often connected with the so-called *iʀ*-umlaut, which, unlike the older *i/j*-umlaut, regularly affect vowels in light syllables, e.g. *kømr* 'comes' < *komiʀ* and *ferr* 'goes' < *fariʀ*. The likeliest explanation of *iʀ*-umlaut, however, in accordance with the analysis of *i/j*-umlaut offered above, is that palatal *ʀ* prevented the lowering of *i* to *e*, and thus this is simply another variety of *i*-umlaut. Comparable is the later change (palatal mutation) of *a* to *e* before *gi* or *ki* in which *i* has developed from earlier *e* or *æ* due to the palatal consonant, as in *tekinn* 'taken' (inf. *taka*) and *genginn* 'gone' (inf. *ganga*).

Old English. Even though, among the Gmc. languages, umlaut occurred first, perhaps, in OE (so, e.g., Hirt 1931–4: I, §33.2), it took place relatively late in the series of vowel changes characteristic of that language, such as fronting of *a* and breaking (§§4.12–13).[13] The results in EWS are these:

æ > *e*: PGmc. *bariz > *bæri > *bere* 'barley' (cf. Go. *barizeins* 'made of barley'); PGmc. **satjana*ⁿ > *settan* 'set' (cf. Go. *satjan*).

a > *æ*: The vowel *a* did not normally occur in a position where it would be subject to umlaut, having always been fronted to *æ* in the relevant environments (§4.12), but *a* could be restored on an analogical basis and then umlauted. Examples: PGmc. **fariþ(i)* > *færiþ, reformed as *fariþ (cf. inf. *faran*) > *færð* (cf. Go. *fariþ*); PGmc. **sakja*ⁿ (acc. sg.) > *sækkja, reformed as *sakkja (cf. OE *sacu* 'strife') > *sæcc* 'strife'.

ā (from *ai*) > *ǣ*: PGmc. *dailiz > *dāli > *dǣl* 'portion' (cf. Go. *dáils*); PGmc. **laizijana*ⁿ > *lārjan > *lǣran* 'teach' (cf. Go. *láisjan*).

o > *e* (Anglian *œ*, spelt ⟨oe⟩, or *e*): The vowel *o* did not normally occur in a position where it would be subject to umlaut, since PGmc. *u* was not lowered to *o* when *ī̆* or *j* appeared in the next syllable (§4.3). It might be introduced analogically, however, or it might undergo umlaut in a loanword. Examples: PGmc. *murʒinaz reformed as *morʒinaz (on the basis of the alternative stem **morʒan-*, as in OHG *morgan*) > *mergen* (cf. OIcel. *myrginn*, *morginn*); OE *ele* 'oil' (Northumbrian *œle*) from Lat. *oleum*.

ō > *ē* (Anglian *ǣ*, spelt ⟨oe⟩): PGmc. *bōkiz > *bēc* 'books' (Anglian *bǣc*; cf. *bōcere* 'scholar'); PGmc. **sōkijana*ⁿ > *sēcan* 'seek' (cf. Go. *sōkjan*). The same development affects *ō* derived from *ā*ⁿ (§§4.1, 4.11, 4.12): *wēniz > **wā*ⁿ*niz* > *wōni > *wēn* 'expectation' (Anglian *wǣn*); *ʒansiz > **ʒā*ⁿ*si* > *gēs* 'geese' (Anglian *gǣs*).

u > *y* (Kentish *e*): PGmc. *muniz > *myne* 'mind' (cf. Go. *muns*); PGmc. **buʒjana*ⁿ > *bycgan* 'buy' (cf. Go. *bugjan*).

ū > *ȳ* (Kentish *ē*): PGmc. *fūliþō > *fȳlð* 'filth' (Kentish *fēlþ*; cf. *fūl* 'foul'); PGmc. **brūki(j)iþ(i)* > *brȳcð* 'enjoys' (cf. Go. *brūkeiþ*).

ea (breaking of *æ*, §4.13) > *ie* (non-WS *e*): PGmc. **xalðiþ(i)* > *hielt* 'holds' (cf. inf. *healdan*); PGmc. **balþijana*ⁿ > *bieldan* 'embolden' (cf. *beald* 'bold', and see §6.17 on *-*lþ*- > -*ld*-). The same development is seen in the WS palatal diphthongization of *æ* (§4.13), e.g. *giest* 'guest' < *ʒeasti < *ʒæsti < *ʒastiz and *be-sciered* 'deprived' < *-*scearid* < *-*scærid* < *-*skariðaz*.

ēa (from *au*) > *īe* (non-WS *ē*): PGmc. *lauʒiz > *līeg* 'flame' (Anglian *lēg*; cf. Go. *láuhmuni* 'lightning'); PGmc. **bauʒijana*ⁿ > *bīegan* 'bend' (Anglian *bēgan*; cf. *bēag* 'ring'). In EWS *nīehst(a)* < **nēahist-* < **nǣhist-* is seen the same development of the breaking of *ǣ* (§4.13).

ĕo > *ĭo* (> *ĕo*, but Northumbrian *ĭo*): The diphthongs *eo* and *ēo* should not have occurred before *i* or *j* in the next syllable (§4.4), but they could be introduced into the environment for umlaut on an analogical basis. The plainest evidence of this is words in which EWS *ĭe* might be expected but is not found, e.g. *geþeode* (also EWS *geþīode*) 'language' < *-*þēodī* for earlier *-*þiudī*, by analogy to *þēodō > *þēod* 'people'; see also n. 14 and A. Campbell 1977: §202.

io (breaking of *i*) > *ie* (Northumbrian *io*, Mercian, Kentish *eo*): PGmc. *irzijaz > *iorrī > *ierre* 'angry' (Northumbrian *iorre*, Mercian *eorre*; cf. OS *irri*);[14] EWS *gesiehð* 'sees' (Kentish -*siohð*) < *sioxiþ < **six*ʷ*iþ(i)*.

īu (from PGmc. *iu*, §4.4) > *īe* (non-WS *ē*): PGmc. **kiusiþ(i)* > *cīest* 'chooses' (cf. inf. Go. *kiusan*); PGmc. **liuxtijana*ⁿ > *līehtan* 'illuminate' (cf. Go. *liuhtjan*).

Front umlaut could also occur when *i/j* appeared in the third syllable of words with initial stress, e.g. *ǣmyrge*, *ǣmerge* 'embers' < *āmyrjæ < **aimurjō*ⁿ (cf. OHG *eimuria*): see A. Campbell 1977: §203.

Old Frisian. Although front umlaut must have produced a variety of sounds in the prehistoric period, they had all fallen together as $\breve{e}$ by the time of the historical records:[15]

$a > æ$ (§4.12) $> e$: PGmc. *baðjaz > bed* 'bed'; PGmc. *laᶾjanⁿ > *leggjan > ledza* 'lay'.

$\bar{a}^n$ (from PGmc. *aŋ* before *x*, §4.1, and NSGmc. *an* before a voiceless fricative, §4.11, and Anglo-Frisian *ā* before a nasal consonant, §4.12) $> \bar{e}$: PGmc. *fanxiþ > fā^nxiþ > fēth* 'takes'; PGmc. *tanþiz > *tā^nþiz > tēth* 'teeth'; PGmc. *wēnijanⁿ > *wānjan > wēna* 'expect'.

$\bar{o} > \bar{e}$: PGmc. *blōðijanⁿ > blēda* 'bleed'; PGmc. *bōtijanⁿ > bēta* 'atone'.

$u > y > e$: PGmc. *kustiz > kest* 'choice' (cf. OE *cyst*); PGmc. *kunjaⁿ > kenne* 'kind' (cf. OE *cynn*).

$\bar{u} > \bar{y} > \bar{e}$: PGmc. *brūðiz > brēd* 'bride' (cf. OE *brȳd*); PGmc. *kūþijanⁿ > kētha* 'announce' (cf. OE *cȳðan*).

$ai > \bar{a} > ǣ > \bar{e}$: PGmc. *laizijanⁿ > lēra* 'teach' (cf. OE *lǣran*); PGmc. *dailiz > dēl* 'part' (beside *deil*;[16] cf. OHG *teil*, OE *dǣl*).

$au > \bar{a} > \bar{e}$: PGmc. *hauzijanⁿ > *hārjan > hēra* 'hear'; PGmc. *laubijanⁿ > lēva* 'believe' (cf. Go. *ga-laubjan*).

PGmc. *iu* remains unchanged (rather than developing to *iā*, §4.14) in umlaut environments, except that it becomes a rising diphthong, e.g. PGmc. *diupijanⁿ > diūpa* 'deepen, dip' (cf. LWS *dȳpan < *dīepan*).

Old Saxon. Only the umlaut of *a* to *e* (and *ai* to *ei*) is undeniably indicated in the orthography, and even then forms with *a* by analogical replacement are frequent beside those with *e*, e.g. *mannisk* beside *mennisk-* 'human' and acc. pl. *handi* beside *hendi* 'hands'. The evidence of MLG, however, shows that other back vowels and back diphthongs must have been mutated: see, e.g., Lasch 1914: §§42–60. Occasional spellings in OS itself could also represent the native umlaut of vowels besides *a* (see, e.g., Prokosch 1939: §41h), but other explanations are possible.[17] Unlike in OE, syncope (§5.6) antecedes *i*-umlaut in heavy-stemmed verbs, e.g. *sanda* 'sent' : OE *sende* (cf. Go. *sandida*).

Old High German. As with OS, only the early umlaut of *a* ('primary umlaut') is indicated in the spelling, as *e*, though Notker (late 10th cent.) uses ⟨iu⟩ for the umlaut of /u/, and MHG evidence shows that other back vowels and back diphthongs must have undergone mutation ('secondary umlaut', which by most accounts includes umlaut of *a* in environments in which it had earlier been prevented), as the *i* or *j* that caused the umlaut evidenced in MHG had been lost or lowered to *e* already in the OHG period, with signs of weakening as early as the start of the ninth century.[18] On the basis of rhyme in MHG poetry it may be concluded that the *e* derived from PGmc. *e* and the *e* resulting from the umlaut of *a* were discrete phonemes, /ε/ and /e/, respectively, and thus in modern grammars they are often distinguished as *ë* and *e* (or *ę*), respectively.[19] Examples of the umlaut of *a* are PGmc. *lambiz- > lembir* 'lambs' (cf. nom. *lamb*) and PGmc. *brannijanⁿ > brennen* 'burn' (cf. pret. *branta*). This umlaut of *a* begins to appear in the OHG records ca. 750 and is carried through by the ninth century, spreading southward. It fails before *h* + consonant and before consonant + *w* (as also, in part, in OS), as in *mahtīg* 'mighty' and *garawen < *ᶾarwijanⁿ*. Also as in OS, occasional spellings, especially late in the OHG period and early in the MHG, seem to evidence attempts to represent the effects of umlaut: examples are $\bar{a} > ǣ/\bar{e}$, as in *unsēlic* 'misfortunate' (12th cent.); *uo* (from *ō*) > *ue*, as in *gruene* 'green'; $u > ü$ (spelt *i, ui, iu, y*), as in *ibilo* 'evil' *< *uƀil-* (11th/12th cent.); $\bar{u} > iu$, as in *liuten* 'make a sound' (cf. *lūt*

'sound'; Notker, ca. 1000); and *ō* (from *au*) > *ǣ*, spelt *oi* in *troistest* 'console' (2 sg.; 11th century). Because they are late, such spellings are unlikely to represent Anglo-Frisian orthographic influence.

1.   So, e.g., Scherer 1995: 142–5 and Sievers 1885a: §41 Anm. For an overview of developments in the study of umlaut, see Holsinger & Salmons 1999: 241–5.

2.   Cf. Kleiner 1999a: 95. Palatalization of /l/ is probably the best explanation for the failure of diph-thongization in OE *tellan* < Proto-WGmc. **talljan* (for expected OE **tiellan* < **tealljan*: see Barrack 1998: 153–5). Otherwise, however, it should probably be assumed that /l/ in the syllable coda was normally velar in prehistoric OE (see §4.13).

3.   Howell & Salmons (1997) argue that front umlaut is most regular when it affects vowels most different in place of articulation from the conditioning sound; hence, *a* is umlauted first and most regularly, *u* least regularly.

4.   The form **niuhagestumʀ** on the Stentoften stone (mid-7th cent.) has repeatedly been said to show front umlaut in dat. pl. *-ʒestumʀ* 'guests', analogical to nom. sg. **ʒest(i)ʀ* < **ʒastiʀ* (cf. **-gastiʀ** on the Gallehus horn, ca. 400), but it now appears that the inscription should be interpreted as *niu ha[n]gestumʀ* 'nine steeds': see Santesson 1989: 227b; Schulte 1998: 76–82.

5.   For bibliography on ON front umlaut, see Schulte 1998, Iverson & Salmons 2012. For an intensive study of the Runic evidence for the reduction and syncope of umlaut-causing vowels, see Schulte 2000a; for a concise account, H.F. Nielsen 2000: 261.

6.   That umlaut at first affected vowels in heavy syllables but not light is nonetheless an idea that is to be found still in recent literature, e.g. Lahiri 2000: 120 and Voyles 2005: 268, the latter adopting the unorthodox position that "many—if not most" phonological changes are governed from the start by morphosyntactic conditioning.

7.   This formulation assumes that the *i*-stem gen. sg. and dat. pl. endings were replaced early by *a*-stem desinences, as otherwise there can be no *i*-stem case-forms that can be assumed with confidence not to have undergone umlaut. Replacement of the fem. *i*-stem endings by *ō*-stem ones must have been far advanced at the time of syncope, since umlaut has been removed entirely from the fem. paradigm.

8.   Wadstein 1892. There is also the mythological name *Bergelmir*, the prototheme of which, as suggested by the context (*Vafþrúðnismál* 29, 35), should mean 'barley' and thus be derived from **bari(z)-*: cf. OIcel. *barr*, OE *bere* 'barley' (*i*-stems, originally *s*-stems), Go. *barizeins* 'made of barley': see Fulk 1989: 317.

9.   Analogical change in *spekð*, etc., is essentially the view of Schulte (1998: 250–1), who distinguishes usefully among *i*-, *j*-, and *ī*-umlaut.

10. So Hesselman 1945: 25–45, esp. 29, and earlier Seip (1919: 86), the latter assuming *i* > *ə*; similarly Reid 1990, assuming *i* > *a*. The corpus of Runic inscriptions yields no evidence on this point. Reversion may seem questionable if *i* had been lost already after heavy stems and the umlauted vowel in such stems therefore had been phonemicized. If the new sounds were regarded as separate phonemes in heavy stems, why not also in light? The alternative of supposing that *i* was lowered to *e* after light stems only, and before the loss of *i* after heavy stems (as seems to be suggested by Gordon 1957: 272), is surely unlikely, as the loss of *i* after heavy stems shows that the vowel was weakened earlier there.

11. For a synopsis of attempts to explain the failure of umlaut in light radical syllables, see Schulte 1998: 30–58.

12. They explain (2012: 117) that with the replacement of **-ið-* by **-ð-*, "the motivation for retaining umlaut in ⁺*telða*, now from /tal+ða/, simply disappeared." A similar, though lightly sketched, explanation was offered by Kleiner (1999a). Yet umlaut should originally have applied to all forms within the paradigm, and so it is difficult to see how the underlying stem could have escaped lexicalization as **tel-* rather than **tal-*. Another possibility is that reversion in the pret. ind. served to differentiate the ind. from the sj., a difference already eliminated in the heavy stems. But the problem of how the light umlauted stem persisted unlexicalized remains. Some of these issues are treated in Fertig 2013, where comparison is drawn to the disappearance of umlaut in nouns that lost OHG *-i* and MHG *-e* in the gen. and dat. sg., e.g. OHG dat. sg. *anst* beside *ensti* 'favor' and MHG gen./dat. sg. *kraft* beside *krefte* 'power'.

13. The argument of Collier (1987) that *i*-umlaut preceded breaking and the WS digraph ⟨ie⟩ represents /i/ cannot be reconciled with the evidence of the ME dialect of the Southwest, in which the reflex of WS *ie* is a rounded vowel: see §4.13.

14. This word, however, with PGmc. *-rz-*, is something of an exception (due to the geminate), since in Anglian, breaking usually failed before *r* when *i* appeared in the next syllable. EWS *hierde* 'herdsman' (PGmc. *xirðijaz*; Northumbrian *hiorde*, Mercian *heorde*) probably has the umlaut of *eo* extended analogically from *heord* 'herd'. See A. Campbell 1977: §§154, 201.

15. See further Russ 1996.

16. OFris. *ei* rather than *ē* is common before dental sounds and *l*.

17. Thus, for example, Holthausen (1921) explains forms like *andwirdi* 'answer' and *fīsid* 'inclined' (for *andwurdi*, *fūsid*), as scribal errors (§88 Anm. 4), and forms like *ēhtin* (< PGmc. *ā*ⁿ*xtinaz* 'regarded') and *mēri* 'glorious' (< Proto-WGmc. *mǣrja*) as possibly due to English or Frisian influence (§§89, 92).

18. Braune 2004a: §§51, 56. This analysis, however, is not universally accepted, as some are of the opinion that umlaut was not phonemicized, or perhaps not even realized allophonically, until late in the OHG period: see, e.g., Kastovsky 1995: 231 n. 8, Voyles 1996 (with refs. to his earlier work, and to opposing views of H. Penzl), Klein 2013: 184. Voyles, in particular, has argued in various studies that umlaut spread on a morphological or morpholexical rather than a phonological basis and thus need not have arisen in OHG before the tenth century. For an overview of the controversy, see Iverson & Salmons 1996 (arguing that primary umlaut did antecede secondary) and M.R. Barnes 1999. For criticisms of morpholexical approaches, see Holsinger & Salmons 1999: 245, though their concern is solely the status (phonological or morpholexical) of primary umlaut. Gütter (2011) highlights and discusses twelve names in documents from the period 827–957 which show umlaut of vowels other than *a*. Some further studies relevant to OHG umlaut are van Coetsem & McCormick 1982, McCray 1983, Kortlandt 1993, Salmons 1994, Iverson, Davis, & Salmons 1996, Janda 1998, Rauch 1999, Isakson 2002, and Panieri 2012–13.

19. For discussion, see Liberman 1987.

4.8   Back mutation

In both North and West Gmc., a back vowel may exert influence upon a front vowel in a preceding syllable. In some instances, especially in NGmc., the process closely parallels front mutation, in that the affected vowel remains monophthongal and assimilates one or more features of the back vowel, but more commonly the result is fracture—that is, development of the front vowel to a back diphthong. These processes are also sometimes referred to as *u*-umlaut (or *u/a*-umlaut) or back umlaut, or labial (or labiovelar) umlaut, though in ON studies these terms are not commonly used to refer to fracture.

   Old Icelandic. When *a* appears in the next syllable, *u* is lowered to *o*, as in *koma* 'come' (cf. OE *cuman*), gen. *sonar* 'son' (nom. *sunr*). This change, known as *a*-umlaut, is very commonly reversed on an analogical basis, e.g. *guð* 'god' beside *goð*. See Noreen 1970: §61.1 for details.

   Stressed *e* before *a* in the next syllable (but not before nasalized *a*ⁿ)[1] undergoes fracture to the falling diphthong *ea*, with subsequent conversion to the rising diphthong *ja*, as with PNorse *berʒan* > *bjarga* 'save' (cf. Go. *baírgan*) and *herta* > *hjarta* 'heart' (cf. Go. *haírtō*).[2] In parallel fashion, *e* before *u* in the next syllable undergoes fracture to a falling diphthong that may be represented *eo*, later developing at least in West Norse to a rising diphthong *jǫ*, but *jo* before a geminate velar stop in OIcel. (e.g. *þjokkr* 'thick' < NWGmc. *þekkuz*) and *jó* when lengthened (§4.9, e.g. *mjólk* 'milk'; cf. Go. *miluks*).[3] There is thus *u*-fracture in PNorse acc. pl. *skeldu* > *skjǫldu* 'shields' and dat. pl. *heltum* > *hjǫltum* 'hilts'. There has been disagreement in the literature about the specifics of *u*-fracture.[4]

   In addition to these instances of fracture, there is rounding of a stressed non-back vowel or diphthong, often referred to as back umlaut, labial umlaut, or *u/v*-umlaut.[5] The

vowels *a* and *ā* are rounded before *u* in the next syllable; similarly, *e*, *ĭ*, and *ei* are rounded before either *u* or *w*:

a > *ǫ*: PGmc. **þankō* > **þakku* > *þǫkk* 'pleasure' (cf. Go. *þagkjan* 'think'); PNorse **allum* > *ǫllum* 'all' (dat. pl.; cf. nom. sg. *allr*).

ā (from PGmc. *ēₗ* or *āⁿ*) > *ǫ́*: The *ǫ́* produced by this change subsequently fell together with *á* by about 1250 and is represented thus in normalized orthography; however, *ǫ́* is required by the rhymes in some earlier skaldic verse. Examples: PNorse dat. sg. **gātu* > *gǫ́tu*, later *gátu* 'riddle'; PGmc. **axʷō* > **āu* > *ǫ́*, later *á* 'river' (cf. Go. *aƕa*); PGmc. 1 pl. pres. **fāⁿxum* > OIcel. *fǫ́m*, later analogical *fǫ́um*, *fáum* 'take'.

e > *ø*: This change is infrequently caused by *u* because *e* in the relevant position underwent fracture except after *r* or next to *l* (see *supra*). Examples: PNorse **reru* > *røru* 'rowed' (3 pl.); PGmc. **malwijanⁿ* > **melwan* > *mølva* 'crush' (cf. Go. *ga-malwjan*); PGmc. **stiŋkʷanⁿ* > **stekkwan* (§6.14) > *støkkva* 'spring' (cf. Go. *stigqan*).

i > *y*: NWGmc. **mirkwiz* > **mirkuʀ* > *myrkr* 'darkness'; PGmc. **siŋgʷanⁿ* > *syngva* 'sing' (cf. Go. *siggwan*)

ī > *ý*: PGmc. **tīwaz* > **tīuʀ* > *Týr* (name of a god; cf. Lat. *dīvus* 'god');[6] PNorse **strīkwan* > *strýkva* (but usually analogical *strýkja*) 'stroke' (cf. OE *strīcan*).

ei > *ey*: PGmc. **aiwa* > **eiu* > *ey* 'ever' (cf. Go. *ni-áiw* 'never'); Proto-West Norse **kʷæikʷ-* in *kveykva* 'kindling' (more commonly *kveikja*).

Changes of this sort could also apply to vowels of lesser stress, e.g. in **-teʒuʀ* > *-tøgr* in *þrítøgr* '30'. According to the standard view, *a* in a medial syllable was mutated to *ǫ*, later developing to *u*, as in nom. sg. fem. **ʒamalō* > **ʒamǫlu* > *gǫmul* 'old'; on the possibility that this might be the result of an earlier change, see §5.5. In combination with various consonants, *u*-umlaut could produce further changes, referred to collectively as combinative back mutation, e.g. PGmc. **wērun(þ)* > **wārun* > *óru* 'were' (beside analogically restored *vǫ́ru*, later *váru*, though *óru* is required by the poetic form in some skaldic verse: see Hornklofi, *Haraldskvæði* 2/2) and PNorse **nahtu* > *nótt* 'night' (§6.14).

As with *i/j*-umlaut (§4.7), there appear to have been two patterns of this back umlaut, (1) whereby the umlaut is always carried through and the *u/w* is lost in the early period, and (2) whereby the *u/w* is preserved and the umlaut is usually missing in East Norse. The East Norse results, however, cannot be due to phonological developments only, as there is evidence for the earlier occurrence of pattern (2) in East Norse: see Hreinn Benediktsson 1963, with references.

Old English. A front vowel may be diphthongized by a back vowel in the following syllable, though conditions for this set of developments vary by dialect, the changes being most widespread in Mercian and least in WS, where they are generally limited to the position before a lone labial or liquid consonant (*f*, *p*, *w*, *m*, *l*, *r*).[7] With few exceptions (noted below), the change does not occur in closed syllables, and only in Kentish (and Mercian, if the change is not analogically induced) does it take place before a velar consonant. This change is most likely coeval with, or postdates, the earliest manuscript evidence (ca. 700: see the references in Fulk 1992: 347 n. 170).

The product of this change is diphthongs that are orthographically indistinguishable from diphthongs inherited from PGmc., but their subsequent histories show them to have differed from those diphthongs. In poetic meter they are treated like short vowels, whereas diphthongs inherited from PGmc. have the same scansion as long vowels. Despite the typological objections that have been raised, e.g. by Stockwell & Barritt (1951), it is generally assumed that phonemically long and short diphthongs were

distinguished in OE, the former marked here with macrons. Indeed, repeated attempts have been made to explain the digraphs produced by back mutation (as well as breaking and diphthongization by initial palatal consonant, §4.13) as non-diphthongal, but the alternative proposals all face daunting obstacles (see Hogg 1992: §§2.20–30 for discussion and references). ME spellings of the Southwest like *seothen* < OE *seoþþan* 'afterward', *souen*, *seoue(ne)* < OE *seofon* 'seven', and *hor* < OE *heora* 'their' do not prove that the result of back mutation was an actual back diphthong, but such spellings are also used for the reflexes of OE long diphthongs (e.g. *leosen*, *loese* < OE *lēosan* 'lose'), just as the long and short diphthongs are spelt identically in OE, and so the orthographic evidence is hard to dismiss.

The change is caused by *a* or *u* (or its allophone *o*), whether etymologically long or short:

æ > *ea* in West Mercian only,[8] though spellings with *ea* are common in verse. Examples: PGmc. **xaƀukaz* > Mercian OE *heafoc* (WS *hafoc*) 'hawk'; PGmc. **xafõ* > Mercian OE *heafu* (WS *hafu*, *-o*) 'oceans'.

e > *eo*: PGmc. **xerotaz* > OE *heorot* 'hart'; PGmc. **beƀruz* > OE *beofor* 'beaver' (cf. Skt. *babhrúḥ* 'reddish-brown; mongoose').[9]

i > *io*, which yields *eo* in all dialects except Northumbrian and, in part, Kentish. Examples are WGmc. **klipōdæ* > Northumbrian OE *cliopade* (WS *cleopode*; cf. WS inf. *clipian* beside analogical *cleopian*) 'called'; PGmc. **siƀun(-)* > Northumbrian OE *siofu*, WS *seofon* (cf. Go. OHG *sibun*). The vowel *i* in the environment for back mutation, and regardless of the following consonant, may undergo so-called combinative back mutation when it follows *w*, as in OE *wudu* 'wood' < *widu* (also attested) and *swugian* beside *swigian* 'be silent'.

Although back mutation is rare in closed syllables, it does occur in a few forms, the commonest of which are *seoððan* 'since' and *siondon* 'are' beside *siððan*, *sindon*.

Old Frisian. The vowel *i* was diphthongized to *iu*, a rising diphthong, before *u* or *w* in the next syllable, e.g. *niugen* '9' < NSGmc. **niʒun* and *diunk* 'dark' < WGmc. **diŋkwa*.

Old Saxon and Old High German. The vowel *e* is raised to *i* before *u* in the next syllable, e.g. OS OHG *filu* 'many' (cf. OIcel. *fjǫl-* < PNorse **felu-*), OS OHG *sihu* '(I) see' (cf. OE *sēo* < WGmc. **sexʷu*), and OS *miluk*, OHG *miluh* 'milk' (cf. OE *meol(o)c*). The change often fails even when there is no analogical basis for restoration of *e*, e.g. OS *eƀur*, OHG *ebur* 'boar' (cf. OE *eofor* < PGmc. **eƀuraz*).

1.   So, most notably, there is no fracture in verbs of strong classes IV and V because *aⁿ* remained nasalized after a light stressed syllable (see §2.5 on the Germanic foot), hence, e.g., *geta* 'get' rather than †*gjata*.

2.   This change is attested in Runic inscriptions of the seventh century (Björketorp, Istaby).

3.   This is the convincing explanation of Hreinn Benediktsson (1963: 428–31), who argues that when *e* was diphthongized, its off-glide could be identified with any of the extant back vowels, and *ǫ* was the sound it was usually identified with in Old Icelandic. The handbooks of OIcel. grammar generally instead assume a change of *jo* to *jǫ* by ca. 1250 on the basis of orthographic evidence (countered by Hreinn).

4.   Before Hreinn Benediktsson (1963) offered his analysis there were two prevailing views: (1) that *a*- and *u*-fracture produced different diphthongs from the start (as Hreinn assumes), and (2) that they both initially produced *ea*, which subsequently underwent back mutation and stress shift to *jǫ*, just as *a* is mutated to *ǫ*. Hreinn (1963: 431) demonstrates the unreliability of the orthographic evidence for the latter view. A third view, that fracture is an unconditioned change, initiated by a general diphthongization of *e* to *ie* (so Svensson 1944), appears to have gained no adherents.

5.   See the exchange of views between S.R. Anderson and G.K. Iverson in *Language Sciences* 42 (1976), 26–34; also Kuzmenko 1994.

6.   When *u* is the cause of this change, it must immediately follow *ī*.

7.   For details of the conditions of the change in other dialects, see A. Campbell 1977: §§205–21.

8.   This is because Mercian is the only dialect in which *æ* could occur before a back vowel, due to so-called Second Fronting, whereby *æ > e* and *a > æ*: for the conditions, see Hogg 1992: §§5.87–92.

9.   In a form such as *geol(o)ca* 'yolk', from WGmc. **jelokôⁿ*, *e* would have been diphthongized to *ie* by the initial palatal consonant, and this appears to have been converted to *io* (later *eo*) by back mutation: see A. Campbell 1977: §220.

4.9   Changes of stressed vowels and diphthongs in Proto-Norse

PGmc. *ē₁* has become NGmc. *ā* already in the earliest NGmc. Runic inscriptions, e.g. in the name-element **-mᴀrᴀz** on the Ellestad stone (ca. 550–600?). Koivulehto (1986: 286) finds that PGmc. *ē₁* appears as *a* already in the earliest loanwords into Finnish, borrowed ca. 300–200 BCE.

In Proto-Norse, *ai* was fronted to *æi*, later giving OIcel. *ei*. In the older runic inscriptions it is still represented by **ai** (there being no separate rune for *æ*), as in **staina** on the Tune stone (ca. 200–ca. 450) and **stᴀin** on the Eggjum stone (ca. 700). But under certain conditions it was monophthongized to *ā*: (1) *æi > ā* immediately before /x/, which was subsequently lost, as in PGmc. **aix(e) >* OIcel. *á* 'owns' (still **ᴀih** on the Maglemose bracteate, ca. 400–ca. 650). The change is perhaps attested as early as ca. 400–ca. 600 on the Åsum bracteate in the form **fahi[do]** 'color[ed]' and on the Halskov bracteate (ca. 450–550?) in the form **fahide**.[1] (2) *æi > ā* before *r* (but not before ʀ), as in PGmc. **sairaⁿ >* OIcel. *sár* 'wound' (Go. *sáir*, OE *sār*) and PGmc. **airuz > órr*, later *árr* (§4.8) 'messenger' (Go. *áirus*, OE *ār*); cf. PNorse **gaiʀaʀ >* OIcel. *geirr* 'spear'. (3) *æi > ā* in some medial syllables of lesser stress, §5.6. In addition, Proto-Norse *æi* developed to ON *æ* (i.e., /æː/) before *w* (which might be lost, §6.14), as in **aiwīn- >* OIcel. *ævi* 'age' (cf. Go. *aíws < *aiwaz*) and *hræ* 'corpse' (cf. Go. *hraíw*).

Parallel to (1) above there are the changes *ĭ > é*, *ŭ > ó*, and *au > ó* before (lost) /x/, as in **rixtijana > rétta* 'straighten' (cf. OHG *rihten*), 3 sg. pret. **þūⁿxtē > þótti* 'seemed' (cf. OE *þūhte*), and **þauh > *þōh* (borrowed into OE; cf. ME *þōȝ*) > *þó* 'though' (cf. Go. *þáuh*). The /x/ thus lost may represent the devoicing of **ȝ* (§6.14), as in **flauȝ > *flauh > *flōh > fló* 'flew'. As the example of *rétta* shows, vowels were lengthened before *xt* (probably at the time of the lenition of *x* to *h*), which subsequently developed to *tt*.

Also in Proto-Norse, a nasal consonant was lost before non-final *s, f, r, l*, with nasalization and compensatory lengthening of the preceding vowel. Examples: **ansuz > āⁿsuz > *ōsuʀ >* OIcel. *áss* 'god' (cf. Latinized Go. *anses*, OHG *ansi-*); **fimfilaⁿ > *fīfila > fífl* 'fool'; PNorse **þunraʀ > *þūⁿraʀ > Þórr* (name; cf. OE gen. sg. *þunres* 'thunder'); PNorse **anlaibaz > *ālæibaʀ > Áleifr* (name, beside *Óláfr*, with *-ei-* required by the rhyme in some skaldic verse, e.g. Sigvatr Þórðarson, *Víkingarvísur* 9/8 and *Nesjavísur* 4/4). See Krogh 1996: 221–3. Compensatory lengthening attends the loss of various consonants, as in PNorse **þiwiʀ > þír* 'maidservant' (cf. Go. *þiwi*), PGmc. **maþlaⁿ > mál* 'speech, affair' (cf. Go. *maþl* 'market'), PNorse **fjoðriʀ > fjórir* '4' (cf. Go. *fidwōr*), and PGmc. **axtō > átta* '8' (cf. Go. *ahtáu*).

Some further lengthenings may be mentioned. There is lowering and lengthening of high vowels before ʀ in OWN monosyllables, e.g. dat. **miʀ > mér* 'me'; cf. the short vowel in 3 pl. pret. **kuʀun > *koʀuⁿ > køru* 'chose' (with ʀ-umlaut, §4.7; cf. OHG

churun). There is thus lowering without lengthening otherwise before *ʀ*, as in *eru* 'are' < **eʀuⁿ* < **izun*. Starting about 1200, back vowels and diphthongs are lengthened before *l* plus a labial or velar consonant (*m*, *f*, *p*, *g*, *k*), rarely a dental, as in *hjálmr* 'helmet', *sjálfr* 'self', *úlfr* 'wolf', *bólginn* 'swollen', *fólk* 'people', *háls* 'neck', *skáld* 'poet' (requiring a short vowel for the rhyme in early skaldic poetry, e.g. Bragi's exchange with the troll-woman 1/1)

   With the loss of postconsonantal *w*, a following *a* or *e* might become *o*, and *i* might become *y*, as in *tolf* '12' (later *tólf*; cf. Go. *twalif*), *sofa* 'sleep' (cf. OE *swefan*), and *systr* 'sisters' < **swistriʀ*. There is lowering of *ē* after *w*, as in PGmc. **wixtiz* > **vēttʀ* (with *i* > *ē*, as above) > *vættr* 'weight'.

   There is general shortening of long vowels before geminate consonants, as with nom. sg. neut. *gott* 'good' : masc. *góðr* and nom. sg. masc. *þinn* 'your (sg.)' : dat. *þínum*, though an exception is before *tt* < *xt*, as in PGmc. **xaxtuz* > *háttr* 'manner'. The diphthong *ei* became *e* under such conditions, as in *ekki* 'not' < **æitt-gi* and *edda* 'grandmother' (cf. poetic *eiða* 'mother'). The effects of this change are often removed on an analogical basis, e.g. in nom. sg. masc. *fínn* 'fine' (cf. dat. *fínum*), nom. sg. neut. *lítt* 'little' (cf. masc. *lítill*), and *stórr* 'large'. Likewise, there is general shortening in closed syllables, including syllables closed as a result of syncope, as with nom. pl. masc. *ymsir* 'various' (nom. sg. *ýmiss*), *brullaup* 'wedding' < *brúð-laup*, Þorsteinn (name, from Þór-), Skirnir (name; cf. *skíra* 'cleanse'), and *mestr* 'most' (cf. Go. *máists*). Once again, however, analogy commonly removes irregularities, e.g. *dýrð* beside *dyrð* 'glory' (cf. *dýr-* 'costly') and *árna* beside *arna* 'intercede' (cf. Go. *áirinōn* 'be an emissary' and OIcel. *ár-* 'messenger').

   In Old West Norse, PGmc. *eu* develops to *eo*, whence *jó*, before dental consonants, *x*, and *m*; otherwise it appears as *jú*. Examples: PGmc. **keusanaⁿ* > OIcel. *kjósa* 'choose', **þeuxaⁿ* > *þjó* 'thigh', **xleumaz* > *hljómr* 'sound', but **leuȝanaⁿ* > *ljúga* 'lie', **leuƀaz* > *ljúfr* 'dear'. Contrariwise, the back diphthong that developed in preterites of class VII (§12.20) gives OIcel. *jó* regardless of what consonant follows, as with *hljóp* 'sprang', *jók* 'increased'.

   On front and back umlaut, and fracture, see §4.7–8. For further details of Proto-Norse vowel developments, consult the grammars cited in §1.14.

1.   The form **fahido** occurs also on the Rö stone (ca. 400), but there perhaps **a** for **ai** is due simply to omission of a rune, given the form **saira** 'wound' in the same inscription (so Antonsen 1975: 13, 43).

4.10   Changes of stressed vowels and diphthongs in the protolanguage of West Germanic

The handbooks (e.g. A. Campbell 1977: §120.2) prescribe that new diphthongs developed when the sequences -*awj*- and -*iwj*- underwent WGmc. gemination (§6.15), e.g. **strawjanaⁿ* > **strawwjan* > **strauwjan* > EWS **strīegan*, Anglian *strēgan* 'strew', and **niwjaz* > **niwwja* > **niuwja* > OE *nīewe*, OS OHG *niuwi* 'new'. There are, however, significant reasons to doubt this.[1] Similar diphthongs developed as a consequence of the *Verschärfung* (if the *Verschärfung* did not result from the analogical extension of diphthongs rather than doubling of glides: see §6.10), with or without umlaut, e.g. **klajjō* > **klaijō* > *klāju* > OE *clǣg*, similarly OFris. *klāy*, MLG *klei*, and **trewwō* > **treuwu* > OE *trēow* 'faith', OS *treuwa*, OHG *triuwa* (cf. Go. *triggwa*). New diphthongs also arose as a consequence of the WGmc. loss of *w* before *u* (§6.16), as with

*þrawō > *þrawu > *þrau > OE þrēa 'affliction', or when postvocalic w became final and thus formed a diphthong, as with *trewan > *treu > OE trēo, OS trio 'tree', or when final -ō became -u and contracted with a preceding vowel, as with *hi-ō (with analogical fem. -ō added to the stem hi-) > *hiu > OE hēo 'she'.

1.   It is difficult to imagine how w could have remained consonantal in forms like *strawjanⁿ and *niwjaz (cf. Go. stráujan, niujis), and at all events WGmc. *strauwjan should be expected to have developed not to EWS *strīegan but to *strīewjan > *strīewan (§6.15). See also §6.10 on the unlikelihood of the dismantling of geminates in this fashion. Rather, EWS *strīegan may be derived unproblematically from PGmc. *straujanⁿ, and OE nīewe may be assumed to have undergone the same sort of paradigm regularization that affected words like OE þēow, gen. þēowes 'servant' (§7.12).

4.11   Changes of stressed vowels in North Sea Germanic

In a change comparable to that seen in PGmc. *faŋxanⁿ > fāⁿxanⁿ (§4.1), in North Sea Germanic a nasal consonant was lost before any voiceless fricative, with nasalization and compensatory lengthening of the preceding vowel. The change thus affects mf, ns, nþ and produces āⁿ, īⁿ, ūⁿ. The first of these yields ō in Anglo-Frisian (as does āⁿ inherited from PGmc.), but either ā or ō in OS (whereas PGmc. āⁿ is always reflected as ā, as in OS OHG brāhta : OE brōhte, OFris. brochte 'brought'): for details, see Ringe & Taylor 2014: 142–6. Examples: WGmc. *fimf > *fīⁿf > OE OFris. OS fīf (cf. Go. OHG fimf); WGmc. *ʒans > OE OFris. MLG gōs, but OHG gans 'goose'; PGmc. *funsaz > OE OS fūs, but OHG funs 'ready'; *anþeraz > OE ōðer, OFris. ōther, OS āðar, ōðar, but Go. anþar, OHG ander 'other'. Compare the similar developments in NGmc. (§4.9).

At least in some instances, final stressed *-wō yields -ū, as in OE OFris. OS hū 'how' (beside OFris. OS huō) and OE neut. tū 'two'. The same change probably results in OE cū, OFris. kū 'cow' (also OIcel. kýr, dat. & acc. kú, but OS cō, OHG kuo), since this derives from PGmc. *kʷō- (cf. Lat. bōs, and see Szemerényi 1956, idem 1996: §7.5.5; De Decker 2011), and OE neut. bū 'both' can be explained as analogical to tū. The facultative nature of the change in NSGmc. suggests generalization of paradigm alternants. See Lane 1936: 22 for references, and Hollifield 1979 and Schrijver 2004: 201–4 for an alternative analysis assuming development of final ō to ū even in a stressed syllable without a preceding labial element. To the contrary, Ringe (2017: 223) suggests a Pre-PGmc. paradigm alternant due to a change *gʷow- > *gʷuw- > *gū-, whereas Euler (2013: 91–2, following Griepentrog 1995: 238–40, 246) thinks the forms with ū are by analogy to *sū- 'sow'. See also Boutkan 1995b: 44–5.

4.12   Changes of stressed vowels and diphthongs in Anglo-Frisian

(N)WGmc. ǣ (< ē₁) appears as ǣ in WS, but as ē elsewhere in Anglo-Frisian.[1] An exception is before nasal consonants, where it is reflected everywhere as ō, presumably from earlier āⁿ, as in OE OFris. mōna 'moon' (cf. Go. mēna, OIcel. máni, OS OHG māno) and 3 pl. pret. OE c(w)ōmon, OFris. kōmen 'came' (cf. Go. qēmun, OS quāmun).

Parallel to these developments in the long vowels are changes affecting a: (1) Before a nasal consonant it was nasalized. In OFris. and in some dialects of OE the resulting aⁿ was subsequently rounded, hence OFris. OE (Mercian) noma 'name', lomb 'lamb', hond 'hand', long 'long'.[2] (2) Elsewhere, a was fronted to æ. In the absence of

further conditioning (see below) it remained as such in OE, whereas it is reflected in OFris. as *e*. Examples: OE *fæder* 'father', *dæg* 'day', *læt* 'slow, late', OFris. *feder*, *dei*, *let* (cf. Go. *fadar*, *dags*, *lats*). This fronting is commonly referred to as Anglo-Frisian Brightening. Except in umlaut environments, PGmc. *a* remains unchanged in OFris. before /x/ (cf. *achta* 'eight', *sax* 'knife', *slā* 'kill' (< *slaxan)), before checked *l* (cf. *salt* 'salt', *ald* 'old'), between *w* and checked *r* (cf. *warm* 'warm', *swart* 'black'), and in some unaccented words, e.g. *was* 'was'. In Anglo-Frisian a notable asymmetry between the long and short vowel inventories of WGmc. (with no short vowel corresponding to *ǣ*, no long vowel corresponding to *a*) was thus eliminated by the fronting of *a* to *æ*, whereas elsewhere in WGmc. (and NGmc.) it was eliminated by the backing of *ǣ* to *ā* (§4.6). See further Kortlandt 2008: 266.

This fronting of *a* applied also to the diphthong *au* in OE, producing *ēa*, at first a diphthong with a rounded off-glide, as shown by early spellings, e.g. ⟨aeodbald⟩ (i.e. *Ēadbald*, name) in Bede, with rounding persisting in late Northumbrian. There probably was no such fronting in the development of *au* in OFris., where it produces *ā*, before which there is no palatalization (§6.17; see Kortlandt 2006a). Examples: OE *ēac* 'also', *ēage* 'eye', *bēam* 'tree' : OFris. *āk*, *āge*, *bām* (Go. *áuk*, *áugō*, OHG *boum*), but OE *gēac* 'cuckoo' (with palatal initial) : OFris. *gāk*. PGmc. *ai* appears as *ā* in OE[3] and is represented by ⟨e⟩ or ⟨a⟩ in OFris., probably [eː] and [æː], with the cause of the divergent outcomes still debated (see Goblirsch 1991, Hofmann 1995, with references). Examples: OE OFris. *gād* 'lack', *rāp* 'rope', fem. & neut. *twā* 'two' (cf. Go. *gáidw*, *-ráips*, *twái*), but also OFris. *(n)ān* '(n)one', *hām* 'home', *klāth* 'garb' beside *(n)ēn*, *hēm*, *klēth*.

1.   The evidence of Insular North Frisian shows that in the dialect out of which it developed the sound was probably *ǣ*, as in WS: see Århammar 2001: 750–3.

2. Only in the West Midlands did this rounding persist in OE, and to the present day. The vowel appears to have lost any vestige of its nasal quality elsewhere by the end of the OE period (so A. Campbell 1977: §130).

3. Uncertainty about whether *ai* became *æi* in Anglo-Frisian stems from doubts about whether *æi* could have developed to OE *ā*: so, e.g., A. Campbell 1977: §132.

4.13   Changes of stressed vowels in early Old English

PGmc. *eu* develops to *ēo* in Old English, as in *freusanⁿ > *frēosan* 'freeze' and *deuzaⁿ > *dēor* 'beast'. This *ēo* develops to *īo*, *īa* in Kentish.

Front vowels may become back diphthongs before certain consonants, usually in the syllable coda. These are *r*, *l*, *h*, and (by some accounts) *w*.[1] The standard view is that these consonants were velar, as one might expect on the basis of their modern reflexes, though this is not the only explanation that has been offered.[2] This so-called breaking (which antedates front umlaut, §4.7) takes place before *r* and *l* only in closed syllables (and not when the sonorant is simply word final), whereas *h* causes breaking in both open and closed syllables. The vowels that undergo breaking are *ǽ̆*, *ĕ*, *ĭ*, producing what were presumably otherwise identical long and short diphthongs, though some of the same controversy attends the interpretation of the OE digraphs as in the case of back mutation (§4.8). The specific environments and results of breaking are these:

Before *r* plus any consonant other than *j* (and always before *rr*), the short vowels *æ* and *e* are broken to *ea* and *eo*. Examples are *bearn* 'child', *heard* 'hard', *weorð* 'worthy', *steorra* 'star' (cf. Go. *barn*, *hardus*, *waírþs*, *staírnō*). In Northumbrian, *æ*

often is retracted to *a* instead, especially after a labial consonant, as in *farr* 'bull' and *ðarf* 'need'.

Before *l* plus any consonant, *æ* is broken to *ea*, whereas *e* is broken to *eo* in WS only when the consonant after *l* is *h*. Examples: *healp* 'helped', *healdan* 'hold' (Go. *halp*, *haldan*) and *seolh* 'seal' (OHG *selah*). Breaking also occurs in *ā-seolcan* 'become languid' and in non-WS *seolf* 'self'. Breaking of *i* before *l* cannot be proved. Before checked *l* the Anglian dialects show retraction rather than breaking of *æ*, as in *cald* 'cold' and *all* 'all' (WS *ceald*, *eall*).

Before *h* (i.e. [x] on the standard view) in both open and closed syllables, *ǽ*, *ě*, and *ĭ* are broken to *ěa*, *ěo*, and *ĭo* (> *ěo* in most dialects).[3] Examples: *xlaxtraz* > *xlǽxtr* > *hleahtor* 'laughter', WS *nǽx* > *nēah* (but non-WS *nēh* > *nēoh*, later Anglian *nēh*, Kentish *nīoh*); *fextanⁿ* > *feohtan* 'fight'; *Peohtas* 'Picts'; *liⁿxtaz* > *līxtaz* > *līoht*, *lēoht* 'light' (adj.; cf. Go. *leihts*). At the time of breaking, short *i* occurred in an open syllable only in umlaut environment, e.g. *-sixiþ(i)* > *-sioxiþ* > *-siehð* 'sees'.

Before *w*, *ǽ* was retracted to *ǎ*, as in WS *ge-sawen* 'seen' and pret. pl. *sāwon* 'saw'. In open syllables it was also retracted before a back vowel in the following syllable, hence nom. pl. *dagas* 'days' (sg. *dæg*) and dat. pl. *māgum* 'kinsman' (nom. sg. *mǽg*), though *ǣ* is often found for *ā*.

A source of short diphthongs besides back mutation (§4.8), as well as breaking, is diphthongization by initial palatal consonants (which precedes front umlaut but not breaking: cf. *ceorl* 'commoner', not †*cierl*, from *kerlaz*). In Anglo-Frisian, front vowels palatalize an initial velar consonant (§6.17), producing OE palatal *c*, *sc*, *g*, and in WS, *ǽ* and *ě* are in turn diphthongized by the initial palatal. Examples are *ceaster* 'town' < *cǽstru* < *kastrō* (borrowed from Lat. *castra*); 3 sg. *geaf* 'gave' < *ʒǽf* < PGmc. *ʒab(e)* (Go. *gaf*); pl. *gēafon* 'gave' < *ʒǽbun* < PGmc. *ʒēbun(þ)* (Go. *gēbun*); *scieran* 'cut' < *skeranⁿ* (cf. OIcel. *skera*); *gīe* 'you (pl.)' < *ʒē*.[4] Similar changes occur less regularly in Northumbrian: see A. Campbell 1977: §186 for details. The digraphs in such forms are of disputed significance (see §4.8 *supra* and Hogg 1992: §5.49), but the vocoids resulting from *ě* and from the umlaut of *ǽ*, *ě* affected by initial palatals are reflected in ME with spellings indicating rounding (e.g. Southwestern ME *ʒuue* < EWS *giefan* 'give'), strongly suggesting that at least originally the result of this change was a set of back diphthongs (see Fulk 2012: §20 & Remark 3).

At about the time of the earliest manuscript records, in a process referred to as smoothing, the diphthongs *ěa*, *ěo*, *ĭo* were monophthongized to *ǽ*, *ě*, *ĭ* in the Anglian dialects before *c*, *g*, *h*, which were thus presumably palatal (see Hogg 1992: §5.93 for discussion). Subsequently, *ǣ* as the result of smoothing developed to *ē*, and before *r* or *l* plus a back consonant *æ* became *e*. Examples: *wæx* 'wax' (WS *weax*, OS *wahs*); *færh*, *ferh* 'pig' (WS *fearh*, OHG *far(a)h*); *hēh* 'high' (WS *hēah*, Go. *háuhs*); *werc* 'work' (WS *weorc*, OIcel. *verk*); *flēge* 'fly' (WS *flēoge*, OHG *flioga*); *mixen* 'dunghill' (WS *meoxen* < *mixs(t)-*); *fil* 'file' < *fīⁿxlu* < *fiⁿxlō* (WS *fēol*). Smoothing of *ěa* to *ě* occurred in LWS before or after a velar (palatal) consonant, though the change is expressed only irregularly in the orthography, e.g. LWS *ehta* 'eight', *hēh* 'high', *ēge* 'eye', pret. sg. *gef* 'gave', *cēs* 'chose', *gēr* 'year' beside *eahta*, *hēah*, etc.

By various means, such as loss of intervocalic *h*, *w*, or *j*, or analogical re-fashioning, vowels (and diphthongs) could become contiguous and undergo contraction. The results are various: see A. Campbell 1977: §§234–9 for details. Examples are *gǣð* 'goes' < *gǽ-iþ* (§12.63); *fōn* 'take' < *fōhan* < *fāⁿxanⁿ*; *sēon* 'see' < *seohan* <

*sex^{w}ana^n; *slēan* 'strike' < *sleahan* < *slæxan* < *slaxana^n;[5] *frēond* 'friend' < *fri(j)ōnd-*.[6] Compensatory lengthening occurs upon loss of *x* between voiced sounds, even with an intervening liquid consonant, as in gen. sg. *mēares* (cf. nom. *mearh* 'horse'), *þwēal* 'washing' (cf. Go. *þwahl*), *ēored* 'troop' < *eoh-rād-*. Poetic meter sometimes preserves evidence of the state before the application of contraction and compensatory lengthening (see Fulk 1992: 92–121).

　　In a process referred to as palatal umlaut, *e* (or *eo* or *io* developed from it, where Anglian smoothing did not apply) before /x/ plus consonant in absolute finality was raised to *i*, as in *cniht* 'boy', *riht* 'right', *wrixl* 'change'. It cannot be determined whether the digraph in *siex* 'six' represents an actual diphthong.

　　On front and back umlaut, see §§4.7–8. For further details of OE vowel developments (especially changes of the literate period, which are for the most part left unconsidered here), consult the sources cited in §1.16.

1.　It appears rather that supposed instances of breaking before *w* can be explained as due to back mutation (§4.8): see Fulk 1993b: 350 n. 6, *idem* 1992: 146 n. 2. On Gmc. breaking in general, see Roelands 1989, Liberman 1998, Kostakis 2015. On OE breaking in particular, see H.F. Nielsen 1984 (and the refs. there), Strøjer 1984, Kortlandt 1994a, Suzuki 1994; also Hogg 1992: §§5.16–34, with refs.

2.　Howell (1991b) argues on the basis of parallels chiefly in German dialects that breaking in OE is instead a consequence of weakening of the relevant consonant. The chief difficulty confronting this view is that /x/ would appear not to have been weakened in the relevant environments in OE, as shown by later developments, including Anglian smoothing and LWS smoothing (see A. Campbell 1977: §§222–33, 312–14), and development of [x] to [ɣ] and [f] in ME (Jordan 1974: §§196–7). Lutz 1991 likewise explains various vowel developments in the history of English as due to weakening of /x/. Gąsiorowski (2006) argues that the articulation of OE /r/ was hardly uniform—as might be expected on the basis of modern dialects.

3.　At the time of breaking, WS had no *ē* in the relevant environments and non-WS no *ǣ*.

4.　Although WS had *ǣ* where Anglian had *ē* at the time of this change, a new *ē* had arisen by lengthening under Prokosch's law (§2.5), hence *ȝē* 'you (pl.)' (> Mercian *gē*) by analogy to *wē* 'we' (§8.3).

5.　It is sometimes assumed that in forms like *seohan* and *sleahan* the loss of *h* induced lengthening of the preceding vowel before contraction: so, e.g., Hogg 1992: §7.45. Yet there would have been nothing to compensate in terms of syllable weight and structure if, as is usually supposed, *h* in such forms was in the syllable onset rather than the coda. See Fulk 1992: §101. It should be noted that when contracted forms like *sēon* demand disyllabic scansion in verse, a heavy initial syllable is never required.

6.　Unlike the other examples, *frēond* is never disyllabic in verse, and at some places the meter demands a monosyllable (i.e., not *frijōnd-*), e.g. *Beowulf* 1385a.

4.14   Changes of stressed vowels in Old Frisian

There is breaking of *e* and *i* to *iu*, a rising diphthong, before /x/ + /x, s, t/, as in *texxō- > tiuche* 'team, parcel of land', 2 sg. *sixist > sixst > siuchst* 'see', *fextan > fiuchta* 'fight'. Breaking is prevented by *i* in the following syllable, as in *plixti- > plecht* 'duty'. Unlike in OE, *i*-umlaut antecedes breaking in OFris. (see Stiles 1995: 194–5).[1]

　　As in OE, adjacent vowels contract upon loss of intervocalic *h*: *-a-a-* contracts to *-ā-*, as in WGmc. *slaxan > slā* 'strike'; *-e-a-* contracts to *-iā-*, as in *sex^{w}an > siā* 'see', and *-ŏ̆-a-*, whether in *verba pura* or due to loss of intervocalic *x*, yields *-uā-*, as in *do-an* (§12.61) > *dwā* 'do' and WGmc. *xā^{n}xan > *hōxan > hwā* 'hang'.

　　PGmc. *eu* develops to a rising diphthong *iā* (cf. Kentish OE, §4.13 *supra*), as in PGmc. *leuþaz > liāf* 'dear' and *beuðana^n > biāda* 'offer'.

　　Palatalization of *ȝ* (§6.17) resulted in the rise of a new diphthong *ei*, as in *waȝnaz > *wæȝn > wein* 'cart' and *xuȝiz > *hyȝi > hei* 'mind' (§4.7).

On front and back umlaut, see §§4.7–8. For further details of OFris. vowel developments, consult the sources cited in §1.17.

1.   On OFris. breaking, see further de Graaf & Tiersma 1980, Tiersma 1983, 1986, van der Meer 1985. On breaking in general, see also the references in §4.13 n. 1.

4.15   Changes of stressed vowels in Old Saxon

WGmc. *ǣ* (PGmc. *ē₁*) is realized as *ā*, even before nasal consonants, as in *lātan* 'let' and *māno* 'moon'. Unlike in OE and OFris., PGmc. *āⁿ* results in *ā*, as in *wāh* 'evil' (cf. OE *wōh* 'crooked') and *brāhta* 'brought'. PGmc. *ē₂* is usually reflected as *ē*, but in some texts the result may be *ie* (as in Franconian dialects), as in *hēr*, *hier* 'here' and *tieglan* 'tile' (Lat. *tēgula*). PGmc. *ō* is usually reflected as *ō*, but it may also be diphthongized to *uo*, as in OHG, as in *brōðar*, *bruoðar* 'brother' and *stōd*, *stuod* 'stood'. PGmc. *ai* usually results in *ē*, as in **stainaz > stēn* 'stone' and *lēm* 'loam', but before *j* it is umlauted to *ei*, as in gen. pl. *ei(i)ero* 'eggs' (= OE *ǣgra < *āj- < *aij-*, and cf. OIcel. *eggja*) and *hneihida* (misspelt ⟨hnethida⟩) 'neighed' (= OE *hnǣgde*). PGmc. *au* becomes *ō*, as in *lōn* 'reward' (cf. Go. *laun*) and *rōd* 'red' (Go. *ráuþs*), though this *ō* is rarely spelt *uo*, and *au* before *w* usually remains unchanged, as in *thau* 'practice' (OE *þēaw < *þauw-*) and *skauwon* 'view' (OE *scēawian*). PGmc. *eu* is reflected as *eo*, *io*, later also *ea*, *ie*, as in *breost* 'breast', *fliogan* 'fly'. But *eu* remains (or is spelt ⟨iu⟩) before *w*, as in *hreuwan* 'rue', *eu*, *iu* 'you (pl.)'.

There is often contraction of adjacent vowels upon loss of intervocalic *w* (§6.16) or *h* (§6.20), and in instances of the removal of hiatus between vowels, though not commonly in poetry. Examples: *gimālda* beside *gimahalda* 'said', *vē* beside *fehu* 'herded animal', and perhaps *dōn* beside *duan*, *doan*, etc. 'do'.[1] When the first vowel in such sequences was originally long, it is shortened, as shown by the change of *eo* to *io*, *ia*, *ie*, as in **aiw > *ē-u > eo*, *io* 'ever' (Go. *áiw*; Holthausen 1921: §108 Anmm. 1–2).

Long vowels are shortened before geminate consonants (as in OE), e.g. *ettar* 'poison' (OE *ātor*, *attor*), *ellevan* '11' (cf. Go. **áinlif*).

Various changes of vowel qualities are encountered on a facultative basis under the influence of neighboring consonants, e.g. *farah* beside *ferah* 'life', *old* beside *ald* 'old', *soster* beside *suster* 'sister': see Holthausen 1921: §§109–14. On the raising of *e* to *i* before *u* in the next syllable, see §4.4.

1.   See §12.61. The loss of hiatus in originally reduplicating preterites, e.g. 3 sg. pret. *lēt* 'let' (< **l-e-ǣt*, §12.20), is perhaps earlier; at all events, contraction is carried through consistently even in poetry.

4.16   Changes of stressed vowels in Old Low Franconian

The vowels of OLF are similar to those of OS, hence PGmc. *ē₁ > ā* and PGmc. *āⁿ > ā*. But *ai* is monophthongized to *ē* only before *r* or *w* (and possibly before *h* (/x/) or in final position, as in OHG, though no relevant forms are attested), as in *sēo* 'sea' and *mērra* 'more' (Go. *sáiws*, *máiza*). Likewise, *au* becomes *ō* only finally or before *h*, *r*, or an alveolar consonant, as in *ōra* 'ear' (Go. *áusō*); otherwise it becomes *ou*, as in *ouga* 'eye'. The new *ē* and *ō* do not undergo the diphthongization regularly suffered by PGmc. *ē₂* and *ō*, as in *hiera* 'here' and *fuot* 'foot'. These changes are nearly identical to those of OHG.

4.17   Changes of stressed vowels in Old High German

PGmc. *iu* generally remains as such in OHG, though in Central German before a non-high vowel in the next syllable *eu* develops to *io*, the usual form beside occasional *eo* (the earlier form).[1] In Upper German this change occurs only before an alveolar consonant or *h* (/x/). Examples: inf. *beotan* 'offer', but 1 sg. *biutu*, imp. *biut*, and *leoht*, *lioht* 'light' (noun), but *liuhten* 'illuminate' < **liuxtijan*. PGmc. *eu* appears early as *eo*, more generally as *io*.

PGmc. *ē₂* and *ō* were diphthongized to *ie* (*ia*, *ea*) and *uo* (*ua*, *oa*), as in *hier* (*hēr*, *hear*, *hiar*) 'here', *mieta* 'reward' (Go. *mizdō*, §3.5), *buoh* 'book' (Go. *bōka*), *suohhen* 'seek' (Go. *sōkjan*), *fuoz* 'foot' (Go. *fōtus*). Diphthongized spellings of *ō* start to appear in Franconian in the eighth century, of *ē* in the ninth, spreading to Upper German.

PGmc. *ai* is reflected as *ei*, except that it is monophthongized to *ē* before *r*, *w*, or *h* (/x/), as in *ēr* 'early' (Go. *áir*), *ēht* 'property' (Go. *áihts*), and gen. sg. *snēwes* 'snow' (Go. *snáiwis*); cf. *stein* 'stone' (Go. *stáins*), *reit* 'rode', etc. There is also monophthongization finally in a few interjections, e.g. *sē* 'look!' (= Go. *sái*). Comparably, *au* developed to *ou* except before *h* and dental consonants, where it was monophthongized to *ō*, hence *hōh* 'high' (Go. *háuhs*) and *tōd* 'death' (Go. *dáuþus*), but *loufan* 'run' (OIcel. *hlaupa*), *ouga* 'eye' (Go. *áugō*). The new monophthongs did not undergo the dipthongization that affected PGmc. *ē₂* and *ō*, and whereas *h* from PGmc. *x* caused the change, final *h* from *k* by the High German Consonant Shift (§6.21) did not, hence *hōh* : *ouh* 'also' (Go. *áuk*). These changes begin to be expressed in the orthography in the eighth century, first in Franconian, spreading southward. See Taylor 1989, with references.

As in OS and OLF, PGmc. * āⁿ* yields *ā* in OHG, as in *fāhan* 'take' < **fāⁿxanaⁿ*.

On the raising of *e* to *i* before *u* in the next syllable, see §4.4.

1.   The change fails when the next syllable originally contained *j*, hence *diuten* 'signify' < WGmc. **þiudjan*. That is to say, the original conditioning of the PGmc. *eu* : *iu* contrast remained relevant.

4.18   Summary table of the development of Germanic stressed vowels

The following table summarizes the vowel developments outlined in §§4.1–17, though a number of changes described there cannot conveniently be indicated in the table:

PGmc.	Go.	OIcel.	OE (EWS)	OFris.	OS	OHG
a	a	a	æ, o (§4.12)	e, o (§§4.12, 4.14)	a	a
		e (§4.7)	e, æ, ie (§4.7)	ō (§4.1)	e (§4.7)	e (§4.7)
		ǫ (§4.8)	ea (§§4.12–13)	ē (§4.7)	ā (§4.1)	ā (§4.1)
		e > ø (§4.8)	ō (§4.1)			
		o, ó (§4.9)	ē (§4.7)			
		ǫ > á (§4.8)				
e	i, aí	e	e	e	e	e
	(§4.5)	i (§4.4)	i (§4.4)	i (§4.4)	i (§4.4)	i (§4.4)
		ja, jǫ, jo,	eo (§§4.8, 4.13)	iu (§4.14)		
		jó (§4.8)	ie (§4.7)			
		ø (§4.8)				

PGmc.	Go.	OIcel.	OE (EWS)	OFris.	OS	OHG
a	a	a e (§4.7) ǫ (§4.8) e > ø (§4.8) o, ó (§4.9) ǭ > á (§4.8)	æ, o (§4.12) e, æ, ie (§4.7) ea (§§4.12–13) ō (§4.1) ē (§4.7)	e, o (§§4.12, 4.14) ō (§4.1) ē (§4.7)	a e (§4.7) ā (§4.1)	a e (§4.7) ā (§4.1)
e	i, aí (§4.5)	e i (§4.4) ja, jǫ, jo, jó (§4.8) ø (§4.8)	e i (§4.4) eo (§§4.8, 4.13) ie (§4.7)	e i (§4.4) iu (§4.14)	e i (§4.4)	e i (§4.4)
i	i, aí (§4.5)	i e (§4.3) y (§4.8) é (§4.9)	i eo (§§4.8, 4.13) ie (§4.7) ī (§4.1, 4.11)	i iu (§§4.8, 4.14) ī (§4.1, 4.11)	i e (§4.3) ī (§4.1, 4.11)	i e (§4.3)
u, o	u, aú (§4.5)	u, o y, ø (§4.8) ó (§4.9)	u, o y, e (§4.7) ū (§4.11)	u, o e (§4.7) ū (§4.11)	u, o ū (§4.11)	u, o
$\bar{a}^n$	ā (§4.1)	á (§4.1) æ (§4.7) ǭ > á (§4.8)	ō (§4.1) ē (§4.7)	ō (§4.1) ē (§4.7)	ā (§4.1)	ā (§4.1)
$\bar{e}_1$	ē ai (§4.5)	á (§4.6) æ (§4.7) ǭ > á (§4.8) ó (§4.9)	æ (§4.6) ēa (§4.13) ā (§4.13)	ē (§4.6)	ā (§4.6)	ā (§4.6)
$\bar{e}_2$	ē	é	ē	ē	ē, ie (§4.15)	ie, ia (§4.17)
ī	ei (§1.11)	í ý (§4.8) é (§4.9)	ī	ī	ī	ī
ō	ō	ó	ō	ō	ō, uo (§4.15)	uo (§4.17)
ū	ū	ú ý (§4.7)	ū ȳ (§4.7)	ū ē (§4.7)	ū	ū
ai	ái (§1.11)	æi > ei (§4.9) ei > ey (§4.8) á (§4.9)	ā (§4.12) æ (§4.7)	ē, ā (§4.12) ē (§4.7)	ē (§4.7) ei (§4.7, 4.15)	ei, ē (§4.17)
au	áu (§1.11)	au ey (§4.7) ó (§4.9)	ēa (§4.12) īe (§4.7)	ā (§4.12) ē (§4.7)	au, ō (§4.15)	ō, ou (§4.17)
eu	iu (§4.5)	jó, jú (§4.9)	ēo (§4.13) īe, īo (§4.7)	iā (§4.14)	eo, eu (§4.15)	io (§4.17)