Chapter 13

THE MYSTERY OF OLD ENGLISH TYPE A2K

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WORKING WITH A nineteenth-century theory of language when the index card was the most advanced sorting technology, Eduard Sievers distinguished acceptable Old English verses from unacceptable ones with such precision that his work is still routinely employed by editors of Old English poetry. The great linguistic achievements of Sievers's era were "laws," categorical rules that applied without exception to explain language change. Comparable laws for the metre would have applied to all verses, isolating the spurious ones as violations. Sievers provided categorical rules for some important metrical features but others resisted analysis. There were tantalizing statistical trends but they all seemed to be plagued with exceptions. Sievers focused on manageable areas of uncertainty by sorting verses with well-attested linguistic patterns into "types." Some types were interpreted as subtypes of a major type and the number of major types was reduced to five: A, B, C, D, and E.[1] Verses with unusual patterns were then evaluated for possible assignment to an established type. In the era of Sievers, the most efficient way to analyse the metre of *Beowulf* was to create 6,364 index cards, one for each verse, and to organize the cards according to subtype and line number. The verse and its features of possible interest could be added in the main body of the card.

While grouping similar verses together, Sievers made some remarkable discoveries. As a historical linguist, he knew that some Old English syllables had been derived from two syllables by vowel contraction and that some disyllabic sequences had been derived from one syllable by epenthesis.[2] Apparent exceptions containing these syllables conformed perfectly to a common pattern if the earlier value was assumed. Either value could apparently be employed at need. In some cases the later value was required for normal scansion. Sievers also knew that some linguistic rules recognized an equivalence between a long stressed syllable and the disyllabic "resolvable" sequence of a short vowel with primary word stress followed by a single consonant and an unstressed vowel.[3] In some cases, apparent exceptions with resolvable sequences conformed perfectly to an established type if the sequences were assigned a monosyllabic value; in other cases, the disyllabic value was required for normal scansion.

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1 On Sievers's verse types, and on other key technical aspects referred to in this chapter and volume, see the Glossary of Metrical Terms in the Appendices. Quotations from *Beowulf* are from Klaeber 4, and from *JdgII* are from *ASPR*.

2 Eduard Sievers, *Altgermanische Metrik* (Halle: Niemeyer, 1893), 123–27.

3 Sievers, *Altgermanische Metrik*, 127–28; A. Campbell, *Old English Grammar* (Oxford: Clarendon, 1959), 143–47.

To appreciate these discoveries, it is important to disentangle their metrical aspect from their linguistic aspect. Sievers's "prosodic rules" for resolution, vowel contraction, and epenthesis are based on uncontroversial facts about the Old English language. The only metrical aspect of these rules is employment of the same word with two different prosodic values to satisfy a variety of metrical requirements.[4] It is also important to distinguish metrical fact from metrical theory. Sievers based his types on linguistic patterns that have significant frequency within the corpus of verses that survive in manuscripts. The frequencies of these linguistic patterns are facts, about as close to "pure" facts as the empirical sciences can come; and many linguistic patterns favoured by the poets have strikingly lower frequency in Old English prose.[5] The pattern frequencies in *Beowulf* are genuinely *metrical* facts.

Sievers confronted serious problems when he tried to identify just what made his acceptable patterns acceptable. In formal terms, this meant discovering general principles that applied to all verses. Verse types had been defined in terms of their stress patterns and these were quite various. There was considerable variety even among subtypes of the same type. General principles would be required to show that these subtypes were significantly related to one another rather than lumped together to make the theory look simpler than it actually was. The difficulty of the task was particularly evident in the case of resolution. Sievers had shown that some verses required resolution and that others required non-resolution. As we shall see, however, he did not formulate rules for resolution that applied consistently to all types or even to all subtypes of a given type. Perhaps the most stubborn obstacle was the mysterious Type A2k, a variant of Type A2a, a subtype of Type A2, which is a subtype of Type A.[6]

Type A1 is by far the most common subtype of Type A and the most common pattern overall. Sievers represents it as a pattern with two primary lifts occupied by stressed syllables, notated as "/," and two dips occupied by unstressed syllables, notated as "x." Type A1 is divided into two trochaic foot patterns, notated as / x, and the verse pattern is represented as / x | / x, with the foot boundary notated by a vertical bar. In Type A2a, the first foot contains a secondary lift normally occupied by a syllable with subordinate stress. The secondary lift is notated with a backslash and Type A2a is represented as / \ | / x. Type A2k is a variant of this pattern in which the second primary lift is occupied by an unresolved short syllable and the second syllable of the resolvable sequence occupies the verse-final x position. Items (1) and (2) are examples of Types A1 and A2k from *Beowulf*.

4 For theoretical analysis of prosodic rules see Paul Kiparsky, "The Rhythmic Structure of English Verse," *Linguistic Inquiry* 8 (1977): 239–44.

5 Geoffrey Russom, "Metrical Complexity and Verse Placement in *Beowulf*," in *Old English Philology: Studies in Honour of R. D. Fulk*, ed. Leonard Neidorf, Rafael J. Pascual, and Tom Shippey (Cambridge: Brewer, 2016), 95–97.

6 Definitions of Sievers's subtypes come from *Altgermanische Metrik*, 33–35. We will not need to consider hypermetrical types.

(1)	*lēofne* / *þēoden* "beloved lord" (34b)	Type A1	/ x | / x
(2)	*hlēoburh* / *wera* "shelter-fort of men" (1731b)	Type A2k	/ \ | / x

Resolution is obligatory on the first alliterating lift of the verse, which is always a primary lift. There are also significant trends: non-resolution is common on secondary lifts and among syllables with subordinate stress. Further precision is difficult to achieve within Sievers's system. Resolution seems to be obligatory on the second primary lift in Types A1 and A3, with a handful of possible exceptions.[7] Non-resolution is very common on the second primary lift of Type A2k, however. There is quite a dramatic difference in this respect between A2k and the other A subtypes, making it difficult to argue that Type A is a metrically significant grouping of verse patterns.

Sievers tried to solve the mystery of Type A2k with evidence from other verse types. Non-resolution was also common on the second primary lift of his Type C, represented as x / | / x. Item (3) is a Type C1 verse with a long stressed syllable on the second primary lift; item (4) is a Type C3 verse with an unresolved short syllable on the second primary lift.

(3)	*on twā* / *healfa* "on two sides" (1095b)	Type C1	x / | / x
(4)	*on dēop* / *wæter* "on deep water" (509b)	Type C3	x / | / x

Sievers explained non-resolution in Type C3 by positing a metrical rule of subordination, a "rhythmical" rule peculiar to the poetry.[8] This metrical rule rendered the second of two adjacent lifts equivalent to a secondary lift, the kind of lift on which non-resolution normally occurs. Introducing a second kind of stress subordination complicated the metrical system but there is independent evidence for this analysis of Type C. Sievers had discovered a strong tendency within the verse toward placement of syllables with prominent phrasal stress, such as those in nouns and adjectives, before less prominent syllables, such as those in verbs and phrase-final function words.[9] A syllable on the first primary lift is normally more prominent than a syllable on the second one. This difference between lifts is emphasized by alliteration, which is strongly associated with linguistic prominence, not only in Old English metre but in alliterative metres generally.[10] Alliteration is obligatory on the first primary lift but not on the second. It

7 *Klaeber's Beowulf and the Fight at Finnsburg*, ed. R. D. Fulk, Robert E. Bjork, and John D. Niles, 4th ed. (Toronto: University of Toronto Press, 2008), 330. Citations of Old English poetry come from this edition unless otherwise specified, with suppression of diacritics not required for scansion. The alliterating lift in type A3 is represented as the second primary lift by Sievers, who posits a non-alliterating first lift in this subtype.

8 Sievers, *Altgermanische Metrik*, 27–28.

9 Sievers, *Altgermanische Metrik*, 41–42.

10 Paul Kiparsky, "The Role of Linguistics in a Theory of Poetry," *Daedalus* 102 (1973): 273.

seems reasonable to conclude that the first primary lift subordinates following lifts, and an analogue for metrical subordination in Type C can be found in the natural language. The Old English rule for compound formation integrates two words into a larger word by subordinating the primary stress in the second word to the primary stress in the first word. Native speakers would have little difficulty with a rule that subordinated the second lift to the first lift as it integrated feet into a larger metrical constituent, the verse; and the analogy would be reinforced by verses realized as a single compound word, with one constituent of the compound in each foot. Such verses occur more than three hundred times in *Beowulf*, about once every ten lines on average.

Non-resolution also occurs on the second primary lift in Sievers's Type D. Item (5) is a Type D1 verse with a long syllable on the second primary lift. Item (6) is a Type D3 verse with an unresolved short syllable on the second primary lift.

(5)	*fēond* | *mancynnes* "enemy of mankind" (164b)	Type D1	/ | / \ x
(6)	*feorh* | *cyninges* "the life of the king" (1210b)	Type D3	/ | / \ x

Sievers attempted to solve the mystery of Type A2k by generalizing his rule of poetic subordination to cover all adjacent lifts, including a subordinate lift immediately followed by a primary lift. On the second primary lift in Type A2k, he argued, non-resolution was common because this lift was adjacent to a preceding subordinate lift in the pattern / \ | / x; and non-resolution was rare on the second primary lift in Type A1 because this lift was not adjacent to a preceding lift in the pattern / x | / x.[11]

The solution offered by Sievers is not directly contradicted by metrical evidence but it ignores important metrical facts and creates theoretical problems that shake the foundations of his system. In Type D, the effect of metrical subordination is detectable but rather weak, raising doubts about the analogy with Type C. Compare items (4) and (6), repeated for convenience as (7) and (8).

(7) *on dēop* | *wæter* "on deep water" (509b)	Type C3	x / | / x
(8) *feorh* | *cyninges* "the life of the king" (1210b)	Type D3	/ | / \ x

Non-resolution occurs in 503 verses like item (7), 46 percent of 1102 Type C verses scanned by Sievers as x / | / x.[12] Non-resolution occurs in only 17 verses like item (8),

11 Sievers, *Altgermanische Metrik*, 27 and 33. In extending his non-resolution rule to type A2k, Sievers may have seen an analogy with "syncopation" in Greek lyric metres. For analysis of this compensatory device see Paul Kiparsky, "Indo-European Origins of the Greek Hexameter," in *Language and Meter*, ed. Dieter Gunkel and Olav Hackstein (Leiden: Brill, 2017), 77–128.

12 The counts do not include verses with a weak class II verb that were scanned by Sievers as type C with non-resolution on the second primary lift. Sievers posited a subordinate stress on the medial syllable in weak class II but there is no linguistic evidence for this stress. See R. D. Fulk,

less than 5 percent of 374 Type D verses scanned by Sievers as / | / \ x.[13] Sievers's analogy between Types C and D ignores these differences. Now consider Type D2 verses like item (9), which have non-resolution on the secondary lift of the second foot.

(9) *stēap* | *stānhliðo* "steep stone-cliffs" (1409a)	Type D2	/ | / \ x

There are 90 verses like item (9) among the 374 Type D verses with the pattern / | / \ x (24 percent). In Type D, non-resolution on the secondary lift has much higher frequency than non-resolution on the second primary lift. The observed frequency differences on lifts make much better sense if the second lift in Type C is redefined as a secondary lift that is inherently subordinated as well as metrically subordinated. John C. Pope argued for this approach on rhythmical grounds and Klaus von See found independent linguistic evidence for it.[14] Reanalysis of Type C requires abandonment of Sievers's claim that all verse patterns have two primary lifts; but as A. J. Bliss argued, that claim should be abandoned in any case because it is plagued by numerous exceptions of Type A3a. There is no independent evidence for a second lift in A3a.[15] When the two-lift hypothesis is abandoned, Sievers's metrical subordination rule works perfectly; but we will need to rethink what all verses have in common.

The hypothesis that every verse has two feet remains defensible but we will also need to rethink what all feet have in common. With the second lift of Type C redefined as a secondary lift, the second foot in item (10) will have the same pattern as the second foot in item (11).

(10) *in* | *geārdagum* "in days of yore" (1b)	Type C3	x | / \ x
(11) *stēap* | *stānhliðo* "steep stone-cliffs" (1409a)	Type D2	/ | / \ x

Item (10) now has a light initial foot with an x position occupied by an unstressed word. In abandoning the two-lift hypothesis, we have also abandoned the hypothesis that all feet have one primary lift. Introducing light feet is a less radical change than might at first appear. In the metres most thoroughly studied by Western scholars, feet are defined as polysyllabic patterns with at least one prominent syllable and foot

A History of Old English Meter (Philadelphia: University of Pennsylvania Press, 1992), 228. Since short unstressed syllables cannot undergo resolution, they should not be lumped together with unresolved stressed syllables.

13 All verse counts come from my electronic scansions, which have been available gratis to researchers on request since 1998.

14 John C. Pope, *The Rhythm of Beowulf*, 2nd ed. (New Haven: Yale University Press, 1966), 19; Klaus von See, *Germanische Verskunst* (Stuttgart: Metzlersche Verlagsbuchhandlung, 1967), 4–5.

15 A. J. Bliss, *The Metre of Beowulf*, rev. ed. (Oxford: Blackwell, 1967), 61–62.

patterns are repeated to establish a predictable linguistic rhythm. As Sievers observed, however, the feet employed by Germanic alliterative poets do not conform to the usual definition of "foot."[16] Foot patterns are repeated only in Types A and B; and there are heavy feet of an unfamiliar kind in his Types D and E. In Sievers's system, every metrical foot can be realized as a stressed word. If we add unstressed function words, a simpler generalization emerges: every foot can be realized as a word.[17]

Sievers's solution to the mystery of Type A2k has fatal flaws of a purely theoretical kind. It seems at first glance to explain why non-resolution is avoided on the second primary lift in all subtypes of Type B (x / | x /) and Type E (/ \ x | /). In these types the second primary lift is immediately preceded by a dip and is never occupied by an unresolved short syllable. If the many verses of Types B and E were relevant, they would provide impressive data coverage for Sievers's solution. In fact they are irrelevant. Short syllables are excluded from the verse-final lift in Types B and E not because there is a metrical rule against them but because non-resolution is linguistically impossible on a verse-final lift. Due to syntactic constraints on enjambment in Old English metre, a verse-final lift is always occupied by the last syllable of a word, and stressed word-final syllables are never short in Old English.[18]

There are no short stressed monosyllables in Old English and no short monosyllabic constituents in compounds, so there are no relevant examples with non-resolution on the second primary lift in the pattern / x | / \ (Type A2b) or the pattern / x | / \ x (Types D*1 and D*2).[19] Non-resolution is linguistically possible on the second primary lift in / x | / x \ (Type D*4), but a D*4 verse with non-resolution would also be acceptable with resolution as / x | / \ (Type A2b) or as D*4 with an unstressed syllable following the resolved sequence. The scansions with resolution are obviously preferable because resolvable sequences are normally resolved on primary lifts. Given the paucity of data coverage, it is time to refocus on the major theoretical problem posed by the high frequency of non-resolution in Type A2k: how to justify the claim that Type A is a metrically significant category rather than an arbitrary grouping of patterns. Sievers's rule for non-resolution would address this problem if it applied across verse types. With the dubious evidence of Type C excluded, however, non-resolution on a primary

16 Sievers, *Altgermanische Metrik*, 29.

17 The birth of alliterative metres in ancient Western Europe was triggered by a shift of stress to the first syllable of the word in Germanic, Italic, and Goidelic Celtic. Alliterative metres arose at about the same time in all three language groups. In some Irish word-foot metres, the foot was always realized as a single word and light word feet could be used. See Geoffrey Russom, *The Evolution of Verse Structure in Old and Middle English Poetry: From the Earliest Alliterative Poems to Iambic Pentameter* (Cambridge: Cambridge University Press, 2017), 39–45.

18 In English of all periods, a monosyllable that is short when unstressed becomes long when stressed, as for example with *the* in "not *the* Professor Einstein!" (compare unstressed "the" in "the professor"). On prefixes that acquire length when stressed see Campbell, *Old English Grammar*, 30–31.

19 As in Type C, instances in Type D with a foot realized by a trisyllabic weak class II verb are excluded from consideration (cf. n12 above).

lift occurs with high frequency only in Type A2k. A rule that applies only to the anomaly requiring explanation is nothing more than an arbitrary restatement of the problem.

As we have observed, subordination after a primary lift would be easy for a native speaker to apprehend because it bears such a close resemblance to subordination after the first constituent of a compound word, which is apprehended with automatic facility during normal language use. There are no Old English compounds in which a constituent with subordinate stress subordinates a following stressed constituent. Metrical subordination in Type A2k would be quite difficult to apprehend because it posits subordination of the second primary lift to a preceding subordinate lift that is normally occupied by a syllable with subordinate linguistic stress, such as the second element of a compound. Some compounds with a structure similar to Type A2k are formed from an ordinary compound followed by a simplex word. In these triple compounds the second constituent is subordinate to the third and becomes vulnerable to reduction, as when *Cant-wara-byrig* (Kent-dwellers' city) becomes *Canterbury*. From a native speaker's point of view, Sievers's rule gets things exactly backwards.

Theory construction is a laborious undertaking. If a theory that seemed promising encounters serious problems, simply discarding it would be a terrible waste of effort. A new theory should retain important contributions by earlier theorists while solving a wider variety of problems. The most famous example of good theoretical practice is Einstein's theory of relativity, which incorporates Newton's entire theory of motion into a very different kind of theory that also explains subtle problems encountered by nineteenth-century physicists.[20] Since the 1980s I have been working on a theory of Old English metre that retains important features of Sievers's system:

1. Metrical patterns based on linguistic patterns favoured by Old English poets
2. Division of the verse into two metrical feet
3. Heavy metrical feet with two lifts
4. A distinction between primary lifts and secondary lifts
5. Heavy verses included in Sievers's Types A, D, and E
6. Resolution
7. Prosodic rules for contraction and epenthesis
8. Metrical subordination

Problems with the five-types system can be attributed in part to problems with the positivist linguistics of the nineteenth century, which focused on accurate description of observed data and had not developed rigorous criteria for explanation of data, which requires attention to what is *not* observed and exploration of alternatives in thought

20 Albert Einstein and Leopold Infeld, *The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta* (New York: Simon and Schuster, 1938).

experiments.[21] When Sievers formulated his metrical rule for non-resolution, he did not ask himself what would happen if his rule did not apply and so failed to notice that non-resolution is often impossible due to rules of ordinary language. The prestige of "laws" in nineteenth-century linguistics valorized metrical rules without exceptions and led to neglect of important statistical trends. It is not sufficient to distinguish what happens from what does not happen. It is no less important to distinguish what happens much of the time from what happens only sporadically.[22]

Sievers's neglect of correlations across verse types is also attributable to the limitations of index-card technology. My critique of the non-resolution rule has required verse counts for correlations of long and short syllables with primary and subordinate lifts in both feet as well as with primary and subordinate linguistic stress. Exploring these correlations across types in a set of 6,364 index cards would be error-prone, laborious, and extremely time-consuming. Today an Old English poem can be analysed in a database management system of the kind routinely supplied with personal computers. The user of such a system is initially presented with a table of empty rows and columns. If a line-by-line version of a poem is already available in electronic form, it can be inserted into a column on the table and each verse will be copied automatically into a single row. The verse number and significant metrical features of each verse can be marked in other columns on the same row with the verse. A filtering function can be used to select any marked feature or combination of features in any number of columns. The user can then obtain, say, a complete list of all b-verses of Type E that have a long syllable on the first primary lift, a short syllable on the secondary lift, and resolution on the second primary lift. It took me no more than a few seconds to determine that verse 1009b is the only instance in *Beowulf*. With this technology a metrist can do correlations across verse types while thinking through alternative hypotheses.

Since the advent of Chomsky in the 1950s, language-particular rules have gradually been reformulated as rules based on universal linguistic norms. Today's phonologists have replaced categorical rules with violable rules that apply in languages generally.[23] Violable rules are ranked in a hierarchy of influence and differences among languages are explained as differences in ranking. Consider syllable length, the linguistic feature of special interest here. A short syllable can be defined as a syllable with one unit of phonological length, called a *mora* in technical idiom. A long syllable can be defined as

21 The classic refutation of positivism in linguistics is Noam Chomsky, "A Review of B. F. Skinner's *Verbal Behavior*," *Language* 35 (1959): 26–58.

22 This point must now be argued rather than simply assumed, given the devaluing of relative frequencies in recent work on a four-position theory of the metre, a trend initiated by skepticism about the relevance of Bliss's statistical observations in Nicolay Yakovlev, "The Development of Alliterative Metre from Old to Middle English" (unpublished DPhil thesis, Oxford University, 2008), 49–55.

23 On the usefulness of violable rules for analysis of poetic form, see Geoffrey Russom, "Optimality Theory, Language Typology, and Universalist Metrics," *Studia Metrica et Poetica* 5 (2018): 7–27.

a syllable with two *morae*.[24] In stress-based languages, the most prominently stressed syllable in a word is normally long. The energy invested in primary word stress normally expands into a second mora. This tendency can conflict with another: stress is normally confined to a single syllable. We can formulate the two tendencies as violable rules: (1) stress must expand into a second *mora*; and (2) stress must be confined to a single syllable. If rule (2) is ranked higher, as in Italian, rule (1) can be violated and short stressed monosyllables can occur, as with *no* in "Credo di no" (I think not). If rule (1) is ranked higher, as in English, rule (2) can be violated and short stressed monosyllables are ruled out. In English of all periods, as in most other languages, a single consonant between vowels belongs to the syllable occupied by the second vowel.[25] When the initial short vowel of an Old English resolvable sequence bears the most prominent stress in a word, the stress energy cannot be confined within the short vowel and must expand into the next syllable. On this analysis it is easy to see why rule (1) is often violated under subordinate stress. Subordination reduces the energy of expansion. Categorical requirements and significant tendencies are explained by the same violable rules as they apply in various linguistic environments.

My universalist theory of OE metre employs violable rules and universal principles of poetic form to attack problems that arise within the five-types theory.[26] We need to consider the following principles.

P1. Metrical constituents such as feet, verses, and lines are derived from linguistic constituents such as words, phrases, and sentences.
P2. It must be possible, under normal conditions of reception, to determine whether a larger metrical constituent contains the required number of smaller constituents. The larger and smaller constituents must be readily distinguishable from one another to make this possible.
P3. Norms for a metrical constituent are based on norms for the corresponding linguistic constituent.
P4. Departure from norms causes metrical complexity, inhibiting frequency and placement toward the end of a larger metrical unit (the universal principle of closure).

24 René Kager, *Optimality Theory* (Cambridge: Cambridge University Press, 1999), 146–47.

25 When two consonants stand between vowels, the first consonant usually closes the first syllable and makes it long. Exceptions are due to an independent tendency to maximize onsets, which promotes assignment of consonant clusters to the onset when they are acceptable there. On length in stressed syllables and related features of syllable structure, see Kager, *Optimality Theory*, 91–95.

26 For application of the proposed universal principles to some representative world metres, see Russom, *Evolution of Verse Structure*, 28–53. For analysis of type A2k, I employ the most recent formulations of these principles, which are applied to a variety of other problems in Geoffrey Russom, "The Word-Foot Theory of Old English Meter, Version II" (*JEGP*, forthcoming).

P5. Norms governing a larger metrical unit rank higher than norms governing a smaller metrical unit.[27]
P6. Rules for sound echoes that add metrical prominence, such as rhyme and alliteration, correspond to rules that add linguistic prominence, such as the nuclear stress rule of Modern English, which elevates the prominence of final constituents, or the Germanic stress assignment rule, which elevates the prominence of initial constituents.

The rules of a particular metre follow from the universal principles as corollaries. We will need to consider Old English rules R1–R6.

R1. Old English metre employs "word feet"– foot patterns that correspond to word patterns. There are nine foot patterns, one for every native word pattern, unstressed words and compounds included (except for compounds large enough to fill a whole verse, with one constituent of the compound in each foot). The normative foot pattern corresponds to the normative word pattern in Old English, which has a long syllable with primary word stress followed by an unstressed syllable. A foot is normally realized as a single word.
R2. Old English metre employs verses (or "half-lines") of two feet. The normative verse pattern is a phrase consisting of two normative feet, each occupied by a single word. This linguistic pattern has much higher frequency in poetry than in prose.
R3. Normative placement of words within the verse is based on normative placement of words within the phrase during the late Proto-Germanic era when the metre was born. Within the verse, constituents with prominent phrasal stress such as nouns and adjectives normally precede less prominent constituents such as verbs and phrase-final function words.[28]
R4. The normative verse pattern establishes norms for all verses. Multiple departures from these norms may make a verse pattern unacceptable. One foot may exceed the norm of two positions, for example, but not both. There are twenty-five permissible combinations of word feet. Each counts as a distinct verse pattern.[29]

27 On the operation of this principle in iambic pentameter see Gilbert Youmans, "Milton's Meter," in *Rhythm and Meter*, ed. Paul Kiparsky and Gilbert Youmans (San Diego: Academic, 1989), 376–79. The same principle applies in the phrasal stress rules of English: syllables receiving stress at sentence level subordinate syllables receiving stress in phrases below sentence level, which in turn subordinate syllables receiving stress at word level.

28 Verbal infinitives and participles are less prominent than lexical nouns and adjectives but more prominent than finite (tensed) verbs. For our purposes here the relevant difference is between verbs and the more prominent nouns and adjectives. See Russom, "Metrical Complexity and Verse Placement," 90–91.

29 The total number of word-foot patterns is not much greater than the number of subtypes in Sievers's system (nineteen, not counting subtypes considered doubtful by Sievers or those attested only in Old Norse metres). Unlike Sievers's subtypes, word-foot verse patterns all conform to a

R5. The Old English line consists of two verses. The normative line pattern is based on the normative sentence pattern in late Proto-Germanic. The line normally ends with a weakly stressed constituent.

R6. Assignment of alliteration acts like the Germanic stress assignment rule and subordinates following lifts at all levels of metrical structure.[30] The a-verse subordinates the b-verse, and a second primary lift in the b-verse is more deeply subordinated than a second primary lift in the a-verse. At verse level, alliteration is obligatory on the first constituent with metrically significant stress, normally a prominent constituent such as a noun or adjective. Constituents of lower prominence have a lower probability of alliteration where alliteration is optional. Alliteration is forbidden on a subordinate lift in the b-verse.

In previous publications I have shown how violable rules can explain the frequencies of representative verse patterns and their distributions within the alliterative line.[31] Here we will keep the focus on Type A2k and on associated peculiarities of resolution that I have not discussed before.

The universalist theory divides Types A, D, and E into feet as Sievers does. Types B and C are divided immediately before the first alliteration. To avoid confusion between two partially similar scansion systems, I use a distinct word-foot notation, employing "S" for the primary lift and "s" for the secondary lift. I retain "x" for unstressed syllables but do not collapse all adjacent unstressed syllables into one dip as Sievers does.[32] Members of the same Sievers type are no longer assumed to be analogous but I retain the familiar type designations as expository devices with no theoretical significance. Items (12)– (16) are examples of the most common A, B, C, D, and E patterns with all lifts occupied by long syllables and each foot realized as a single word. The boundary between feet is marked with a forward slash in the word-foot scansions.

(12) *bēaga/bryttan* "distributor of rings" (35a)	Type A	Sx/Sx (= / x | / x)
(13) *þis/ellenweorc* "this deed of valor" (2643a)	Type B	x/Sxs (cf. x / | x /)

single set of rules based on universal norms, forming a coherent metrical system that could readily be internalized by native speakers.

30 Metrical subordination of lifts within the line can be represented by a standard binary tree structure in which all branching nodes branch into one strong node and one weak node. See Russom, *Old English Meter and Linguistic Theory* (Cambridge: Cambridge University Press, 1987), 67–82.

31 Well-attested realizations of each verse type are discussed in Russom, "Metrical Complexity and Verse Placement."

32 Unstressed words are included in word feet only when the verse would be unacceptable without them, as for example with "ond" in *Beowulf* 121a, "grim ond / grǣdig" (grim and greedy), analysed as Sx/Sx with a word group in the first foot. All other unstressed words are excluded from the basic pattern as extrametrical and must obey special rules that distinguish extrametrical words from light word feet. See Geoffrey Russom, *Beowulf and Old Germanic Metre* (Cambridge: Cambridge University Press, 1998), 45–59.

(14) *on/gylpsprǣce* "in boasting speech" (981a)	Type C	x/Ssx (cf. x / | \ x)
(15) *wīs/wēlþungen* "wise, most accomplished" (1927a)	Type D	S/Ssx (= / | / \ x)
(16) *bēaghroden/cwēn* "ring-adorned queen" (623b)	Type E	Ssx/S (= / \ x | /)

The second lift of Type B is now reanalysed as secondary. Non-resolution is linguistically impossible on this lift because it stands at the end of the verse. Type B provides no evidence relevant to our present concerns. With the second lift of Type C reanalysed as secondary, the universalist theory explains frequencies of non-resolution consistently in Types C and D. As we have seen, however, this explanation cannot plausibly be extended to a primary lift preceded by a secondary lift. The mystery of Type A2k persists. When we turn to our rules and principles for help, the mystery deepens. If non-resolution causes complexity on a primary lift, how can we account for its unusually high frequency in Type A2k, as compared to its frequency in the normative Type A1, which should be most tolerant of added complexity, all other things being equal? Why does Type A2k favour the b-verse, where universal principle P4 restricts complexity? To get to the heart of this problem we need to resituate Type A2k within the universalist theory and see how the rules and principles interact.

Item (17) is an instance of Ss/Sx with a long syllable on the second primary lift. Item (18) has an unresolved short syllable on the second primary lift of the same word-foot pattern.

(17)	*frumsceaft / fīra* "first-creation of men" (91a)	Old A2a	Ss/Sx (= / \ | / x)
(18)	*hlēoburh / wera* "shelter-fort of men" (1731b)	Old A2k	Ss/Sx (= / \ | / x)

Ss/Sx is heavy relative to the normative pattern Sx/Sx and has much lower frequency, with 242 total instances. As expected, Ss/Sx has lower frequency overall in the b-verse, with 67 instances out of 242 (28 percent). Our problem is with Ss/Sx variants like item (18), which have higher frequency in the b-verse, with 41 instances out of 68 (60 percent).

Our first task is to explain why non-resolution on the second primary lift is acceptable in Ss/Sx verses like (18) but rarely or never occurs in the normative Sx/Sx pattern. Item (19) is an exceptional realization of the Sx/Sx pattern with non-resolution on the second primary lift.

(19)	*hwīlum / dydon* "did at times" (1828b)	Old A1	Sx/Sx
(20)	*wið / manna hwone* "with any one of men" (155a)	New B	x/Sxs
(21)	*þēod- / cyninga* "of the nation-kings" (2a)	Old D3	S/Ssx

(22)	*ond / þēodcyningas* "and nation-kings" (JdgII 162b)	New C	x/Ssx
(23)	*Him / Bēowulf þanan* "then Beowulf thence (went)" (1880a)	New B	x/Sxs

Item (19) has the same pattern of stress and length as the second foot in (20), a permissible realization of Type B with resolution on the verse-final lift. Routine employment of both (19) and (20) would violate universal principle P2, since the verse pattern of (19) would be indistinguishable from the foot pattern of (20). As we have observed, however, verses like (19) are vanishingly rare and apparent examples may only be apparent. In the original version of *Beowulf*, the manuscript form *dydon* was probably Anglian *dēdon*, with a long stressed syllable.[33] Principle 2 would also be violated by routine employment of Type D verses like (21) alongside Type C verses like (22), in which the second foot has the same pattern as verse (21); but (22) is just one of many odd verses in *Judgment Day II* and no such verses are found in *Beowulf*.[34] Our mysterious Ss/Sx verse in item (18) accords with principle P2 because resolution of "wera" would not yield an acceptable foot. The second syllable is unambiguously stressed in "hlēo-burh," a poetic compound, and word groups like "hlēoburh wera" never appear in Type B. Apparent exceptions like item (23) do occur in *Beowulf*, but the only other one is verse 435b. In both instances, the second stressed syllable is the secondary constituent of a compound proper name, which can occupy an s position or an x position.[35] The only plausible scansion of (23) is as x/Sxs. The acceptability of (18) is explained straightforwardly by reference to universal principle P2.

Many acceptable verse patterns are quite complex and are largely or entirely confined to the a-verse. Our next task is to explain why Ss/Sx with non-resolution appears most often in the b-verse. Here we can turn to R5 for help. Rules for resolution apply at the level of the metrical position. The mysterious high frequency in the b-verse is attributable in part to R5, which promotes assignment of words with subordinate phrasal stress to line-final position. As a line-level rule, R5 can override position-level rules in accord with universal principle P5. We need to distinguish non-resolved Ss/Sx variants like (18), in which the last word is a prominent noun or adjective, from non-resolved variants like (24), in which the last word is a less prominent verb or function word.

(24)	*blōdfāg / swefeð* "sleeps bloodstained" (2060b)
(25)	*hrēawīc / hēoldon* "they controlled the killing ground" (1214a)

Due to the influence of R5, Ss/Sx verses like (24) have a b-verse frequency of 67 percent, with 14 a-verses and 29 b-verses. Ss/Sx verses like (18), on the other hand, have a b-verse

33 Fulk, *History of Old English Meter*, 185.

34 Fulk, *History of Old English Meter*, 98.

35 Russom, *Old English Meter*, 101–2.

frequency of 48 percent, with 13 a-verses and 12 b-verses. The effect of R5 on these distributions can be cross-checked against the distributions for Ss/Sx variants with a long syllable on the second primary lift. Variants like (17), with a noun or adjective on this lift, have a b-verse frequency of 7 percent, with 79 a-verses and 6 b-verses. Due to the influence of R5, the b-verse frequency for variants like (25), with weak stress on the second primary lift, rises to 25 percent, with 55 a-verses and 18 b-verses. One final question now remains. If non-resolution on a primary lift causes complexity, why do non-resolved Ss/Sx variants like (24) have a b-verse frequency of 67 percent, higher than the frequency of 25 percent for otherwise similar variants like (25) that have a long syllable on the second primary lift? Here R6 comes to our assistance. Unresolved short syllables normally occupy secondary lifts that are inherently as well as metrically subordinated. The most suitable primary lift for an unresolved short syllable is the second primary lift of the b-verse, which is more deeply subordinated than the second primary lift of the a-verse. The complexity caused by non-resolution is overridden in (24) not only by R5 but also by R6, the line-level rule for metrical subordination of lifts.

In the universalist theory, subtypes of a given Sievers Type are no longer assumed to be analogous but there are meaningful analogies of other kinds, including analogies across types. Consider the Type E pattern Ssx/S, which has the same pattern of lifts as Ss/Sx but different placement of the dip. Constraints on non-resolution in Type A have no analogues in Type E because its second primary lift is verse-final and non-resolution is linguistically impossible on this lift. Constraints on verse placement imposed by R5 apply to both patterns, however, and in the same way, as expected.

(26)	*wonsælī / wer* "ill-fated man" (105a)	Type E	Ssx/S
(27)	*græsmoldan / træd* "trod the greensward" (1881b)	Type E	Ssx/S

Type E variants like (26), with the second primary lift occupied by a prominent constituent such as a noun or adjective, have a b-verse frequency of 45 percent, with 99 a-verses and 82 b-verses. Type E variants like (27), with a lightly stressed verb or function word on the second lift, have a b-verse frequency of 88 percent, with 31 a-verses and 233 b-verses. In Ssx/S, as in Ss/Sx, the frequency of b-verses is elevated by the influence of R5.

A mathematician or physicist who proposes a theory will seldom have worked out all the consequences of its general principles.[36] Since at least the time of Euclid, the standard practice has been to show how abstract principles that are simple in the

36 Post-positivist attitudes towards theory and data are expressed with characteristic forthrightness by physicist Richard Feynman in *The Character of Physical Law* (Cambridge, MA: MIT, 1967), 171: "One of the most important things in this 'guess—compute consequences—compare with experiment' business is to know when you are right. It is possible to know when you are right way ahead of checking all the consequences. You can recognize truth by its beauty and simplicity. It

relevant sense apply in some clear cases, then to predict that they will apply correctly in all cases. Contributions from many researchers may be required to test the theory, explore subtle consequences, or sharpen hypotheses. "Ownership" of a theory can be a difficult sort of thing to define and that is certainly true where the universalist theory of Old English metre is concerned. The word-foot concept is appropriated from an important study of Irish alliterative metres.[37] Besides incorporating much of Sievers's system, the universalist theory has an obvious debt to A. J. Bliss, who pioneered statistical analysis of Old English verse placement, and to linguists working toward a universalist theory of metre, especially Kristin Hanson, Bruce Hayes, Roman Jakobson, Paul Kiparsky, Jerzy Kuryłowicz, and Gilbert Youmans.[38] Software linguist Jacqueline Haring Russom introduced me to database management technology at an early stage of my research. In 1987, *Old English Meter and Linguistic Theory* concluded with a prediction that progress in our understanding of language would be sure to improve the word-foot theory. Significant progress occurred very promptly indeed. Just five years later, historical linguist Robert D. Fulk published *A History of Old English Meter*; a year after that, Alan Prince and Paul Smolensky introduced ranked violable rules to theoretical linguistics.[39] The universalist theory, in its current form, was made possible by these advances. I have also learned much from researchers who have tested word-foot concepts in a variety of original projects, especially Thomas Bredehoft, Michael Getty, Nelson Goering, Megan E. Hartman, Leonard Neidorf, Rafael Pascual, and Jun

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is always easy when you have made a guess, and made two or three little calculations to make sure that it is not obviously wrong, to know that it is right." Note the rehabilitation of a Romanticist view of truth and beauty that was taboo for positivists.

37 James Travis, *Early Celtic Versecraft* (Ithaca: Cornell University Press, 1973).

38 In addition to the works cited above, see especially Kristin Hanson, "Generative Metrics: The State of the Art," in *Current Trends in Metrical Analysis*, ed. Christoph Küper (Frankfurt: Peter Lang, 2010), 45–62; Kristin Hanson, "Metrical alignment," in *Towards a Typology of Poetic Forms*, ed. Jean-Louis Aroui and Andy Arleo (Amsterdam: John Benjamins, 2009), 267–86; Kristin Hanson and Paul Kiparsky, "A Parametric Theory of Poetic Meter," *Language* 72 (1996): 287–335; Bruce Hayes, *Metrical Stress Theory: Principles and Case Studies* (Chicago: University of Chicago Press, 1995); Roman Jakobson, *Language in Literature* (Cambridge, MA: Harvard University Press, 1987); Roman Jakobson, *Selected Writings Vol. 5: On Verse, its Masters and Explorers* (The Hague: Mouton de Gruyter, 1979); Paul Kiparsky, "Metered Verse," in *Annual Review of Linguistics* 6 (2020): 25–44; Jerzy Kuryłowicz, *Die sprachlichen Grundlagen der altgermanischen Metrik* (Innsbrück: Institut für vergleichende Sprachwissenschaft, 1970); and Gilbert Youmans, "For all this Werlde Riche: Syntactic Inversions as Evidence for Metrical Principles in the Alliterative *Morte Arthure*," in *Approaches to the Metres of Alliterative Verse*, ed. Judith Jefferson and Ad Putter (Leeds: Leeds Texts and Monographs, 2009); Gilbert Youmans, "Generative Tests for Generative Meter," *Language* 59 (1983): 67–92.

39 Alan Prince and Paul Smolensky, *Optimality Theory: Constraint Interaction in Generative Grammar* (Malden: Blackwell, 2004). A 1993 manuscript of this was widely cited, for example, in Kager, *Optimality Theory*, 440.

Terasawa.[40] Robert D. Fulk integrated the word-foot theory with amazing speed and thoroughness into his 1992 book and later into what is now the standard edition of *Beowulf*. What I enjoy very much about metrical theory is the sense of having chanced upon a site where many ideas converge and we come a little closer to the core mystery of literary studies: How does literary form help us to express, and to understand, what matters most?

40 Important contributions by these researchers include Thomas E. Bredehoft, *Early English Metre* (Toronto: University of Toronto Press, 2005); Michael Getty, *The Metre of "Beowulf": A Constraint-Based Approach* (Berlin: Mouton de Gruyter, 2002); Nelson Goering, "Early Old English Foot Structure," *Transactions of the Philological Society* 114 (2016): 171–97; Megan E. Hartman, *Poetic Style and Innovation in Old English, Old Norse, and Old Saxon* (Berlin: Medieval Institute Publications, 2020); Leonard Neidorf, *The Transmission of "Beowulf": Language, Culture, and Scribal Behavior* (Ithaca: Cornell University Press, 2017); Rafael J. Pascual, "Sievers, Bliss, Fulk, and Old English Metrical Theory," in *Old English Philology*, ed. Leonard Neidorf, Rafael J. Pascual, and Tom Shippey (Cambridge: Brewer, 2016), 17–33; and Jun Terasawa, *Nominal Compounds in Old English: A Metrical Approach* (Copenhagen: Rosenkilde and Bagger, 1994).