Metrical complexity

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0. Introduction

In this paper I will be concerned with metrical complexity in poetry.[1] Poetry written in a particular metrical tradition can be seen as the mapping of a given metrical structure and the segmental and prosodic structure of the text. To give a simple example: a poem written in an iambic pentameter organises the elements that constitute the poem into lines where ten syllabic positions — or, in some cases, moraic positions — match with five iambic feet w-s. As is well-known, this mapping often leads to 'mismatches' between metrical feet en prosodic units, for instance when an iambic foot is projected onto a bisyllabic word that has a structure s-w. Mismatches are most likely constitutive for modern metrical poetry in a broad sense, ranging back at least as far as Shakespeare. Nevertheless, matching and mismatching between prosody and meter are a starting point for the linguistic analysis of metrical structure and, more particularly, for an attempt to define metrical complexity in a given poem or a given poetic tradition. Using the work of the Dutch poet Slauerhoff (1898-1936) as an example, I will try to show that the components of metrical complexity are constraints that can be parameterized. I will pay special attention to the question as to which of these constraints are defined by higher units of prosodic and syntactic organisation.

1. Two types of mismatch

1.1 Positions in the line. In the unmarked case, the number of syllables in a line of metrical verse matches the number of positions defined by the meter. Thus, an iambic pentameter matches with ten syllabic or moraic positions. Violations of this aspect of the mapping of prosody and meter are numerous in not a few poetic traditions. Extrametricality at the right edge of the line, for instance, is quite common, as can be seen in the following line from the poem *De jonken*, 'The

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junks'.[2] The poem is written in iambic pentameters; extrametrical syllables here and after will be represented between < >.

(1)
```
Gehéimgehòuden   in de dònkre héuvlen,
 w  s  w s   w   s   w  s   w  s   < >
secret-kept      in the dark hills
```

Catalexis, the projection of a foot on a position that is (partly) empty also occurs, but I will postpone the discussion of such cases till section 3 since the argument is more involved.

Catalexis and extrametricality typically occur at edges, the left and right edge of a domain, respectively. Generally, but not exclusively, the domain for both these phenomena in poetry is the line. Other possibilities for mismatches between the number of syllabic positions and the number of metrical positions are then to be found between the edges. Logically, there are two types, and both are so familiar from the literature that I will only briefly mention them. In the first case, metrical footing skips an unstressed syllable and the foot spreads over three consecutive syllables under conditions that seem to be language-specific. In Dutch, unstressed syllables, including determiners and other clitic elements can easily be skipped. In the literature on English verse the phenomenon is also known as Relegation, I will call it Spreading. The counterpart of Spreading is Absorption: an entire metrical foot is projected onto one syllabic position only. An example of Spreading, with the syllable that is skipped marked 0, is given in (2), also a line from *De jonken*; Absorption, indicated with F for 'Foot' is illustrated in (3), from the poem *Hathor*:

(2)
```
Tùsschen de rótsen,   onder de èerste stér.
  w    s  w  s  w     s  w  0    s  w   s
between the rocks,    under the first star
```

(3)
```
Hoòg   tussen  de hóornen
  F    w  s     w  s  < >
high   between the horns
```

There is more to be said about the metrics of the latter example, but before we can discuss that more fully, we will have to turn to the question whether higher levels of prosodic organisation are determined by syntactic structure, or by autonomous prosodic parsing, or both. I will discuss that in section 2.1, and first illustrate the second type of mismatch between prosodic and metrical structure: rhythmic alternations.

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[2] Poems are cited from the 1961 edition of the Verzamelde Gedichten (Slauerhoff 1961[6]). Translations are given in the form of glosses. Iambic alternations are represented by the familiar w and s, and in the examples that are discussed in more detail, stressed positions are indicated by the x's of the metrical grid.

1.2 Rhythmic alternations. The second line of the poem *De jonken*, in (4), below, shows a phenomenon that is also common in metrical poetry: the projection of a metrical foot on a word that does not match the rhythm, but is, in fact, its exact opposite. In the literature, this is known as Inversion, and Slauerhoff's poetry contains not a few examples of this:

(4)
```
Éven   verràden  door het mórgenròod
w s     w  s  w    s    w   s  w  s
just   betrayed  by   the morning red
```

Even, 'for a moment', 'just', is s-w, and its second syllable is unstressed. This example, and other examples from the same poem, all obey the constraint known as the Monosyllable Rule, formulated in Kiparsky 1977 and quoted here in full from Hayes (1988:222):

(5) a A stressed syllable must occupy s position unless: (i) it consists of a single, monosyllabic word, or (ii) it immediately follows a phonological phrase boundary.
b At the right edge of a phonological phrase, a sequence *stressless-stressed* must occupy w-s position.

In other examples, (5a) is clearly violated, for instance in the prepositional phrase *over knielende golven* in the following line from *Het boegbeeld: de ziel*, 'The figure-head: the soul':

(6)
```
Mijn zégetòcht        over knièlende gólven
 w    s w s           w s    w  s  w  s < >
my triumphal journey  over kneeling waves
```

Both in *over* and in *knielende*, the first syllable is inherently stressed and matched with w, whereas s matches the unstressed syllable that is immediately adjacent. *Over* is the leftmost element in a PP and would therefore not violate the Monosyllable Condition by (aii), but *knielende* does violate it, unless we regard it as the leftmost element of the NP *knielende golven*. So, the question is, what is the definition of 'phrase' in the generalisation about phrase boundaries in (5), above? Which boundaries count?
Another example is to be found in the following line from the poem *De ontdekker*, 'The explorer':

(7)
```
Op de áanbrèkende gebóort  tóevlòog.
w   s  w   s w  s  w s      w  s
at the outbreaking birth   towards-flew
```

The participle *aanbrekende* and the verb *toevloog* are prosodically s-w, and both *aan-* and *toe-* match with metrical w, which is a violation of (5a). However, both words are compounds, and *over* in (6) and *even* in (4) are not. So, in order to appreciate the role of syntactic organisation at the interface of prosody and metrical structure, we will have to become more precise.

2. *Phrasing and metrical structure*

2.1 Bounding conditions. Though the Monosyllable Rule is a generalization over a corpus, in this case Shakespeare, it appears that, as a constraint, it is quite commonly obeyed in other modern poetry as well. It predicts that a stressed position in a polysyllabic word is matched with a strong position in metrical structure, and it adds conditions under which the constraint may or may not be cancelled. As Hayes (1988:237) correctly states, the rule can essentially be reformulated as a Bounding Condition, with the prosodic word as its focus and a particular phonological phrase as the domain within which it applies. This raises two further questions: (i) what is the role of higher prosodic units and (ii), to what extent can such conditions vary. Hayes himself (1989:231) defines the following condition for the poem *Hiawatha* by Longfellow:

(8) 'A line L is metrical if, for any constituent C of L, the following holds: any peak defined in C that occupies metrical W position is adjacent to a peak also defined in C'.

Assume that (5) and (8), though defined over a particular corpus, have a wider application and consider again the example (7), above. Both *aanbrekende* and *toevloog* are mismatches, since particle verbs in Dutch have the stress peak on the particle. However, the nature of the mismatch changes if we take into consideration that these words are compounds, and thus consist of two prosodic words. That means that the mismatch is like any case where iambic w-s is projected onto a sequence of two elements within a larger domain that are stressed s-w.[3] Under Hayes' definition in (8), the line would still be metrical since the projection of metrical w on prosodic s is compensated for by an immediately adjacent stress peak within the same constituent. Even so, there are mismatches in Slauerhoff's poetry that are more complex and would be unmetrical by the constraints discussed so far. What I will claim, and illustrate more fully in the next section, is that Slauerhoff's metrics can be understood only if larger domains projected by the syntax are systematically taken into account. Before that,

[3] For similar considerations about the behaviour of Dutch compounds in metrical verse, compare Neyt (1993).

something should be said about the definition of phrases and larger units in prosody in general and in metrics in particular.

It is generally recognised that prosodic parsing is not just a function of syntactic parsing, and that there are also autonomous constraints that define the level of p-structure, the latter seen as the interface between syntactic and prosodic organisation. Thus, Inkelas and Zec (1995) entertain the possibility that there is a minimal-size constraint, comparable to the well-known constraints on minimal feet and minimal words, though the degree to which such a constraint imposes itself on the syntactic phrasing may be language-specific. Clitics or, more generally, weakly stressed elements will under certain conditions group with adjacent lexical elements and separate them from their syntactic Heads, as in sequences like the following (Hayes 1989:237):

(9) `[the [great lakes]]  [[the great] [lakes]]`

where the righthand column represents the prosodic phrasing. In Dutch metrical poetry prepositions easily attract unstressed determiners in PP's, as in the following line from *De jonken*, where the determiner *de* prosodically groups with the preposition *door*:

(10)
```
[Dòor de] [verlátenhèid],   het diép voor de òogen
   w   s    w  s w  s         w   s   w   0  s < >
through the desolation,     the deep before the eyes
```

Such cases are quite common and certainly do not exhaust the possibilities of independent prosodic structuring, whether in spoken language in general or in metrical lines in particular. Helsloot, in her recent dissertation on the prosody of Italian free verse (1995) has taken this consideration a large step further, and claims that the basic constraints on prosodic organization must allow for independent phonological phrasing instead of phrasing that is syntactic with some adjustments. There is no room here to discuss this important issue in any depth, but I tend to disagree with her position that this is a matter of either/or. The role of syntax in the prosodic phrasing of poetry may, for instance, very well differ with the kind of poetry under discussion. In any case, when I say that Slauerhoff's metrics is sensitive to syntactic projections, I do not wish to imply that this settles the issue on the nature of p-structure in general.

2.2 The parameterization of constraints. Let us return to the generalizations in (5) and (8). Assume that 'phonological phrase' (Kiparsky 1977, Nespor and Vogel 1986) refers to major phrases such as A″, P″, and N″. Then, the line in example (6), above, repeated here as

(11)
```
Mijn zégetòcht        over knièlende gólven
 w    s   s           w s    w  s  w  s < >
my triumphal journey over kneeling waves
```

cannot be 'saved', not even by Hayes' Bounding Condition in (8), because the syllables *knie-* and *gol-* are not adjacent. However, the peak on *golven*, itself properly matched with metrical s, may compensate for the w on the first syllable of *knielende*, if one extends the notion 'constituent' to the level of the phrase, *knielende golven*, and the notion 'adjacent' to 'adjacent at a next higher level'. By the same reasoning, however, the projection of metrical w on the first syllable of *over* is not compensated for by the peak on *knielende*, since that stress peak is not properly matched itself.

(12)

```
                          x
              x           x
    x         x           x
[over   [knielende    golven]]
 w s      w   s  w     s < >
```

If we assume, instead, that the phrase is prosodically parsed as [*over knielende* [*golven*], the situation is not very different: *knielende* cannot compensate for the mismatch in *over*, since *knielende* is itself wrongly matched, and the mismatch in *knielende* is compensated only on a next higher level:

(13)

```
                          x
    x       x
    x       x             x
[[over knielende]  [golven]]
  w s     w   s w     s < >
```

What this indicates is that Bounding Conditions on metrical structure can be used succesfully as a measure of complexity if the constraints that they express are ordered in such a fashion that a violations of the basic constraint can be viewed as parameterized. This requires that generalizations referring to different types of constraints are carefully distinguished. Consider the line quoted in (11). Both *over* and *knielende* violate the condition that prosodic s should be matched with metrical s, which is expressed in (5ai) and in (8). Under a relaxed definition of (8), the mismatch in *knielende* is compensated for by an adjacent peak at a higher level. The mismatch in *over* is not compensated for, but since *over* occurs at the left edge of a phrase, it is tolerable by 5(aii). Why the latter condition applies in metrical poetry is not immediately clear, but it is undisputed that the relaxation of prosodic constraints in general can be more easily found at left edges. As types of constraints, however, (5ai) and (5aii) are of a different nature and should be kept apart: in a given corpus or in a given metrical tradition, one may be true while the other is not.

We can now tentatively formulate a generalization that replaces both (5ai) and (8) by specifying additional conditions so that the basic constraint 'Metrical s should not match prosodic w' can be relaxed.

(14) In metrical poetry, metrical w cannot be projected onto prosodic s in a given prosodic domain W(ord), where W is polysyllabic,
  a unless s is adjacent to a stress peak within the same domain,
  b or within a next larger domain.

Such generalizations should not be misunderstood. What we would not want to say is that the mismatches in the line quoted in (11) are not there.[4] What we do want to say is, that on higher levels of rhythmical organization, the mismatch in *knielende* is absorbed to an extent by the peak on the phrasal head *golven*, just like the mismatch in *over* is, by a different condition, tolerable because of its position at the left edge of a phrase. This means that complexity of rhythmical organization is a function of the type and number of conditions that have to be added to the basic constraints. If we only state that a given type of mismatch between prosodic and metrical organisation is '(un)metrical in X', where X is a corpus, a tradition, or one poem, for that matter, it becomes more difficult to find a measure of complexity that can define types of metrical organisation.

Along the same lines, we can become more precise about Inversion. The basic constraint is that the projection of a foot w-s on a sequence of elements s-w is antimetrical. This effect is strong in the smaller domain of a single prosodic word, but less strong in a domain that contains two prosodic words, like the compounds *aanbrekende* and *toevloog* in line (7). Inversions of the latter type are actually quite common. But inversions of the first type are also quite frequent in Slauerhoff's poetry, and do not occur exclusively at the left edge of the line. To that extent, his poetry is more complex than metrical poetry where such inversions are rare.

3. Metrical organization and syntax

In this final section, I will try to substantiate the claim that higher levels of syntactic phrasing play a substantial role in the rhythmical organisation of Slauerhoff's poetry, and is one of the determining factors in the complexity of his verse. Consider, first, the following stanza from the poem *Hathor*.

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[4] In fact, the inversions in this line have a clear effect on the level of interpretation with which I will not be concerned here.

(15)
```
Haar zoon   de zon  draagt  zij
her son     the sun carries she

Hoog   tussen    de hoornen
high   between   the horns

Als moeders    eerstgeboornen,
like mothers   first-borns

Hinden  hun gewei.
hinds   their antlers
```

The poem is written in iambic trimeters. The last line quoted, however, has five syllabic positions and there is no straightforward match between stressed and unstressed positions and the iambic rhythm. What I claim is that the projection is as in (16):

(16)
```
                  x
     x            x
     x      x     x
0 Hinden hun gewei
w  s  w   s   w s
```

For the claim that a foot can project onto an empty position, however, one needs an argument, and in this case, the argument is in the syntax. The verb *dragen*, 'carry', in the first line, is also the (hidden) predicate of the third and the last line, and these two lines form a coordination:

(17)
```
Als    moeders eerstgeboornen   [dragen]
like   mothers first-borns      [carry]

[en]   Hinden    hun gewei      [dragen]
[and]  hinds     their antlers  [carry]
```

The syntactic parallellism of lines three and four projects an empty coordinating element, AND, at the beginning of line four, and this zero element matches with the w of the foot that projects its s onto the stressed syllable of *hinden*. The iambic rhythm and the prosody now match perfectly. Consider, next, the second line of the same stanza:

(18)
```
Hóog tùssen de hóornen
 w    s  w   s   w <s>
```

This line shows a radical mismatch in a scansion that only takes the consecutive syllables as its target. An immediate cause of this mismatching is that the line consists of six syllables of which the last one is clearly extrametrical, parallel to the last syllable in line three. A natural solution presents itself if we consider the syntactic structure of the line. *Hoog*, 'high', is an adjunct to the PP *tussen de hoornen*, 'between the horns', just like in the phrase

(19) (Het vliegtuig vloog) laag over de bomen
(the plane flew) low over the trees

For our purposes and without going into the details, the structure of the phrase can be represented as in (20):

(20) [Hoog [tussen [de hoornen]]]

with a major boundary between *hoog* and *hoornen*. This makes it plausible that *hoog* is a case of Absorption, that is, the entire first iamb is projected onto the first monosyllabic word in the line, marking the boundary between *hoog* and the following PP:

(21)
```
                  x
    x             x
    x   x         x
Hoog tussen de hoornen
  F   w  s   w   s  < >
```

That leaves *tussen* as an inversion of the familiar type, marking the left edge of the phrase. I will not go so far as to claim that the projection of the first two feet actually corresponds to an audible pause, but the interpretative effect appears to be quite similar. Consider also, from the same poem, the following lines:

(22)
```
Meedòogenloos    't   gelaát  en
  w  s w  s      0     w s    <  >
merciless        the  face    and

Afwèzig de oógen.
w  s w  s   w <s>
absent  the eyes.
```

The last line presents the same asymmetry that we saw in the earlier example: it contains six syllables and the last one is extrametrical. Consequently, the scansion is hopelessly ill-matched. Notice, however, that this line has a peculiar syntax. *Afwezig de oogen* is a syntactic inversion that is uncommon and barely grammatical in normal conversational Dutch. While (23) is an acceptable sentence, (24) is not:

(23) Marie kwam binnen, haar gezicht lijkbleek
Mary entered, her face deathly pale

(24) ?Marie kwam binnen, lijkbleek haar gezicht
Mary entered, deathly pale her face

Afwezig must therefore have been moved from its original position in a small clause [*de oogen afwezig*], and adjoined to a left-peripheral position in a higher domain. If we now assume that the second metrical foot is partly projected on that syntactic boundary itself, the metrical structure of the line can be represented as follows:

(25)
```
                x
      x         x
x     x         x
Afwezig 0 de oogen
w  s w  s  w s < >
```

There are more, but somewhat more subtle indications that syntactic phrasing is a guiding principle in Slauerhoff's versification. Consider again the line quoted above in (7), and repeated here as (26), with the syntactic phrasing indicated:

(26)
```
[Op    [de  áanbrèkende gebóort]]  [tóevlòog]]
 w      s  w    s w  s  w s          w   s
 at    the outbreaking birth       towards-flew
```

In the compound participle *aanbrekende*, one of the two unstressed syllables at the end of the word is skipped by Spreading. I will assume that, in the unmarked case, this will be the syllable that is immediately adjacent to the stressed syllable within the same (sub)domain. By force, s is projected on the next unstressed syllable, in this case the syllable *-de* that contains the inflectional ending. I will call this Rhythmical Strengthening, here marking the right edge of a word. We observe the same in the first word of the following line from *De jonken*:

(27)
```
[Tràagzéilende]  [en vèr naar vóor gebògen]
   w   s w  s     w  s   w    s    w s < >
slow-sailing     and far forward bowed
```

The effect in the latter example is that the boundary between two major prosodic domains is highlighted; notice that the distribution of metrical feet aligns with the major phrases in the proportion 2-3 that is familiar from much poetry written in iambic pentameters. A slightly more complicated but also more telling example is to be found in the following line from the poem *De ontdekkker*, 'The explorer':

(28)
```
En zònder drîft   - léeg,   over lèege zéeën.
w   s  w    s       w      s w   s  w  s < >
and without drift - empty,  over empty seas
```

In a first syllable-by-syllable scansion, the third metrical foot is projected across the boundary between *leeg* and the PP *over leege zeeën*. This in itself is not a problem, but it is certainly marked, and it results in two mismatches: projection of metrical w onto the stress peak on *leeg*, and inversion in *over*. Notice, however, that *leeg* is a single predicate, as indicated by the comma in the text, and that

there is a strong boundary between *leeg* and the following PP.If we now assume that the third foot is absorbed by *leeg*, the footing marks the syntactic boundary, and at the same time smoothes out the rhythmical structure of the line[5]:

(29)

```
                          x                 x
                  x       x         x       x
      x           x       x     x   x       x
En zonder drift - leeg,  over leege zeeën
w   s  w    s       F    w 0    s w  s < >
```

Thus, it appears that the larger prosodic units that determine the rhythmical organisation of Slauerhoff's poetry are, to a considerable extent, defined by the syntax of the lines and of the stanza in which they occur.

3. Conclusion

In the foregoing, I have chosen to discuss constraints on metrical structure in poetry by looking at some lines of verse in detail, rather than by making generalizations based on the study of a large corpus. With that restriction, two conclusions can be drawn, one more specific and one more general. To begin with the general conclusion, constraints on the mapping of metrical structure and prosodic structure are relative rather than absolute, and can therefore be profitably formulated in a way that makes it possible to parameterize them. In doing so, natural classes of relevant generalizations should be kept apart. Second, an investigation of the prosody-meter interface must take into consideration larger domains than the syllable or the word. Whether these larger units are primarily prosodic or syntactic is a matter of debate, but there can be no doubt that there exists one type of poetry where the mapping of metrical structure and prosodic structure is determined by syntactic categories - to a considerable and interesting degree. This insight may not only lead to a typology of versification and metrical complexity, but it may also contribute to the discussion about what determines prosodic phrasing in general.

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[5] So far, the cases of Absorption that I found involve monosyllabic words that are bi-moraic; it would be interesting to see whether this constraint holds for the entire corpus.

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