Incongruent enjambments: the case of classical French verse[1]

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ABSTRACT

In versified texts congruence is one facet of the concordance between the edges of metrical constituents and those of grammatical constituents. Congruence may be characterized roughly as the requirement that no element within a syntactic constituent be in a stronger metrical position than the final element in that constituent. If break strength is defined in terms applicable to any constituent structure tree, syntactic as well as metrical, incongruences are discrepancies between the relative strengths of two breaks in metrical structure and the relative strengths of their counterparts in syntactic structure. Although our primary source of data is classical French verse, the characterization of congruence we present is a rather abstract one that does not make reference to features that are specific to French poetic forms or to the grammatical structure of the French language. This should make this characterization applicable in other poetic traditions.

KEYWORDS: metrical form, enjambment, constituency matching, ease of processing, locality.

1. PRELIMINARIES

Dell and Benini's 2020 book entitled *La Concordance chez Racine* (henceforth CCR) presents a general account of the metrics of alexandrine couplets in Jean Racine's plays. The book's central topic is constituency matching, that is, the conditions that govern the location of metrical boundaries relative to the edges of grammatical constituents. This article deals with those aspects of constituency matching that the authors of CCR call congruence. We propose a new account of congruence that is more empirically adequate and conceptually more satisfactory.

This article is organized as follows. Section 2 presents a preliminary characterization of congruence together with examples that illustrate it. Section 3 adduces facts, some of them already noted by the authors of CCR, that do not square with that characterization. Section 4 proposes a unified conception of the strength of breaks in trees that represent constituent structure. This conception allows us to interpret incongruence as a discrepancy between the relative strengths of breaks in metrical structure and syntactic structure. Section 5 argues that the only strength discrepancies which are relevant to congruence are those that are local, where locality is defined as a containment relationship between metrical constituents. Section 6 concludes by reviewing various outstanding issues of a general nature.

Let us first situate our discussion of congruence in the general scheme of things. Our approach to metrics is the same as that in CCR. It belongs to the line of thought illustrated by Kiparsky 1977, Hayes 1989, Blumenfeld 2015.[2] Metered verse is a mapping between a linguistic object and a metrical pattern. The linguistic object is a text, a sequence of sentences. In the simplest case, where lines are all of the same meter, the metrical pattern is made up of repetitions of a template for the meter in question. The template for the French alexandrine is depicted in [1].

[1] $(\ (x\ x\ x\ x\ x\ x)_H\ \ (x\ x\ x\ x\ x\ x)_H\ )_L$

An alexandrine line is a sequence of two hemistichs and a hemistich is a sequence of six metrical positions. In the discussion below, hemistichs are the smallest metrical groupings.[3] Setting aside line-final feminine schwas, which are extrametrical, the vowels of the text are matched one-to-one with the metrical positions. [2] depicts such a correspondence (Baudelaire[4])).

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[1] We wish to single out for special thanks Jonah Katz, whose penetrating discussion of an earlier draft led to a radical reorganization of our text. Our warm gratitude also goes to Nigel Fabb, John Goldsmith, Giorgio Magri, Marc Plénat, and Donca Steriade, whose comments led to important improvements.

[2] For the study of French verse we owe a special debt to Cornulier 1982, 1995, 2000 and Verluyten 1981, 1982, 1989.

[3] There is no generally accepted analysis of hemistichs into feet. For proposals about foot structure in alexandrine verse, v. for instance Porohovshikov 1932, Dinu 1993, Fabb and Halle 2008: 133 sqq.

[4] For references to the examples cited, see Appendix III.

[2]
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          tes nobles jambes, sous les volants qu'elles chassent
           e   ɔ  ə   ã  ə    u    e  ɔ ã      ɛ  ə    a  ə
           |   |  |   |  |    |    |  | |      |  |    |
       ( ( x   x  x   x  x    x)H (x  x x      x  x    x )H )L
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An alexandrine is well-formed only if the right edges of its two hemistichs meet certain conditions that are dealt with in detail in CCR. Some of these conditions have to do with prominence (stress placement), while others pertain to constituency matching. The conditions on stress placement prohibit stress mismatches involving metrical positions which are hemistich-final; they will not be discussed here (see chapter 4 in CCR).

The conditions on constituency matching reflect a universal tendency for metrical structure to carve grammatical structure at its joints, as it were. The strength of metrical boundaries must match to some extent the strength of the grammatical boundaries with which they coincide. This constituency matching is a matter of degree. As noted in CCR, it varies across periods, genres and poets, and it was most strictly enforced in the works of 17th century authors. As the grammatical properties of a sentence are represented by two constituent structure trees, Syntactic Structure and Prosodic Structure, there are two kinds of grammatical boundaries to consider, syntactic and prosodic. We follow CCR in assuming that in French the constituents of Prosodic Structure form a hierarchy with the following categories, from the smallest to the largest: Syllable, Word, Clitic Group, Phonological Phrase, Intonational Phrase.[5]

We adopt here CCR's proposal to distinguish two facets of constituency matching: cohesiveness and congruence. While cohesiveness imposes a minimal strength to grammatical breaks at metrical boundaries, congruence regulates the span of grammatical constituents that straddle metrical boundaries.

Before we move on to congruence, which is the subject of this article, let us say a few words about cohesiveness. Cohesiveness avoids metrical boundaries that fall inside tightly-knit word sequences. In 17th century verse it is exceedingly rare for the end of a hemistich to fall inside a Clitic Group, as is the case in [2], in which the end of the first hemistich is straddled by the Clitic Group *sous les volants*.

According to CCR, all the information that is relevant for characterizing caesura cohesiveness is contained in Prosodic Structure. In Racine's plays, except for a few dubious cases,[6] a Phonological Phrase is never broken up by a caesura.[7]

An abbreviated notation for the situation in [2] is [3], where the caesura is marked by a vertical bar:

[3] Tes nobles jambes, sous | les volants qu'elles chassent,

The term 'caesura' traditionally designates the boundary between two hemistichs that belong to the same line of verse. In this paper it refers to the rightmost metrical position in the first hemistich. More generally, in this paper every METRICAL BOUNDARY is equated with the last metrical position of a metrical unit (hemistich, line, distich). By a line end we mean the last metrical position in a line: in the example above, the end of the line is its rightmost metrical position, i.e. the position associated with the vowel /a/ in *chassent*, as shown in [2].[8] In [3] the vertical bar after *sous* is a typographically convenient way of representing the fact that the vowel of *sous* is associated with the rightmost metrical position of the first hemistich. Once this is understood, there is no harm in saying that in [3] the word *sous* is 'before' the caesura, while saying at the same time that its vowel is associated with the caesura.

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[5] On Prosodic Structure, v. e.g. Selkirk 1984, Hayes 1989. For French, we adopt the definitions of Clitic Group, Phonological Phrase, and Intonational Phrase, presented in CCR on pages 56, 77, and 34.

[6] V. CCR 83.

[7] The regularities for cohesiveness at the end of lines in Racine's plays have yet to be fully worked out. In any case the facts presented in CCR 66-76 show that the grammatical information that is relevant for cohesiveness at the end of lines is not confined to Prosodic Structure. Syntactic and semantic properties are also at play.

[8] In [2] the schwa of *chassent* is not associated with a metrical position because in French verse a schwa is extrametrical if it is the rightmost vowel in a line-final polysyllabic word.

2. Congruence, a first stab

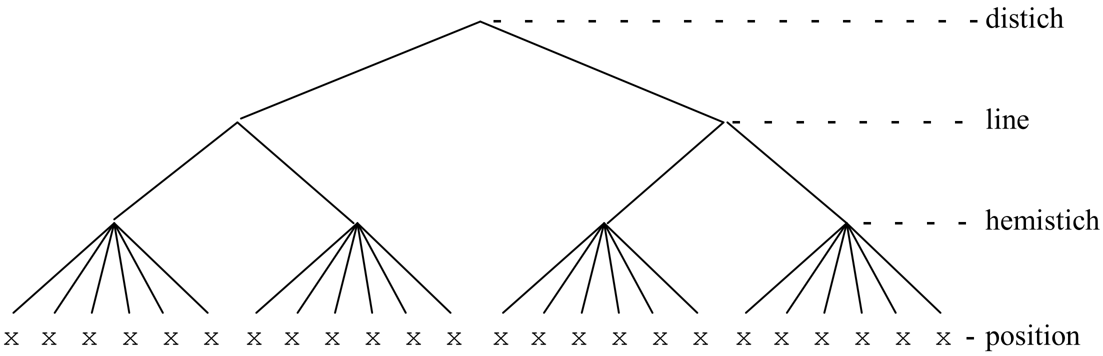
We now turn to congruence, the second term of the cohesiveness/congruence dichotomy inaugurated in CCR.[9] In discussions of cohesiveness, what is at issue is whether a grammatical constituent is allowed to span a metrical boundary. In discussions of congruence, by contrast, what is at issue is when a grammatical constituent does span a metrical boundary, how the rest of the constituent behaves with respect to other metrical boundaries. Consider the alexandrine in [4], whose text is a sentence in which we have italicized a relative clause that straddles the caesura:

[4] Or celui *pour lequel | je parle* est affamé. Racine

We say that in [4] the whole sentence is congruent with respect to the caesura, while the relative clause is not. Congruence is a relation between a metrical boundary and a syntactic constituent that straddles it. It depends on the metrical strength of the boundary relative to the metrical strength of the end of the syntactic constituent. In [4] the sentence ends with the line, and a line end is a stronger metrical position than a caesura. By contrast, the end of the italicized sequence is located inside a hemistich, and a metrical position located inside a hemistich is weaker than the caesura. If we use the term 'enjambment' to refer to any situation in which a grammatical constituent spans a metrical boundary, our purpose is to investigate why some types of enjambment are more common than others, with reference to metrical material outside the site of enjambment itself.

Let us explain what we mean when we say that one metrical position is stronger than another. The lines of a 17th century play are grouped into distichs (rhyming pairs). The tree in [5] represents the metrical structure of a distich.

[5]



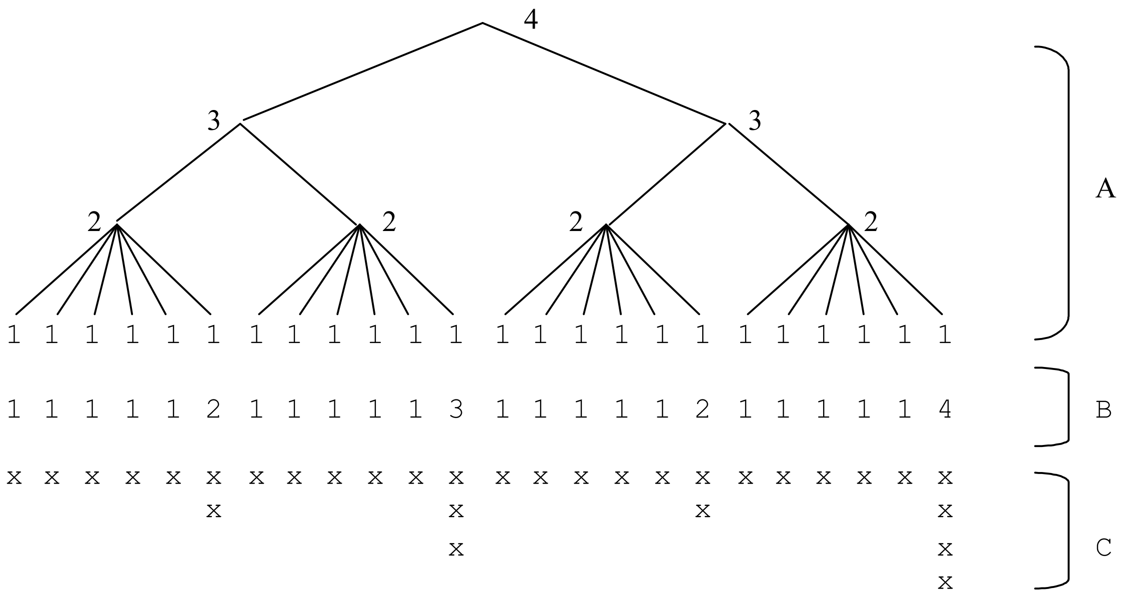
The distichs of a play are not grouped into larger metrical units. Consequently the metrical units of a play form the following hierarchy:

[6] Metrical hierarchy: Position, Hemistich, Line, Distich, Poem.

The metrical strengths mentioned in the text below [4] stem from the metrical hierarchy: the larger a metrical unit, the stronger its last position. Let us assign numbers to the nodes in the tree in [5], assigning 1 to the terminal nodes and adding 1 every time we move up to the next level. The result is represented in [7A]. When a position is hemistich-final, we define its strength as the number assigned to the largest metrical unit in which the position is rightmost. Positions that are not hemistich-final are of strength 1. Each number in [7B] is the strength of the position lined up with it in [7A]. Metrical strength can be represented by column height in a metrical grid, as shown in [7C].[10]

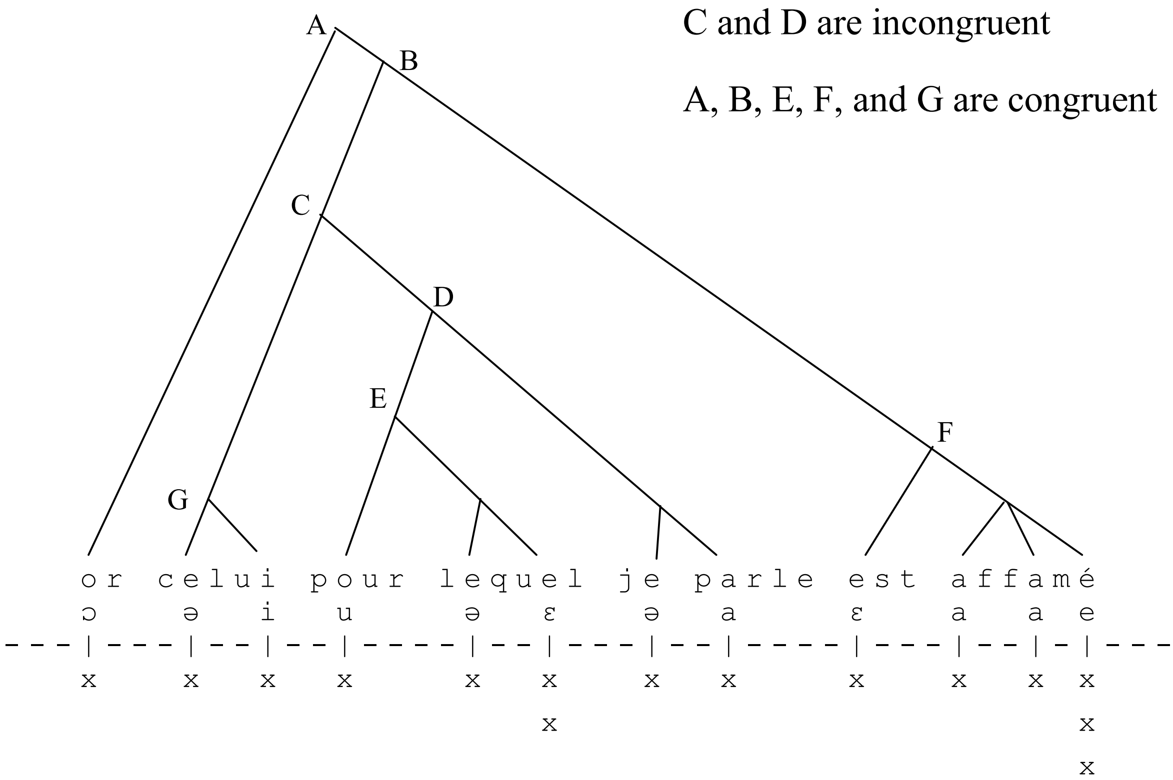
[9] The notion of congruence harks back to rules laid down by 17th century theorists, see CCR 21.
[10] On metrical grids, v. Liberman and Prince 1977.

[7]



We can now examine example [4] in greater detail. The mappings between its syntactic structure and its metrical structure is depicted in [8].

[8]



The diagram in [8] is divided into two halves by a dashed line. The upper half represents syntactic structure and the lower half, metrical strength. The correspondence between the two halves is mediated by the one-to-one mapping of vowels and metrical positions. It simplifies the exposition to treat vowels as the terminal nodes of syntactic structure, a word of *n* syllables being represented as a sequence of *n* terminal nodes (*n* vowels) dominated by a single node. The caesura is the metrical position associated with the vowel /ɛ/ in *lequel*. Congruence requires, as a first approximation, that no element within a syntactic constituent be in a stronger metrical position than the final element in that constituent.

Constituents C and D are incongruent: both contain the vowel /ɛ/, their rightmost vowel is /a/ in *parle*,[11] and the metrical position paired with /ɛ/ is stronger than that paired with /a/. We will say that in [8] constituents C and D are incongruent over the caesura, or that the caesura is incongruent in C and D. The other constituents in [8] are all congruent: none straddles a metrical position that is stronger than that associated with its rightmost vowel.

Here are other lines in which caesuras are incongruent. Following the convention adopted in [4], the syntactic constituent italicized in each example is one responsible for the incongruence of the caesura.

[9]	a	Le destin charmé *suit* | *tes jupons* comme un chien	Baudelaire
	b	Rappelez-vous l'*objet* | *que nous vîmes*, mon âme,	Baudelaire
	c	Le vallon où je *vais* | *tous les jours* est charmant	Hugo
	d	Que vouliez-vous qu'il *fît* | *contre trois* ? — Qu'il mourût,	Corneille
	e	Ce souffle *étrangement* | *parfumé*, d'où vient-il ?	Heredia

Congruence is the normal state of affairs in French verse. In a poem, incongruent metrical boundaries are always a minority. Instead of defining congruence, however, we will provide a definition that covers those situations in which congruence is flouted. This will make the discussion easier to follow later when we move on to a more accurate characterization of congruence. The definition that we take as our starting point is a generalized version of that proposed in CCR:[12]

[10] Incongruence: Let *b* be a metrical boundary, B* a syntactic constituent straddling *b*, and *f* the metrical position associated with the rightmost vowel in B*. *b* is incongruent in B* (or equivalently, B* is incongruent over *b*) if

b is stronger than *f*.

We say that a constituent straddles a boundary if it contains the vowel paired with that boundary and also the vowel paired with the next metrical position. A metrical boundary that coincides with the end of a sentence is not straddled by any syntactic constituent. As it does not meet the conditions of definition [10], it is congruent.

To illustrate definition [10], consider the following lines. The caesura is congruent in the first line, incongruent in the second.

[11] a À disputer des <u>prix | indignes de ses mains</u> CONGRUENT Racine

[[N] [A PP] $_{NP}$]

b Derrière la <u>*muraille* | *immense* du brouillard</u> INCONGRUENT Baudelaire

[[N A] [PP] $_{NP}$]

In both lines the underlined sequences are NPs.[13] These NPs are made up of a noun and an attributive adjective followed by a PP, but their constituent structures differ. In [11a] the PP is a complement of the adjective, and consequently the smallest constituent that straddles the caesura is the underlined NP taken as a whole. In [11b], on the other hand, the PP is a complement of the noun, and we have a small NP *muraille immense* nested in a larger one. While lines like [11b] are rather commonplace in 19th century verse, not a single instance is to be found in Racine's plays.[14]

[11] The final schwa in *parle* is elided before the following vowel.

[12] The definition in CCR only took into account the boundary's minimal hinge in syntactic structure. Minimal hinges will be introduced in section 4.

[13] We use the following abbreviations: A = Adjective, Adv = Adverb, N = Noun, P = Preposition. XP is a phrase the head of which is of category X.

[14] Lines like [11b] are prohibited by CONGR, on which v. below.

According to definition [10], incongruence is a relation between a metrical boundary and a syntactic constituent : while the caesura in [11b] is incongruent in the constituent *muraille immense*, it is congruent in the constituent *muraille immense du brouillard*. When we say that a metrical boundary is incongruent *tout court*, as we did in our comments about the caesura in [8], [9] and [11], we mean that there exists some syntactic constituent in which the boundary is incongruent. As will become apparent later, there is no need to check for congruence every constituent that straddles a boundary. In most cases one only needs to check the smallest one.

We have exemplified (in)congruence in the case of caesuras. Let us now exemplify it in the case of line ends. Compare the following distichs.

[12]	Pleurez l'autre, pleurez l'*irréparable affront*	Corneille
	Que sa fuite honteuse imprime à notre front.	
[13]	La douleur est injuste, et toutes les *raisons*	Racine
	Qui ne la flattent point | aigrissent ses soupçons.	

In [12] the end of the first line is congruent because the only syntactic constituent that straddles it is the italicized NP, the end of which coincides with that of the distich, and the end of a distich is metrically stronger than a line end that is not distich-final. In [13], on the other hand, the end of the first line is incongruent. It is straddled by an NP the end of which coincides with the caesura of the next line, and line boundaries are metrically stronger than caesuras. Here are other distichs in which the end of the first line is incongruent.

[14]	Il m'est plus étranger, frères, que la *lumière*	Hugo
	Du soleil à l'enfant | dans le sein de sa mère !	
[15]	*Pour prix d'une victoire où je perds ce que j'aime,*	Corneille
	Je lui laisse mon bien ; | qu'il me laisse à moi-même.	
[16]	Non, je la crois, Narcisse, | *ingrate, criminelle,*	Racine
	Digne de mon courroux. | Mais je sens malgré moi	

Moving up the metrical hierarchy, here is an example in which the end of a distich is incongruent.

[17]	a	Hélas ! *Lorsque lassés de dix ans de misère,*	Racine
	b	*Les Troyens en courroux menaçaient votre mère,*	
	c	*J'ai su de mon Hector lui procurer l'appui ;*	
	d	Vous pouvez sur Pyrrhus ce que j'ai pu sur lui.	

[17] is a sequence of two distichs. The end of line [17b] is the boundary between the two distichs. The constituent straddling it is the sentence in italics, whose end coincides with that of line [17c]. The end of line [17b], a distich end, is metrically stronger than that of line [17c], which is not the end of a distich.

As one of the determinants of constituency matching, congruence is a feature that is characteristic of the style of a poet, a genre or a period. The stricter congruence is, the more limited the set of texts that can be squeezed into a given metrical form. Congruence was most rigorously enforced in the elevated poetry composed in the 17th century (tragedies, epics, odes, religious poems). We chose to work on 17th century tragedies because we assumed that their strong congruence would increase our chances of spotting regularities that would be exceptionless or nearly so. The corpus discussed in CCR is the plays by Racine, eleven tragedies and one comedy totalling 18,507 alexandrines. We present the figures in table [18] to give readers a general idea of the frequency of incongruences in Racine's plays.

[18]		I caesura	II end of a distich-initial line	III end of a distich
A	metrical boundaries	18,507	9,102	9,090
B	incongruent metrical boundaries	513 2.7%	221 2.4%	409 4.4%

The left-to-right order of the columns in table [18] is by order of increasing metrical strength. Row A counts the occurrences of a given boundary type in the corpus. Row B counts those occurrences that are incongruent. The first column indicates that the corpus contains 18,507 caesuras (one for each alexandrine), 513 of which are incongruent, a 2.7% ratio.[15]

Besides the frequency of incongruences, their nature is another feature that distinguishes one poetic style from another. Some types of incongruence which are rarely found in 17th century poetry became rather commonplace in the production of 19th century poets such as Hugo or Baudelaire. The incongruences in Racine's plays almost never violate condition CongR, which will be presented in section 6.2. This suggests that such incongruences are of a rather severe kind.

3. Genuine incongruences vs. parasitic ones

Definition [10] is not restrictive enough in its characterization of incongruences. Consider the following distich, in which the two metrical boundaries in the first line are incongruent according to the definition.

[19] a Et maintenant, *que fait* | *<u>le secret comité</u>* Hugo
b *<u>Du Parlement</u>*, touchant | le projet présenté?

The italicized sequence is a syntactic constituent that straddles the caesura and the end of the first line; the part of that sequence which is underlined is a syntactic constituent straddling the end of the line. Both constituents end at the same point inside the first hemistich of the second line.[16] Definition [10] says that the caesura in the first line is incongruent, but in fact the incongruence is only an apparent one. It is a side-effect of the incongruence at the end of the line. This is shown by the fact that the caesura ceases to be incongruent if one removes the incongruence at the end of the line, as we've done in the following construct, in which the first line is end-stopped:

[20] a Et maintenant, *que fait* | *le secret comité?* construct; after [19]
b Il n'a rien fait, touchant le projet présenté.

[15] The incongruences counted in the table are listed in CCR 181-193. Certain plays contain passages that are not sequences of alexandrines. This is the reason why the number in cell A-I is not an even number. Lines not contained in a pair of rhyming alexandrines are not counted in columns II and III, which explains why A-I is larger than the sum of A-II and A-III. Furthermore, as the end of the last distich in a play is necessarily congruent, the final distichs of the twelve plays in the corpus were not counted in column III, which explains why the difference between the figures in cells A-II and A-III is 12.

[16] This is an abbreviation for "Both constituents end with the same vowel, which is mapped to a metrical position located inside the first hemistich of the second line." From now on we will often allow ourselves such abbreviations.

The end of [20a] is congruent because it is not straddled by any syntactic constituent. The caesura is also congruent, because the end of the syntactic constituent that straddles it coincides with a line end, and line ends are stronger metrical boundaries than caesuras.

In order to exclude boundaries like the caesura of [19a] from the purview of definition [10], we could include in the definition the additional requirement that *b* be the rightmost boundary straddled by B*. This will not do, however, because of cases like the following.

[21]	a	Le singe avait raison. *Ce n'est pas sur l'habit*	La Fontaine
	b	*Que <u>la diversité | me plaît</u>;* c'est sur l'esprit.	

The italicized sequence is a syntactic constituent that straddles the end of the first line; the part of this sequence which is underlined is a constituent straddling the caesura in the second line. Both constituents end at the same point inside the second hemistich of the second line. In contrast to the situation in [19], the incongruence of the earlier boundary (the line end) does not disappear when one removes the incongruence of the later boundary (the caesura). This can be seen from the following construct.

[22]	a	Le singe avait raison. *Ce n'est pas sur l'habit*	construct; after [21]
	b	*Que diversité plaît*; | elle plaît dans l'esprit.	

The caesura in the second line of [22] is congruent (it is not straddled by any syntactic constituent), and yet the end of the first line is still incongruent.

What examples [19] and [21] have in common is a configuration in which two metrical boundaries meet the conditions of definition [10] and one boundary is contained in a syntactic constituent that straddles the other. In [21] the later boundary is stronger than the earlier one, and each boundary is incongruent in its own right. In [19], by contrast, the later boundary is stronger than the earlier one, and one boundary's (in)congruence is contingent on that of the other.

While Racine's plays contain a number of instances like [19], in which the incongruence of one boundary is parasitic on that of the other,[17] we know of only two instances in which either boundary is incongruent in its own right, as is the case in [21].[18]

What is at issue here is the notion of metrical strength embodied in diagram [7]. This notion is not a local one, in the sense that it allows us to compare the strengths of any two metrical positions in a poem regardless of the distance between them, e.g. any line end is deemed metrically stronger than any caesura in the same poem no matter how many intervening lines there are between them. By contrast, the notion of metrical strength we will adopt is a local one. It will allow us to compare the strengths of two positions only if they are contained in metrical constituents that are in a domination relationship.

4. A LOCAL NOTION OF STRENGTH

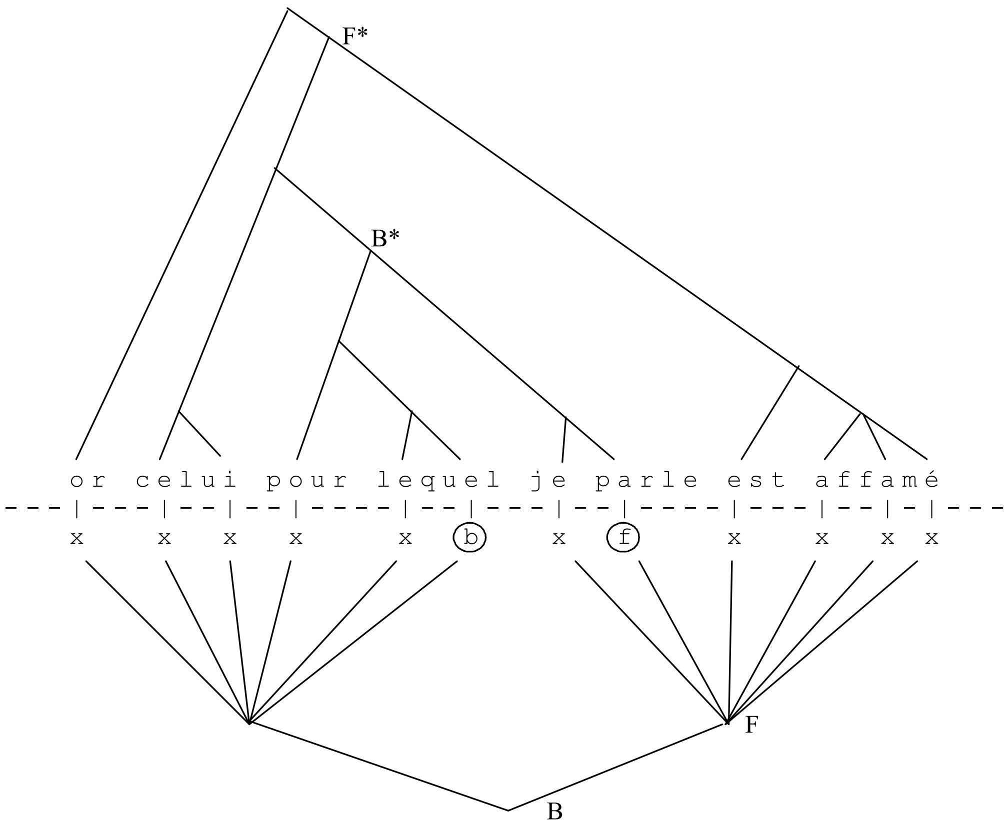
The definition of incongruence presented in [10] is rather opaque, in that it does not reveal what we think is the gist of congruence: congruence is an aspect of the need for a minimum of agreement between two trees whose terminal nodes are in a one-to-one correspondence. Incongruence is *a discrepancy between the relative strengths of two breaks in metrical structure and the relative strengths of their syntactic counterparts*.

Let us return to example [4]. While diagram [8] showed how its syntactic structure is mapped to a metrical grid derived from metrical strucure, [23] shows how it is mapped to the metrical structure itself.

[17] Here is a list of those that can be found among the cases of incongruence listed in CCR 208-211: *Plaideurs* 187, 313, 791, 780, 343, 32, 148, 402, 454, 736, 786; *Alexandre* 317, 299; *Bajazet* 657, 731; *Bérénice* 615, 836.

[18] One instance is [31] below. The other occurs in lines 451 and 452 in *Britannicus*, a distich in which both line ends (rhymes *diadème*, *même*) are incongruent.

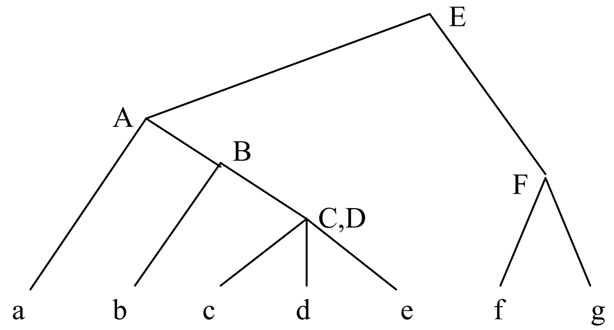
[23]



In [23] the caesura *b* is incongruent in the syntactic constituent B*, whose rightmost vowel occupies position *f*. The diagram shows that while in metrical structure the break after *b* is stronger than that after *f*, in syntactic structure the break after *b*'s counterpart (the last vowel in *lequel*) is weaker than that after *f*'s counterpart (/a/ in *parle*). In order to make this idea more precise we must be able to characterize in a unified fashion the relative strength of breaks between syntactic constituents and the relative strength of breaks between metrical units. To do this we must give up the idea of representing break strengths by columns in a grid, because grids do not convey constituency. Let us first introduce a definition that will allow us greater brevity.

A break in the terminal sequence of a tree can be represented as pair of adjacent terminal nodes. Let us define the MINIMAL HINGE of a terminal node as the smallest constituent that contains that node and the terminal node that immediately follows it. This definition is applicable to any tree, metrical or syntactic. Every terminal node in a tree except the last has a corresponding nonterminal node that is its minimal hinge (henceforth 'MH'), as illustrated in diagram [24].

[24]



In [24] terminal nodes are labeled with lowercase letters and their minimal hinges are labeled with corresponding capitals. Node B, for instance, exhaustively dominates the sequence *bcde*, which is the smallest constituent that contains *b* and *c*; in other words B is *b*'s MH. Node E, which is the smallest constituent that contains *e* and *f*, is *e*'s MH. The rightmost node in [24] does not have an MH because it is not followed by any terminal node. Two terminal nodes can have the same MH, as is the case for *c* and *d*, which are immediately dominated by the node labeled C,D.

A nonterminal node N in a tree is the MH of some terminal node *n*, and we take the location of N in the tree to be representative of the strength of the break between *n* and the terminal node that immediately follows *n*. The higher N in the tree, the stronger the break between *n* and the following terminal node. Here is our generalized definition of strength relationships.

[25] Stronger-than: Let *a* and *b* be terminal nodes (their left-right order is indifferent). *a* is stronger than *b* iff *a*'s MH dominates *b*'s MH.

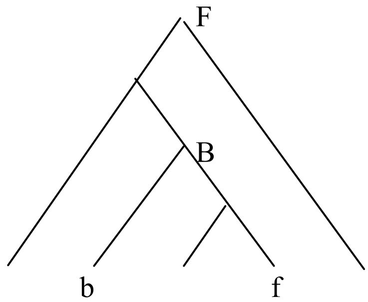
In diagram [24], according to the definition, the break between *b* and *c* is weaker than that between *e* and *f* because B, which is *b*'s MH, is dominated by E, which is *e*'s MH. In contrast, consider the break between *b* and *c* and that between *f* and *g*, whose respective MHs are B and F. Definition [25] does not say which break is stronger, because neither MH dominates the other.

We can now get to the gist of the definition of incongruence presented in [10]. The following proposition is true of any tree:

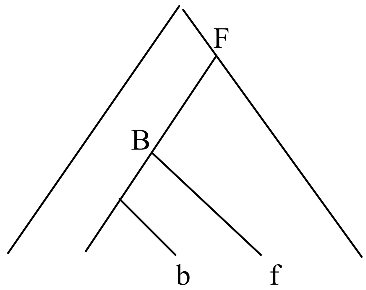
[26] Let *b* and *f* be terminal nodes. If *f* is the rightmost node in a constituent that straddles *b*, *f* is stronger than *b*.

Let B and F be the respective MHs of *b* and *f*. If *f* is the rightmost node in a constituent that straddles *b*, F dominates B. [26] is illustrated by particular cases represented in the diagrams in [27].

[27] (a)



(b)



As a consequence of [26] the break at the end of a constituent is stronger than any break inside that constituent. This is true of all trees, metrical or syntactic. Consider again the break at the end of the constituent *pour lequel je parle* in the syntactic tree in [23]. That break is stronger than those after the other words in the constituent. It is stronger, in particular, than that after *lequel,* the syntactic break at the caesura.

[26] explains a puzzling feature of the definition of incongruence presented in [10], which we repeat here for the readers' convenience:

[10] Incongruence: Let *b* be a metrical boundary, B* a syntactic constituent straddling *b*, and *f* the metrical position associated with the rightmost vowel in B*. *b* is incongruent in B* (or equivalently, B* is incongruent over *b*) if

b is stronger than *f*.

At the beginning of this section we stated that incongruence amounts to a discrepancy between the relative strengths of two breaks in metrical structure and the relative strengths of their syntactic counterparts. If this is indeed the case, one may wonder why [10] refers to strength relationships in metrical trees, but makes no mention of strength relationships in syntactic trees. Besides the condition "*b* is stronger than *f*", should [10] not include another that would require that the syntactic counterpart of *f* be stronger than that of *b*? Such a condition is superfluous, for it is met in any case: it follows from the fact that proposition [26] is necessarily true of the syntactic counterparts of nodes *b* and *f*, given how these nodes are defined in [10].

5. DOING AWAY WITH PARASITIC INCONGRUENCES

We are now ready to deal with the difference between examples [19] and [21]. Rather than a new notion of incongruence, what the discussion in the preceding section has introduced is definition [25], a definition of strength that is applicable in any tree. Strictly speaking, there is no reason to change our notion of incongruence as defined in [10]. All that readers would have to do from now on every time they encounter an occurrence of the term 'incongruence', is plug our new definition of strength into definition [10]. What we shall do instead is to incorporate the new definition of strength into the definition of incongruence. This redundancy should help readers keep track of the relevant notions. The resulting definition reads as follows:

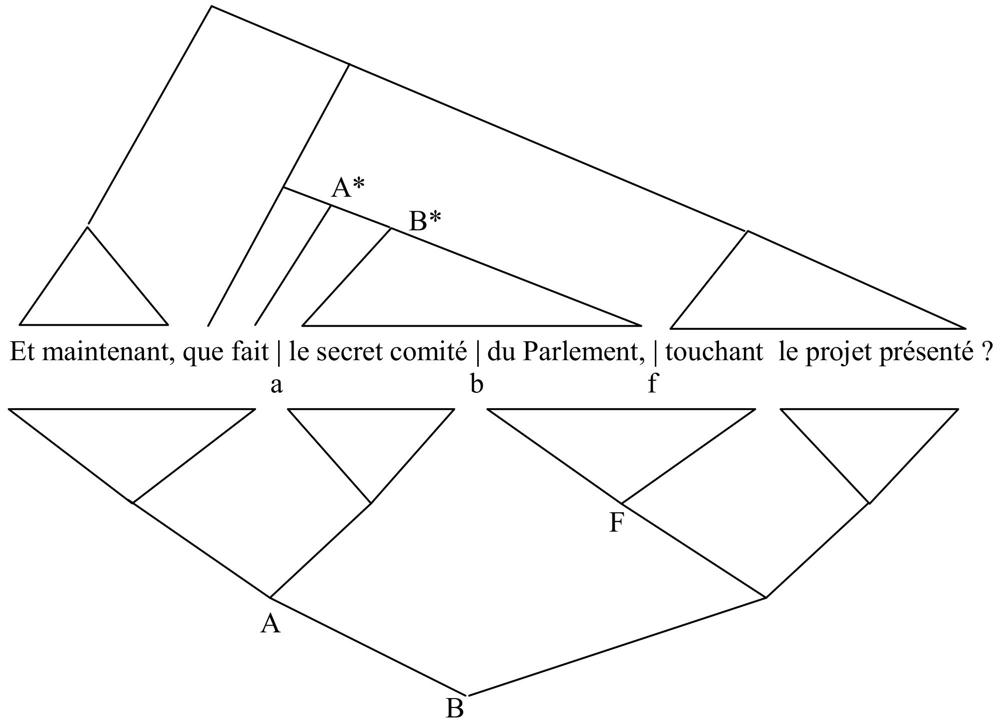
[28] Incongruence: Let *b* be a metrical boundary, B* a syntactic constituent straddling *b*, and *f* the metrical position associated with the rightmost vowel in B*. *b* is incongruent in B* (or equivalently, B* is incongruent over *b*) if
b's metrical MH dominates *f*'s metrical MH.[19]

Before we see how this definition applies in distichs [19] and [21], let us apply it to diagram [23]. The metrical MH of the caesura is B and the metrical MH of the end of B* is F. B dominates F, which makes the caesura incongruent in the phrase *pour lequel je parle*.

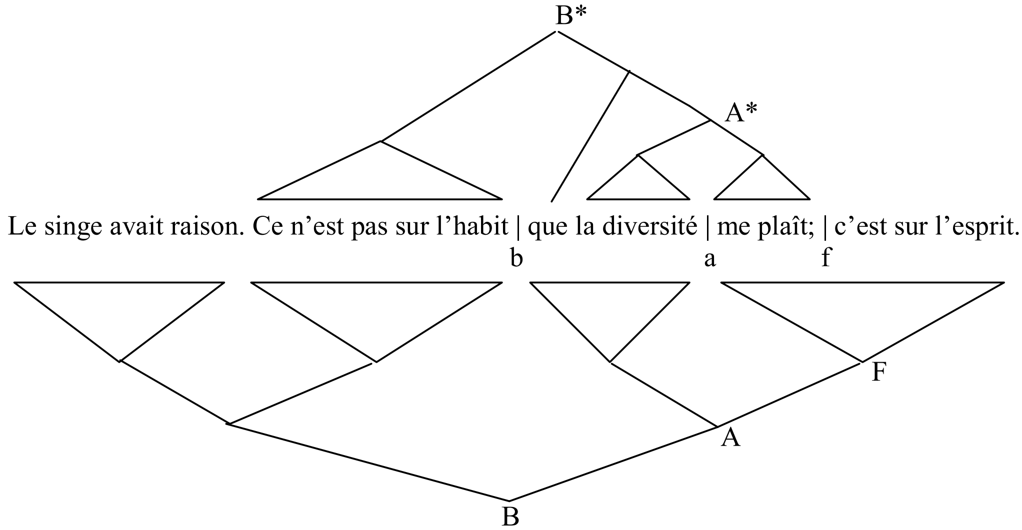
The scansions of [19] and [21] are represented in [29] and [30].

[19] As *b* and *f* both belong to metrical structure, their minimal hinges also belong to metrical structure, given our definition of minimal hinges. In the final clause of [28] the redundant occurrences of *metrical* were added as aids to the readers.

[29]



[30]



In [29], line end *b* meets definition [28], while caesura *a* does not.[20] *b* is straddled by constituent B* and *f* is the metrical counterpart of the last vowel in B*. B, which is *b*'s MH, dominates F, which is *f*'s MH. Consider now caesura *a*. It is straddled by constituent A* and *f* is the metrical position paired with the last vowel in A*. But A, which is *a*'s MH, does not dominate F, which is *f*'s MH, and so *a* does not meet definition [28].

In diagram [30] boundaries *a* and *b* both meet definition [28]. Node B, which is the MH of line end *b*, dominates node F, which is the metrical MH of the end of B*. Node A, which is the MH of caesura *a*,

[20] As explained in section 1 when we first mentioned caesuras, a vertical bar stands for the rightmost metrical position to its left. In [29] and the diagrams below, the vertical bars are positioned inside the text, while in fact they represent features of metrical structure. In [29] the bar labeled *b* stands for the last metrical position in line A, a position mapped to /ɛ/, the last vowel in *secret*. It is for the sake of conspicuousness that the bar and its label stand above the space between the two inverted triangles that represent hemistichs. Strictly speaking they should stand above the right vertex of the triangle on the left.

dominates node F, which is also the metrical MH of the end of A*, as the ends of A* and B* coincide. Thus *a* and *b* are both incongruent according to definition [28].

[29] and [30] are configurations in which two boundaries were incongruent under our earlier, nonlocal, definition of metrical strength (v. [7]), but according to the generalized notion of strength incorporated into definition [28], [29] contains only one incongruent boundary. Incongruences like those in [30] are very rare in Racine's plays, while incongruences like those in [29], far less so. Under our local definition of strength, this fact is rather to be expected: according to this definition configurations like [29] are ordinary occurrences of a single incongruence, but configurations like [30] have an added complexity: they involve one incongruent boundary occurring inside a syntactic constituent that straddles another boundary which is also incongruent.

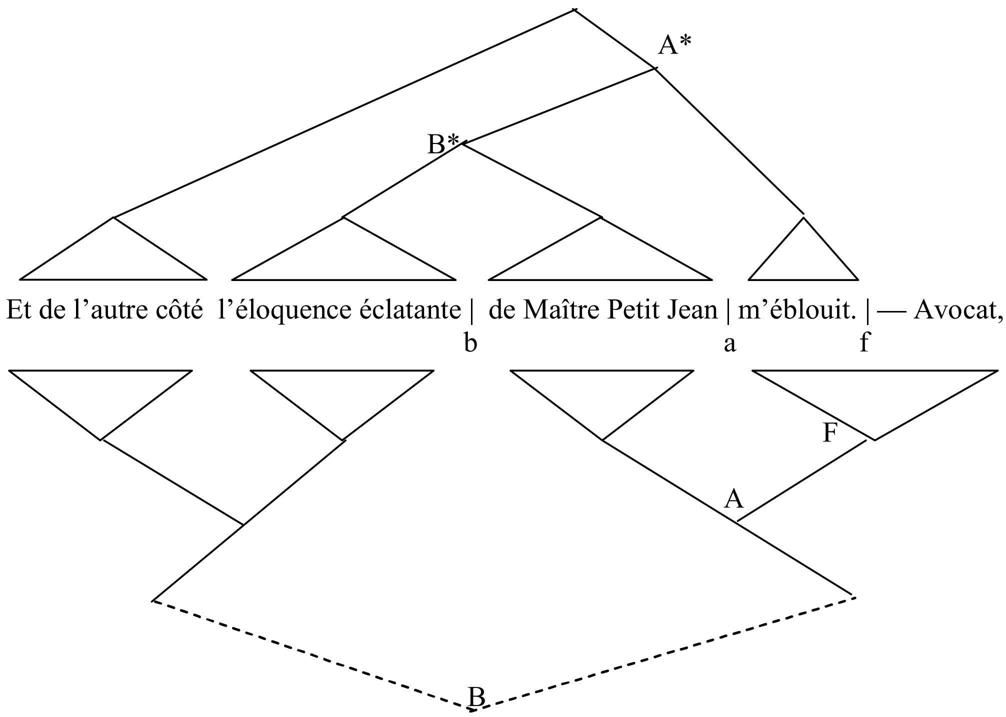
In [30] the same syntactic constituent B* is incongruent over two different metrical boundaries *b* and *a*. There are also configurations in which a single metrical boundary is incongruent in two different syntactic constituents. These also seem to be rare. We have found only one instance in Racine's plays. It occurs in the comedy *Les Plaideurs*:[21]

[31] a Et de l'autre côté *l'éloquence éclatante* Racine

b *De Maître Petit Jean | m'éblouit.* — Avocat,

The end of line [31a] is incongruent in two constituents, the underlined NP and the italicized clause. The scansion of [31] is represented in [32].

[32]



In [32], line end *b*, which is incongruent in constituent B*, is also incongruent in constituent A*. As *b*, the end of the first line, is a distich boundary, B, its metrical MH, is the node Poem (see [6]). The solid lines in the lower half of the diagram represent portions of two abutting distichs. *b* is incongruent in B*,

[21] Another instance that we know of occurs at the end of line 1380 in Corneille's *Mélite*, also a comedy:

Monsieur, il est trop vrai, *le moment déplorable / Qu'elle a su son trépas a terminé ses jours*.

The line end is incongruent in the underlined NP. As that line end is a distich end, it is also incongruent in the italicized clause.

the end of which coincides with caesura *a*, as B dominates A, which is *a*'s metrical MH. *b* is also incongruent in A*, as B dominates F, which is the MH of *f*, the metrical counterpart of the end of A*.[22]

Our goal is to compare the frequency of various kinds of incongruences across periods, poetic genres, etc. Complex cases like [32], in which the same boundary is incongruent with respect to different syntactic constituents, show that in a tally of incongruences it is not enough to count those boundaries that are incongruent; one must also take into account the syntactic constituents involved. A poem contains as many instances of incongruence as there are pairs (*b*, B*) that meet definition [28]. As any syntactic constituent that straddles a metrical boundary can be a source of incongruence, it would seem that in order to identify all the incongruences in a poem, one would have to check for congruence every syntactic constituent in the poem that straddles a metrical boundary. Fortunately, in most cases the constituents that it is sufficient to check for congruence are those that are a metrical boundary's *syntactic* minimal hinge. This follows from two generalizations. The first generalization concerns metrical boundaries that are congruent in the smallest syntactic constituent that straddles them:

[33] Generalization 1: Let *b* be a metrical boundary and B* a syntactic constituent straddling *b*. If *b* is congruent in B* it is also congruent in any constituent that contains B*.

This proposition is justified in Appendix I. To illustrate its consequences, suppose that we want to determine whether the caesura is congruent in the third line of the following example, in which a single sentence is coextensive with a sequence of four distichs.

[34] a [$_{6}$ Pour toute ambition, pour vertu singulière, Racine
b [$_{5}$ Il [$_{4}$ excelle [$_{3}$ [$_{2}$ à conduire un char dans la carrière,
c [$_{1}$ À disputer des *prix* | *indignes de ses mains*, $_{1}$]
d À se donner lui-même en spectacle aux Romains,
e À venir prodiguer sa voix sur un théâtre,
f À réciter des chants qu'il veut qu'on idolâtre, $_{2}$]
g Tandis que des soldats de moments en moments
h Vont arracher pour lui les applaudissements. $_{3}$] $_{4}$] $_{5}$] $_{6}$]

We first consider the italicized phrase in line [34c], which is the smallest syntactic constituent that straddles the caesura in question. The caesura is congruent in that phrase, as explained earlier in our discussion of [11]. There are six syntactic constituents that straddle the caesura of line [34c] besides the italicized phrase. We have enclosed them between brackets in [34]. The need to check those constituents one by one for congruence would greatly detract from the locality that we consider a desirable property of congruence. But there is no need for such checks, as proposition [33] ensures that the caesura is congruent in every one of the six constituents.

The second generalization concerns syntactic constituents whose ends coincide:

[35] Generalization 2: Let *b* be a metrical boundary and B* a syntactic constituent whose rightmost vowel is *v*. If *b* is incongruent in B*, it is also incongruent in any syntactic constituent K such that K contains B* and *v* is the rightmost vowel in K.

The validity of this generalization is easy to see. According to definition [28], the congruence of a boundary *b* in a constituent B* depends on the pair (B, F), where B is *b*'s metrical MH and F is the metrical MH of the last vowel in B*. Let us illustrate with line end *b* and constituents A* and B*

[22] Furthermore *a* is incongruent in A*, as A, which is *a*'s metrical MH, dominates F, which is the metrical MH of *f*, and *f* is the metrical counterpart of the end of A*.

in [29].[23] Both constituents end with the same vowel, B* is the smallest constituent that straddles *b*, and A* contains B*. The pairs (*b*, B*) and (*b*, A*) both meet definition [28], but as they share the pair (B, F) in metrical structure, they belong to one and the same instance of incongruence.

6. Outstanding issues

We began with metrical strength defined as in [7]. We have shown that this definition is not adequate from an empirical point of view. The new definition [25], which we incorporated into definition [28] for expository convenience, is more empirically adequate and conceptually more satisfactory.

The new definition has a greater empirical adequacy than the earlier one, because it distinguishes correctly between caesura *a* in [29], which is congruent, and line end *b* in [30], which is incongruent, and it allows for a more adequate characterization of configurations like [32], in which the same metrical boundary is incongruent in more than one syntactic constituent.[24] The new definition is also more satisfactory from a conceptual point of view. It is more parsimonious, as it characterizes the relative strength of breaks in trees of either kind, syntactic and metrical, by means of the same formal device, domination relationships between nodes (v. [25]). This enables us to see that in the final analysis congruence is fundamentally a matter of pure geometry, or rather of pure logic: among all texts whose vowels can be paired with the terminal nodes of metrical structure, poets tend to prefer those in which syntactic breaks best match the strength of corresponding breaks at metrical boundaries. We conclude this article by reviewing various outstanding issues of a general nature.

6.1. Congruence vs. alignment constraints

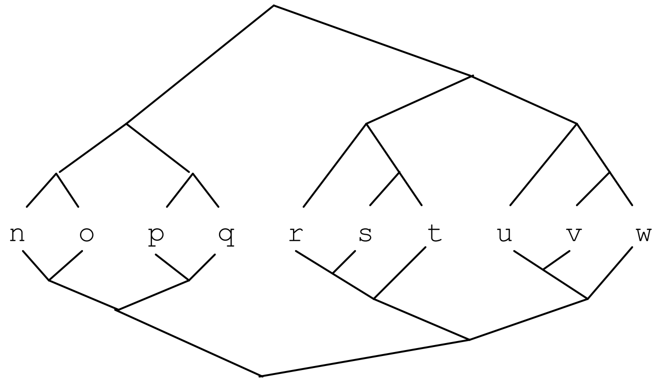
Moving to a metrical form with a greater depth of embedding than the distich of alexandrines, we have examined *dizains* (ten-line stanzas) rhymed *ababccdeed* in which lines are all of the same length. The metrical structure of these dizains is [([ab][ab]) ([(cc) d] [(ee) d])], that is, a quatrain followed by a sexain made up of two tercets.[25] We posit this structure on the basis of the rhyme scheme alone, independently of the structure of the associated texts.[26] Let us give examples of stanzas with such a dizain structure. Our first example is fully congruent:

[36] n Ainsi quand le jeune navire Lamartine
o Où s'élancent les matelots,
p Avant d'affronter son empire,
q Veut s'apprivoiser sur les flots,
r Laissant filer son vaste câble,
s Son ancre va chercher le sable
t Jusqu'au fond des vallons mouvants,
u Et sur ce fondement mobile
v Il balance son mât fragile
w Et dort au vain roulis des vents!

The stanza in this example is coextensive with a single sentence. The quatrain is coextensive with a subordinate clause (*quand le jeune navire…veut s'apprivoiser…*). The sexain is coextensive with the main clause, which is a conjunction of two clauses. The first tercet is coextensive with the first clause (*laissant filer…son ancre va chercher…*) and the second is coextensive with the second clause (*il balance…et dort…*). The scansion of [36] is represented in [37].

[23] This is the second time we are using [29] as an example. Note that while our earlier discussion dealt with the status of caesura *a*, we are now dealing with a different issue, the status of line end *b*.
[24] Our improved definition renders pointless the difference between two kinds of incongruence that is discussed in CCR 124-126.
[25] Martinon 1912: 367ff., Cornulier 1993: 28-29. The two kinds of brackets are for the sake of conspicuousness.
[26] On the general principles involved, see Dell 2003.

[37]



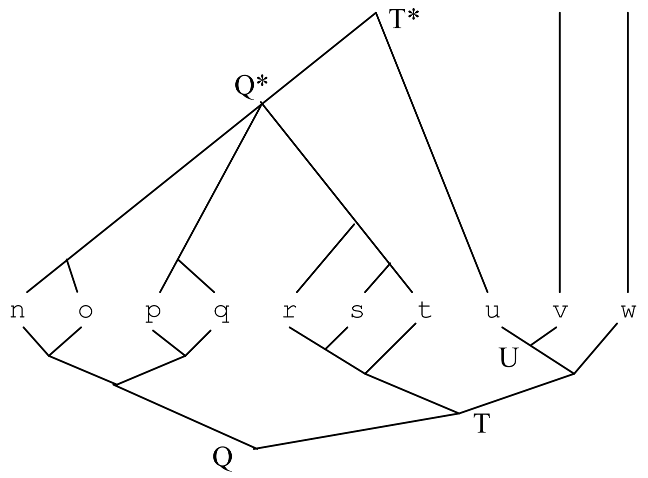
[37] follows the same convention as the earlier diagrams, with metrical structure represented in the lower half, but instead of representing a metrical position, each terminal node stands for a line taken as a whole. Here is why such a partial representation of metrical stucture is sufficient in the present case. The internal structure of lines is irrelevant for the present purposes because the stanza has the property that any syntactic constituent in it that straddles a line end has an end that coincides with the end of another line. Consider for instance the three syntactic constituents that straddle the end of the first line of the dizain. The end of the subject NP *le jeune navire…matelots* coincides with the end of line *o*. The end of the subordinate clause *quand le jeune navire…veut s'apprivoiser sur les flots* coincides with that of line *q*. The end of the sentence taken as a whole coincides with that of the dizain.

We consider next a stanza that contains two incongruent metrical boundaries.

[38] n Et si mon invisible monde Hugo
o Toujours à l'horizon me fuit,
p Si rien ne germe dans cette onde
q Que je laboure jour et nuit,
r Si mon navire de mystère
s Se brise à cette ingrate terre
t Que cherchent mes yeux obstinés,
u Pleure, ami, mon ombre jalouse !
v Colomb doit plaindre La Pérouse.
w Tous deux étaient prédestinés !

The stanza consists of three sentences. The first sentence encompasses lines *n* to *u*, the second is coextensive with line *v*, and the third, with line *w*. In [38] as in the previous example, any syntactic constituent that straddles a line end has an end that coincides with the end of another line, and so the scansion of [38] can be represented in diagram [39], where each terminal node stands for a line taken as whole.

[39]



Two lines have incongruent ends in stanza [38], line *q* (the end of the quatrain) and line *t* (the end of the first tercet). Let us apply definition [28] to these line ends. Consider first the end of *q*. It is straddled by Q*, which ends in *t*, and by T*, which ends in *u*, and Q dominates T and U. Then consider the end of *t*, which is straddled by T*. T* ends in *u* and T dominates U. The situation here is analogous to that in [32], taking *q* and *t* in [39] as the counterparts of *b* and *a* in [32].

Dizains afford us the opportunity of comparing the predictive power of a congruence requirement with that of alignment constraints. Recent work on metrics has adopted violable alignment constraints as a powerful formal device for stating regularities that match metrical constituents with grammatical constituents.[27] Alignment constraints are of the form AL(Y, Z, Edge), where 'Edge' stands for Left or Right, and where one member of the pair (Y, Z) is a category of metrical structure (M), and the other member, a grammatical category (G). There are two kinds of alignment constraints depending on how M and G are mapped to the pair (Y, Z). We give an example of each kind in [40], limiting ourselves to right-alignment:

[40] a AL (M, G),
e.g. AL (Distich, Sentence): The right edge of every distich coincides with that of a sentence.

b AL (G, M),
e.g. AL (IP, Line): The right edge of every IP coincides with that of a Line.

Congruence is at first blush like an alignment constraint of type [40b], as it requires the end of every syntactic constituent that has property P to coincide with the end of a metrical unit that has property Q. Focusing on congruence violations at the end of the quatrain and at that of the first tercet, we have examined their frequency in 233 *ababccdeed* dizains composed in the 19th century, almost all of them in octosyllabic lines. Our results are displayed in table [41], wich also takes into account whether quatrain and first-tercet ends coincide with sentence ends.[28]

[41]

		A end of quatrain	B end of first tercet	
a	congruent	198	139	sentence-final
b		26	69	sentence-internal
c	incongruent	9	25	
d	total	233	233	

[27] See e.g. Hanson 2009, Hayes, Wilson and Shisko 2012, Blumenfeld 2015.
[28] See Appendix II for details.

Table [41] indicates that 224 out of 233 quatrain ends are congruent (224 = 198 + 26), and 208 out of 233 first-tercet ends are congruent (208 = 139 + 69). These figures illustrate the fact that congruence is not a property specific to sequences of distichs. The table presents another salient fact, which is the tendency of quatrain ends and first-tercet ends to coincide with sentence ends. To account for this tendency one could posit violable constraints such as the following:

[42] AL(Quatrain, Sentence): The end of every quatrain coincides with a sentence boundary.

However, positing [42] would not dispense us from invoking congruence, because [42] has nothing to say about the difference between the quatrain ends in [41b] and those in [41c], which both violate [42]. There are 35 (26+9) quatrain ends that fall inside a sentence, and they are congruent in 74% of the cases (26/35). The same holds for first-tercet ends: there are 94 of them (69+25) that are sentence-internal and 73% of them are congruent (69/94).

One may wonder whether the effects of congruence could be parcelled out and attributed to several alignment constraints. The prospects in this direction are rather dim. While alignment constraints are only concerned with edges, congruence is also concerned with containment relationships, as explained in sections 4 and 5.

If congruence cannot be derived from alignment, maybe it is the other way around, and alignment is just an extreme case of congruence: a radical means of shielding a metrical boundary from incongruence is to align it with the end of a sentence.

6.2. Congruence and the hypothesis of phonological metrics

A remarkable property of congruence is the fact that the grammatical information it depends on is that contained in syntactic structure. This poses a serious challenge to the Hypothesis of Phonological Metrics proposed by Hayes 1989: 224. According to that hypothesis "metrical rules NEVER [*sic*] refer to syntactic bracketing, only to prosodic bracketing. In other words, syntax has effects in metrics only insofar as it determines the phrasing of the Prosodic Hierarchy." Here is why we hold that congruence must refer to syntactic structure. First, there is the fact that in Racine's plays incongruences almost never violate the condition below, which refers to syntactic categories:

[43] CONGR: If a metrical boundary is incongruent, the smallest syntactic constituent that straddles it is not an NP, an AP, a PP, or an AdvP.

This condition is discussed in CCR 35-36, 139-144. As explained in CCR 139-144, [43] interacts with a cohesiveness constraint which favors metrical boundaries that coincide with the edges of Intonational Phrases. Setting these aside, the violations of CONGR in Racine's plays fall into two classes. There, are on the one hand, those in which an incongruent metrical boundary is straddled by a coordinate structure, as in the following examples:

[44]	a	Et ce sont *ces plaisirs* | *et ces pleurs* que j'envie.	Racine
	b	Pensez-vous être *saint* | *et juste* impunément ?	Racine
	c	Tout mon sang *de colère* | *et de honte* s'enflamme.	Racine

These cases are common enough.[29] They may be due to properties of coordinate structures that elude us.[30] We have to leave them unaccounted for. Apart from these, Racine's plays contain only 15 exceptions to [43]. Two-thirds of them are found in *Les Plaideurs*, the only comedy, whose 884 lines only amount to 5% of the total number of alexandrines in the corpus.[31]

[29] V. CCR 197-199.
[30] About the assumptions undergirding our syntactic analyses, v. CCR 31-33, 155-177.
[31] Additional evidence that metrics must have access to syntactic structure comes from cohesiveness at the level of line endings, v. note 7 above and CCR 84.

Another reason why congruence must refer to syntactic structure is that a congruent metrical boundary and a strongly incongruent one can occur in configurations that are identical from the point of view of Prosodic Structure. Consider the following two distichs, in which the sequence in italics is the syntactic MH of the end of the first line:

[45] a Oui, j'accorde qu'Auguste a droit de *conserver* Corneille
L'empire où sa vertu | l'a fait seule arriver,

b Oui, j'accorde qu'Auguste a droit de *conserver* construct; after [45a]
L'empire en un moment | où tout peut arriver,

Considered from the point of view of syntactic structure, as is required by definition [28], the end of the first line is congruent in [45a] but not in [45b]. Considered from the point of view of Prosodic Structure, on the other hand, the two distichs are very similar. In either one the sequence which runs from *conserver* to the end is a single Intonational Phrase and the edges of the Clitic Groups in one sequence can be aligned with those in the other, as shown below (the number of metrical syllables in each Clitic Group in [45b] is indicated in the bottom row).

[46]							
[45a]	[conserver]	[l'empire]	[où sa vertu]	[l'a] [fait]	[seule]	[arriver]
[45b]	[conserver]	[l'empire]	[en un moment]	[où tout]	[peut]	[arriver]
		2	4	2	1	3

The Prosodic Hierarchy has only one constituent between the Clitic Group and the Intonational Phrase, namely the Phonological Phrase, and [45a] and [45b] have identical analyses in terms of Phonological Phrases.

The research that led Hayes to formulate his Hypothesis of Phonological Metrics mainly dealt with the distribution of word stresses in small-scale metrical units up to the line level. The effects of congruence, however, are not confined to linguistic strings that fit in a line. The largest constituent in Prosodic Structure is the IP.[32] There are numerous cases of concordance between metrical structure and grammatical structure that involve grammatical constituents larger than the IP. Representations in which the linguistic material is divided into segments no larger than IPs would miss the information relevant in such cases. To get an idea of what is at stake, let us compare the following dizain with that in [36].

[47] n L'enfant dont la mort cruelle Lamartine
o Vient de vider le berceau,
p Qui tomba de la mamelle
q Au lit glacé du tombeau ;
r Tous ceux enfin dont la vie,
s Un jour ou l'autre ravie,
t Emporte une part de nous,
u Murmurent sous la poussière :
v Vous qui voyez la lumière,
w Vous souvenez-vous de nous ?

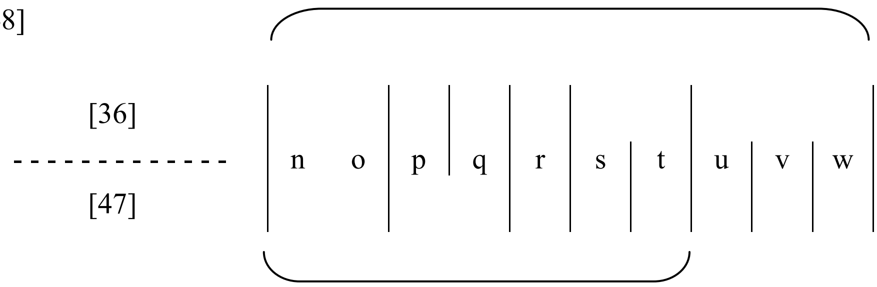
While the end of the quatrain is congruent in [36], it is not in [47], and yet the differences between the prosodic phrasings of the two dizains do not seem to bear any relationship with this fact, as we shall now see.

[32] According to the definition in CCR 34, an IP boundary occurs at a given point of a text if and only if modern spelling conventions mandate a comma or a stronger punctuation at that point. The notion harks back to the *tronçon* defined in Dell 1984, 68.

As explained earlier, the end of the quatrain in [36] coincides with the limit between a subordinate clause and a following main clause, and the only syntactic constituent that straddles the quatrain end is the sentence. In [47], on the other hand, the quatrain is coextensive with the NP *l'enfant…tombeau*. This NP is conjoined with another, *tous ceux…une part de nous*, and the two NPs form a constituent whose end coincides with that of the first tercet. Consequently the end of the quatrain is incongruent.

The two dizains are lined up in [48] so as to make it easy to compare their division into successive IPs. Each letter in the medial sequence stands for the end of a line. A bar after a letter indicates that the end of the line coincides with an IP edge. A bar jutting upwards indicates an IP edge in [36] and one jutting downwards indicates an IP edge in [47]. The span of the syntactic MH of the quatrain end in either stanza is represented by a bracket.

[48]



The dizains in [36] and [47] share IP boundaries at the end of lines *o*, *q*, *r*, *t* and *w,* but there is no apparent relation between their decomposition into IPs and the fact that the end of the quatrain is congruent in [36] but not in [47].

The largest syntactic domain is the sentence, but in CCR 127-131 several examples are presented which t suggest that congruence may still be relevant above the sentence level if constituent structure trees are formal devices suitable for representing the way sentences group themselves into higher-order units to form a coherent discourse. If this is the case, it is semantic representations that we should expect congruence to make reference to.[33]

6.3. CONGRUENCE IS GRADIENT

Congruence is a matter of degree. French readers find some incongruences more noticeable than others. They find the incongruence in [9b] more noticeable than that in [9c], and that in [14] more noticeable than that in [13]. There is evidence that the severity of incongruences depends on syntactic structure as well as on metrical structure. The evidence on the syntactic side is generalization CONGR [43]. As noted at the end of section 2, Racine avoids incongruences that violate CONGR, while such incongruences are not as rare in poems composed by 16th or 19th century poets. Furthermore, as already noted in section 6.2, most of the CongR violations in Racine's plays are found in the comedy *Les Plaideurs*, and comedies are generally more permissive.

On the metrical side there is one aspect of Racine's plays that might be taken to reflect the gradient nature of congruence. It is the frequency of those incongruent syntactic constituents whose end falls inside a hemistich. Here is an example.

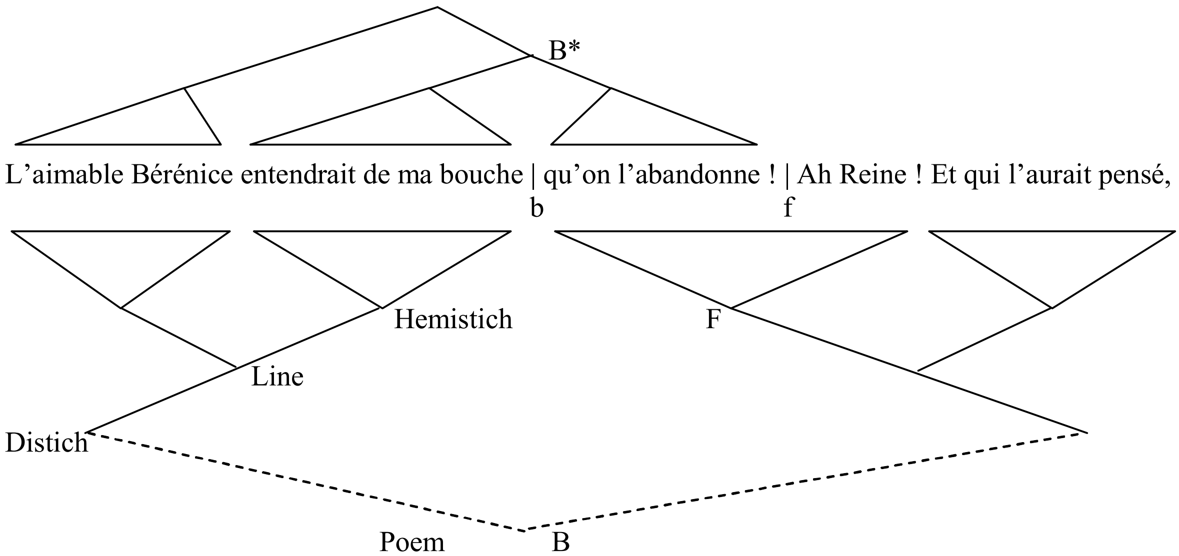
[49] L'aimable Bérénice *entendrait de ma bouche* Racine
Qu'on l'abandonne ! Ah Reine ! | Et qui l'aurait pensé,

The incongruent boundary is a distich end, it does not coincide with the edge of an IP, and the end of the syntactic constituent that straddles it falls inside a hemistich. Instances like [49] are very rare in Racine's plays. There are only three of them.[34] We conjecture that this rarity is due to the distance

[33] Scherr 2006 presents generalizations on the grouping of lines in Pushkin's *Eugen Onegin*. Some of these generalizations refer to boundaries that are syntactic *or semantic*.
[34] The other two instances occur in the comedy *Les Plaideurs*. These can be found in CCR 210.

between two nodes of metrical structure, the MH of the boundary and the MH of the end of the straddling constituent. This distance is maximal, as can be seen in [50], which represents the scansion of [49].

[50]



As the boundary under consideration is a distich edge, the solid lines in the lower half of diagram [50] represent portions of two abutting distichs, after the fashion of diagram [32]. Node B, the MH of the incongruent distich boundary, is Poem, while F, *f*'s metrical MH, is a Hemistich node.[35] The distance between B and F is maximal: in a poem in which the largest metrical unit is the distich, if one node dominates another in metrical structure, the distance between them cannot be greater than 4, which is the number of grouping levels in the metrical hierarchy: Hemistich, Line, Distich, Poem. Given the extreme rarity of cases like [49] in Racine's plays, we venture the following conjecture:

[51] Let *b* be a boundary which is incongruent in a syntactic constituent whose end does not coincide with a metrical boundary. The higher *b* is in the metrical hierarchy, the higher the degree of incongruence.

This conjecture is borne out by the frequencies in Racine's plays of incongruent metrical boundaries with syntactic MHs whose ends do not coincide with metrical boundaries. The higher the boundaries are in the metrical hierarchy, the fewer their occurrences, as can be seen in table [52].

[52]

incongruent boundary → end of its syntactic MH ↓	caesura	end of a distich-initial line	end of a distich
IP-internal	334	18	3
coincides with an IP edge	179	135	82

Conjecture [51] is corroborated by the distribution of incongruences in our corpus of dizains. An instance of an incongruence meeting the conditions of [51] is that at the end of the second line in the following quatrain, which begins a dizain by Hugo:

[35] On the left-hand side of [50] the node labels on metrical structure are reminders for the readers' convenience.

[53] n Comment naît un peuple ? Mystère ! Hugo
o À de certains moments, *tout bruit*
p *A disparu*; toute la terre
q Semble une plaine de la nuit;

The end of a quatrain or a tercet is not involved in any one of the incongruences meeting the conditions of [51] that occur in the 233 dizains we have examined.[36] This fact is in accord with conjecture [51], as quatrains and tercets are the highest metrical units in a dizain.

6.4. Congruence and ease of processing

Congruence is a rightward-oriented property. Definition [28] implies that the left edges of constituents are not relevant to congruence; only their right edges matter. Why is it so? We suggest that there is a functional explanation to this inherent directionality. Online processing of metered verse requires listeners/readers to do two things in parallel: they must parse the syntactic structure of the text so as to compute its meaning, and in addition they must apprehend its metrical structure. Listeners/readers must wait till the end of a syntactic constituent before they have all the information needed to compute its meaning, and they must wait till the end of a metrical constituent before they can assess the well-formedness of its correspondence with the portion of text that instantiates it. In accord with the suggestions in Obermeier et al. 2013 and in Fabb 2015: 188-191, we like to think that the burden that this two-fold task imposes on memory is alleviated if the coincidence between the ends of metrical units and those of syntactic constituents is made predictable to a certain extent.

Besides its orientation rightward, another property of congruence that may facilitate processing is its locality. This locality has two aspects, call them syntactic locality and metrical locality. Syntactic locality: in order to check a boundary for congruence, it is in most cases sufficient to check a very limited portion of its syntactic environment, namely the boundary's syntactic minimal hinge (v. generalizations [33] and [35]). Metrical locality: congruence can be violated in a constituent only if the boundary's metrical MH and the metrical MH of the constituent's end are in a domination relationship to one another.

Tying congruence to ease of processing would explain why readers find it difficult to keep track of metrical structure in French verse that contains frequent incongruences. It would also explain why all metered verse composed in French is congruent to some degree. Given that our characterization of congruence does not make reference to any features that are specific to French poetic forms or to the structure of the French language, it would be surprising if congruence did not manifest itself in all poetic traditions.

[36] See [56] in Appendix II.

Appendix I

We explain here why proposition [33] is true. Definition [28] and proposition [33] are reproduced below.

[28] Incongruence: Let *b* be a metrical boundary, B* a syntactic constituent straddling *b*, and *f* the metrical position associated with the rightmost vowel in B*. *b* is incongruent in B* (or equivalently, B* is incongruent over *b*) if

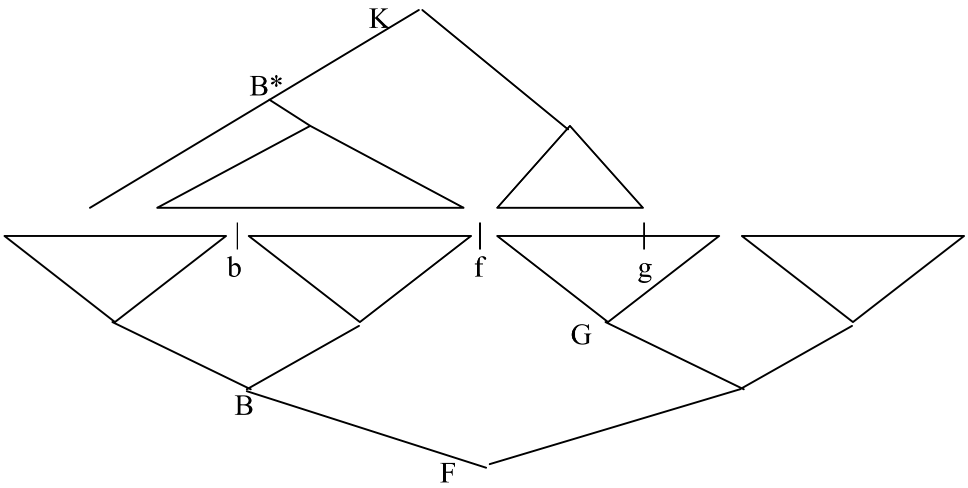
b's metrical MH dominates *f*'s metrical MH.

[33] Let *b* be a metrical boundary and B* a syntactic constituent straddling *b*. If *b* is congruent in B* it is also congruent in any constituent that contains B*.

Let *b* be a metrical boundary that is congruent in B* and let *f* be the metrical position associated with the rightmost vowel in B*. Let K be a constituent that contains B* and let *g* be the position associated with the rightmost vowel in K. Here is why *b* is congruent in K, i.e. why B, the MH of *b*, does not dominate G, the MH of *g*.

Suppose *b* were discongruent in K. B would then dominate G. But as can be seen in diagram [54], B could dominate G only if *g* were located to the left of *f*. And if *g* were located to the left of *f*, this would contradict our premise that K contains B*.

[54]



Appendix II

We give here details on the dizains discussed in Section 6.1. These dizains are all those contained in the poems listed in the table below. The poems are all by Victor Hugo except for those in the first three rows. Columns A and B correspond to their counterparts in table [41], with figures b/c corresponding to those in rows b and c in table [41]. Column C indicates the number of boundaries which are incongruent in a syntactic constituent whose end does not coincide with a metrical boundary (v. conjecture [51]).

[55]

title of poem	number of dizains in the poem	A end of quatrain b/c	B end of first tercet b/c	C
a. Pensée des morts (Lamartine)	19	0/2	6/0	0
b. Le malheur (Vigny)	8	1/0	2/1	2
c. Héléna (Vigny)	4	0/0	0/0	1
d. Le chant du tournoi	9	1/0	4/0	0
e. À M. de Lamartine	26	3/2	10/2	1
f. Les mages	71	8/5	14/19	9
g. La fonction du poète	25	6/0	12/1	0
h. Dicté après juillet 1830	13	1/0	5/1	1
i. Le génie	13	1/0	3/0	1
j. La bande noire	11	5/0	7/0	0
k. Le poète dans les révolutions	10	0/0	0/0	0
l. Pluie d'été	7	0/0	5/0	0
m. La naissance du duc de Bordeaux	8	0/0	1/1	0
n. Le baptême du duc de Bordeaux	9	0/0	0/0	0
	233	26/9	69/25	15

The incongruences that meet the conditions of [51] in dizains are tallied in table [56], where each number is the tally for the end of the line labeled with the corresponding letter.

[56]

n	o	p	q	r	s	t	u	v	w	total
2	3	0	$\boxed{0}$	2	2	$\boxed{0}$	5	1	$\boxed{0}$	15

Appendix III

[2] *Les Fleurs du Mal*, “Le beau navire”;

[4] *Les Plaideurs*, III, 3;

[9a] *Les Fleurs du mal*, “Hymne à la beauté”;

[9b] *Les Fleurs du mal*, “Une charogne”;

[9c] *Les Contemplations*, “Pasteurs et troupeaux”;

[9d] *Horace*, III, 6;

[9e] *Les Trophées*, “Brise marine”;

[11a] *Britannicus*, IV, 4;

[11b] *Les Fleurs du Mal*, “Le cygne”;

[12] *Horace*, III, 6;

[13] *Britannicus*, I, 2;

[14] *Cromwell*, V, 12;

[15] *Le Cid*, V, 6;

[16] *Britannicus*, III, 6;

[17] *Andromaque*, III, 4;

[19] *Cromwell*, II, 5;

[21] *Fables*, IX, 3, “Le singe et le léopard”;

[31] *Les Plaideurs*, III, 3;

[34] *Britannicus,* IV, 4;

[36] *Harmonie poétiques et religieuses*, II, 9, “Le chêne”;

[38] *Les Feuilles d’automne*, IX, “À M. de Lamartine”;

[44a] *Britannicus*, II, 3;

[44b] *Esther*, I, 1;

[44c] *Esther*, III, 4;

[45] *Cinna*, II, 1;

[47] *Harmonie poétiques et religieuses*, II, 9, “Pensée des morts”;

[49] *Bérénice,* III, 3;

[45] *Cinna*, II, 1;

[53] *Les Contemplations*, VI, 23, “Les mages”;

[55a] *Harmonie poétiques et religieuses*, II, 9, “Pensée des morts”;

[55b] *Poèmes antiques et modernes*, *Livre moderne*, “Le malheur”;

[55c] *Manuscrits d’autrefois et Fantaisies oubliées*, “Héléna”;

[55d] *Odes*, IV, 12, “Le Chant du tournoi”.

[55e] *Les Feuilles d’automne*, IX, “À M. de Lamartine”;

[55f] *Les Contemplations*, VI, 23, “Les mages”;

[55g] *Les Rayons et ombres*, I, “Fonction du poète”;

[55h] *Les Chants du crépuscule*, I, “Dicté après juillet 1830”;

[55i] *Odes*, IV, 6, “Le génie”;

[55j] *Odes*, II, 3, “La bande noire”;

[55k] *Odes*, I, 1, “Le poëte dans les révolutions”;

[55l] *Odes*, V, 24, “Pluie d’été”;

[55m] *Odes*, I, 8, “La naissance du duc de Bordeaux” ;

[55n] *Odes*, I, 9, “Le baptême du duc de Bordeaux”.

References

Blumenfeld Lev, 2015, “Meter as faithfulness”, *Natural Language and Linguistic Theory*, 33, p. 79-15.

Cornulier Benoît de, 1982, *Théorie du vers. Rimbaud, Verlaine, Mallarmé*, Paris, Seuil, coll. “ Travaux linguistiques ”.

Cornulier Benoît de, 1993, “Le système classique des strophes. Hugo 1829-1881.*Langue Française* 99, 26-44.

Cornulier Benoît de, 1995, *Art Poëtique. Notions et problèmes de métrique*, Lyon, Presses Universitaires de Lyon, coll. “ IUFM ”

Cornulier Benoît de, 2000, “La place de l’accent et l’accent à sa place”, in Michel Murat, *Le Vers français. Histoire, théorie, esthétique*, Paris, Champion, coll. “Métrique française comparée”, p. 56-91.

Dell, François, 1984: "L'accentuation dans les phrases en français", in F. Dell, D. Hirst and J.-R. Vergnaud, eds., *Forme sonore du langage; structure des représentations en phonologie*. Paris: Hermann, 65-122.

Dell, François, 2003: “Répétitions parallèles dans les paroles et dans la musique des chansons”. Pp. 499-522 in Jean-Louis Aroui, ed., *Le sens et la mesure. De la pragmatique à la métrique. Hommages à Benoît de Cornulier*. Paris : Champion.

Dell, François and Romain Benini, 2020, *La Concordance chez Racine. Rapports entre structure grammaticale et forme métrique dans le théâtre de Racine*. Paris, Classiques Garnier.

Fabb Nigel, 2015, *What is Poetry ? Language and Memory in the Poems of the World*, Cambridge University Press.

Hanson Kristin, 2009, “Metrical alignment”, in Jean-Louis Aroui et Andy Arleo (ed.), *Towards a Typology of Poetic Forms*, Amsterdam, Benjamins, p. 267-286.

Hayes Bruce, 1989, “The prosodic hierarchy in meter”, in Paul Kiparsky et Gilbert Youmans (ed.), *Rhythm and meter*, San Diego, Academic Press, p. 201-260.

Hayes Bruce, Colin Wilson et Anne Shisko, 2012, “Maxent grammars for the metrics of Shakespeare and Milton”, *Language*, 88/4, p. 691-731.

Kiparsky Paul, 1977, “The rhythmic structure of English verse”, *Linguistic Inquiry*, 8, p. 189-247.

Liberman, Mark and Alan Prince, 1977, “On stress and linguistic rhythm”, *Linguistic Inquiry*, 8, p. 249-336.

Martinon Philippe, 1912, *Les strophes*. Paris: Champion.

Obermeier, Christian, Winfried Menninghaus, Martin von Koppenfels, Tim Raettig, Maren Schmidt-Kassow, Sascha Otterbein and Sonja A. Kotz, 2013, “Aesthetic and emotional effects of meter and rhyme in poetry”, *Frontiers in Psychology* 4-10, 1-10.

Scherr, Barry P., 2006, “Structural dynamics in the Onegin stanza”, in Elan B. Dresher and Nila Friedberg, eds., *Formal Approaches to Poetry*. Berlin : Mouton, p. 267-284.

Selkirk, Elisabeth O, 1984: Phonology and Syntax. The Relation between Sound and Structure. Cambridge: MIT Press.

Verluyten Paul, 1981, “Contraintes syntaxiques à la césure”, *Linguistique en Belgique*, 4, p. 219-252.

Verluyten Paul, 1982, *Recherches sur la prosodie et la métrique du français*. Thèse de Doctorat, Departement Romaanse Filologie, Université d’Anvers.

Verluyten Paul, 1989, “L’analyse de l’alexandrin. Mètre ou rythme ?”, in Marc Dominicy, (ed.), *Le Souci des apparences*, Bruxelles, Éditions de l’Université de Bruxelles, coll. “Langage”, p. 31-74.