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Rhythmic structure in Ausiàs March (1400–1459) and Vicent Andrés Estellés (1924–1993): A quantitative constraint-based approach

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Abstract: A poet's choice of rhythmic patterns is affected by three factors: a universal set of metrical constraints, common to all languages; the metrical grammar and lexical structure of the poet's own language; and the poet's personal style. The first aim of this paper is to analyse how these three factors influence the frequency of different stress patterns in the customary metre of Ausiàs March (1400–1459): the decasyllable with caesura *a minore* (4+6 syllables). The second aim is to compare March's schemes of stress with the patterns used by Vicent Andrés Estellés (1924–1993) in his alexandrines in the 1971 book *Llibre de meravelles* (*Book of Wonders*). The comparative analysis shows that the same metrical constraints operate in both authors and that their weight is equivalent. This equivalence can be seen first in the similarity of their arrangement of patterns in terms of frequency, which shows a clear preference for models that are rhythmically better; and second in the similarity of the proportions of their use of different schemes. The twofold coincidence indicates that March and Estellés, in spite of the vast distance in time between them, share the same metrical grammar. All that separates them is March's slight inclination toward patterns of binary rhythm compared to Estellés's preference for ternary rhythm. This difference, which is inde-

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pendent of the metre used by the authors, must be attributed to their stylistic preferences.

Keywords: Catalan poetry, decasyllable, metre, rhythm, March, Estellés

1 Introduction

A poet's choice of rhythmic patterns is affected by three factors that play a variable role in determining the result. First, the universal constraints on metrical well-formedness, which are common to all languages, determine the complexity of structures and predict that the most harmonic models, for example, the ones that most closely approximate a rhythm that alternates weak and strong syllables such as the iambic pattern WSWSWS,[1] will be the most frequent ones, while the models that are farthest from such a rhythm, such as schemes with stresses on consecutive syllables, will be the least common.[2] The second factor that affects rhythm is the metrical grammar and lexical structure of a language. In this respect, there is no doubt that the number of syllables and accentual profile of a language's words have an influence on the selection of preferred patterns. Thus, a high proportion of monosyllabic words should favour the creation of verses with a perfect alternating rhythm like WSWSWS. Lastly, in spite of the demands of the universal principles and the constraints imposed by the characteristics of a specific language, poets can decide to combine patterns of equivalent complexity in variable proportions, generating an imprint that defines their personal style. As we shall see, this is what occurs, for instance, with the proportions in which Ausiàs March (1400–1459) and Vicent Andrés Estellés (1924–1993) use binary and ternary patterns in their poetry.

The first aim of this paper is to analyse the frequency of different stress patterns in the customary metre of Ausiàs March – the decasyllable marked by a caesura *a minore* (4+6 syllables) – while the second aim is to compare March's metrical schemes with the patterns used by Vicent Andrés Estellés in his alexan-

1 In keeping with the typical approach adopted in linguistic studies of metrics, the letter W will stand for weak or unstressed syllables and the letter S for strong or stressed syllables.

2 This duality is prominent in all studies on metrics; for a Catalan example, see the studies by Oliva (1980, 1992, 2008). From the perspective of optimality theory, research has, in recent years, focused specifically on the identification of universal constraints that define the formal suitability and therefore the frequency of different metrical structures (see, among others, Golston/Riad 1997; Golston 1998; Hayes/MacEachern 1998; Friedberg 1999; Hayes et al. 2012; and in the case of Catalan, Jiménez 2019).

drines in the book *Llibre de meravelles* (*Book of Wonders*), published in 1971 (see the reference in §7). As for March's typical metre, the decasyllable marked by a caesura *a minore* contains, as its name suggests, ten metrical syllables – up to the tenth stressed syllable – and is considered the classic metre of early Catalan literature (Serra/Llatas 1932, 36–39; Oliva 1980, 113; Parramon 1992, 21; Bargalló 2007, 118). The prototypical model of the decasyllable, which March used almost exclusively, is a verse line that begins with a hemistich of four syllables ending with a stress on the fourth syllable (a masculine caesura): the end of the hemistich almost always coincides with the end of a word, without any synaloephas or elisions between the hemistichs (Bohigas 2000, 514;[3] Duffell 1994, 296–297).[4] The function of the caesura after the stressed fourth syllable, as Parramon notes (1992, 15; 1999, 34–35), is to organise the internal rhythm of the verse. The second hemistich has six syllables, with a stress on the sixth. The final word normally ends in a stressed syllable, in an oxytone, but in some cases it can also end in an unstressed syllable so that the verse has a final extrametrical unstressed syllable (marked between angle brackets in our examples; see example (2)). As highlighted by Pagès (1912–1914, vol. 1, 152) and Serra/Llatas (1932, 42–43), the 4+6 structure of the decasyllable matches the preference, identified in *Leys d'amors*, to put the longer hemistich at the end, whereas the alternative combination, known as *a maiore*, has a 6+4 structure, with the longer part at the beginning of the verse, and "does not sound well" ("non ha bela casenza", Molinier 1841, 116).[5]

3 Bohigas's approach to the issue is indirect. It can be inferred from his commentary on the only verse that has an elision of vowels between the two hemistichs: "Mal pendrà *pint·en* l'aygua sa figura:" (VII, **13**, 'Its figure will be badly printed in the water,'). Note that the English translations offered in this paper, wherever possible, reflect the literary versions that appear in the bilingual edition of Conejero et al. (1998) (see the reference in §7). These versions are marked by a superscript $^{\text{CONEJ.}}$ in each case, whereas all other translations, such as the one that appears in this footnote, are provided by the author of this paper.

4 Oliva's qualification (1980, 115) that there is only a caesura when the first hemistich may have additional syllables that do not effect the count and that March's decasyllables therefore do not have a caesura but just a coupe (as explicitly noted in Oliva 1992, 246; 2008, 110), is not relevant for our undertaking. For this reason and to simplify the notation, we will assume throughout the paper that the analysed verses are made up of two hemistichs that are separated by a caesura after the fourth syllable, following the convention adopted by Bargalló (2007, 122–123), which is in accordance with the traditional nomenclature (see, for example, Pagès 1912–1914, 152; Serra/Llatas 1932; Ferreres 1979, vol. 1, 97; 1981, 318; Archer 1997a, 30; 2017, 87–88; Bohigas 2000, 514).

5 The predilection for placing longer elements at the end is not exclusive to metrics; in Catalan syntax, for example, longer verb complements usually come at the end too (Hernanz 2002, 1027–1028; Vallduví 2002, 1231–1232). In the field of metrics, this predilection not only affects the arrangement of the hemistichs, but is also reflected in the preference to place longer stress groups – that is, groups that have more syllables clustered around the stress – toward the end. This tendency is

Apart from the stresses on the fourth and tenth syllables, there is no other accentual constraint on the decasyllable; all the other syllables, therefore, can be stressed or unstressed (Parramon 1992, 21; Oliva 2008, 112). As for previous studies on the distribution of stresses in the remaining syllables, there are descriptions of the patterns of some poems in Palomero (1990) and Zimmermann (1997). Similarly, Ferreres (1979, vol. 1, 99; 1981, 319–320) identifies a number of the most common patterns, while de Sisto (2019, 2020) analyses a sample of 130 verses in order to draw out any deviations from the iambic rhythmic pattern – that is, from five consecutive WS sequences – at each position along the verse line, but does not provide any detail on the combinations of stresses. Lastly, Duffell (1994, 297) not only highlights the variety of accentual models, but also finds that the binary rhythm is twice as frequent as the ternary rhythm.[6] However, beyond these limited findings, there is, as Zimmermann (2017, 158) notes, no complete description of all the rhythmic patterns and their frequencies in March's decasyllables.

To make up for the lack of detailed numerical descriptions of March's verse, this paper will undertake a count of the poet's metrical patterns and then compare the results with the results obtained from an analysis of the alexandrines in Estellés's *Llibre de meravelles* (Jiménez 2019). The comparison between the hemistichs of the alexandrine and the second hemistich of the decasyllable *a minore* can be done directly without any difficulty, because both structures contain six metrical positions and share a single formal constraint: a stress on the sixth syllable. It is therefore expected that the distribution and frequency of stress patterns will be similar in the two poets, because they both work with roughly the same vocabulary structure and, in principle, with the same metrical grammar. It should also be possible, albeit indirectly, to compare the tetrasyllables of the first part of March's verses and the hexasyllables of Estellés, although doing so will require a more detailed explanation, which appears in the relevant section (see §3.1).

Having described the first two aims, the paper will set out our methodology in section 2, where special attention is given to the identification of stressed words and the resolution of marked structures. Sections 3 and 4 will focus on the results

captured in the Long-Last principle: "In a sequence of groups of unequal length, the longest member should go last" (Hayes/MacEachern 1998, 489; see also Oliva 1992, 146).

6 While not made explicit in his methodology, the interpretation of the examples in Ferreres (1979, 1981) implies that he used a method similar to the one adopted in this paper to define which syllables are stressed and to resolve any adjacency between stresses, that is, stress clashes. Very similar criteria can also be inferred from the interpretation of the rhythmic structure in poem LXXXI offered by Zimmermann (1997) (see §2). By contrast, the inference of uncorrected potential stress clashes at the end of hemistichs in de Sisto (2019, 2020), based on the provided schemes, suggests that, unlike in the present analysis, no method was applied to resolve the clashes. As a result, de Sisto's data will be used only as a guidepost.

from an analysis of the first and second hemistichs of the decasyllables, respectively, always in comparison with the counts from Estellés's alexandrines. Section 5 will assess the correlation between the accentual structure of the first and second hemistichs in March's verses. Lastly, section 6 will set out the paper's conclusions.

2 Methodology

On the grounds of availability, the text used for the counts is the version of Ausiàs March's poems produced by Pere Bohigas, which was edited by Amadeu-Jesús Soberanas and Noemí Espinàs and published by Barcino in 2000 (second edition; see the reference in §7).[7] Any differences that may arise between the Barcino text and the variants of the critical apparatus, which are set out in the volume's footnotes, do not typically affect the rhythmic schemes.[8] As an example, the first part of verse 5 in poem I, which is "sentir estar" ('feeling [it] to be') in the Barcino text, would keep the binary rhythm WSWS even if replaced by "sabut de cert" (extract from MS L, 'known for sure') or by "vehent estar" (extract from MS B, 'seeing [it] to be'). While there are a few cases where the differences do affect the rhythmic patterns, the quantitative method used in this paper, which draws on a broad sample of verses, minimises such deviations. For the divergences to be significant, they would all have to generate bias in the same direction and that is highly unlikely because the alternatives typically have opposite effects. For instance, in poem I, verse 11, the possible replacement of "me sojorn e·m delit," ('I sojourn and delight'$^{\text{CONEJ·}}$) in the second hemistich with "yo sent molt gran delit." (extract from MS B, 'I feel very great delight') would substitute a ternary pattern WWSWWS with the binary WSWSWS; by contrast, in poem VI, verse 14, the change of "mon ferm voler per altre tal amant" ('the firmness of my love [would me content] in loving of its ilk'$^{\text{CONEJ·}}$) to "lenteniment en amor contemplant" (extract from ELM, 'my understanding contemplating love') would replace – also in the second hemistich – a binary scheme WSWSWS with the ternary WWSWWS. (Recall that, as indicated in footnote 3, verses marked with a superscript $^{\text{CONEJ·}}$ are taken from the bilingual edition of Conejero et al. 1998, referenced in §7).

For the purposes of counting the rhythmic patterns in Ausiàs March, we have first of all excluded every poem that was not written in decasyllables with a cae-

7 This edition is included in the automated online corpus of early Catalan, the *Corpus informatitzat del català antic* (<http://cica.cat/>).

8 The variants of the critical apparatus can also be consulted in Archer (1997b) and at the synoptic edition by Martín/Alemany (2019), available at the Miguel de Cervantes Virtual Library.

sura after the fourth syllable. The excluded group includes poems XII (written in octosyllables), CXXIV (written in decasyllables with a caesura after the fifth syllable), and CXXV, CXXVII and CXXVIII, which were written in sundry metres (for more on the structure of stanzas and verses, see Pagès 1912–1914, vol. 1, 152–156; Ferreres 1979, vol. 1, 95–97; 1981, 313–318; Archer 1997a, 30–31; 2017, 87–92; Bohigas 2000, 512–514). In the case of poems written in octaves with a final tornada or envoi of four verses, which account for the majority of March's poetry, the analysis will focus on the first eight verses and the final twelve verses, which typically correspond to the last full stanza and the tornada. In total, this amounts to 20 lines of verse. In the case of poems written in octaves where there is no final tornada, the selection will take the first stanza and the last two stanzas. In total, this amounts to 24 lines of verse from the poems C, CII, CIV–CVI and CXVII. Similarly, 24 verses are selected from the poems with two tornadas (including the first and last octaves). This covers poems CVII–CVIII and CXXII*b*. The sample also contains the complete text of any poems of 20 lines or less (XXVIII), including a limited number that have just a stanza, with a tornada of four lines (LXXX), two lines (LXXXVI) or none (XXIX, LXXXI–LXXXIII). For poems written in ten-line stanzas, the first and last stanzas have been selected. This amounts to 20 lines of verse if there is no tornada (LXXXVII, XCII); 22 lines of verse if there is a tornada of two verses (CXII, CXV–CXVI, CXVIII–CXIX); and 24 lines of verse if the tornada has four verses (CXIII). In total, the corpus contains 2,464 lines of verse pertaining to 124 different poems.[9]

Based on the selected lines of verse, the various patterns of stress have been input into an Excel spreadsheet, with the unstressed syllables marked as 0 and the stressed syllables marked as 1. The first step was to mark the fixed stress on the fourth and tenth syllables. The second step was to assess the distribution of stresses across the other syllables in each line. Clearly, one of the major challenges for a study of this kind is to decide which syllables are stressed in a text that is not only replete with artificial inversions of order but also dates from a period in the distant past.

In the case of the inversions, the greatest difficulty is to define how to resolve sequences of consecutive stresses – that is, stress clashes – like the one that appears at the end of the verse in example (1) (in all of the numbered examples, note that the syllables of polysyllabic words are separated by hyphens, while the syllables of interest appear in italics). When there is a stress clash within a phonological phrase, normally the last stress prevails and the stress to the left is removed. This can be seen in (2) in relation to the clash between *negun* and *bé* or

9 For a complete description of the period's metrical repertory, see Parramon (1992), which covers a range of issues, including descriptions of the types of stanzas, rhymes and line lengths.

between *pot* and *caure* (for more on this issue in Catalan, see Oliva 1992; Serra 1992; 1992–1993; Oliva/Serra 2002). That said, the inversion that appears in (1) raises the question as to whether the second part of the line forms a stress unit that must be treated in the same way. The assumption is that it does, given that in other inverted structures that are common in the language, such as the inversion appearing in the parallel question *De foll pensament ve?* ('Does it flow from wistful yearning?'), there is a stress unit in the final part and a consequent reduction of the stress clash by means of eliminating the stress on the word *pensament*. To support this assumption further, we know that the presence of two consecutive stresses at the end of a verse is generally considered highly marked. This is why Oliva (1980, 83), when speaking of the decasyllable, underscores that the last WS sequence of the verse cannot be altered, because the stress on the tenth position is fixed (for more on the Catalan case, see also Oliva 1992, 194; Jiménez 2019; de Sisto 2019; 2020; and more generally Hayes et al. 2012, 702).[10] All told, given the high frequency of inversions that leave two stressed syllables at the end of the two hemistichs in March's poetry, as seen in (1), the structures have been resolved by eliminating the stress on the penultimate syllable so that the pattern in (1) ends in a final WS or unstressed-stressed sequence, as the example shows.[11] As highlighted by Bohigas (2000, 511), the inversions appear to function as a strategy that adheres "a efectes rítmics i no solament a necessitats imposades per les rimes" ['to rhythmic effects and not merely to the needs imposed by the rhymes'].

(1) Resolution of stress clashes in inverted structures:

e son de-lit	de foll pen-sa-*ment ve*, (1, 2)	
WWWS	WSWWSS	Initial pattern
↓		
WWWS	WSWWWS	Corrected pattern
		'And his delight from wistful yearning flows,'[CONEJ.]

10 By way of comparison, there are only four lines of verse in Estellés's *Llibre de meravelles* (Jiménez 2019, 252–254) that have the SS structure at the end of the first hemistich (0.3% of the sample) and only one line of verse that has the SS structure at the end of the second hemistich (0.1% of the sample).

11 The rather more straightforward alternative would be not to correct the stress clashes. This approach can be inferred from the proposal put forward by de Sisto (2019, 2020). It is also pursued by Ramírez (1985, 78), who states that the verses "veent penjar son es*tat* prim en l'ayre;" (LVI, **10**, 'seeing how its pure state takes hold of a thread') and "e nós vivents, no li falli*rà* casa;" (LVI, **14**, 'and while we live there will be no lack of home') have, respectively, a stress on the seventh syllable and the ninth syllable, which would cause a clash with the following syllable. However, this approach has the obvious drawback of affording a poor image of March's abilities to create optimal rhythmic patterns.

(2) Resolution of stress clashes in naturally ordered structures:

Temps de ve-nir	en ne-*gun bé*·m *pot cau*<re;> (I, 7)	
SWWS	WWSSSS	Initial pattern
↓		
SWWS	WWWSWS	Corrected pattern

'Time hence can be the bearer of no good'[CONEJ.]

By contrast, we have not corrected stress clashes that arise from syntactical enjambments between hemistichs. This is true even for cases such as the ones that appear in (3), which have a caesura without a pause (Bohigas 2000, 514). In everyday language, *desig* and *teu* would form part of the same phonological phrase and *desig* would lose its stress; in our interpretation, we preserve the clash to ensure the stress on the fourth syllable. However, as noted by many authors (Ferreres 1979, vol. 1, 104; 1981, 323; Oliva 1980, 113–114; Duffell 1994, 291–292), medial enjambment is not common in March, so there are few clashes of this sort.

(3) Preservation of stress clashes between hemistichs in verses that have a caesura without a pause:

Per què·l de-*sig*	*teu* a-mar me cons-treny (XCIX, 39)	
WSWS	SWSWWS	Proposed pattern, with the stress clash preserved

'Why by your will am I constrained to love'[CONEJ.]

Identifying unstressed elements in early Catalan also raises questions. For example, in the verse reproduced in (4), Oliva (1992, 273) suggests that the pronoun *me* in *socoreu-me* could be unstressed and give rise, taking into account the overall stress patterns of March's decasyllables, to a structure at odds with the metre that he employs: that is, by placing a stress on the verb in the third syllable and not on the fourth syllable. However, Oliva also leaves open the possibility that the pronoun is stressed for reasons of emphasis. This eventuality would lead indirectly to the treatment that is being proposed here. Without doubt, placing emphasis could be the reason for the stress. However, it is much more likely that post-verbal pronouns in the period functioned at least in some cases as stressed syllables, as still occurs today in certain Valencian dialects of Catalan (see Todolí 1988; Bataller 2017, vol. 1, 164–165; Beltran/Segura-Llopes 2017, 207), and that March was simply taking advantage of this property, as has been noted by Aramon (1964, 266, f.n. 2) and Duffell (1994, 292).[12]

12 As Bohigas (2000, 514) notes, some of the verses not included in our corpus, such as "quant en amar-*vos*, dona, se contenta" (XVIII, 14, 'Madam, when 'tis content to love but you'[CONEJ.]) and "està e vol-*se* fer dret com lo fus." (CXXI, 28, 'he's [hunched over] and wants to stand up like a spindle'), raise a problem of syntactical enjambment that varies slightly from what we have described in (3), because in these verses there is no doubt about the placement of the stress on the fourth syllable (on

(4) Treatment of ambiguous elements in the fourth syllable:

So-co-reu-*me*	dins los tér-mens d'un·ho<ra,> (III, 7)	
WWSW	WWSWWS	Stress pattern proposed by Oliva (1992)
↓		
WWWS	WWSWWS	Stress pattern based on our proposal

'Bring succour, pray, before the hour is done'[CONEJ.]

However, the selected corpus does not contain many cases like this one, where an element that is, in principle, unstressed appears in a position that is necessarily stressed. In addition to the verse in (4), we find the verses presented in (5), nearly all of which relate to the initial tetrasyllable and some of which have already been noted by Bohigas (2000, 514), Ferreres (1979, vol. 1, 97–99; 1981, 319–320) and Oliva (1980, 113–114). Bearing in mind that these findings point to an ambiguous rhythmic behaviour among certain particles, we have followed the criteria adopted in Jiménez (2019) to define rhythmically ambiguous words, and treated certain elements as stressed or unstressed as a function of the metrical environment in which they occur.[13] As a result, they are counted as stressed when it fits the metre, e.g. the verses in (5), or when it helps to achieve better rhythmic structures, e.g. the verse in (6), where we obtain a purely binary pattern by stressing the words *és*, *una* and *tal*.[14]

-mar- and *-vol-*, respectively), since the pronouns that follow the verbs are typically unstressed. In relation to this issue, Duffell (1994, 292) notes that the hyphen in these lines is dispensed with in editions such as the one by Ferraté (1979) so that "they do not break the mid-line word-boundary constraint".

13 Included in the list of rhythmically ambiguous words that are stressed depending on the context are the following elements in the corpus: some compound words, including adverbs ending in *-ment*; indefinite articles and generally quantifiers and numerals (*algun*/*degun*, *altre*, *dos*/*dues*, *null*, *tal*, *tant*, *tres*, *tot*, etc.); the intensifiers *bé*/*ben*, *menys*, *més*, *molt*, *poc*, *pus*/*plus*, *quasi* and *tan*; stressed possessive adjectives and pronouns; prepositions such as *contra*, *dins*, *entre*, *fins*, *jus*, *sense*, *sobre*, *sus* and *vers*/*enver*; the conjunctions *doncs*, *mentre*, *perquè* and *sinó*; the adverbs *ja*, *mai* and *no*; the one-syllable forms of the verbs *fer*, *ser* and *tenir*, and the auxiliary forms of the verbs *haver* and *ser*; some adjectives typically placed before the noun, such as *gran*, *bon* and *mal*; and strong personal pronouns. Following the treatment observed in some of the verses in (5) like the first one, we have placed a stress on the relative pronoun *què* preceded by a preposition and on the particles *qual* and *on*, unless it causes a stress clash with the surrounding words. Lastly, we have chosen not to place a stress on other relative pronouns, weak pronouns or unstressed possessive adjectives and pronouns; however, we are cognizant that these particles can often receive a rhythmic stress.

14 It should be noted that in (5) the rhythmically ambiguous elements typically occur more frequently at the end of the first hemistich than at the end of the second one. This does not arise by chance, but rather indicates that the metrical rigour of the final part of the verse tends to be stricter; this tendency, which is common to all languages, has been captured in the principle called the

(5) Stresses on elements that are in principle unstressed at the end of the first hemistich (a) and at the end of the second hemistich (b):

a.

ce-lla per *què*	A-mor és de-se-gual. (III, 20)
	'The very cause of Love's iniquity.'[CONEJ.]
pe-ne-dint-*vos*	com per po-qua mer-cé (XIII, 37)
	'Ruing that, through the scarcity of your grace'[CONEJ.]
d'a-que-lla *que*	sia prop de ra-hó, (XL, 43)
	'The one which nigh to reason may be found'[CONEJ.]
e ço de *què*	mon cor se a-do-lo<ra> (LXIV, 23)
	'The reason why my heart is so afflicted'[CONEJ.]
a·quell a *qui*	Na-tur·à·na-mo-rat. (LXXXIV, 52)
	'That wight whom Nature hath enamoured.'[CONEJ.]
d'a-que-lla *que*	de pres-sent és a-mant. (LXXXV, 60)
	'of the one who loves for the moment.'
e ço de *què*	no y-ma-gi-na-rem (XCV, 5)
	'And that of which we never could imagine'[CONEJ.]
per si, e *com*	al-tre de-lit no sent. (CXIV, 4)
	'such that I do not feel any other delight'

b.

car tots mos ginys	yo solt per tra-hir-*me*; (XXVIII, 11)
	'For I lose all my wiles but to betray me;'[CONEJ.]

(6) Stressed treatment of ambiguous elements:

o *és* a-junt	ab *u*-na *tal* es-po<sa>: (VII, 7)
WSWS	WSWSWS
	'or is he attached to such a wife'

By contrast, these ambiguous words are interpreted as unstressed when the alternative would generate a stress clash or when we would be forced to place a stress on the first syllable of a hemistich: in (7), for instance, placing a stress on *altre* and *no* would generate a clash with the preceding word. In the first case, moreover, the second hemistich would have an initial stress.[15]

(7) Unstressed treatment of ambiguous elements:

l'i-ma-gi-nar,	qu·*al*-tre bé *no* y ha-bi<ta>, (I, 4)
WWWS	WWSWWS
	'Imaginings, nought else therein may dwell'[CONEJ.]

"Strict End Hypothesis" (see Kiparsky 1968, 138; Hayes 1983, 373; 1988, 239; Golston 1998, 755; de Castro-Arrazola 2018; and, for Catalan, Jiménez 2019, 251, f.n. 33; 2021).

15 The challenge of interpreting ambiguous elements is not exclusive to Catalan, but also appears in other languages. In Russian, for example, Zhirmunsky (1966, 93–113) relates the stress of ambiguous words to the rhythm that they generate. This proposal is later taken up by Gasparov (1974, 132–137), who reworks it into the Zhirmunsky rule (for more on this issue, see Pilshchikov 2019).

Also in relation to the stress on the fourth syllable, we offer some instances in (8) where the stress moves from the third syllable typically of paroxytone words to the last syllable of the hemistich. Outside of our corpus, we find other shifts in the proper names *Origenés* (XXVI, 42) and *Mercuriús* (LXXV, 33) (see Bohigas 2000, 514; Ferreres 1979, vol. 1, 319; 1981, 98–99; Oliva 1980, 113–114; Duffell 1994, 293). Following interpretations like that of Duffell (1994, 293), who highlights March's aversion to the recession of accent to the third syllable, we assume that the stress falls on the fourth syllable, possibly with the help of a certain accentual variation in the adaptation of classical loanwords in the period, which Duffell also notes.[16]

(8) Shifts of stress from the third to the fourth syllable:
tan pas-cif-fich com vos-tre seny re-geix (XXIII, 37)
'As peacefully as your intellect commands' CONEJ.
a Tan-ta-lús per con-tí-nuu de-sig; (XXXI, 42)
'to Tantalus himself [am I compared] through my desire continuous;' CONEJ.
pa-ra-li-tich, que no pot se-nya-lar, (CI, 2)
'And paralysed, he cannot make a sign;' CONEJ.

The description of metrical patterns set out in this study is not dependant on the type of metrical feet that are posited, that is, how the stressed and unstressed syllables are arranged into higher-level structures. Let us assume axiomatically with Jiménez (2019, 240) that any feet that may be created have their prominence to the right. As a result, we will not consider the possibility, which is accepted in other studies (for example, in Oliva 1980, 1992, 2008), that we could combine binary structures with prominence to the right (WS, iambic) and to the left (SW, trochaic). Accordingly, the possible feet include: a single stressed syllable (S, a degenerate foot), a stressed syllable preceded by an unstressed one (WS, an iamb), and a stressed syllable preceded by two unstressed ones (WWS, an anapaest). When there are more than two adjacent unstressed syllables, those that exceed two in number are not assigned to any foot. All of these possibilities are illustrated in (9), where the tetrasyllable contains a degenerate foot and an anapaest and the hexasyllable contains an unassigned syllable, an anapaest, an iamb and even an extrametrical syllable at the end: <ga>.

(9) Verse structure in metrical feet:
Pren-me'n a-xí com al pa-tró qu·en plat<ga> (II, 1)
(S)(WWS) W(WWS)(WS)
'I'm like that captain who is near shore' CONEJ.

16 For a complete list (accompanied with references to the sources) of words with an accentual pattern in medieval Valencian texts that differ from the current norm, see Casanellas (2013, 31).

Broadly speaking, to compare the patterns in March's verses with those in Estellés's verses, which will serve as our reference point, we will do so descriptively, based on their respective counts. Sometimes, when it is necessary to check whether any variations in the distribution of the patterns in the different samples are statistically significant, we will use Pearson's chi-squared test. In all statistical tests, the level of significance lies at $p = 0.05$, which is the p-value typically used in social sciences. If there are any differences in the distribution of the models between the samples, we will use Cramer's V to estimate the impact of the independent variable – for example, the authors' style – on the distribution of the patterns. For the evaluation of Cramer's V, which takes values from 0 to 1, we will follow the scale proposed by Eddington (2015, 44), according to which the range from 0.1 to 0.2 denotes a weak effect; the range from 0.2 to 0.4 denotes a moderate effect; and the range from 0.4 to 0.6 denotes a strong effect.

In addition, we will analyse the number of words by hemistich in the verses of March and Estellés. We will only present the counts for the tetrasyllable in the first hemistich of March, whereas the ratio of the hexasyllables in March's second hemistich will be compared with the same figure for Estellés's alexandrines. To make this comparison, we will use a one-way ANOVA test, treating the number of words as the dependent variable and each author's hexasyllables as the independent variable, with their hexasyllables divided into three different groups: those in March's second hemistich, those in Estellés's first hemistich and those in Estellés's second hemistich. If there are any differences in the averages for the three groups, a Games-Howell post-hoc test will be carried out to determine how to group them.

3 Analysis of the first hemistich in the decasyllables of March and comparison with Estellés

3.1 Hypothesis

The first hemistich of a decasyllable *a minore* requires only a stress on the fourth syllable (Oliva 2008, 112; Bargalló 2007, 118).[17] Bearing this constraint in mind, there are eight possible combinations, which are set out in (10). Clearly, the pat-

17 As noted in §1, the hemistich must also end with a word that is stressed on the last syllable, so that its end coincides with the end of the word. However, this does not affect the placement of stresses.

terns SSSS and WSSS are not expected, given that they would generate excessive metrical complexity: "els xocs consecutius constitueixen les seqüències més arítmiques de totes" ('consecutive stresses are the most arrhythmic sequences of all', Oliva 1992, 146). If they appear, therefore, they will be corrected by eliminating some of the stresses. As indicated by Oliva (1992, 206), for instance, the initial pattern of SSSS in *Tu, nen, va!, corre!* 'You, boy, go!, run!' is changed to WSWS. Also, as noted earlier, there is a strong tendency in all metrical schemes to place a WS combination at the end of hemistichs. This tendency is codified in Oliva (1980, 83; 1992, 194) as a prohibition on inverting the WS scheme in the last foot of a verse. Given this prohibition, it is unsurprising that the counts produced by de Sisto (2019, 2020) normally treat the last two metrical syllables of a line as an iamb. Accordingly, the SWSS and WWSS patterns, if they exist, should be very infrequent. Similarly, as we have already described in Jiménez (2019, 253), it is highly marked for stress clashes to occur at the start of a verse or hemistich, based partly on lexical structure and partly on an aversion to place a stress at the start of a verse (see also Ferrater 1983, 91; 1987, 77–78; Bargalló 2007, 239); this constraint would affect the SSWS structure.[18] As a result, the most likely structures of the tetrasyllables are SWWS, WWWS and WSWS, which are also the structures identified by Ferreres (1979, vol. 1, 99; 1981, 319–320).

(10) Possible stress combinations in the first hemistich, ranked from highest to lowest complexity:

1	SSSS	2	WSSS	3	SWSS	4	WWSS
5	SSWS	6	SWWS	7	WWWS	8	WSWS

As for the distribution of SWWS, WWWS and WSWS patterns in the decasyllables, the iambic structure WSWS, which corresponds to the verse design (Oliva 1980, 81; 1992, 245; 2008, 11), should be the most frequent. The substantiation of this hypothesis in empirical studies comes from Ferreres (1979, vol. 1, 99; 1981, 320), who provides the only quantitative reference that we have. Ferreres states that the pattern with a stress on the second syllable is the most numerous one. A similar conclusion can be inferred from the models identified by de Sisto (2019, 83; 2020, 108), who finds that the first and third syllables are typically unstressed, whereas the second syllable can be stressed or unstressed.

The rank order of the other two patterns draws on indirect inferences from the counts of the hexasyllables in Estellés and March. In effect, the transgressions of

18 The tendency to avoid placing a stress on the initial position of a verse is very common in the world's languages and has been captured in the "Non-initial principle" (see, for example, Golston 1998, 740).

the hexasyllables with the structures SWWSWS, WWWSWS and WSWSWS, which share a final SWS string that does not add complexity (that is, it contains no clashes or sequences of three unstressed syllables – lapses – and it enables the hemistich to conclude with an iamb), are equivalent to the transgressions of the SWWS, WWWS and WSWS patterns. The SWWS model has a stress on the initial syllable of the hemistich, which as noted above is regarded as marked in metrical schemes (see footnote 18 and, for a formal explanation, Jiménez 2019, 248–249). The second pattern, WWWS, has a sequence of three unstressed syllables, which is penalised by the grammar, although as noted by Jiménez (2019, 249–250), it is penalised to a less extent than the initial stress (for more on the marking of lapses in Catalan, see Oliva 1992, 76; 2008, 68; Serra 1992; 1992–1993; Oliva/Serra 2002, 380; Bargalló 2007, 50; Wheeler 2005, 298). In the third and last pattern, we find a binary structure in iambs that is metrically flawless. As a result, we can deduce first of all that the rank order of patterns by frequency should be the same for the tetrasyllables and the corresponding hexasyllables, that is WSWS > WWWS > SWWS. In addition to the same rank order, we can also expect some agreement in their frequencies: above all, the two poets work in all cases with the same language, the same linguistic material, and it is expected that their search for the perfect binary pattern would lead them to a distribution of schemes that is quite similar.

3.2 Results

The first notable result comes with the practically complete absence, in the first hemistich, of structures with stress clashes that cannot be reduced: nearly every identified contact between stresses arises within a syntactical unit and can be resolved by eliminating the first stress in accordance with the repair strategies envisaged in the language (see Oliva 1992; Serra 1992; 1992–1993; Oliva/Serra 2002). There is only one verse, which is reproduced in (11), where the clash arises between elements of different phrases, and even then we suspect that it could be corrected as SWWS.[19]

(11) First hemistich with stress clash, SWSS structure:
On se-rà, on, que mon vo-ler con-ten<te?> (LXXVI, 2)
SWSS WWWSWS
'Where shall it be my will I may content?'[CONEJ.]

19 In fact, the elimination of stress on the second *on* is the solution used by Raimon to set the verse to music (Miguel de Cervantes Virtual Library at <http://www.cervantesvirtual.com/portales/ausias_march/683450_lloc/>; last access: 09.03.2021).

The second conclusion is that the counts, in effect, confirm that within the metrical grammar of Catalan, the constraint against stressing the first syllable of a component is higher-ranked than the constraint against the presence of lapses; naturally, a perfect iambic structure is always better than any structure with transgressions, however minimal. The described preferences are corroborated by the rank order of the different patterns by frequency, which appears in Table 1, while (12) illustrates the three most common patterns in the initial hemistich using the verses of the final tornada, or envoi, of poem IX.

Table 1: Frequencies and percentages of first hemistich patterns in March's poems

Pattern	Frequency in March (%)
SWSS	1 (0.04%)
SWWS	331 (13.4%)
WWWS	802 (32.5%)
WSWS	1,330 (54%)

(12) Illustration of the top three metrical patterns in the first hemistich, using poem IX, 41–44:

Lir en-tre carts,	fins a veu-re la por<ta>
SWWS	WWSWWS
	'Lily 'midst thorns, before the very door'CONEJ.
de mos de-lits	so-bi-rans son ven-gut;
WWWS	WWSWWS
	'Of sovereign delights I'm come to stand;'CONEJ.
no y he to-quat,	ans me'n torn com a mut,
WSWS	WWSWWS
	'Called have I not mute I turn away,'CONEJ.
e per tor-nar	ja trob la vi-a tor<ta.>
WWWS	WSWSWS
	'The way of my return I find confused.'CONEJ.

The rank order of frequencies, therefore, matches our expectations, taking into consideration the literature on March and the previous analysis of the metrical complexity in Estellés presented in Jiménez (2019). Obtaining new numerical data, however, enables us to go even further and assess not only whether the rank order of the top three patterns coincides, but also whether their proportions (excluding the negligible pattern SWSS from the comparison) coincide in the first hemistich of March and in the hexasyllables of March and Estellés. As noted earlier, the comparison will look at the tetrasyllables in relation to the set of each author's hexasyllables ending in SWS. The distribution of the pat-

terns, which appears in Table 2, clearly indicates that the percentages for Estellés are very similar to the percentages for the tetrasyllables of March and that the percentages for both parts of March's verses are relatively close as well.

Table 2: Frequencies and percentages for March's first hemistich and for the hexasyllables of March and Estellés

Pattern of tetrasyllables	Frequency in March (%)	Equivalent pattern in hexasyllables	Frequency in March (%)	Frequency in Estellés (%)
SWWS	331 (13.4%)	SWWSWS	56 (5.5%)	122 (14.9%)
WWWS	802 (32.6%)	WWWSWS	311 (30.6%)	255 (31.1%)
WSWS	1,330 (54.0%)	WSWSWS	650 (63.9%)	821 (54.1%)

The comparison of the two hemistichs in March, conducted with Pearson's chi-squared test, finds statistically significant differences in the distribution of the patterns ($\chi^2_{(2)} = 54.047$; $p < 0.001$, Cramer's V = 0.125), but the size of the effect is weak. The difference is due basically to the combined effect in the second hemistich of an increase in the proportion of purely iambic rhythms and a decrease in the proportion of structures beginning with SWWS. The decrease of the SWWSWS pattern relative to the SWWS pattern in the first hemistich is predictable, given that the initial stress of the second hemistich would always cause a stress clash with the fourth syllable of the verse, whereas that factor would have no influence on stresses placed on the initial position of a line. Nor does the increase in the frequency of pure binary patterns in the second part of the verse come as a surprise. As noted earlier, there is typically a shift in favour of optimal structures in the final parts of a line. If we add these two factors into the equation, the relative weight of the principles at work in the selection of the patterns in each hemistich of March's verse is not as different as it might seem.

In the comparison between March's tetrasyllables and Estellés's hexasyllables, by contrast, our statistical test establishes that the small variations found in the distribution of the patterns are not statistically significant ($\chi^2_{(2)} = 1.334$; $p = 0.513$, Cramer's V = 0.020). Unlike in the previous case, a reduction in the patterns with an initial stress in Estellés is not necessary, because not every first hemistich in his alexandrines ends with an oxytone and so stress clashes with the second part of the verse are not always generated. In addition, the other two patterns have a distribution that is quite similar. The interpretation that we can draw, therefore, is that even though the number of syllables in the metre may differ, the

authors' solutions to a similar challenge are fairly equivalent both in the selection of patterns and in their frequency. Nor could it be otherwise, because they are both affected by the weight of universal principles in the metrical grammar of Catalan and by the same lexical structure of the language.

The last point to make about the first hemistich relates to the consequences on the lexical structure of largely choosing a binary rhythm.[20] In general, there is agreement that the selection of ternary rhythms and the acceptance of lapses increase the distance of a verse from the ideal pattern, which is characterised by binary alternation. In compensation, however, they increase the ability to use a broader range of vocabulary (see, for example, Friedberg 1999, 113; and, for Catalan, Jiménez 2019). Ternary rhythms offer strategies that help to strike a balance between the demands of rhythm and the capacity to express ideas with a more extensive lexicon.[21] Conversely, the widespread adoption of binary rhythms reduces the vocabulary that can be accommodated in a verse and would appear to result in a greater presence of monosyllables and, consequently, in a higher number of words in each hemistich. The abundance of monosyllables in March's poetry has been previously noted by various authors such as Duffell (1994, 290) and Ramírez (1985, 79), with a special emphasis on the first hemistich in the latter case. The data, which appear in Table 3,[22] confirm this property. The average number of words by hemistich comes to 3.2 words (standard deviation = 0.813), and the most frequent patterns are three and four words per line.[23]

20 For a complete list and frequency of the vocabulary used in March, see Flam (1962); Hauf (1983); Lara (2000); Santanach/Torruella (2005); Alemany et al. (2008). The vocabulary of March and its frequency can be retrieved online from the lemmatized concordances of Ausiàs March's poems (Alemany et al. 2011).

21 The tendency to choose metrical patterns that enable the vocabulary of a language to fit is summarised in the "Fit principle" ("Languages select meters in which their entire vocabularies are usable in the greatest variety of ways", Hanson/Kiparsky 1996, 294).

22 For the purposes of the count, the units include clearly independent words and clitic elements such as definite articles and weak pronouns, whether they are written separately or joined by an apostrophe or hyphen to an adjacent word (known as the *host*). With this system, there are six words in the first hemistich of "l'om qui n'és menys, és arbre menys de fruyt;" (CVI, 487, 'He who does not have them is a tree without fruit;') and "si no us n'an grat, ajau-los per ingrats." (CIX, 44, 'If they're not welcome, have them as unwelcome'$^{\text{CONEJ.}}$).

23 By extrapolation, we should expect an approximate average of 4.8 words in the second hemistich (see the results in section 4.2).

Table 3: Count of the number of words in the first hemistich (with the percentage in brackets) in March's poems

Number of words	Count (%) in the first hemistich of March (2,464 hemistichs)
1	35 (1.4%)
2	399 (16.2%)
3	1,187 (48.2%)
4	733 (29.7%)
5	108 (4.4%)
6	2 (0.1%)
Average (std. dev.)	3.2 words (0.813)

4 Analysis of the second hemistich in the decasyllables of March and comparison with Estellés

4.1 Hypothesis

As noted throughout the study, the decasyllable has no rhythmic constraint apart from stresses on the fourth and tenth syllables. This means that any other stresses in the second hemistich can be placed freely, but with a certain preference for the sixth, seventh and eight syllables, as Parramon (1992, 21) has pointed out. Thus, the rhythmic freedom of the second hemistich coincides with the rhythmic freedom of the two half-lines of the alexandrine, which also have six syllables (the polyrhythm of the alexandrine is implicit in the studies of Oliva, but it is highlighted explicitly by Navarro Tomás 1956, 85–88, and Domínguez Caparrós 2014, 151). In the same vein, Duffell (1994, 291) notes in relation to poem CXXIV that, even though March had the technical ability to choose a single rhythm – the binary rhythm – he preferred rhythmic variety as a deliberate stylistic choice. In the second part of the decasyllable, therefore, we would expect a certain variety in the patterns. Indeed, some of these patterns have been identified by Ferreres (1979, vol. 1, 99; 1981, 319–320): WWSWWS, WSWSWS, WSWWWS, WWWSWS and SWSWWS. However, we cannot rule out other less frequent patterns that appear in the alexandrines of Estellés, in particular SWWSWS, WWWWWS and SWWWWS (Jiménez 2019, 243).

At this point, it is important to underscore that the most frequent patterns in the hexasyllables fall into two broad families. One contains all the binary patterns. This group includes the iambic model WSWSWS and the models WSWWWS and WWWSWS, which would become purely binary with the insertion of a rhythmic stress in the middle of the three-syllable lapse. The second group contains the ternary pattern WWSWWS. The SWSWWS model could also be included in the second group, because it can be turned into a purely ternary pattern with the elimination of the initial stress. Similarly, the SWWSWS could be considered binary, because it can become binary with the absorption of the first stress, which would in passing eliminate the stress clash with the fourth syllable of the line, and with the insertion of a rhythmic stress in the second position. While the elimination of stresses and the insertion of rhythmic stresses are permissible strategies to improve the eurhythmy of verses in Catalan (see Oliva 1992, 59–84), we prefer to leave these models in separate categories from the ternary model and the typical binary models because of their limited quantitative significance. Likewise, we do not assign to either of the two main groups the scheme WWWWWS with its extended lapse (to which the pattern SWWWWS can also be reduced through elision of the initial stress), because its conversion into a binary or ternary pattern would depend on the stylistic preferences of each author, which do not necessarily coincide. Nor do we include in the two broad groups any of the patterns that have stress clashes, which are small in number and have little real effect on the overall counts.

In relation to the frequency of the models, if we take Ferreres (1979, vol. 1, 99; 1981, 320) as our point of reference, the stress would tend to fall more often on the third syllable of the second hemistich. This would mean that the distribution of stresses in the second hemistich could resemble the distribution found in the verses of Estellés, where the purely WWSWWS pattern is clearly most common (37.5% of the verses). However, if we take the study of Duffell (1994, 290) as our reference, the binary pattern would be dominant (66% of the verses), while the ternary pattern would fall to only 26% of the verses. If Duffell's calculations are confirmed, therefore, March's preference for binary rhythms would mark a major stylistic difference with Estellés.

Whether the frequency of the different patterns in March and Estellés is the same or different, the rank order of the models should not differ very much, because the rank order established for Estellés was grounded in the metrical complexity of structures, which do not depend on authors' styles. We expect to find agreement in the rank ordering above all in certain groups like the binary patterns, because the constraints that place value on the suitability of these structures are universal and should therefore be reflected in similar preferences on the part of the two authors, as noted earlier in section 3.2. As a result, we expect the rank order to be WSWSWS > WSWWWS > WWWSWS, because having an iambic

rhythm is better than having lapses and, among all the examples with lapses, it is better to place the largest group of syllables around a stress at the end of the verse, i.e., in the pattern WSWWWS. In addition to a similar rank order, the proportions of the patterns in each sub-class should also be similar, as we saw in section 3.2: ultimately, the two authors, once they have chosen a binary or ternary model, face the challenge of filling their verses armed with the same resources: the vocabulary of the language, with its accentual structure, which has changed little in the past 500 years.

4.2 Results

The count of the patterns in the second hemistich of March's decasyllables appears in Table 4. As a point of reference, the table also shows the frequency of the models in the hemistichs of Estellés's alexandrines. Regarding March's verses, the first conclusion is that there is, as expected, some variety in the combinations. This confirms that the decasyllable has no stress constraint in the second hemistich beyond the requirement of a stress on the tenth syllable.

Table 4: Counts of stress patterns in the second hemistich of March's decasyllables and in both hemistichs of Estellés's alexandrines; italics is used to mark the cases where the rank order by frequency differs in the two authors

Pattern type	Description of the model	Count in March	Rank order in March	Rank order in Estellés	Count in Estellés
Ternary	WWSWWS	735 (29.8%)	1	1	947 (37.5%)
Binary and assimilated types	WSWSWS	650 (26.4%)	2	2	444 (17.6%)
	WSWWWS	546 (22.2%)	3	3	438 (17.4%)
	WWWSWS	311 (12.6%)	4	4	255 (10.1%)
(Possible) binary	SWWSWS	56 (2.3%)	*5*	*6*	122 (4.8%)
(Possible) ternary	SWSWWS	55 (2.2%)	*6*	*5*	154 (6.1%)
Models with extended lapses	WWWWWS	46 (1.9%)	7	7	48 (1.9%)
	SWWWWS	29 (1.2%)	8	8	45 (1.8%)
Models with clashes	WWSSWS	17 (0.7%)	*9 (tied)*	*9*	40 (1.6%)
	WSSWWS	17 (0.7%)	*9 (tied)*	*10*	17 (0.7%)
	SWSSWS	2 (0.1%)	11	11	7 (0.3%)
	WSWWSS	–	–	*12*	4 (0.2%)
	WWSWSS	–	–	*13*	1 (0.04%)

The near-perfect agreement in the rank order of the patterns used by March and Estellés based on frequency also fits nearly perfectly with our expectations. In the rank ordering, there are only three points of disagreement (marked in italics in Table 4), which are not statistically significant and in any event do not affect the most frequent patterns. The first point of disagreement relates to the distribution of the patterns SWWSWS and SWSWWS, which are shown in (13). Whereas the latter model is more frequent in Estellés, the two patterns are balanced in March. Even so, the divergence is not statistically significant ($\chi^2_{(1)} = 1.244$; $p = 0.265$, Cramer's V = 0.057), so that we can argue that March and Estellés do not differ in their preferences for these patterns.

(13) Illustration of the patterns SWWSWS and SWSWWS in the second hemistich, using poem XI, 40–41:

e·n mon so-cors	mà no s'i trob·ar-ma<da.>
WWWS	SWWSWS
	'Yet in my cause no hand hath taken arms.'CONEJ.
Liir en-tre carts,	l'o-ra sent a-cos-ta<da>
SWWS	SWSWWS
	'Lily 'midst thorns, I feel the hour draws nigh;'CONEJ.

There is also a small difference in the rank order of the patterns WWSSWS and WSSWWS illustrated in (14). This disagreement, however, is also not statistically significant, even though it approaches very close to the threshold for significance ($\chi^2_{(1)} = 3.704$; $p = 0.054$, Cramer's V = 0.202). Lastly, we find two patterns in Estellés, specifically the least frequent ones, which are completely absent from March's poetry. Taken as a whole, we observe agreement in the rank order of the models based on their degree of structural complexity, with the better models ranked as more frequent and the more complex models ranked as less frequent. This is one more proof that the two authors employ the same metrical grammar.

(14) Illustration of the patterns with stress clashes in the second hemistich:

tos-temps veu-rà	en si co-ses no-ve<lles,> (CXV, **112**)
WSWS	WSSWWS
	'he will always discover new things,'
Lir en-tre carts,	ab mi-lans caç la gan<ta> (LXIV, **25**)
SWWS	WWSSWS
	'Lily 'midst thorns, with kite I hunt the goose'CONEJ.

As Table 4 shows, the lower frequency patterns include the ones that have stress clashes. As in Estellés, the presence of clashes at the start of a line is ruled out first of all because of the difficulty of finding stress combinations to generate such a structure (Jiménez 2019). Second, given that the first hemistich of the decasyllable always ends in an oxytone, an initial clash in the second hemistich would generate sequences of three consecutive stresses, which reflects a level of complexity that is

clearly inadmissible. Nor are there clashes at the end of a verse because of the previously noted requirement for the final two positions to fit the WS structure; the presence of any final clashes that could be inferred from the study by de Sisto (2019, 2020) is clearly due, as noted back in section 3.2, to the author's non-application of strategies to repair stress clashes. Thus, we are left with a limited number of hemistichs with stress clashes, which always appear in internal positions. They also coincide with the hexasyllables that have the most frequent clashes in Estellés.

Sequences with more than two unstressed syllables are regarded as more acceptable than patterns with clashes, even if the result is an extended lapse as in the schemes WWWWWS and SWWWWS (for more on this issue, see the rationale provided in Jiménez 2019, 251–252). These two patterns, which are illustrated in (15), are therefore more frequent than the models with clashes in the two authors being compared. The small imbalance in favour of the WWWWWS pattern that is observed in March, while it does not reflect a statistically significant difference with respect to the distribution in Estellés ($\chi^2_{(1)} = 1.592$; $p = 0.207$, Cramer's V = 0.097), points to a certain tendency noted previously in other cases, that is, to avoid a stress clash with the final syllable of the first hemistich, which is stressed. This tendency accentuates the aversion to placing stress on the first syllable of the second component of a verse. The same reasons underlie the relatively low frequency of the previously discussed structures SWWSWS and SWSWWS, even though they have no stress clash or lapse, unlike other more frequent models with lapses such as WSWWWS and WWWSWS.

(15) Illustration of patterns with extended lapses in the second hemistich:

A joch de daus	vos a-com-pa-ra-ré. (XLVI, 60)
WSWS	WWWWWS
	'I shall compare you to a game of dice.'[CONEJ.],
e puys per nom	pro-pi vos cri-da-ran, (XLII, 35)
WWWS	SWWWWS
	'and given that they will call you by your proper name,'

Turning our focus now to the four most frequent patterns in Table 4, exemplified in (16), we see that the ternary rhythm is the most common model in March. This was noted by Ferreres (1979, vol. 1, 99; 1981, 320) and can also be inferred from the tendencies shown by de Sisto (2019, 2020).[24] The ternary rhythm is also predominant in Estellés, corroborating the insight of Ferrater (1981, 80) that the ternary rhythm is one of the most natural in Catalan. Nevertheless, the distribu-

24 Tangentially for our study, the abundance of ternary patterns in the second hemistich, according to Ramírez (1985, 73), reveals that March does not follow the stress patterns of the Italian *hendecasyllable*, which prefers stresses on the fourth and eighth syllables or on the sixth syllable.

tion among the patterns clearly differs. Compared to Estellés, March's verses reflect a striking decline in the frequency of the ternary model and a rise in the frequency of binary rhythms, especially the iambic model WSWSWS and the model with the longest foot at the end: WSWWWS. Unlike the other cases, the divergence is now statistically significant ($\chi^2_{(3)} = 48.470$; $p < 0.001$, Cramer's V = 0.131), even though the size of the effect is weak. As we will see in the next paragraph, the variation is primarily due to changes in the frequency of the ternary pattern with respect to the group of binary models as a whole and not to differences within the latter group. We can therefore conclude that, even though the ternary rhythm is the most common one in March's poetry, a predilection for the rhythms in the binary group predominates and the proportions are not very different from those predicted by Duffell (1994, 290). This predominance could indicate that the system of stress in Catalan is, as Coromines (1971, 96–97) claimed, essentially binary, even though the ternary rhythm is very natural as well.

(16) Illustration of the ternary pattern and the three binary patterns in the second hemistich, using poem XXXIV, 41–44:

Lir en-tre carts,	los es-cur-çons no mor<den>
SWWS	WWWSWS
	'Lily 'midst thorns, the scorpion hath no bite'CONEJ.
ab tant fort mos	com és lo de A-mor;
WSWS	WSWWWS
	'To be compared in strength to that of Love;'CONEJ.
si bé·ls mor-duts	no pas-sen tal cuy-çor,
WSWS	WSWSWS
	'Although the bitten suffer not such chafe,'CONEJ.
per-den lo seny	e les vis-tes e-xor<ben.>
SWWS	WWSWWS
	'They lose all sense, and blindness veils their sight'CONEJ.

By contrast, despite the variations in frequency among the three binary patterns in March and Estellés that appear in Table 4, the proportions of the two authors' use of these patterns are not statistically different ($\chi^2_{(2)} = 4.494$; $p = 0.106$, Cramer's V = 0.041). Moreover, the sample is quite extensive in this case, suggesting that the agreement identified by the test stems from a very deep tendency. As in section 3.2, the equivalence of the proportions appears to indicate once again that we have two poets who ultimately adopt the same solutions because they share the same metrical grammar and structure of language.

Let us conclude this section by checking whether the slight predilection of March for binary patterns with respect to Estellés leads to the selection of shorter words and therefore a higher ratio of words per line. In principle, this outcome is what we would expect. First, because other authors such as Ramírez (1985, 79) note the abundance of one-syllable words in March, which is quite widespread in

the first hemistich and not uncommon in the second hemistich.[25] Second, because as noted earlier the selection of rhythmic patterns that are less strict than the binary model is typically interpreted as a way to fit a broader range of vocabulary into the verse. To evaluate the ratio of words per line, we count the words in the second hemistich of March's verse and compare the result to each hemistich in Estellés's alexandrines in *Llibre de meravelles* (see Table 5). The one-way Anova text indicates that the three corpora present significant differences ($F_{(2,\ 5009)} = 90.307$; $p < 0.001$, $R^2 = 0.035$). According to the Games-Howell post-hoc test, the ratio in Estellés's first hemistich (average: 4.07 words, SD: 1.077) and second hemistich (average: 4.05 words, SD: 1.067) is practically identical, but the value is slightly higher in March's second hemistich (average: 4.46 words, SD: 1.049). While the difference goes in the expected direction with more words per hemistich in March, there is not a large gap in terms of the size of the effect ($R^2 = 0.035$).[26] It would seem natural to conclude that, except for the slight predilection for binary patterns in March, there is nearly total agreement on the selection of rhythmic schemes with regard to the remaining aspects.

Table 5: Count of the number of words in the second hemistich of March and the first and second hemistichs of Estellés (with percentages in brackets)

Number of words	Count (%) in the first hemistich of March (2,464 hemistichs)	Count (%) in the first hemistich of Estellés (1,274 hemistichs)	Count (%) in the second hemistich of Estellés (1,274 hemistichs)
1	–	2 (0.2%)	7 (0.5%)
2	42 (1.7%)	66 (5.2%)	64 (5%)
3	404 (16.4%)	322 (25.3%)	321 (25.2%)
4	835 (33.9%)	480 (37.7%)	473 (37.1%)
5	808 (32.8%)	280 (22%)	297 (23.3%)
6	312 (12.7%)	106 (8.3%)	100 (7.8%)
7	57 (2.3%)	16 (1.3%)	11 (0.9%)
8	6 (0.2%)	2 (0.2%)	1 (0.1%)
Average (SD)	4.46 words (1.049)	4.07 words (1.077)	4.05 words (1.067)

25 Another property that Ramírez (1985, 79) notes is the accumulation of monosyllabic rhymes in March's poetry.

26 Although there is not a big difference between the ratio of words in the second hemistich (4.46 words per hemistich) and the anticipated ratio based on the counts of the first hemistich (4.8 words), the results do effectively corroborate the findings of Ramírez (1985, 79), which is that one-syllable words are more frequent in the first part of the verse.

5 Analysis of the combinations between the two hemistichs of March's decasyllables

This section raises two additional points on the combinations of the three main stress profiles in March's first hemistich with the four most frequent patterns in his second hemistich. The related counts appear in Table 6. Firstly, the statistical analysis reveals that the patterns of the two hemistichs do not combine entirely randomly, that is, there is a certain degree of association between the models of the first and second hemistichs ($\chi^2_{(6)} = 15.917$; $p = 0.014$, Cramer's V = 0.060). However, the value of Cramer's V indicates that the association between the schemes selected for each hemistich is rather weak. As expected, the combination with the pattern WSWS is always more frequent for all models of the second hemistich. In addition, the combination of second hemistich patterns with each first hemistich model always follows the same rank order by frequency as the rank order that occurs when the second hemistich patterns are counted separately, with the exception of the inversion in the frequency of the pairings between SWWS and the schemes WWSWWS and WSWSWS, and even then the difference is negligible. Similarly, the combination between WWWS and WWWSWS is less frequent than expected, but the difference again is not very significant. The remaining deviations from the average, even when they contribute to exceeding the threshold of significance, can be regarded as minor.

Table 6: Count of the combinations between the top stress patterns in the first and second hemistichs

		Second hemistich	Count based on the combination of second hemistich patterns with each first hemistich pattern	Total
First hemistich	WSWS	WWSWWS	402 (33%)	1,219 (100%)
		WSWSWS	329 (27%)	
		WSWWWS	303 (24.9%)	
		WWWSWS	185 (15.2%)	
	WWWS	WWSWWS	250 (34.5%)	725 (100%)
		WSWSWS	229 (31.6%)	
		WSWWWS	170 (23.4%)	
		WWWSWS	76 (10.5%)	
	SWWS	WWSWWS	83 (27.9%)	297 (100%)
		WSWSWS	92 (31%)	
		WSWWWS	73 (24.6%)	
		WWWSWS	49 (16.5%)	

A second observation based on Table 6, which runs contrary to the claim of Ferreres (1979, vol. 1, 99; 1981, 320), is that the purely iambic pattern WSWS / WSWSWS is not only not the least common, but is in fact the second most frequent. This finding, however, is not in any way unexpected. As noted in the previous sections, we have seen that the binary pattern is quite common in both hemistichs. In this regard, the last question that we would like to pose is whether the greater abundance of iambic hexasyllables in March's poetry compared to Estellés's alexandrines is an extension of the tendency toward binary patterns in the tetrasyllable of the first hemistich. That is, we want to test whether the increase in binary hexasyllables in March's second hemistich in relation to Estellés reflects a demand of the decasyllable *a minore* more than a stylistic decision of March. To clarify the matter, we will analyse how the purely binary and ternary schemes in the second hemistich combine with the iambic model and the group of two non-iambic models in the first hemistich. The distribution of cases, which appears in Table 7, shows a certain degree of association between the binary pattern in the first hemistich and the ternary pattern in the second hemistich, even though it is not statistically significant ($\chi^2_{(1)} = 2.302$; $p = 0.129$, Cramer's V = 0.041). We must therefore conclude that the metre of the first hemistich does not affect the metre of the second hemistich and that, as a result, the greater presence of structures with an iambic rhythm in the hexasyl-

lables of March is genuinely due to a stylistic choice and not to an imposition of the genre.

Table 7: Relationship between the binary and non-binary rhythm of the first hemistich and the binary and ternary rhythms of the second hemistich

		Second hemistich	
		WSWSWS	WWSWWS
First hemistich	WSWS	329 (50,6%)	402 (54,7%)
	WWWS, SWWS	321 (49,4%)	333 (45,3%)

6 Conclusions

The preceding analysis of March's poems confirms that, as we had previously found in Estellés, the frequency of stress patterns is inversely proportional to their structural complexity in the initial tetrasyllable and the final hexasyllable. Unsurprisingly, therefore, the most common patterns in the two poets are the anapaestic and iambic models. Moreover, as the formal suitability of the patterns is governed by universal constraints on metrical well-formedness that are shared by both authors, the rank order of the schemes by frequency practically always coincides in the two examined corpora, not only in their hexasyllables, but also in the indirect comparison that we have carried out between March's tetrasyllables and the corresponding hexasyllables of March and Estellés.

While there are many concurrences, we have also found that the proportion of binary and ternary patterns is determined by the authors' style, with March exhibiting a slight inclination toward the iambic rhythm. That said, within each group and especially in the tetrasyllables and the family of binary patterns, we find quite a similar distribution among the various schemes, even to the point that they are often statistically equivalent. In our view, this agreement stems from the fact that the two authors use the same language and must grapple with a lexicon that is more or less identical. As a result, similar percentages emerge out of the delicate balance struck between the expression of ideas and the search for the ideal binary or pure ternary rhythm. All told, therefore, the two poets reach similar solutions with equivalent frequencies, because their poetry exhibits the same metrical grammar. In this regard, the question remains as to whether we are speaking of the metrical grammar of the Catalan language or only that of Catalan poetry. In other words, it is hard to determine whether the two authors' poetry embodies the prototypical rhythmic schemes of Catalan or, to the contrary,

merely reflects a formal tradition featuring a number of particular uses that pertain to a well-established genre. In my view, the explanation in all likelihood lies in a combination of the two factors, which complement one another when determining what is metrically suitable in Catalan and what is not. However, this is a question that requires more in-depth study in the future.

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