Varying degree of vowel similarity in consonance:[1]

Phonological analysis of 19th-century poets

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Abstract In English poetry, rhyme is broadly classified into *perfect rhyme*, where both the vowel and coda consonant of the final syllable match, and *imperfect rhyme*, where only one of these elements aligns. Consonance, a type of imperfect rhyme, involves matching coda consonants while allowing vowel differences. Prior studies suggest that vowel pairs in consonance share certain phonological similarity: Maher (1969), Zwicky (1976), and Natsume (2023) suggest that consonance pairs typically differ by one or two phonological features, while Okazaki (2014) proposes that vowel pairs either reflect morphophonological alternations or are linked through shared intermediary vowels. However, a degree to which the similarity can vary among poets remains unanswered question, as studies on phonological analysis of consonance is scarce. This study extends the prior studies with a case study of two late 19th-century poets, Emily Dickinson and W. B. Yeats. Examples of consonant rhyme were collected from their poetry by identifing word pairs matching in rhyme schemes but differing in their vowel pronunciation. The analysis revealed that Dickinson and Yeats display more variability in the similarity in their consonance pairs compared to Blake and Hopkins, imposing notably weaker constraints on vowel combinations. This variation is interpreted as a poetic strategy in which relaxing phonological constraints enables the development of new expressive possibilities.

1. Introduction

It is crucial for rhymes to sound similar – if they are not, poets would fail to create a rhythmic effect that is soothing to the ears of readers. Strangely enough, however, there exists a sub-class of rhyme that lacks this quintessential musical effect: consonance. While most rhymes repeat the last vowel of a word and its following consonants, in consonance, only the consonants are repeated. Consider the following example:

[1] This is a reworked version of my MA thesis.

What immortal hand or eye /**aɪ**/

Could frame thy fearful symmetry? /sɪmɪtr**i**/

William Blake, *The Tyger*

Here, *eye* and *symmetry* are used as a rhyming pair, even though their last vowels are dissimilar. Consonance tends to be "not nearly as pleasing to the ear" and "sometimes undeniably dissonant" (Shapiro and Beum 1965, p.90). These characteristics place consonance in stark contrast to the well-known harmonious effect of traditional rhyming.

Although consonance might seem like a rule-breaker, it operates within its own set of rules. Prior research has revealed that vowels involved are not entirely arbitrary but are governed by specific phonological principles: Zwicky (1976) and Natsume (2023) claim that the vowels must share similarities in terms of phonological features, while Okazaki (2014) states that the vowels are underlyingly related. As Shapiro and Beum (1965) explain, the dissonance in consonance "[comes] close to the melodic quality of rhyme without resolving into it". This description highlights the intricate restrictions placed on vowel combinations in consonance, where the pairing must neither be too dissimilar to lose coherence nor too identical to qualify as a traditional rhyme.

One of the unanswered questions involves the varying degrees of restriction poets impose on the vowels within this device. Since consonance is inherently about similarity, which operates on a subjective scale, different poets might interpret and apply these constraints in distinct ways. However, consonance has not received sufficient scrutiny from a phonetic or phonological perspective, with only a few case studies available. This paper examines phonological properties of consonance found in works of 19th-century poets, namely Emily Dickinson and William Butler Yeats, and then compares them to those of Gerard Manley Hopkins and William Blake using data from Natsume (2023, 2019), with the aim of demonstrating a difference between the poets in restriction imposed on a selection of vowel in consonance.

2. Rhymes and their sub-classes

2.1 Definition

Rhyme (to be more concise, end-rhyme) is a repetition of identical or similar sounds at the ends of poetic lines. Rhymes can be broadly categorized into two types: perfect rhyme, and its less stringent counterparts, known as imperfect rhyme. Perfect rhyme, often referred to simply as rhyme,

adheres to stricter phonological rules, whereas imperfect rhyme allows for greater flexibility in sound correspondence. Greene and Cushman (2016) describe the former as follows:

> "the linkage in poetry of two syllables at line end [...] that have identical stressed vowels and subsequent phonemes but differ in initial consonant(s) if any are present"
>
> (Greene and Cushman, 2016, p. 294)

Two examples are cited below[2]:

1. I passed along the water's edge below the humid trees,
2. My spirit rocked in evening light, the rushes round my knees,
3. My spirit rocked in sleep and sighs; and saw the moorfowl *pace*
4. All dripping on a grassy slope, and saw them cease to *chase*

   […]

William Butler Yeats, *The Indian upon God*

(Line numbers and emphasis added)

1. Where dips the rocky *highland*
2. Of Sleuth Wood in the lake,
3. There lies a leafy *island*
4. Where flapping herons wake

   […]

William Butler Yeats, *The Stolen Child*

(Line numbers and emphasis added)

In these examples, the ends of corresponding lines exhibit repetition of stressed vowels and the following phonemes, thus fulfilling the criteria for perfect rhyme. Notably, in cases where the stressed syllable is not the final syllable of the word, as seen in *highland* and *island*, the vowels and consonants of the subsequent syllable(s) must also align.

[2] If a final syllable is stressed, the rhyme is called a **masculine rhyme**. If a final syllable is unstressed, it is called a **feminine rhyme**.

In contrast to perfect rhyme, imperfect rhyme relaxes the strict phonological requirements and instead matches only certain elements of the final syllable. Imperfect rhyme can be further divided into two subcategories: assonance and consonance. Assonance involves the repetition of identical vowel sounds while allowing variation in the final consonants, whereas consonance involves the repetition of final consonants with variation in the vowel sounds. Consider the following example:

> […]
>
> 9. For they, for all smooth lips can say,
> 10. Have given their hearts up to the play.
> 11. And who could play it well ***enough***
> 12. If deaf and dumb and blind with ***love***?
> 13. He that made this knows all the cost,
> 14. For he gave all his heart and lost.
>
> […]
>
> William Butler Yeats, *Never give all the Heart*
>
> (Line numbers and emphasis added)

In this poem, the rhyming scheme follows an aabb pattern, indicating that each pair of consecutive lines should rhyme. While most pairs exhibit perfect rhyme, such as *say – play*, the pair *enough – love* deviates from this pattern. Here, the vowel [ʌ] is identical, but the consonants differ: [f] in *enough* versus [v] in *love*. The shared vowel sound is sufficient to create a partial rhyme despite the differing consonants.

Consonance, on the other hand, involves the repetition of final consonant sounds while allowing variation in the vowels. Here is an example:

> 1. A man came slowly from the setting sun,
> 2. To Emer, raddling raiment in her dun,
> 3. And said, 'I am that swineherd whom you ***bid***
> 4. Go watch the road between the wood and ***tide***,
> 5. But now I have no need to watch it more?'

6. Then Emer cast the web upon the floor,
7. And raising arms all raddled with the *dye*,
8. Parted her lips with a loud sudden *cry*.

William Butler Yeats, *Cuchulain's Fight with the Sea*

(Line numbers and emphasis added)

In this poem, the rhyming scheme also follows an aabb pattern. However, the pairing *bid – tide* clearly does not meet the criteria for perfect rhyme, as the vowels differ: [ɪ] in *bid* and [aɪ] in *tide*. Instead, the consonant sounds are identical, creating a partial rhyme that falls into the category of consonance. Note that consonants sounds are deemed identical even if they do not exist: in the following example, *avow – know* have no consonant in their rhyme but nevertheless functions as a consonance pair, due to their shared status of their consonant being absent:

[…]
9. Bid the ghost have sword in fist:
10. Some there are, for I **avow**
11. Such devilish things exist,
12. Who have planned his murder, for they **know**
13. Of some most haughty deed or thought
14. That waits upon his future days,
15. And would through hatred of the bays
16. Bring that to nought.

[…]

William Butler Yeats, *A Prayer for my Son*

(Line numbers and emphasis added)

In some cases, consonance and assonance can occur in the same pair, as in the following example:

1. I walk through the long schoolroom questioning;
2. A kind old nun in a white hood **replies**;
3. The children learn to cipher and to sing,
4. To study reading-books and **history**,
5. To cut and sew, be neat in everything

6. In the best modern way - the children's **eyes**
7. In momentary wonder stare upon
8. A sixty-year-old smiling public man.

William Butler Yeats, *Among School Children*

(Line numbers and emphasis added)

Here, both consonance and assonance are used in *replies – history – eyes*: [aɪ] – [i] – [aɪ] and [z] – [Ø] – [z]. This should not be considered as unrhyming pairs, as there exists a rhyming pattern that is consistent throughout the poem, as indicated by the following stanzas:

[…]
9. I dream of a Ledaean body, bent
10. Above a sinking fire, a tale that she
11. Told of a harsh reproof, or trivial event
12. That changed some childish day to tragedy –
13. Told, and it seemed that our two natures blent
14. Into a sphere from youthful sympathy,
15. Or else, to alter Plato's parable,
16. Into the yolk and white of the one shell.

[…]

William Butler Yeats, *Among School Children*

(Line numbers and emphasis added)

The poem consists of eight stanzas (the rest of which will not be cited here), all following the abababcc pattern. It is only when a poem adheres to certain rhyming scheme that a pair can be considered a combination of consonance and assonance; otherwise, the pairs not intended to rhyme can be wrongly considered as "imperfectly rhyming".

2.2 Poetic effects

One of the primary reasons poets employ rhymes is to establish a rhythm that appeals to the auditory senses of readers. The repetition of identical or similar sounds at the ends of lines generates a euphonic quality, creating a melodic cadence that enhances the overall reading or listening experience. Beyond their rhythmic contribution, rhymes also play a crutial role in emphasizing line endings. The

repetition inherent in rhyme signals the conclusion of a line, thus creating a distinct auditory marker. This, in turn, has a variety of poetic effects, as described by Pattinson (2014):

> 1. It is followed by a grammatical pause. This lets the lyric's idea "ring on" during the silence.
>
> 2. On the musical side of the song, there is usually a musical rest with the phrase rest, creating an end to a melodic phrase as well.
>
> 3. Since it is the end of a musical phrase, a melodic or harmonic signal usually will tell you what to expect next. This special musical function calls even more attention to the spot.
>
> 4. When there is rhyme in the phrase-end position, it has a special feature: it will *sound* like other words, again focusing attention on the position.
>
> (Pattinson, 2014, p.9 – 10)

While the significance of repetition and similarity in rhymes is evident, it is noteworthy that many poems incorporate imperfect rhymes. Some instances of imperfect rhymes may arise unintentionally: in historical rhymes, pairs of words that were once considered perfect rhymes may become imperfect due to changes in pronunciation over time. Examples include *eaten – threaten* in the works of Thomas Wyatt (1503 – 1542), *sweat – heat* by William Shakespeare (1564 – 1616), and *great – get* by John Donne (1571 – 1631), all of which were likely pronounced as perfect rhymes during the 16th century (Wyld, 1965, p.4). Some of these pairs, especially those categorized as "eye rhymes," continue to be used in poetry despite their loss of auditory correspondence. Notable examples include *love – prove, flood – brood, hear – bear, waste – past*, and *have – grave*. These pairs rely on their visual similarity (the spelling) to create a rhyming effect, even though they no longer produce the same auditory resemblance (Wyld, 1965, p.11).

In many cases, however, poets intentionally incorporate imperfect rhymes to exploit their dissonant qualities. Pattinson (2014) highlights one such effect: by avoiding the resolution achieved through perfect rhyme, poets can sustain emotional tension and carry unresolved feelings into subsequent sections of a poem. This technique is exemplified in Warren Zevon's "Hasten Down the Wind" (p.27):

> She's so many women
> He can't find the one who was his *friend*
> He's hanging on to half a heart
> But he can't have the restless part

So he tells her to HASTEN DOWN THE *WIND*

Emphasis by Pattinson (2014)

Here, the imperfect consonance in the pair *friend – wind* creates a sense of suspension and uncertainty, reflecting the unresolved emotions of the speaker. According to Pattinson (2014), the use of a perfect rhyme or a slightly less imperfect one, such as assonance, would have diminished this effect, making the poem feel more conclusive and less emotionally charged. By deviating from traditional rhyming patterns, poets can deliberately leave emotions unsettled, thereby enriching the depth and complexity of their work.

Another significant advantage of employing imperfect rhymes lies in their ability to prevent monotony. While rhyming is a fundamental element of many English poetic traditions, strict adherence to perfect end rhymes can render a poem overly predictable and unvaried. Poets, always in pursuit of fresh methods of expression, often push the boundaries of convention to introduce novelty and innovation into their work. The strategic use of imperfect rhymes allows poets to break free from traditional expectations, creating moments of surprise and individuality that maintain the reader's engagement. By doing so, they bring new life into established forms, ensuring that their compositions remain dynamic, thought-provoking, and artistically compelling.

3.Previous studies

One of the enduring questions in the study of consonance is the extent to which vowels in consonance pairs can exhibit dissimilarity. The majority of prior studies has sought to address this issue by employing phonological features as a basis for analysis. The feature-based approach to consonance was initially proposed by Maher (1969, 1972) and subsequently expanded by Zwicky (1976), with similar lines of inquiry pursued by Natsume (2023). An alternative methodology was introduced by Okazaki (2014), who explored the underlying structural relationships between words to elucidate patterns in consonance. Despite variations in their methodological frameworks, these studies collectively converge on the notion that consonance pairs typically share certain phonological properties. However, they also highlight variability in the degree of similarity required for consonance, which appears to depend on the perspectives and analytical priorities of individual researchers.

3.1 Feature-based analysis

Maher (1969) offers a detailed examination of imperfect rhymes found in both traditional nursery rhymes and “modern doggerel”. He asserts that meaningful discussions of slant rhymes necessitate the use of phonological abstraction, particularly the concept of distinctive features. For instance, he identifies examples such as “in a stitch in time saves nine” “one for my dame, one for the little boy who lives in the lane”, which differ in the feature of nasality. Similarly, “he catches fishes in other men's ditches”, illustrates commonality in stridency between [ʃ] and [tʃ], while “Little Tommy Tucker sings for his supper”, displays the shared property of being grave voiceless stops between [k] and [p]. Maher (1972) reinforces these findings by presenting analogous examples from German folk versification. Maher (1969, p14) states the imperfect rhymes “mirror clearly the psychological reality, the autonomy, or simply the folk's awareness of componential features in phonology”, highlighting the cognitive salience of such phonological abstractions.

The investigation of imperfect rhymes was further advanced by Zwicky (1976), who analyzed irregular rhymes in rock music lyrics. He posits that the vowels in consonance pairs are generally “one feature apart in anybody's feature system” (p. 691). Some of the most frequent pairs are as follows:

ɪ – ɛ :	19 examples
ʌ – ɔ :	10
i – e :	9
ʌ – a :	8
u – o :	6
ɛ – æ ɛ – e	4
a – ɔ :	3

(Zwicky, 1976, p. 691)

For example, the first pair ɪ – ɛ as in *underfed – hid* (p.691) differs solely in height: ɪ is a *high* front unrounded vowel whereas ɛ is *mid* front unrounded vowel. The second pair, ʌ – ɔ, contrasts in rounding, and in the third pair, distinction yet again involves differences in height. The last pair is somewhat exceptional: a is [−round, +low] while ɔ is [+round, − low] according to Chomsky and Halle (1968), thus involving two features. Those "vocalic feature rhymes", as Zwicky calls them, appear in some of the rock music lyrics as shown below:

> My experience was limited and underfed,
> You were talking while I hid,
> To the one who was the father of your kid.
>
> Bob Dylan, *Love is Just a Four Letter Word*

> Old Reilly stole a stallion
> But they caught him and brought him back
> And they laid him down on the jail house ground
> With an iron chain around his neck.
>
> Bob Dylan, *Seven Curses*

> Well the technical manual's busy
> She's not going to fix it up too easy
>
> Joni Mitchell, *Electricity*

> Advertising signs that con you
> Into thinking you're the one
>
> Bob Dylan, *It's Alright Ma (I'm only Bleeding)*

Expanding on this framework, Natsume (2023) examines the poetry of Gerard Manley Hopkins and identifies a more flexible application of Zwicky's rule. While the majority of consonance pairs conform to the "one-feature-apart" constraint, Natsume also identifies several exceptions involving differences of up to three features. For example, pairs such as /ɪ/ – /e/ adhere to the standard constraints, as do pairs involving diphthongs, such as /uː/ – /aʊ/, where the secondary segment of the diphthong is restricted by the rule. There are three exceptional pairs: /ɒ/ – /aʊ/ (e.g. *not – mouth*), distinguished by two features, [high] and [low]; /ʌ/ – /uː/ (e.g. *blood – food*), differing in three features, [high] [tense] [round]; and /ɒ/ – /uː/ (e.g. *of – approve*), which also contrast in three features, [tense] [high] [low]. These results reveal that Hopkins' works operate under looser constraints compared to those found in rock music lyrics. This suggests that the tolerable degree of vowel dissimilarity varies significantly across poetic and lyrical traditions. (See page 43 for the list of vowel pairs.)

3.2 Vowel alternation analysis

Okazaki (2014) provides a complementary perspective by employing a different analytical method to examine consonance in modern poetry and song lyrics. Okazaki's study classifies vowel pairs into three distinct categories:

(a) Pairs corresponding to a vowel alternation triggered by suffixation

(b) Pairs corresponding to a vowel alternation triggered by ablaut

(c) Pairs corresponding neither to an alternation triggered by suffixation nor ablaut

Examples:

(a)	steel – tell	[i:] – [e]	<<	serene – serenity
(b)	him – name	[i] – [ei]	<<	give – gave
(c)	tell – still	[i] – [e]	<<	give [i] – gave [ei]
				retain [ei] – retention [e]

(Okazaki, 2014. p. 114 - 120)

Okazaki (2014) posits that pairs in categories (a) and (b) can be considered "perfect rhymes at an underlying level" (p. 119). Taking (a) for example, *steel – tell* share the same vowels as *serene – serenity*; since [i:] in *serene* and [e] in *serenity* is derived from the same underlying vowel, Okazaki (2014) claims that [i:] in *steel* and [e] in *tell* also share the same vowel underlyingly (despite the fact that *steel – tell* are not morphologically related, unlike *serene – serenity*, which are unsuffixed and suffixed version of each other). A similar principle applies to category (b). The pairs in (c), on the other hand, do not appear explicitly in vowel alternations. Such pairs are described as a combination of multiple vowel alternations ([i] – [ei], [ei] – [e]) linked through a mediating vowel ([ei]).

Okazaki (2014, p. 120) further delineates three governing principles for category (c) pairs: (i) the number of linking vowels must not exceed one, (ii) the vowels in the pair must share the same [back] specification in their underlying forms, and (iii) at least one of the alternations involved in the linking must be observed in suffixation. For example, in the case of [i] – [e], the linking vowel [ei] satisfies these principles: (i) only one linking vowel is present, (ii) both [i] and [e] are specified as [-back], and (iii) the alternation [ei] – [e] arises from suffixation. Nevertheless, Okazaki acknowledges the existence of a few exceptional examples that deviate from these rules.

This analysis is extended to compare the works of Emily Dickinson with William Butler Yeats. Okazaki notes that Dickinson adheres more strictly to the proposed principles in category (c), allowing no more than one rule violation in her consonance pairs. By contrast, Yeats exhibits a more flexible

approach, tolerating multiple rule violations. For instance, the pair [ɔ] – [æ] contravenes both rules (i) and (ii). Okazaki interprets this flexibility as the indication of Yeats' prioritization of suffixation-derived vowel alternations, which he perceives as more closely related, over those stemming from ablaut.

4. Problems and Solution

4.1 Problems

One of the key questions in calculating a similarity of vowel pairs is on what basis their similarity should be evaluated. Here, we assert that the major issue with the previous studies is their predominant focus on phonology at the expense of phonetics. Rhymes, being inherently auditory phenomena, are experienced and evaluated through their actual pronunciation rather than their abstract phonological representations. As such, analyses that rely excessively on phonological abstractions risk neglecting crucial aspects of how rhymes are perceived in real-world contexts.

One major limitation of feature-based analyses, such as those conducted by Maher (1969), Zwicky (1976), and Natsume (2023), lies in their reliance on phonological features to measure the dissimilarity between vowels. While phonological features are effective in providing linguists with concise and systematic descriptions of phonological processes and in maintaining phonemic contrasts, they are inherently abstract. This abstraction entails the omission of certain phonetic variances that are present at the surface level. A case in point is the specification of the horizontal position of vowels. In binary phonological feature systems, such as those commonly employed in analyses of English, horizontal vowel position is typically represented as a simple two-way distinction: front versus back, or [-back] versus [+back]. However, this dichotomy fails to capture the three-way phonetic contrast—front, central, and back—that is both observable and relevant in perceptual studies. For example, Singh and Woods (1971) demonstrate a statistical correlation between ternary classifications of horizontal vowel position and acoustic dissimilarities, implying the inadequacy of binary phonological features in accurately representing perceptual data.

Another significant limitation of phonological analyses is their inability to account for vowels that lack distinctive phonological features, such as schwa and /ɜ/. These vowels arise in specific environments where phonemic contrasts are neutralized: schwa in unstressed syllables and /ɜ/ before /r/. Because they lack phonological specifications, these vowels pose a problem for feature-based analyses, which rely on comparing the specifications of features across vowel pairs to determine their

degree of dissimilarity. The absence of features in one or both vowels renders such comparisons impossible, leaving certain consonance pairs unaccounted for within the framework of phonological analysis.

Okazaki's (2014) vowel alternation analysis also presents several challenges, chief among which is the unclear relationship between vowel alternations and their contribution to the acoustic effect of rhyming. Consonance, as an auditory and aesthetic phenomenon, is primarily a property of surface forms that produce acoustic similarity, rather than underlying phonological forms. This raises a critical question: how does the identification of vowel alternations contribute to understanding the acoustic similarity central to consonance? The issue is particularly pronounced in the case of "coupled pairs" in category (c), for which the claimed underlying phonological relationship between the vowel pairs is nonexistent.

Even if one were to accept the hypothesis that underlying phonological relatedness contributes to perceived acoustic similarity, this assumption is problematic and lacks sufficient empirical support. For example, Okazaki (2014) draws a parallel between the pair *tell – steel* and the alternation in *serene – serenity*, suggesting that both share the same underlying vowel /ē/. However, this claim is fraught with issues. While Okazaki asserts that [iː] in *steel* and [e] in *tell* are both derived from the underlying /ē/, there is no evidence to support the assumption that the underlying vowel in *tell* is long. Furthermore, this analysis fails to account for the laxing of the underlying /ē/ to the surface form [e], a process governed by a specific phonological rule. According to Chomsky and Halle (1968, p. 180), laxing occurs in environments where a vowel is followed by more than two syllables, the first of which is unstressed, as represented below:

$$V \rightarrow [-\text{tense}] \,/\, \_\_ C(C_1 +) \begin{bmatrix} -\text{stress} \\ V \end{bmatrix} C_0 V$$

(Chomsky and Halle 1968, p.180, Rule 19b)

However, this condition does not apply to *tell*, which is monosyllabic. Consequently, the underlying /ē/ would remain tense, resulting in an incorrect surface form that fails to match the observed pronunciation. This inconsistency demonstrates the limitations of assuming a straightforward mapping between underlying phonological forms and their surface manifestations in explaining consonance effects.

In summary, while phonological approaches have contributed valuable insights into the study of consonance, their limitations highlight the need for methodologies that account for the

perceptual and acoustic dimensions of rhyming. A less phonologically orientated approach capable of capturing phonetic details may offer a more comprehensive understanding of the phenomenon.

4.2 Proposal

Our proposal aims to address the limitations of prior studies by introducing a feature system grounded in phonetic classification. This approach enables us to quantify the "distance" or degree of dissimilarity between vowels at the phonetic level, providing a more perceptually relevant framework for analyzing consonance. The proposed feature specifications for each vowel are outlined in Table 1.

The proposed system employs five features: [high], [low], [front], [back], and [tense]. These features collectively describe vowel qualities in a manner that is both systematic and reflective of their acoustic and articulatory characteristics. Features [high] and [low] determine vowel height, categorizing high vowels as [+high] vowels and low vowels as [+low] vowels. Features [front] and [back] specify vowel advancement, with front vowels being [+front] and back vowels being [+back]. By extension, mid vowels are represented as [-high, -low], and central vowels as [-front, -back]. Notably, the feature [back] eliminates the need for a separate lip-rounding feature, as all [+back] vowels inherently exhibit lip rounding, rendering the feature [round] redundant. The [tense] feature captures the slight differences in vowel quality that arise from centrifugal positioning, as well as potential differences in vowel length. Importantly, this feature is unique in that it does not specify position directly but instead reflects subtler aspects of vowel articulation.

Table 1

Our Proposal of Feature System

		[+front, –back]	[–front, -back]	[–front, +back]
[+high, –low]	[+tense]	iː		uː
	[–tense]	ɪ; eɪ, ɔɪ, aɪ; i		ʊ; aʊ, oʊ, əʊ (,ɒʊ); u
[–high, –low]	[+tense]		ɜː, ɝ	ɔː
	[–tense]	e	ʌ; ɪə, ʊə, eə; ə	
[–high, +low]	[+tense]		ɑː	ɒ
	[–tense]	æ		

Several vowels within the system warrant further explanation. Diphthongs are listed alongside their secondary elements, as only these secondary elements are restricted under the one-feature-apart rule when used in consonance (Natsume 2023). In other words, the primary elements of diphthongs are disregarded in consonance pairings. Additionally, weak vowels, represented as i and u, are treated as unspecified for the [tense] feature. These symbols denote neutralized forms of /iː/ and /ɪ/ or /uː/ and /ʊ/ respectively in weak syllables, reflecting the variability observed among speakers (Wells 2008, p. 539)[3]. According to Natsume (2023), when these weak vowels are employed in consonance, their [tense] specification appears to be determined by their counterparts in the pairing. For instance, if paired with a [+tense] vowel, weak vowels adopt a [+tense] specification and retrospectively align with /iː/ or /uː/, and vice versa. Consequently, the [tense] feature for weak vowels is left unspecified in our system, and these vowels are excluded from the calculation of feature differences between vowel pairs.

It is important to note that Singh and Woods (1971) provide evidence that challenges the inclusion of the [tense] feature in phonetic analyses. Their study, which explores the relationship between vowel features and perceptual dissimilarity ratings, indicates that tenseness does not significantly influence listeners' perception of vowel dissimilarity (p. 1864). Although the [tense] feature serves an essential role in many phonological systems such as maintaining phonemic contrasts, its perceptual salience appears limited. This discrepancy suggests that the functional importance of features does not necessarily align with their contribution to perceptual judgments. Consequently, one might argue for the exclusion of the [tense] feature in a system designed to assess consonance, given that consonance pairs refer to perceptual similarities in a selection of vowels.

However, the inclusion of the [tense] feature in our proposed system is supported by empirical data from imperfect rhyme studies. As discussed earlier, the majority of rhymes are perfect rhymes, with imperfect rhymes occurring far less frequently. If the [tense] feature were perceptually insignificant, pairs differing solely by this feature—such as [ɪ] and [iː]—would be perceived as

[3] Whether the variance existed in the 19th century depends on the region. For British English, Lewis (n.d.) gives example of a speaker born in the century pronouncing the weak *i* with [ɪ] close to [iː], as well as speakers from the same century having variable pronunciation between those two. It must be noted that this does not indicate that the variance is as widespread as it is today – there were some speakers using primarily the former form, as well as other speakers showing variability. Evidence for American English, on the other hand, is scarce. Nevertheless, we assume that the variability observed today was employed in the 19th century. Since it is impossible to arcuately reconstruct the English spoken at the time, we can only make an bold assumption that the English in the 19th century is no different from the present-day English.

equivalent to perfect rhymes. This would result in a disproportionately high frequency of such pairs. Yet, data from the works of Blake (Natsume 2019) and Hopkins (Natsume 2023) do not support this prediction. In the frequency tables derived from their works (Table 2), pairs differing solely in [tense] (marked with an asterisk) (e.g., [ɪ] – [iː]) do not dominate the rankings – consonance pairs differing only in [tense] appear sporadically and do not exhibit a consistent ranking among the other pairs.

This suggests that the feature contributes to perceived dissimilarity and instability, contrary to an estimate by the dissimilarity study. While [tense] may not be salient in isolated vowel comparisons (Singh and Woods 1971), its role in creating discordance within consonance is significant, as it introduces subtle variations essential to the dissonant effect of imperfect rhymes.

Overall, the proposed phonetic feature system offers a refined framework for analyzing consonance by integrating both articulatory and perceptual dimensions. By addressing the shortcomings of previous phonological models and incorporating empirical findings, this system provides a more comprehensive tool for studying the intricate patterns of consonance in poetic and lyrical contexts.

Table 2

Frequency of consonance vowel pairs for Blake and Hopkins

Blake			Hopkins		
Vowel Pairs	Frequency		Vowel Pairs	Frequency	
eɪ/e	5		i/iː	27	*
e/eɪ	5		iː/i	27	*
aɪ/i	3		aɪ/ɪ	6	
i/aɪ	3		ɪ/aɪ	6	
əʊ/uː	2	*	ɪ/iː	5	*
uː/əʊ	2	*	iː/ɪ	5	*
e/iː	2		ɒ/ɔː	5	
ɑː/ɪə	2		ɔː/ɒ	5	
iː/e	2		aɪ/i	4	
ɪə/ɑː	2		i/aɪ	4	
ɪ/iː	1	*	e/ə	4	
ɪ/eɪ	1	*	ə/e	4	
iː/ɪ	1	*	əʊ/uː	3	*
eɪ/ɪ	1	*	uː/əʊ	3	*
ɑː/ɒ	1		e/eɪ	3	
aʊ/əʊ	1		eɪ/e	3	

æ/eɪ	1	ʊ/uː	2	*
ɜː/ɔː	1	uː/ʊ	2	*
ɪ/e	1	eɪ/iː	2	
ʌ/əʊ	1	iː/eɪ	2	
ɪ/aɪ	1	ə/ʌ	2	
ə/ɪ	1	ʌ/ə	2	
əʊ/u	1	ɔː/ə	2	
ɔɪ/aɪ	1	ə/ɔː	2	
ɪə/eə	1	uː/ʌ	2	
ɔɪ/i	1	ʌ/uː	2	
ɒ/ɑː	1	ə/əʊ	2	
əʊ/aʊ	1	əʊ/ə	2	
eɪ/æ	1	ɒ/ʌ	2	
ɔː/ɜː	1	ʌ/ɒ	2	
e/ɪ	1	ə/ɪ	2	
əʊ/ʌ	1	ɪ/ə	2	
aɪ/ɪ	1	ə/ɜː	1	*
ɪ/ə	1	ɜː/ə	1	*
u/əʊ	1	aɪ/eɪ	1	*
aɪ/ɔɪ	1	eɪ/aɪ	1	*
eə/ɪə	1	aʊ/uː	1	*
i/ɔɪ	1	uː/aʊ	1	*
		i/ɪ	1	
		ɪ/i	1	
		eə/ɪə	1	
		ɪə/eə	1	
		ə/eə	1	
		eə/ə	1	
		e/ɪ	1	
		ɪ/e	1	
		ɔː/ɜː	1	
		ɜː/ɔː	1	
		æ/e	1	
		e/æ	1	
		ɑː/ɔː	1	
		ɔː/ɑː	1	
		ɒ/uː	1	
		uː/ɒ	1	
		ɒ/aʊ	1	
		aʊ/ɒ	1	

5. Study on Consonance

5.1 Goal and Methods

This research seeks to explore the mechanism behind consonance by examining the works of two renowned poets: Emily Dickinson (1830–1886) and William Butler Yeats (1865–1939). By employing a proposed phonetic-based feature analysis system, this study aims to uncover patterns and differences in the use of consonance especially among multiple poets. Examples of consonance have been identified through a manual review of their poetry, focusing on pairs of words that, despite being part of a rhyming scheme (e.g., aabb), have vowels that do not perfectly match. The similarity of vowels was quantitatively assessed by calculating the "distance" between vowels based on their feature differences, allowing for a systematic and replicable comparison of poetic styles.

5.1.1 Choosing the subjects

The poets Emily Dickinson and William Butler Yeats were chosen for this case study due to their shared prominence as influential figures of the late 19th century. Their selection was also informed by a practical consideration: the phonological differences between present-day English and the English of their time are minor and unlikely to significantly impact the results of this analysis. While subtle shifts in vowel positions, such as the historical repositioning of [ʌ] (Barber, 1978, p. 130), have been documented, the overall phonetic system of English has remained stable enough to ensure the validity of our approach.

Furthermore, both poets are identified as prolific users of consonance, as evidenced by prior studies (e.g., Shapiro and Beum, 1965, p. 90), which listed Dickinson and Yeats among other figures such as William Blake, Wilfred Owen, and W. H. Auden. The specific selection of Dickinson is significant due to the relative scarcity of research on consonance in American poetry. Yeats, on the other hand, represents a contrast as an Irish poet whose work is influenced by traditional Irish poetic forms, such as Ae Freislighe and Casbairdne (Turco, 1986, p.91,111). These forms often incorporate distinctive uses of consonance, potentially offering insights into how cultural and linguistic contexts shape poetic expression.

5.1.2 Collecting the data

The data analyzed in this study were sourced from two comprehensive collections: The Poems of Emily Dickinson (Harvard University Press) and The Collected Poems of W. B. Yeats (Scribner Paperback Poetry). Identifying consonance pairs involved a manual process of determining the rhyming schemes of individual poems (or stanzas in cases of varied patterns) and pinpointing lines that were intended to rhyme yet did exhibited vowel differences.

This process demanded cautious handling of poetic forms, particularly given Dickinson's and Yeats's frequent use of unconventional rhyming patterns. For instance, in Dickinson's poem *It's thoughts and just one heart*, the first and last stanzas adhere to an aabccb pattern, even though the rhymes are imperfect. In contrast, other stanzas exhibit distinct patterns, such as xxaaa at the second and third stanza or entirely irregular forms that resist clear categorization as can be observed in the fourth stanza. This is represented below:

1. It's thoughts - and just One *Heart* –
2. And Old Sunshine - *about* –
3. Make frugal - Ones - Content –
4. And two or three - for Company –
5. Opon a Holiday -
6. Crowded - as Sacrament –

7. Books - when the Unit -
8. Spare the Tenant - long eno' -
9. A Picture - if it Care -
10. Itself - a Gallery too rare -
11. For needing more –

12. Flowers - to keep the eyes - from going awkward -
13. When it snows -
14. A Bird - if they - prefer -
15. Though winter fire - sing clear as Plover -
16. To our - ear –

17. A Landscape - not so great

18. To suffocate the eye -
19. A Hill - perhaps -
20. Perhaps - the profile of a Mill
21. Turned by the wind -
22. Tho’ such - are luxuries –

23. It's thoughts - and just two Heart -
24. And Heaven - about -
25. At least - a Counterfeit -
26. We would not have Correct -
27. And Immortality - can be almost -
28. Not quite - Content –

Emily Dickinson, *It’s thoughts and just one heart*

(Line numbers and emphasis added)

In instances where rhyme schemes were ambiguous or unsupported by consonance or assonance, the data were excluded to make analysis as rigor as possible.

It is important to acknowledge that the identification of rhyming schemes can, at times, be subjective. The poets under study, particularly Emily Dickinson, are known for their use of irregular rhyme patterns. This inherent variability introduces challenges in consistently identifying rhyme structures, as individual interpretation often plays a role. Consequently, some instances of consonance may have been inadvertently missed or erroneously included in the analysis.

The pronunciation of words was cited from the Longman Pronunciation Dictionary (3rd ed., Wells, 2008), focusing on American English pronunciations for both poets. This decision reflects the linguistic context of the study: Dickinson, as an American poet, naturally aligns with American English norms, while Yeats, though Irish, employed a form of English pronunciation that closely resembles American English. This resemblance has been noted in linguistic studies, despite Yeats’s use of features such as a trilled /r/, the dropping of /ŋ/ in the suffix -ing, and stress patterns deviating from conventional British norms (Perloff, 1970, p. 29). These phonetic characteristics are corroborated by recordings of Yeats reading his poetry, offering valuable insights into his auditory intentions (Spoken Arts No. 753).

Table 3

Number of unmatching features by different selection of possible pronunciations

there	*door*	Unmatching features	Number of unmatching features
e	ɔː	[front][back]	2
e	oʊ	[low][front][back]	3
æ	ɔː	[low][front][back]	3
æ	oʊ	[high][low][front][back]	4

In cases where words had multiple pronunciations, the analysis selected the pair that minimized vowel distance. For example, in Dickinson's *Safe in their alabaster chambers*, the pairing of *there* and *door* yielded four potential vowel combinations based on their listed pronunciations (ðer and ðær for *there*, dɔːr and doʊr for *door*). This is demonstrated in Table 3.

Among these, ðer – ðær is the least distant pair. Likewise, the combination with the least mismatched vowel features was selected to ensure the most accurate representation of consonance in the poetic context.

5.2 Results

The research yielded a total of 2,038 poetic works containing instances of consonance, from which 2,837 consonance pairs were identified. The data revealed a wide degree of variability in vowel pairings, with some pairs exhibiting a feature difference as large as five. This finding indicates a significant deviation from earlier poetic conventions, particularly when compared with older poets such as William Blake or more "classic" (in terms of rhyming) poets such as Gerard Manley Hopkins, whose vowel pairings rarely exceeded two feature differences. The detailed results for each poet are discussed below.

5.2.1 Emily Dickinson

Emily Dickinson was the most prolific user of consonance among the poets examined, with 2,362 distinct cases identified in her works. Furthermore, her poetry displayed the broadest range of vowel pairings, encompassing 139 distinct combinations. Notably, this expansive range includes numerous instances that challenge established theories of consonance, which typically posit limitations on the number of unmatching features between vowels (e.g., Zwicky, 1976; Natsume, 2023).

Table 4

Vowel combinations of consonance pairs in Dickinson's works

Vowel 1	Vowel 2																
ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	ɔː	aɪ	ɔɪ	aʊ	oʊ	
iː	ɪ	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ɔː	aɪ	aʊ	oʊ			
i	ɪ	iː	eɪ	e	æ	ʌ	ə	ɑː	uː	u	ɔː	aɪ	ɔɪ	aʊ	oʊ		
eɪ	ɪ	iː	i	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	ɔː	aɪ	ɔɪ	aʊ	oʊ	
e	ɪ	iː	i	eɪ	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	ɔː	aɪ	ɔɪ	aʊ	oʊ	
æ	ɪ	iː	i	eɪ	e	ʌ	ə	ɝː	ɑː	uː	ʊ	ɔː	aɪ	aʊ	oʊ		
ʌ	ɪ	iː	i	eɪ	e	æ	ə	ɝː	ɑː	uː	ʊ	ɔː	aɪ	aʊ	oʊ		
ə	ɪ	iː	i	eɪ	e	æ	ʌ	ɝː	ɑː	uː	ʊ	ɔː	aɪ	ɔɪ	aʊ	oʊ	
ɝː	ɪ	iː	eɪ	e	æ	ʌ	ə	ɑː	uː	ʊ	ɔː	aɪ	aʊ	oʊ			
ɑː	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	uː	ʊ	ɔː	aɪ	aʊ	oʊ		
uː	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	ʊ	ɔː	aɪ	ɔɪ	aʊ	oʊ	
ʊ	ɪ	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ɔː	aɪ	aʊ	oʊ				
u	i	aɪ	aʊ	oʊ													
ɔː	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	aɪ	aʊ	oʊ		
aɪ	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	u	ɔː	ɔɪ	aʊ	oʊ
ɔɪ	ɪ	i	eɪ	e	ə	uː	aɪ	aʊ	oʊ								
aʊ	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	u	ɔː	aɪ	ɔɪ	oʊ
oʊ	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	u	ɔː	aɪ	ɔɪ	aʊ

Table 5

Frequencies of consonance pairs in Dickinson's works

	Vowel 2																	
Vowel 1	ɪ	iː	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ʊ	u	ɔː	aɪ	ɔɪ	aʊ	oʊ
ɪ		1	0	0	1	2	2	2	3	4	3	2		4	0	0	2	2
iː	1		0	1	2	3	3	3	2	3	2			3	1		3	3
i	0	0		1	1	2	3	2		3	2		2	3	1	0	2	3
eɪ	0	1	1		1	2	2	2	3	4	3	2		4	0	0	2	2
e	1	2	1	1		1	1	1	2	3	4	3		3	1	1	3	3
æ	2	3	2	2	1		2	2	3	2	5	4		4	2		4	4
ʌ	2	3	3	2	1	2		0	1	2	3	2		2	2		2	2
ə	2	3	2	2	1	2	0		1	2	3	2		2	2	2	2	2
ɝː	3	2		3	2	3	1	1		1	2	3		1	3		3	3
ɑː	4	3	3	4	3	2	2	2	1		3	4		2	4		4	4

uː	3	2	2	3	4	5	3	3	2	3		1		1	3	3	1	1
ʊ	2			2	3	4	2	2	3	4	1			2	2		0	0
u			2												3		0	1
ɔː	4	3	3	4	3	4	2	2	1	2	1	2			4		2	2
aɪ	0	1	1	0	1	2	2	2	3	4	3	2	3	4		0	2	2
ɔɪ	0		0	0	1			2			3				0		2	2
aʊ	2	3	2	2	3	4	2	2	3	4	1	0	0	2	2	2		0
oʊ	2	3	3	2	3	4	2	2	3	4	1	0	1	2	2	2	0	

Contrary to these previously known theoretical constraints, Dickinson's works include pairs with the maximum possible feature difference of five, as observed in six instances: *stood – understand, roof – laugh, good – sad, room – man, insecure – that,* and *up – snap*. These cases, far from being rare exceptions, are complemented by a significant number of pairs with four- and three-feature differences. Such combinations were previously regarded as violations or anomalies in the works of poets like Blake and Hopkins. The distribution of vowel pairings across varying feature differences is presented in Table 6.

These results suggest that Dickinson operated with little regard for conventional constraints on consonance. Her poetry often employed vowel pairings across the full spectrum of feature distances, challenging the assumption that proximity in vowel features is necessary for employing consonance.

Table 6

Instances and percentages by the number of unmatching features from Dickinson's works

	Consonance			
			+Assonance	
Number of Unmatching Features	Instances	Percentage	Instances	Percentage
5	6	0.25%	2	0.41%
4	148	6.27%	46	9.39%
3	301	12.74%	68	13.88%
2	734	31.08%	192	39.18%
1	580	24.56%	114	23.27%
0	593	25.11%	68	13.88%
Total	2362	100.00%	490	100.00%

.

Additionally, Dickinson frequently combined consonance with assonance, resulting in hybrid rhyme pairs that exhibit mismatches in both vowels and codas. Of the 601 instances of assonance identified, 490 (81.53%) were hybrid pairs. This prevalence is highly unexpected given that such combinations are considered the most unstable forms of rhyme.

Regarding the relationship between vowel distance and the occurrence of consonance-assonance hybrid pairs, the data did not reveal any discernible patterns. These hybrid pairs appeared across the full range of vowel distances, from those with minimal feature mismatches to those with significant differences.

Similarly, an analysis of the codas in these hybrid pairs revealed no unifying characteristics. The codas included a diverse array of sounds, encompassing both sonorant and (voiced or voiceless) obstruents, as well as consonant clusters.

5.2.2 W. B. Yeats

Table 7

Vowel combinations of consonance pairs in Yeats' works

Vowel 1	Vowel 2															
ɪ	iː	i	eɪ	e	æ	ə	ɑː	uː	ʊ	aɪ						
iː	ɪ	i	eɪ	e	æ	ʌ	uː	aɪ								
i	ɪ	iː	i	eɪ	ʌ	ə	aɪ									
eɪ	ɪ	iː	i	e	æ	ʌ	ə	ɑː	uː	aɪ	ɔɪ	oʊ				
e	ɪ	iː	eɪ	æ	ʌ	ə	ʊ	ɔː	aɪ	ɪə	aʊ					
æ	ɪ	iː	eɪ	e	ʌ	ə	ɑː	uː	aʊ	oʊ						
ʌ	iː	i	eɪ	e	æ	ə	ɑː	uː	ʊ	ɔː	aʊ	oʊ				
ə	ɪ	i	eɪ	e	æ	ʌ	ə	ɝː	ɑː	uː	ɔː	aɪ	ɪə	eə	aʊ	oʊ
ɝː	ə	ɔː														
ɑː	ɪ	eɪ	æ	ʌ	ə	uː	ɔː	aʊ	oʊ							
uː	ɪ	iː	eɪ	æ	ʌ	ə	ɑː	ʊ	ɔː	aɪ	aʊ	oʊ				
ʊ	ɪ	e	ʌ	uː	ɔː	oʊ										
ɔː	e	ʌ	ə	ɝː	ɑː	uː	ʊ	eə	ʊə	aʊ	oʊ					
aɪ	ɪ	iː	i	eɪ	e	ə	uː	ɔɪ	aʊ							
ɔɪ	eɪ	aɪ														
ɪə	e	ə	eə													
eə	ə	ɔː	ɪə	ʊə												

		e							
ʊə	ɔ:	ə							
aʊ	e	æ	ʌ	ə	ɑ:	u:	ɔ:	aɪ	oʊ
oʊ	eɪ	æ	ʌ	ə	ɑ:	u:	ʊ	ɔ:	aʊ

Table 8

Frequencies of consonance pairs in Yeats' works

	Vowel 2																		
Vowel 1	ɪ	i:	i	eɪ	e	æ	ʌ	ə	ɝ:	ɑ:	u:	ʊ	ɔ:	aɪ	ɔɪ	ɪə	eə	ʊə	aʊ	oʊ
ɪ		7	2	2	7	4		4		1	1	1		32						
i:	7		26	6	5	3	1				1			2						
i	2	26		3			1	2						14						
eɪ	2	6	3		5	16	4	1		1	2			5	1					1
e	7	5		5		5	1	6				1	5	3		1			1	
æ	4	3		16	5		7	1		7	1								1	3
ʌ		1	1	4	1	7		16		10	24	12	13						5	23
ə	4		2	1	6	1	16		2	9	6		18	1		4	9		3	1
ɝ:								2					10							
ɑ:	1			1		8	10	9			1		7						1	3
u:	1	1		2		1	24	6		1		10	6	1					8	15
ʊ	1				1		12				10		1							4
ɔ:					5		13	17	10	7	6	1					3	2	12	8
aɪ	32	2	14	5	3			1			1				1				1	
ɔɪ				1										1						
ɪə					1			4									7			
eə								9					3			7		2		
ʊə													2				2			
aʊ					1	1	5	3		1	8		12	1						11
oʊ				1		3	23	1		3	15	4	8						11	

Table 9

Instances and percentages by the number of unmatching features from Yeats' works

	Consonance			
			+Assonance	
Number of Unmatching Features	Instances	Percentage	Instances	Percentage
5	1	0.21%	0	0.00%
4	10	2.11%	0	0.00%
3	47	9.89%	3	9.38%
2	184	38.74%	7	21.88%
1	94	19.79%	14	43.75%
0	139	29.26%	8	25.00%
Total	475	100.00%	32	100.00%

Yeats's works contained 475 instances of consonance, representing a narrower scope compared with Dickinson. Similarly, Yeats exhibited fewer vowel combinations, totaling 113 distinct pairings. Nevertheless, like Dickinson, Yeats employed distant vowel pairs that defied the constraints observed in the works of earlier poets. For instance, Yeats used 116 pairs with feature differences of three or more, accounting for 12.21% of his consonance pairs. However, these distant pairings occurred less frequently in Yeats's works compared with Dickinson, whose percentage of such pairings was notably higher at 19.26%.

Yeats's use of hybrid consonance-assonance pairs was significantly lower than Dickinson's, with 23 out of 56 assonance pairs (41.07%) being hybrids. Notably, these hybrid pairs were confined to vowel pairings with three or fewer feature differences, suggesting a more conservative approach to combining assonance and consonance.

5.2.3 Discussion

The findings challenge traditional assumptions that consonance and assonance must adhere to strict phonetic proximity. Both Dickinson and Yeats demonstrated a deliberate departure from these constraints, employing vowel pairings with significant feature differences and embracing hybrid consonance-assonance pairs. Their approach demonstrates their willingness to explore expressive possibilities beyond traditional limits.

Dickinson, in particular, displayed an unparalleled radicality, with frequent use of three, four, and five-feature vowel pairings, previously considered anomalies even within imperfect rhymes. Her hybrid pairs, comprising over 81% of her assonance cases and about 20% of her consonance cases, symbolize her experimental approach to rhyme. In contrast, Yeats adopted a more measured style, utilizing hybrid or distant pairs less frequently than Dickinson. Despite this, his work still reflects a conscious effort to expand the possibilities of rhyme within a limitation of poetic frameworks. The radicality of the two poets is highlighted when contrasted with more conservative poets from the same age, namely Blake and Hopkins.

5.3 Comparison with Blake and Hopkins

To contextualize the findings on Dickinson and Yeats, the consonance data of William Blake and Gerard Manley Hopkins (Natsume 2019, 2023) were reanalyzed using the articulatory-based feature system adopted in this study. The results indicate notable differences in the use of consonance across the four poets, shedding light on both traditional constraints and their subsequent evolution.

5.3.1 William Blake

Table 10

Vowel combinations of consonance pairs in Blake's works

Vowel 1	Vowel 2				
ɪ	iː	eɪ	e	ə	aɪ
iː	ɪ	e			
i	aɪ	ɔɪ			
eɪ	ɪ	e	æ		
e	ɪ	iː	eɪ		
æ	eɪ				
ʌ	əʊ				
ɜː	ɔː				
ə	ɪ				
ɑː	ɒ	ɪə			
uː	əʊ				
u	əʊ				
ɔː	ɜː				
ɒ	ɑː				
aɪ	ɪ	i	ɔɪ		

ɔɪ	i	aɪ		
ɪə	ɑ:	eə		
eə	ɪə			
aʊ	əʊ			
əʊ	ʌ	u:	u	aʊ

Table 11

Frequencies of consonance pairs in Blake's works

	Vowel 2																	
Vowel 1	ɪ	i:	i	eɪ	e	æ	ʌ	ɜ:	ə	ɑ:	u:	u	ɔ:	ɒ	aɪ	ɔɪ	ɪə	eə	aʊ	əʊ
ɪ		1		1	1				1						1					
i:	1				2															
i															3	1				
eɪ	1				5	1														
e	1	2		5																
æ				1																
ʌ																				1
ɜ:													1							
ə	1																			
ɑ:														1			2			
u:																				2
u																				1
ɔ:								1												
ɒ										1										
aɪ	1		3													1				
ɔɪ			1												1					
ɪə										2								1		
eə																	1			
aʊ																				1
əʊ								1			2	1							1	

Table 12

Instances and percentages by the number of unmatching features from Blake' works

	Consonance			
			+Assonance	
Number of Unmatching Features	Instances	Percentage	Instances	Percentage
5	0	0.00%	0	0.00%
4	0	0.00%	0	0.00%
3	0	0.00%	0	0.00%
2	8	28.57%	2	100.00%
1	10	35.71%	0	0.00%
0	10	35.71%	0	0.00%
Total	28	100.00%	2	100.00%

Natsume's (2019) data included 28 cases of consonance. The scarcity of data is due to the limited scope of the study, only examining irregular rhymes from *Songs of Innocence and Experience*. These data revealed that Blake operated within a highly restricted range of vowel pairings, employing only 19 unique combinations.

As suggested by Natsume (2019), Blake's use of consonance is characterized by their pair's high phonetic similarities. As shown in the table above, all consonance pairs in Blake's works adhered to a maximum feature difference of two, with no exceptions. Additionally, Blake employed only two hybrid consonance-assonance pairs (*face – head* and *shade – dress*). Note that in both pairs, one of the words contains voiced obstruent. This aids the rhymes to remain stable by placing sonorous (voiced) consonants at rhyme-endings.

5.3.2 Gerard Manley Hopkins

Table 13

Vowel combinations of consonance pairs in Hopkins' works

Vowel 1	Vowel 2						
ɪ	iː	i	e	ə	aɪ		
iː	ɪ	i	eɪ				
i	ɪ	iː	aɪ				
eɪ	iː	e	aɪ				
e	ɪ	eɪ	æ	ə			
æ	e						
ʌ	ə	uː	ɒ				
ɜː	ə	ɔː					
ə	ɪ	e	ʌ	ɜː	ɔː	eə	əʊ
ɑː	ɔː						
uː	ʌ	ʊ	ɒ	aʊ	əʊ		
ʊ	uː						
ɔː	ɜː	ə	ɑː	ɒ			
ɒ	ʌ	uː	ɔː	aʊ			
aɪ	ɪ	i	eɪ				
ɪə	eə						
eə	ə	ɪə					
aʊ	uː	ɒ					
əʊ	ə	uː					

Table 14

Frequencies of consonance pairs in Hopkins' works

	Vowel 2																
Vowel 1	ɪ	iː	i	eɪ	e	æ	ʌ	ɜː	ə	ɑː	uː	ʊ	ɔː	ɒ	aɪ	ɪə	eə	aʊ	əʊ
ɪ		5	1		1				2						6				
iː	5		27	2															
i	1	27													4				
eɪ		2			3										1				
e	1			3		1			4										
æ					1														
ʌ									2		2			2					
ɜː									1				1						
ə	2				4		2	1					2				1		2

ɑː									1						
uː				2				2		1				1	3
ʊ							2								
ɔː					1	2	1			5					
ɒ				2				1		5				1	
aɪ	6	4	1												
ɪə												1			
eə						1					1				
aʊ								1			1				
əʊ						2		3							

Hopkins’ use of consonance, while still constrained, demonstrates a slight loosening of the rigid rules observed in Blake’s works. From Hopkins’s poetry, 85 cases of consonance were identified, encompassing 33 unique vowel combinations.

Unlike Blake, Hopkins allowed for up to three feature differences in vowel pairings, albeit rarely. As shown in Table 15, only three such cases were identified, comprising a mere 3.53% of the total consonance pairs. (The number is so small that these cases can be regarded as exceptions.) Contrastively, the majority of Hopkins’s pairings involved no feature differences (50.59%). However, considering the fact that 28 out of 43 pairs were either i – iː or i – ɪ, it may be suggested that those pairs are better interpreted as perfect rhymes. (Recall from chapter 4 that the weak vowel i copies the [tense] specification from its paired counterpart.)

Table 15

Instances and percentages by the number of unmatching features from Hopkins’ works

	Consonance			
			+Assonance	
Number of Unmatching Features	Instances	Percentage	Instances	Percentage
5	0	0.00%	0	0.00%
4	0	0.00%	0	0.00%
3	3	3.53%	0	0.00%
2	15	17.65%	2	50.00%
1	24	28.24%	2	50.00%
0	43	50.59%	0	0.00%
Total	85	100.00%	4	100.00%

Hopkins also employed four hybrid consonance-assonance pairs (*lips – feast, whips – pieced, not – mouth*, and *peals – it*), demonstrating a modest deviation from Blake's strictures. This slight flexibility may reflect Hopkins's innovative poetic style, which sought to carefully push the limitation of poetic norms for individual creativity.

5.3.3 Discussion

The comparison reveals a clear progression in the use of consonance from Blake and Hopkins to Dickinson and Yeats. While Blake adhered strictly to phonetic proximity, Hopkins introduced a modest degree of flexibility. In contrast, Dickinson and Yeats significantly expanded the boundaries of consonance almost to the verge of becoming ruleless, frequently employing vowel pairings with substantial feature differences and integrating hybrid forms. The radicality of Dickinson's and Yeats's approaches is particularly evident when juxtaposed with Blake and Hopkins. The rhyming practice of two innovative poets marks a significant departure from the tightly constrained norms of earlier poets. These differences demonstrate the evolving nature of poetic conventions and the role of individual innovation in shaping literary traditions.

The comparison also provides a clear illustration of the gradual dismantling of phonological constraints, a process that appears to parallel the broader evolution of poetic expression. Viewed from a linguistic perspective, this progression can be visualized as a shift in the phonetic properties of rhymes over time. Blake's strict adherence to two-feature differences at most reflects a poet working firmly within the boundaries of traditional practices, positioning him as a representative of an earlier stage in this evolutionary trajectory. Hopkins's modest relaxation of these constraints suggests an incremental move toward greater flexibility, while Dickinson and Yeats represent a near-total redefinition of the rules governing rhyme. Yeats's relative reluctance to adopt the most radical forms of imperfect rhymes—evident in his lower frequency of extreme vowel pairings compared to Dickinson—may be interpreted as a reflection of discomfort with excessive deviations from poetic norms which are linguistically expressed as a number of unmatching features. This reluctance highlights the delicate balance Yeats sought between innovation and the preservation of structural coherence in his poetic forms.

As discussed in Chapter 2.2, poets are continually engaged in the search for new expressive methods, driven by the dual goals of expanding their creative possibilities and avoiding the monotony of overly conventional forms. In this context, the radical forms of consonance explored in this study should not be seen as a wholesale destruction or degradation of traditional rhyming practices. Rather,

they represent the culmination of a long evolutionary process, where innovation serves as both a response to and a departure from established norms. These radical rhyming forms, far from undermining the integrity of poetry, embody its capacity for renewal and reinvention, demonstrating how poets like Dickinson and Yeats pushed the limits of what rhyme could achieve, both phonetically and aesthetically.

6. Conclusion

This paper has investigated the phonological properties of consonance in the works of 19th-century poets, specifically Emily Dickinson and William Butler Yeats, and compared these findings with the phonological patterns observed in the works of Gerard Manley Hopkins and William Blake, using data derived from Natsume (2023, 2019). A key contribution of this study was the proposal of a feature system based on phonetic classification, which facilitates more nuanced comparisons of vowel pairs—comparisons that are not readily achievable through traditional phonologically-oriented methodologies employed in previous research. By manually analyzing two comprehensive collections of poetic works, we identified a total of 2837 instances of consonance, where the distance between vowel sounds was quantified by comparing the number of phonetic features shared between them.

The results of this analysis revealed that Emily Dickinson was the most radical in her use of consonance, permitting pairs of vowels to differ by as many as five phonetic features. In comparison, Yeats demonstrated a similar degree of flexibility but was somewhat less extreme in his use of highly divergent vowel pairs. The comparison with more traditional poets such as Blake and Hopkins highlighted a noticeable trend toward the loosening of consonance rules over time, culminating in a near-complete dismantling of conventional constraints in the case of Dickinson's poetry. This trend suggests a gradual evolution in the phonological treatment of rhyme, with greater freedom afforded to the relationship between consonant sounds and vowel qualities.

Nevertheless, it is important to acknowledge several limitations and areas for improvement in this study. The feature system we proposed assumes that the difference in feature specification between vowels is uniformly significant, regardless of which specific features are involved. This assumption, however, may not fully capture the varying degrees of perceptual dissimilarity contributed by different phonetic features. For instance, the feature [tense] has a relatively minor effect on vowel positioning compared with other features, and as such, a difference in the specification of [tense] may not contribute as strongly to perceived dissonance as differences in other features, such as [front] or [high].

Future iterations of this feature system could benefit from adjusting for the differential weight of specific features, providing a more accurate representation of consonance and dissonance as they are perceived.

Another significant concern pertains to the assumptions made about pronunciation in this study. We opted to disregard potential shifts in pronunciation over time, assuming they would not materially affect the outcomes of our analysis. However, given that this study is grounded in phonetic analysis, shifts in vowel articulation and positioning could indeed have an impact on our findings. Additionally, it is possible that the poets employed pronunciations that were considered somewhat archaic at the time the poems were written, pronunciations which may no longer be represented in contemporary pronunciation dictionaries. This historical phonetic variation could have influenced the rhyming patterns in ways that were not accounted for in our analysis.

The limitations of this study also extend to its inability to fully capture the evolution of poetic devices from a linguistic perspective. Consonance as a poetic feature evolves not only through linguistic shifts but also through cultural and literary trends, aspects of which are difficult to address through phonological analysis alone. Therefore, further research that incorporates perspectives from English literature studies is necessary to gain a more comprehensive understanding of how consonance has developed within its broader literary context.

Another unavoidable limitation lies in the challenge of interpreting the poet's intention. As with any linguistic analysis of poetry, we can never definitively determine which vowel pairs were intended to rhyme or which particular pronunciation the poet had in mind. This issue becomes particularly problematic when dealing with poets who employed ambiguous rhyming schemes or when analyzing poems written several centuries ago, where pronunciation conventions have changed substantially.

In conclusion, analyzing poetry from a linguistic perspective offers valuable insights into the inherent linguistic instincts that shape our understanding and appreciation of poetic form. By investigating the phonological features of rhyme, we are able to uncover the subtleties of sound that contribute to the aesthetic qualities of poetry. Despite the challenges and limitations outlined above, this study serves as a stepping stone toward a more thorough exploration of consonance and rhyme in English poetry. We anticipate that further research in this field will continue to illuminate the intricate relationship between phonological structures and poetic expression, offering new avenues for understanding the evolution of English verse.

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