

Rhyme and Alliteration Are Significantly Different as Types of Sound Patterning

In this paper I argue that rhyme and alliteration are significantly different as types of sound patterning. They differ in more than their position within the syllable or word. This difference emerges when we look at different kinds of verbal art in which rhyme or alliteration are used systematically. I suggest that there are possible psychological reasons for the difference, relating to memory and attention.

Rhyme is a pairing of two or more words (or sometimes word sequences) which end in a similar way but usually begin differently, and alliteration is a pairing of two or more words which begin in a similar way but usually end differently. This is quite a loose way of differentiating rhyme from alliteration in terms of the beginning vs. the end of the word, and does not for example refer to the syllable or the components of the syllable. Reference to the parts of the syllable is used by Leech (1969) to differentiate six types of sound patterning, so that for example repetition of just the onset is differentiated from repetition of the onset and nucleus by Leech. But it is not clear that any distributional generalizations are captured by these more specific definitions (see the discussion in the introduction of why we differentiate kinds of poetic form); for example alliteration just of the onset appears to have the same distributional characteristics as alliteration of onset+nucleus (in Finnish, for example).

Alliteration and rhyme are found in everyday speech, including stereotyped expressions, and both are found in verbal art. This paper focuses on verbal art, both spoken and written, which use systematic rhyme and systematic alliteration, where 'systematic' means that the text is subject to rules which control for the presence and location of the rhyming words or the alliterating words. The rules might be conventional in the sense that they hold for a whole poetic tradition, or the rules might hold in just one poem where the rhyme or alliteration involves what Klima and Bellugi (1976: 57) call an 'innovative poetic structure'.

The conventional rules might for example include the rule which is common in English poetry that every line of a poem must end with a word which rhymes, or the rule in Old English that each half of a long-line must have a word which alliterates with a word in the other half. Systematicity requires the text to have structural units relative to which the distribution

of the rhyming or alliterating words can be regulated. This means that systematic rhyme and systematic alliteration are found almost exclusively in poetry (including song), because poetry and song are divided into lines and other sections. Without the framework provided by lines, systematic distribution of words is hard to control, and though rhymes appear outside lineated poems they can normally not be sustained over a long stretch of prose, as we see for example in Arabic 'rhymed prose' where the rhyming is sustained for a time but not throughout (Beeston 1983).

English poetry often has systematic rhyme. In contrast, English poetry has not had systematic alliteration since the mediaeval period, after which alliteration has been common but unsystematic. Alliteration is used systematically in older Germanic poetry including Old English, and is still used in Icelandic, in Irish, in Finnish, Karelian, and Estonian, in Mongolian, and in Somali. Rhyme is used systematically in the poetry of modern Indo-European languages, in Arabic and related traditions, in Chinese, in Indian languages, South East Asian languages, and in other traditions. Both alliteration and rhyme are used systematically in poetry in Icelandic, mediaeval Irish, and Mongolian.

Rhyme and alliteration have various facets, in some of which they are alike and in some of which they are different.

(1) Both rhyme and alliteration relate to a particular part of the syllable: rhyme relates to the end of the syllable, and alliteration to the beginning. Sometimes this is all that needs to be said; in English, the rhymes within the same poem can vary so that some involve the nucleus and the coda while others involve the nucleus (if there is no coda). In Finnish, a poem can vary in whether the alliteration involves just the onset, or just the nucleus (if there is no onset), or both the onset and the nucleus. But sometimes a tighter control on variation is exerted and constitutes a typology: in mediaeval Irish (Knott 1994: 10), rhyme can involve the nucleus and coda (*comhardadh*), or just the nucleus without the coda (*amus*), or just the coda without the nucleus (*uaithne*), and which is used depends on the genre of poetry.

(2) The whole word is the basic domain for both alliteration and rhyme. Alliteration is a similarity between beginnings of words, and rhyme is a similarity between ends of words. The relevance of the word is also clear when we note that both alliteration and rhyme fail in many traditions if two fully homophonous words are paired, as I discuss below.

(3) A word which participates in alliteration or rhyme must be located relative to the line or other poetic section, such as half-line or couplet. For example, in most English rhyming poetry, the rhyming word is located relative to the line (i.e., it is the last word in the line). In Old English alliterative poetry, the alliterating word is located relative to the half-line (i.e., because each half-line must contain an alliterating word).

(4) The location can be fixed, or free, or a mixture. As a simple example, if the rhyming word must come at the end of the line, then it is therefore fixed in location. In Vietnamese 6-8 metre, one of the rhyming words falls inside the line but it is always on the sixth syllable of the 8-syllable line, and so fixed in location. And, in Tamil, there is a distinct kind of rhyme holding between the second syllables of adjacent lines. If the rhyming words can be located

anywhere in the line, then they are free in location (this is rare, but there are mediaeval Irish examples, as we will see). It is more common for one of a pair of rhymes to be free and the other fixed, usually in the order fixed>free; so for example, the first rhyming word may be line-final and hence fixed, while the second rhyming word is line-internal in no fixed location and hence free. For example in the Irish genre *séadna*(*dh*) the last word of the third line (i.e., fixed) rhymes with the stressed word preceding the last word in the fourth line, which is in no specific location and hence free. Alliteration tends to be fully free, though there are some possible counterexamples to this. Note that 'free' here refers to specific locations within the line, usually involving counting syllables. Even if they are in principle free in location, the rhyme or alliteration may be restricted to stressed syllables, which may in turn constrain the sound patterning.

(5) The sets of words which form a rhyme or alliteration pattern are distributed in a pattern across the text, such as an aabbcc (couplets) pattern, or an intersecting abab pattern, with many other possible variations. Here again there is a characteristic difference between rhyme, which allows many kinds of intersecting patterns, and alliteration, where intersecting patterns are very rare (as claimed by Fabb 1999).

(6) A pair of words which participate in a sound pattern must resemble one another in a sub-sequence of the sounds which make up the word. This resemblance is strict phonetic identity in some traditions, which we refer to in the introduction to this book as 'identical rhyme', which is identity between the final parts of the words. But in other traditions, or in the practice of specific poets, looser kinds of similarity are accepted, which we call 'non-identical rhyme', as a nonidentical similarity between the final part of the word. This looser similarity often involves a difference in phonological features between sounds (e.g., different vowel heights, or voiced agreeing with voiceless consonants). Both alliteration and rhyme allow for looser similarities in various traditions, but rhyme is generally much more accepting of loose similarity than alliteration; more concretely we can say that while loose similarity is sometimes encouraged in rhyme, it seems only ever to be intermittent in alliteration. While not a strong difference between alliteration and rhyme, this is nevertheless a difference.

(7) Rhyme can involve a sequence of words, but it seems that alliteration never does. For example Byron in *Don Juan* rhymes 'poet' with 'show it' and 'below it', and he rhymes 'Trecentisti' with 'this t' ye', and there are many other examples in this poem. The likelihood that alliteration does not similarly involve word sequences might be explained by the fact that alliteration rarely involves more than one syllable, while rhyme can easily involve more than one.

(8) Rhyme generally involves the end of the word. But in some cases, the word is split across the line boundary, and the rhyme involves the end of the newly created sub-word. For example Ben Jonson has a pair of lines 'To separate these twi- / Lights, the Dioscuri' where the sub-word 'twi-' rhymes with 'Dioscuri'. Examples of this in English are fairly rare, and might not express any underlying generalization. I know of no examples like this of alliteration, though given that 'twi-' is a stressed syllable this is a bit like the

way that the so called three-Rs, ‘reading, writing and arithmetic’, are treated as alliterating on [r], though the final [r] is not word-initial, but is the onset of a stressed syllable. (I thank a reviewer of this chapter for drawing my attention to the differences described in this and the preceding paragraph.)

To sum up, in poetry, rhyme and alliteration differ in three ways: (i) rhyme location tends to be fixed, but alliteration location is almost always free, (ii) rhyme pattern can intersect, but alliteration pattern requires adjacency, (iii) rhyme is more capable of permitting loose similarity between sounds than is alliteration. There is in addition a known difference between rhyme and alliteration in ordinary English, which is that alliteration is more common than rhyme in the idioms and binomials of ordinary speech.

In this paper, I examine systematic sound patterning, and I draw on two types of evidence to differentiate alliteration from rhyme. My main source of evidence comes from descriptions of poetic practice in different verbal art traditions. Systematic rhyme is more commonly found than systematic alliteration, which presents a methodological problem because there is a narrower range of evidence for kinds of systematic alliteration. But this in itself might be significant: why is systematic alliteration so typologically rare? The second source of evidence is experimental psychology. There is a large amount of experimental work, usually examining memory, which uses words which alliterate or rhyme, though often based on written forms, and for alliteration usually restricted to CV alliteration (i.e., not just the initial consonant and so not the most common kind of poetic alliteration). Most of this work is not on poetry, and is criticized for this reason by Rubin and Wallace (1989), but uses word lists, and sometimes invented words, and for the purpose of studying memory and processing. There is also a small amount of experimental work relating to rhyme in poetry, and a very small amount of experimental work on alliteration in poetry, and I briefly refer to some of this at the end of the paper.

The Word

In this section, I discuss the role of the word in rhyme and alliteration. I have defined alliteration and rhyme as relations between words. But this is not the view taken in his foundational stylistics textbook by Leech (1969: 93) who says that ‘alliteration and rhyme in English are not to be defined with reference to words.’ While it is clear that alliteration and rhyme are defined in part in terms of the structure of the syllable (which was what Leech sought to emphasise), I will now show that Leech was wrong to exclude the word from consideration.

First, a pair of identical vowels can be treated either as an alliteration or as rhyme, if for example the syllable consists just of the vowel. Whether this pairing counts as alliteration or rhyme depends on whether the vowels are at the beginning of the word or at the end of the word, and so the word is relevant.

Second, two identical words in many traditions cannot rhyme or alliterate, even though they will inevitably be similar in sound, and so in principle

should be candidates for rhyme or alliteration. This shows that rhyme and alliteration are both sensitive to the presence of the word as a relevant constituent. In all the various languages' examples of verbal art familiar to us, two instances of the same word cannot rhyme. In some languages, such as English and German, even two different but homophonous words cannot rhyme; Wagner and McCurdy (2010) explain why homophonous rhymes are possible in French but not in English and German. In Somali, two instances of the same word cannot alliterate; Orwin (2000: 209) notes that the only apparent counterexample is a foregrounding use of the repeated word for a specific stylistic effect. Aðalsteinsson (2014: 49) shows that when words are repeated in the Icelandic line, the repeated words are not counted as alliterating and so multiple repetitions of this kind do not violate the strict limitations of how many alliterations are allowed. Cooper (2017) notes that identical words do not alliterate in Old English. The prohibition on using two instances of the same word in both rhyme and alliteration shows again the relevance of the word.

Third, rhyme in some languages, or as used by particular poets, can be sensitive to word-level characteristics, including word class, the presence of suffixes, and kinds of morphology (Worth 1977). Interestingly, alliteration does not seem to be sensitive to word-level characteristics such as word class or the presence of prefixes, and this is another difference between alliteration and rhyme, and another illustration of how alliteration is often much more limited in how it works than is rhyme.

Fourth, neither alliteration nor rhyme seem to hold between two parts of the same word. This is hard to prove, because the situation would rarely arise: it would depend on the word being long enough, and also depend on permitting rhyme on nonfinal syllables, or alliteration on noninitial syllables; it might in principle be possible only in compounds. One place to look for word-internal sound patterning would be Germanic poetry which is both alliterative and has plenty of compounds. Andrew Cooper (personal communication) notes that *Beowulf* (line 395) 'Nu ge moton gangan | in eowrum guðgeatawum' has a potential word-internal alliteration with two instances of [g] in the same word in the second half-line. But he also notes that if this were indeed alliteration then it should be forbidden by the rules which allow only one alliterating word in the second half-line. This suggests that the repetition within the word is not counted as alliteration, and this in turn fits the generalization of there being no word-internal sound-patterning in regulated systems. This again shows that sound patterning is sensitive to the word.

Rhyme and alliteration are thus defined in terms of the word as well as the syllable structure. In contrast, there are other types of sound patterning system which do not refer to the word, such as the various Welsh *cynghanedd* (harmony) systems, in which a sequence of sounds in the first half of the line is repeated in the second half; words are irrelevant to the rule (as indeed are syllable structures). However, this distinctive rule system might perhaps best be analysed not as a type of alliteration or rhyme but as a type of sound-sequence parallelism (as Fabb 1997: 119–120 argues; see Rowlands 1976 for extensive list of types of harmony in Welsh).

Location Relative to Domain

Fabb (2015) argues that each word in a rhyme or alliteration pattern is always stipulated to appear within the boundaries of a relatively small section of text, often a line, sometimes a couplet, and sometimes a half-line. This is true even in mono-alliteration or mono-rhyme poems where the same sound is repeated throughout, but in which the words must still be contained within sections of a specific size. For example, Banti and Giannattasio (1996: 108) cite an example of a Somali song where uniform alliteration throughout would be expected, but in which one whole line switches to a different alliteration. This indirectly demonstrates the relevance of the line as a domain relative to which sound patterning is placed.

In some cases, it is not just one word in the pattern, but all of the words in the pattern which must be contained within a set domain. For example, the rules of English heroic couplet verse require both rhyming words to be within the couplet. Similarly, Germanic and Finnic alliterative traditions require all the alliterating words to be in the same line.

These are commonalities between rhyme and alliteration. However, the interesting difference between rhyme and alliteration is in whether the word is fixed or free within the domain in which it is placed. Broadly speaking, rhyme tends to be fully or partially fixed (often placed at the end of the line), while alliteration tends to be free. Fixity and freedom here are defined in terms of whether the rhyming syllable is in a specific metrical location (e.g., line-final or a specific numbered syllable in the line). ‘Free’ alliteration or rhyme may still be restricted to fall on a stressed syllable, but the freedom is that it does not have to be a specifically located syllable.

FIXED OR FREE RHYME

In many traditions, all rhyming words are fixed in place at the ends of sections, usually the line. Rhyme can also be fixed at the end of the half-line (depending on how one defines line and half-line), as in mediaeval Latin (Sidwell 1995), and in Swahili *shairi* (Harries 1956). In some English four-line song stanzas, only the second and fourth lines rhyme, and so the rhyme falls at the end of a couplet (pair of lines).

In some traditions, rhymes are line-internal, though this is often an accompaniment to other line-final rhymes. A possible exception arises in Tamil and Malayalam and other Dravidian poetry where in some poems rhyme falls only on a syllable early in the line and not line-finally, but in general this poetry shows a great deal of variation in where rhymes are placed, and so rhyme is not always systematic. In a few cases, the line-internal rhyme is fixed relative to the metre. Thus Vietnamese 6-8 metre has alternating lines of 6 and 8 syllables. As part of the rhyme pattern, the final syllable of the six-syllable line rhymes with the sixth syllable of the following eight-syllable line; this is a line-internal rhyme which is fixed in place (Balaban 2003).

In other traditions, the line-internal rhymes are free, though they are still sometimes associated with a fixed line-final rhyme. The Thai *khlong* metres mix free and fixed line-internal rhyme (Cooke 1980). For example, *khlong song suphap* has a two-line stanza of 5+12 syllables, where the final syllable

of the first line rhymes with the fifth of the second (fixed internal rhyme). However there is some freedom: the final syllable of the second line rhymes with a word at the beginning of the next stanza, this being the first or second or third syllable (i.e., freely placed) of the five syllable line. Mediaeval Irish poetry (Knott 1984), which is highly regulated for form, allows rhyme to hold between line-final words. But it also has rhyme between a line-final word and a word internal to the next line (hence partially free). And in Irish it is also possible to have rhyme between freely placed line-internal words in adjacent lines (hence fully free). Mediaeval Breton poetry (Hemon 1962) has rhyme between line-final words, but each line also has rhyme between words inside the line. This is sometimes one rhyme pattern within a line. There are sometimes two rhymes in a line but if there are two separate rhyme patterns in the line, they do not intersect. An example is 'E-n tan manet hep gullet doe' [to stay in the fire without seeing God], from *Buhez Mab Den*, (Hemon 1962: 88) where a rhyme in 'an' is followed by a rhyme in 'et'. The Breton line-internal rhyme is free in the sense that the syllables are not fixed in specific places. In mediaeval Welsh *englynion* poems, a nonfinal word in the long line rhymes with final words in the short lines (Williams 1953). As one example of this, the Welsh *englyn penfyr* metre has a free line-internal rhyme preceding a fixed line-final rhyme, this being a cross-linguistically rare case in which the free rhyme precedes the fixed rhyme.

FIXED OR FREE ALLITERATION

Whereas fixed rhyme is very common in the world's traditions, fixed alliteration is very uncommon (though in a limited range, because systematic alliteration of any kind is rather uncommon). Mongolian offers the clearest example, because it often has line-initial alliteration: Kara (2011) says that 'Mongol alliteration may be line-initial or line-internal; some verses have both.' However it can be seen that in most of the examples he cites, an alliterating word is at the beginning of the line; occasionally there is a line without initial alliteration. In many examples, there is in addition to line-initial alliteration a freely placed alliterating word inside the same line. In his paper there are few if any examples of lines which have alliteration only fixed at the beginning at the line and not elsewhere.

Mongolian is also unusual in that it deploys alliteration between adjacent lines rather than within the line. The only other tradition that has been widely described which uses alliteration between adjacent lines is Somali, in which a single alliteration is continued throughout an entire poem. In Somali, the alliterating words need not be line-initial, and in fact are not in any fixed position in the poem, an example of fully 'free' alliteration.

Free alliteration is also found in the alliterative traditions of Germanic and Finnic verse. In these traditions, alliteration holds within a single line (or couplet, in some Icelandic poetry). The alliterating words are not in predictable (fixed) positions within the line, and again this is fully 'free' alliteration. Mediaeval Irish tends to mix fixed and free, often with a final word (fixed) alliterating with a preceding word in the line (free).

In conclusion, in contrast to rhyme which tends to be fixed, alliteration tends to be free – a generalization which is however subject to various counterexamples.

Pattern

When two or more words rhyme or alliterate, they are distributed in sequence across the text, in a pattern which involves adjacency or intersection, or both. For example, a rhyme scheme in couplets, for example in the pattern aabbcc, involves adjacency, such that a pair starts only when the preceding pair finishes. In contrast a rhyme scheme such as abab cdcd involves intersection, where a pair starts before the preceding pair has finished. A whole stanza, sometimes quite long, can have a single coherent pattern. It seems that there is no principled constraint on the upper size of the domain over which a rhyme pattern can be defined. Patterns are usually predictable (repeating), but they can also be unpredictable as for example in the unpredictable rhyme pattern of Matthew Arnold's 1867 poem 'Dover Beach' (Fabb 2002).

Rhyme is commonly found in both adjacent and intersecting patterns in the world's verbal art, and both types are widely used in English. For example, couplet verse shows adjacent rhyme, while sonnets and many stanza-based poems have intersecting rhyme.

In contrast, alliteration seems always to be in adjacent patterns, as suggested by Fabb (1999). Adjacent alliteration is characteristic of traditions which have line-internal alliteration such as Irish, Germanic and Finnic (indeed, given the shortness of lines and the fact that the alliterative sequence is line-internal, adjacency is what we would expect). Somali poems can have the same alliteration throughout, so again this is adjacent alliteration (every line or every half-line). Adjacent alliteration is also found in Mongolian, where the beginnings of adjacent lines alliterate with one another. In Mongolian, there are occasional counterexamples of intersecting alliteration, but in the critical literature we have seen that they are so rare that they are 'exceptions to the rule' which reinforce the general principle; for example Kara (2011) cites one example of line-initial abab alliteration in a Mongolian poem from 1959.

Another characteristic difference between patterns of rhyme and patterns of alliteration is that for rhyme, it is usually possible to say how many rhyming words there will be, but for alliteration it is often less easy to say how many alliterating words there will be. This is true for alliteration within the line in older Germanic, seen for example in *Beowulf*, where the first half line can unpredictably have one or two alliterating words (but predictably only one in the second half line). It is true for Finnic, where unpredictably two or three alliterating words might exist in the line. In Mongolian stichic verse, the length of an alliterating sequence is not necessarily predictable. The major exception is Icelandic, which strictly controls how many alliterating words there can be inside a specific domain.

It is possible that there is a connection between the more limited patterns of alliteration and the free placement of alliterating words; it may be that when the words are freely placed, a complex pattern is dispreferred, perhaps because it makes keeping track of the pattern cognitively more difficult. In support of this, we might look at freely placed rhyme, and note that patterns of freely placed rhyme (i.e., line-internal rhyme) tend to be fairly simple. In middle Breton, all the rhymes are line-internal and if there are two patterns

they do not intersect. In many hook-rhyme traditions, the internal rhyme is line-adjacent to a preceding line-final rhyme, so that the rhymes are adjacent and in a small domain. However, there is some intersection involving freely placed rhymes, notably in Irish, for example *rannaigheacht mhór*, where a word midway through a line rhymes with a word midway through an adjacent line, and where there is also line-final rhyme (e.g., forming an ab/ab pattern over the two lines). Though this is an intersection it is quite limited, and is in adjacent lines, so it may still be the case that when the word is freely placed, the pattern is more limited. This may then explain why alliteration, with its freedom of placement, generally appears in limited patterns.

Looser Similarity: Nonidentical Rhyme and Alliteration

Two words which alliterate have a similar sounding beginning, and two words which rhyme have a similar sounding ending. Similarity sometimes means identity, using the same sounds, and usually the same tone or stress (if these factors are relevant). I call this identical rhyme or identical alliteration; sometimes the term ‘perfect’ is used instead of identical, but this is avoided here because of the implied value judgment associated with the word ‘perfect’. Sometimes looser similarity is allowed, which I refer to as nonidentical rhyme or alliteration (avoiding the term ‘imperfect’). Looser similarity usually holds between vowels, or between consonants, which are similar in some features but differ usually in just one feature. A one-feature difference might be vowels which differ only by one degree of height, or consonants which differ only in voicing. Sometimes there are phonological generalizations to be made, such that the two sounds are underlyingly the same, before phonological rules differentiate them (Kiparsky 1981 [1973]; Worth 1977; Malone 1982; 1988; Fabb 1997: 125–132). Sometimes how the sounds are written plays a role in allowing them to be counted as similar (see Cooke 1980: 426 on Thai rhyme).

NONIDENTICAL RHYME

Zwicky (1976) describes various kinds of nonidentical rhyme, rhyme where the rhyming part of the word involves sounds which are not identical. His article focuses particularly on nonidentical rhyme in rock lyrics, but he notes that all these types of rhyme are found also in English art poetry and popular poetry.

(i) A stressed syllable is matched with an unstressed syllable. It is worth noting that this can be forced by the singer in performance, even if it is not found in the text; Bob Dylan does this in the final line of the first sung stanza of ‘Highway 61 revisited’, where he sings ‘down on highway sIXty-one’ (in a stanza where a stressed rhyme on ‘-on’ has been dominant).

(ii) One word has extra material at the end. One possibility is to add a syllable (face : places). Another is to add a consonant (refuse : amused); the most common option in rock lyrics is to add an alveolar obstruent (d, t, z, s).

(iii) Vowels are different but consonants are the same. Zwicky found that in rock rhymes, the vowels could be defined in linguistic terms as one phonological feature apart, often one degree in height.

(iv) Vowels are the same but consonants are different. Zwicky also found that in rock rhymes, the consonants tend to be one feature apart, differing in position, manner or voicing. In these songs the most common pairings are nasals which differ in position of articulation such as [n] paired with [m], followed by pairings of d/z (differing as plosive vs. fricative), then t/k (differing in position), s/z (differing in voicing), p/k (differing in position), etc.

Nonidentical rhyme is preferred by some poets and in some traditions. Thus, Wilfred Owen makes his rhymes nonidentical in some of his poems, including for example the poem 'Strange meeting'; Kiparsky (1981 [1973]) describes Owen as allowing any vowel to rhyme with any other but that any coda consonants must be identical. Worth (1977) notes that in Czech, rhymes were formed by words which had vowels differing only in length as a deliberate poetic device, and that in Norwegian, rhymed words had deliberately different tones. Zwicky (1976) and Zwicky and Zwicky (1987) show that for rock songs, nonidentical rhyme is preferred. Some singers deliberately manipulate stress and pronunciation to force rhyming nonidentities in performance, where the nonidentical rhymes are not obvious from the song text alone. So, for example, in her 2009 song 'Everyone's at it' the British singer Lily Allen rhymes 'certain' with 'curtain' which in principle should be an identical rhyme, but in performance she glottalizes the middle of the second but not the first word to create a non-identical rhyme. In the next rhyme pair she rhymes 'bed NOW' with 'HEAD now', shifting the stress to produce a nonidentity from a text which on the page would seem to have identical rhymes.

NONIDENTICAL ALLITERATION

Traditions with systematic alliteration sometimes allow nonidentical alliteration, where the alliterating part of the word involves different but similar sounds. Unlike rhyme, there are almost no clear cases of traditions in which nonidentical alliteration is preferred.

In Germanic verbal art, alliteration requires identity of the whole onset, so that for example [s] and [sk] will not alliterate. An indirect consequence of this constraint is discussed by Hagåsen (2011) who says that while there is a strong tendency to avoid alliteration between the two parts of a dithematic personal name (hence dispreferring names like **Kvarnkvist* and **Rönnrot*), this holds only when onsets are the same, so *Sundstrand* with mismatched onsets is fine, because this does not count as alliteration. Thus there is usually identical alliteration involving onsets, but nonidentical alliteration is sometimes allowed, for example between equivalent palatal and velar consonants; Tristram (1995) describes some alliterations in *Beowulf* with this pattern, and Aðalsteinsson (2014: 32) notes this also for Icelandic. However, while alliteration between consonants is usually identical, alliteration between word-initial vowels allows nonidentity: any initial vowel can alliterate with any other initial vowel. This is a clear case of phonetic non-identity of alliteration. It is however possible that in the underlying representations of the words, identity is still adhered to, if the identically empty onsets of the words (structurally present but not pronounced) are what is being alliterated, as argued by Jakobson (1963) and Aðalsteinsson (2014).

In Finnic verbal art, alliterating consonants are required to be identical. Frog and Stepanova (2011, and personal communication) note that alliteration between /s/ and /ʃ/ is possible in the Viena dialect of Karelian, reflecting a relatively recent phonological development in that dialect, and perhaps only in that dialect. Nonidentical alliteration is allowed between vowels, which are included in the alliteration system of Finnic verbal art, whether the word begins with CV or begins with V. Krikmann (2015) shows in a statistical account of Estonian runosongs that the vowels need not be identical, but the preference is for vowels which differ in one phonetic feature, and the most common pairing between nonidentical vowels is between vowels differing only in height (mid and low).

In mediaeval Irish verbal art, both alliteration and rhyme are allowed to be nonidentical. Words which differ in ‘eclipsis’ (a sound change which involves voicing or nasalisation) alliterate: ‘when a word is eclipsed, the radical initial counts for alliteration, e.g., b and mb alliterate; t and dt’ (Knott 1994: 11). (The spelling indicates mutation of the consonants; eclipsis is the nasalization of a voiced plosive as in the first example, or the voicing of an unvoiced plosive as in the second example.) Words which differ in some forms of lenition can also alliterate (on the whole this pairs a plosive with a fricative). The full set of rules are complex, and are listed by Knott (1994: 11).

In Mongolian, Kara (2011) says that consonants can alliterate if they differ in voicing, and that alveolar and alveopalatal fricatives /s/ and /ʃ/ can alliterate (as in the Karelian dialect noted above), though none of his examples show this type of alliteration, which suggests that this is rare. Kara also says that vowels can alliterate if they vary in height between mid and high (o and u can alliterate; ö and ü can alliterate, e and i can alliterate).

In Somali, consonants which alliterate must be identical (Martin Orwin personal communication).

THE DIFFERENCE BETWEEN NONIDENTICAL ALLITERATION AND NONIDENTICAL RHYME

Many verbal art traditions with systematic alliteration allow specific nonidentical alliterations, and similarly many verbal art traditions with systematic rhyme allow specific nonidentical rhymes. There may however be a difference, which is that nonidentity of rhyme can itself be systematic, while nonidentical alliteration appears not to be systematic. As noted, some traditions and some poets favour nonidentical rhyme. On the whole this is not true for alliteration. One exception is claimed for Irish by Bergin (1921–3: 83), who quotes a mediaeval Irish tract, where ‘reference is made to a metrical fault ... [from which] it is clear that a sequence of alliterating words unrelieved by lenition or eclipsis [various nonidentical alliterations], was displeasing to the ear’.

There is thus a typological generalization that it is nonidentical rhyme (but not alliteration) which can be systematic, and this might fit with an experimental finding relating to rhyme by Knoop et al. (2019). The authors find that nonidentical (‘imperfect’) rhymes are more likely to be accepted as rhymes if they are in structurally predictable positions, for example at the ends of poetic lines. Knoop et al.’s finding may be paralleled by a finding

by Noordenbos et al. (2013), who show that children with dyslexia find it harder to identify partial rhymes, and suggest that the children without dyslexia are using an analytical strategy possibly involving conscious effort. The connection may be that both structural predictability and conscious effort involve attention, and it may be the increased attention which allows nonidentical rhyme.

It is not straightforward to extend Knoop et al.'s finding to match the typological patterns, but it is worth briefly considering how this might be done. For example, it may imply a principle that nonidentical rhyme or nonidentical alliteration are more acceptable (and hence more likely to appear) if the words are in structurally predictable positions. If this were true then it would explain why alliteration, which tends to be free in position, is less likely to be nonidentical.

Further questions arise. First, we would expect fixed alliteration to be more tolerant of nonidentity than unfixed alliteration. The clearest case of fixed alliteration is Mongolian, with line-initial alliteration, and indeed (according to Kara 2011) Mongolian does allow extensive nonidentical alliteration. Mongolian also allows line-internal alliteration, and it would be interesting to test a prediction that nonidentity is more likely in the line-initial than in the line-internal alliteration.

The second question relates to the typology of rhyme. Rhyme is often in a fixed position (usually line-final). Line-final rhymes can certainly be nonidentical. But rhyme can also be in an unfixed position: are such unfixed rhymes less likely to be nonidentical? Some tentative support for this comes for example from Knott's (1994: 14) account of rhyme in Irish *rannaigheacht mhór*: (there are four lines a, b, c, d)

b and d rime [rhyme], and a c consonate with them [note that nonidentical rhymes are generally allowed in final position]. There are at least two internal rimes in each couplet [free], and the final word of c rimes with a word in the interior of d [partially free]. The internal rimes in the first couplet need not be identical, *comhardadh briste* [same vowels, related consonants], or *amus* [same vowels, unrelated consonants] will do. In the second couplet, the rimes must be identical. ... In the more ornate style, the [internal] rimes are identical in the first couplet as well as the second.

In this tradition, therefore, fixed (line-final) rhymes are more likely to be nonidentical than free (line-internal) rhymes, which are more likely to be identical. This dispreference for nonidentical free rhymes is stronger in more ornate verse.

THE AESTHETICS OF NONIDENTITY

There is a widely proposed aesthetic principle that our aesthetic judgments favour intermediate levels of complexity, neither too simple nor too complex. Drawing on Wundt's (1874) hedonic curve, this notion is particularly associated in psychological aesthetics with Berlyne (1960: 200; Kammann 1966; see also Zyngier et al. 2007).

The various kinds of regular poetic form – rhyme, alliteration, metre and parallelism – often involve rules or patterns which only partially determine the linguistic forms of the poem. Consider for example the rules for iambic pentameter, a metre which defines a periodic template against which the rhythm of the line is often somewhat aperiodic (i.e., lines of iambic pentameter do not generally have all and only even-numbered syllables stressed). Rules for rhyme and alliteration are always like this, in that they stipulate that two words must be similar but not identical. All these kinds of regular poetic form thus produce intermediate levels of complexity, and this may be part of their function in poetry.

A further layer of ‘intermediate complexity’ arises when the rhyme and alliteration are nonidentical. Tristram (1995) argues that these and other nonidentities are part of the aesthetics of mediaeval verse from Ireland, Wales and England.

Phonological Similarity, Enhancement and Attenuation, and Attention

Gupta et al. (2005) summarize and reinterpret a long tradition of experimental work, mostly on lists of words, which show that recall of a word is enhanced by the proximity of a word which sounds like it, but also is attenuated by the proximity of a word which sounds like it. These can both be called ‘phonological similarity effects’ or PSEs, though usually the term is used specifically to describe effects where recall is worse because of phonological similarity. For example, to demonstrate the attenuation effect, they show that in the immediate serial recall of a list of words, recall is worse when the list includes words which sound the same (both in how they begin and in how they end), and recall is better when the words sound different. The positive effect of enhancement comes from the possibility that words which sound alike are stored in memory in similar positions; on the other hand, the negative effect of attenuation may arise because the words are so similar that they interfere with each other when recalling them.

In poetry, phonological similarity appears to have only an enhancement effect (and not an attenuation effect), perhaps because in poetry the phonological similarity is attended to. This is shown for rhyme by Nelson et al. (1982, 1987) and Rubin (1995), and shown for alliteration by Boers et al. (2014). Jakobson (1960) argued that attention to language is the defining characteristic of language in its poetic function. This suggests that we attend to rhyme, and to alliteration, when they are in poetry, particularly when they are systematic. If attention contributes to the way that sound patterning enhances recall, then rhyme may have an advantage in poetry. This is because rhyme is more easily attended to in poetry than alliteration, because rhyme is more likely to be fixed in place, and so expected, and also because rhyme is characteristically line final, and so in a salient position. The end of a line is a salient position for various reasons, including that the line-final word often has strong stress, the final or penultimate syllable may be lengthened, there

might be a characteristic pitch level or contour at the end of the line, and there may be a pause after the end of the line. These structural distinctions give rhyme an attentional advantage over alliteration.

Rhyme has an advantage in poetry, in terms of enhancing recall. But in ordinary speech, alliteration may have the advantage. This may relate to the finding that, in contrast to poetry, in word lists rhyme reduces recall: thus Johnson et al. (2014: 18) say ‘rhyme enhances recall in contextual settings [such as poetry], but decreases recall in isolated word conditions.’ But alliteration does not seem to decrease recall in ordinary speech. Thus, Praamstra et al. (1994) find that attenuation is greater for words which end alike (and so like rhyme) than for words which begin alike (and so like alliteration). Thus in ordinary speech, alliteration appears to have an advantage because it enhances recall without also decreasing recall. This may explain why alliteration is more common than rhyme in speech, at least in European languages. For example, alliteration is much more common in English word sequences such as idioms, binomials, etc. as argued by Lindstromberg and Boers (2008: 200): ‘Our casual monitoring of language encountered in day to day reading and listening has resulted in a list of approximately 1,400 current alliterative sequences but only 110 ones that rhyme.’ Williams (2011) notes that in European idioms, alliteration is common but rhyme is very uncommon.

Conclusion

Three major differences between rhyme and alliteration are: (i) rhyme location tends to be fixed, while alliteration location is almost always free, (ii) rhyme pattern can intersect, while alliteration pattern requires adjacency, (iii) rhyme is more open to loose similarity than alliteration. I have suggested that the first of these differences may explain the second two. That is, if alliteration is more freely placed, then complex patterns are dispreferred, and nonidentity is also dispreferred.

A further major difference is that rhyme may be more salient than alliteration, meaning that rhyme is more easily attended to. In some traditions this is because rhyme is more likely to involve a vowel (a more prominent sound). But generally, it is because rhyme is more likely to be in a salient structural position, at the end of a section, such as a line, and in that position may be made additionally salient prosodically by lengthening or raising the pitch, or by preceding a pause. Because rhyme is more likely to be attended to than alliteration, and attention improves memorization, this gives rhyme an advantage in poetry, when poetry needs to be memorized. If rhyme is easier to attend to, this favours rhyme as a poetic form, given Jakobson’s (1960) proposal that the poetic function depends on our attention being drawn to the language of the text.

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