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音声言語の研究 17

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H[aɪɛɪ]tus?

Makoto Umeno

Abstract   Some long vowels in English behave differently from other vowels in that they allow another vowel to follow immediately. On the face of it, hiatus, which is a widely disfavoured phenomenon, appears to manifest itself after those vowels. However, reviewing the literature and examining their phonological status reveal that those long vowels indeed produce a hiatus-breaking glide, [j] or [w], after them when followed by another vowel. This glide-forming process takes place not only across morpheme and word boundaries but also within a morpheme. Accounting for the mechanism of this process requires explicit reference to empty constituents and monovalent subsegmental primes.

1.   Introduction

Hiatus, an occurrence of consecutive vowels that belong to different syllables without the intervention of any consonant, is a cross-linguistically disfavoured phenomenon. In many languages, it is usually resolved by any of the three phonological processes: deleting one of the vowels, synthesising them, or adding a consonant. When it comes to the English language, however, it is not clearly stated in the literature whether English avoids hiatus or not, and this ambiguity may be mainly due to the phonemic/phonetic transcription of English.

While checked vowels in English are not followed by another vowel (thus they never provide the environment where a hiatus occurs), diphthongs and certain long monophthongs, /iː, eɪ, aɪ, ɔɪ, uː, oʊ(əʊ), aʊ/, appear to be able to be followed by another vowel. For example, "*buying*" is transcribed as /ˈbaɪ.ɪŋ/, which seems to allow a vowel sequence /ɪ.ɪ/ to occur. This sort of vowel sequence, however, could be attributed to the transcriptional system itself.

It is also notable that there have been a lot of phonologists who have given symbols *y*, *w* or *j*, *w* to the second part of diphthongs (and sometimes long monophthongs that end with [+high]), as in /iy, ey, ay, ɔy, uw, ow(əw), aw/. Although these symbols are quite insightful in some kind, they may also create the uncanny conception that these vowels end with a consonant. Lindsey (2019), at the extreme of this transcriptional faction, argues that diphthongs of the Standard Sothern British pronunciation (henceforth SSB) should be represented as /ɪj, ɛj, ɑj, oj,

ʉw, əw, aw/[1]. As he argues, this treatment of long vowels is supported by a number of phonetic and phonological facts.

Unfortunately, the two viewpoints above do not provide any clues to the interpretation of the actual phonological status of those vowels and just raise two questions: do those vowels really allow a hiatus to occur? And is the second part of diphthongs and some monophthongs a consonant? The first part of this paper is mainly concerned with tackling the latter question and describing the phonological characteristics of the long vowels in question. The second part will propose that English does not allow hiatus to occur across any boundaries, such as syllables, morphemes, and words through a hiatus-breaking process, namely glide formation.

§2 shows how English long vowels can be phonologically categorised and offers reasons for rejecting the view that diphthongs and certain monophthongs end with consonants by scrutinising their phonological characteristics. §3 introduces the notion and mechanism of empty constituents in the Government Phonological literature. §4 reviews the literature that accounts for a hiatus-breaking process by introducing Element Theory and an empty onset and then extends this analysis (with some modifications to it) to the explanation for a glide-forming process taking place within a morpheme in English by assuming that every syllable has an onset position irrespective of whether it is filled with melodic content. This section also takes up some other hiatus-breaking processes. §5 summarises the main conclusions.

2. Long vowels in English

2.1 The classification of long vowels

Long vowels in English are traditionally divided into two groups: monophthongs[2] and diphthongs as in (1). Diphthongs can be further classified into two subgroups: closing diphthongs and centring diphthongs.

(1)

MONOPHTHONGS			(closing)	DIPHTHONGS	(centring)	
iː		uː			ɪə	ʊə
	ɜː	ɔː	eɪ	əʊ	ɔɪ	eə
		ɑː		aɪ aʊ		

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[1] On the quality of the first part of these long vowels (diphthongs), see Lindsey (2019).

[2] Gimson (1980) named the relevant vowels as 'pure vowels' because they exhibited no quality change in their first half and second half. Lindsey (2019) states that this was actually so at the time Gimson gave the explanation, but nowadays, vowels /iː/ and /uː/ show a more diphthongal-gliding nature.

As Gimson (1980) acknowledges, this classification is problematic from a phonological point of view, but this is still a widely held view of an English vowel system.

Wells (1982) revised this analysis and proposed a new categorisation of English long vowels as in (2). The leftmost group consists of traditional monophthongs and diphthongs which have a front mid to close quality in their endpoints, and the central group is made up of traditional monophthongs and diphthongs which have a back mid to close quality in their endpoints. The rightmost group comprises those of traditional monophthongs and diphthongs which have relatively open quality (in binary feature term: [-high]) in their endpoints. Unlike Gimson's categorisation, Wells' is strongly motivated by phonological characteristics that these vowels have: while the vowels in the leftmost and centre groups end in [+high] quality and permit another vowel to follow, those in the rightmost group end in [-high] quality and usually cause *linking-r* or *intrusive-r* when followed by another vowel.

(2)

iː				uː	ɪə	ʊə
eɪ		ɔɪ	əʊ		ɛə	ɜː	ɔː
	aɪ		aʊ			ɑː

Lindsey (2019) develops the analysis given by Wells and argues that the seven vowels form a natural class because they not only undergo processes, such as smoothing and pre-fortis clipping, but can be followed immediately by another vowel without the process known as *linking-r* (or *intrusive-r*). Lindsey gives the classification[3] as the following:

(3)

ɪj				ʉw	ɪː	ɵː
ɛj		oj	əw		ɛː	ɜː	ɔː
	ɑj		aw			ɑː

What is noteworthy in (3) is that the seven vowels from the left have glides /j/ and /w/ as their endpoint and the six vowels on the right column are transcribed as monophthongs. This characterisation suggests that vowels that end with [+high] nature, regardless of whether they

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[3] It is notable that the qualities of the first part of these diphthongs are considerably different from those in (1) and (2). This reflects vowel quality changes taking place in the southern part of England these days, which are phonetically motivated. See Lindsey (2019) and Fabricius (2019) for a more detailed description.

were previously treated as monophthongs or closing diphthongs, are diphthongs and those which end with [-high] nature, regardless of whether they were previously treated as centring diphthongs or pure monophthongs, are monophthongs. Hereafter, we call the seven vowels from the left in (3), which have conventionally been transcribed as /iː, eɪ, aɪ, ɔɪ, uː, əʊ(oʊ), aʊ/, as just 'diphthongs'.

This transcription raises a quite fundamental question as to whether the second part of those seven diphthongs is a consonant or not. Given the phonological status of those diphthongs noted above, it seems uncontroversial to assume that the second half of them is a consonant, /j/ or /w/. In the next subsection, we will consider the validity of this view and then demonstrate that it is better not to regard the second part of the diphthongs as a consonant.

2.2   A vowel or a consonant?
2.2.1   Introduction: phonetic viewpoint

On the face of it, as noted earlier, the second part of the diphthongs, /j/ and /w/, can be considered as a consonant, and if so, those diphthongs should be regarded as just the combination of a vowel plus a consonant.

It may be quite difficult to discern whether the second half of the diphthongs is a vowel or a consonant from the phonetic point of view since high vowels [i] and [u] and glides [j] and [w], respectively, have almost the same amount of degree of stricture in the oral cavity (cf. Giegerich 1992, McMahon 2001), though some scholars claim that their dynamics or constriction degrees are different (The former view is held by Catford (2001), and the latter is by Ladefoged & Maddieson (1996), Padgett (2008))[4]. Moreover, as Cruttenden (2014) argues, each second part of those diphthongs shows a different degree of narrowing of the oral cavity individually depending on the quality of its preceding part; that is, /j/ of /ɪj/ and /j/ of /ɑj/, for instance, have the different extent of stricture.

Under the phonetic account of the diphthongal offglides, therefore, it is still not clear whether they are consonants or not. This insufficiency of explanation for their real status requires us to investigate the issue from an alternative perspective: phonology. Below we will show how close the relationship between the first and second parts of the diphthongs is and the empirical reasons why they should not be treated as a vowel plus consonant sequence.

2.2.2   Distributional discrepancy

It may be tempting to assume that diphthongal offglides /j/ and /w/ are consonants if we

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[4] The accounts given by the literature listed here are based rather on languages around the world than on English.

pursue the symmetric distribution of consonants flanking a vowel (i.e. an onset and a coda). Conventionally, glides in English have been considered to manifest themselves only in the onset position, but the assumption allows them to occur on either side of a vowel; hence they not only can occupy an onset position but also a coda position. This means that they show exactly the same distributional manner as other consonants, such as /t/ (*taught*), /p/ (*pop*), /k/ (*kick*), etc. Couched in this term, however, the close relationship between the first and second parts of the diphthongs cannot be accounted for.

Firstly, if we assume that the second part of the diphthongs is a consonant, we should treat each set of diphthongs as V̌+/j/ and V̌+/w/ (V̌ refers to a stressed short lax vowel, also known as a checked vowel). Compared to V̌+/other consonants/, which usually displays a maximal inventory of five canonical vowels plus /ʌ/[5] (e.g. (4a)), their vowel inventories are reduced as depicted in (4b) and (4c). Here, '◯' in (4b) and (4c) indicates that the corresponding vowel that exists in a full vowel inventory does not exist.

(4) a. V̌+/t/   b. V̌+/j/   c. V̌+/w/

	ɪ		ʊ		ɪ		◯		◯		ʊ
	ɛ	ʌ	ɔ		ɛ	◯	ɔ		◯	◯	ɔ	
		a				a				a		

pit		put	pea	---	---	two
pet	putt	pot	pay	---	toy	---	---	toe
	pat		pie		cow

In modern English, there are no combinations of vowels that constitute a diphthong, such as /ʌ/+/j/ (=*ʌɪ) or /ʊ/+/j/ (=*ʊɪ) as in (4b), and /ɪ/+/w/ (=*ɪʊ), /ɛ/+/w/ (=*ɛʊ), or /ʌ/+/w/ (=*ʌʊ) as in (4c). It would be possible to think of diphthongs /aɪ/ and /aʊ/, as /ʌ+j/ and /ʌ+w/, not /a+j/ and /a+w/, but this sort of analysis is not directly relevant here in the fabric of arguments displaying the difference of the distributional degree of vowels between a V̌ plus glide sequence and a V̌ plus non-glide consonant sequence.

Secondly, if the second half of the diphthongs were a consonant, it would allow not only short vowels but also long vowels to precede, just as other consonants[6]. For example, both long and short vowels can occur before a word-final /t/, such as /biːt/ *beat vs.* /bɪt/ *bit* and /fuːl/ *fool*

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[5] Most dialects of English have 6 checked vowels and they consist of five canonical vowels plus /ʌ/ (cf. Trager & Smith 1951, Giegerich 1992, Honeybone 2010). The majority of dialects of northern England, however, lack /ʌ/ in their vowel inventories; that is, they just have 5 checked vowels in a stressed syllable.
[6] /ŋ/ does not allow any long vowels to precede.

vs. /fʊl/ *full*. However, long vowels do not occur before glides in monosyllabic words; and there are no sequences, such as *[iːj], *[iːw], *[uːj], *[uːw], etc ([ɪj] and [ʊw] can be thought of as /iː/ and /uː/, respectively).

These two facts strongly support the argument that a vowel and its following glide are strictly intertwined and should not be treated as a separate vowel plus consonant sequence. If they were regarded as separate segments, the reason why the vowel before a glide holds distributional restrictions could not be accounted for. The next subsection will offer further support for the argument by taking up two dynamic processes, both alternations.

2.2.1 Alternations

When diphthongs in English undergo alternations, their first and second parts alternate as one unit. Their unitary characteristic manifests itself in closed-syllable shortening, which is an alternation between long and short vowels, as in (5). The condition under which short vowels occur is when the vowel and the following consonant occupy the same syllable within a word (cf. Myers 1987, Harris 1994, Harris & Gussmann 2002).

(5)   DOMAIN-FINAL   DOMAIN-INTERNAL
         perceive   perceptive
         describe   descriptive
         reduce   reduction
         five   fifty
         retain   retentive

Long vowels in English are free to occur before a word-final consonant, namely, a coda. Harris (1994) argues that this word-final consonant constitutes an onset position of the following empty nucleus, thus it does not occupy the same syllable with its preceding nucleus (as we will see in §3.2). On the other hand, the lefthand position of the domain-internal consonant clusters in the right column, such as perce[p]tive or redu[k]tion, has no choice but to occupy a coda position because there are no onset clusters like [pt], [kt], [ft] or [nt] in English; the outcome is the shortening of its preceding vowel. What is important here is again that diphthongs alternate as one set.

A similar phenomenon is observed in another vowel alternation, called trisyllabic laxing[7], in which long vowels alternate with short in suffixed forms. By taking a closer look at this alteration in (6), again, we can find the first and second parts of diphthongs undergo the process

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[7] Harris (1994) argues that trisyllabic laxing accompanying vowel shift is not treated in terms of a phonological process, and the alternants of this process are recorded in the lexicon.

as one unit.

(6)   UNSUFFIXED FORMS   SUFFIXED FORMS
         v[eɪ]n   *vain*   v[a]nity   *vanity*
         ser[iː]n   *serene*   ser[ɛ]nity   *serenity*
         div[aɪ]n   *divine*   div[ɪ]nity   *divinity*
         pron[aʊ]nce   *pronounce*   pron[ʌ]nciation   *pronunciation*
         s[oʊ]le   *sole*   s[ɔ]litude   *solitude*

The fact shown in these different alternation processes provides further confirmation that the diphthongs are composed of closely related two parts and behave as one unit through any phonological processes.

To summarise the discussion so far, the second part of diphthongs exhibits both consonantal and vocalic nature, but it is best analysed as a vowel, not a consonant, due to the fact that it has an intimate connection with its first part as seen in both static distributional patterns and dynamic alternations. There remains, nevertheless, a fundamental question of why the second part of diphthongs also displays a distinctive (not vowel-like) characteristic of being able to be followed by another vowel immediately, even though it is not a consonant but a vowel. This question in turn brings us back to the most important question raised in §1: do those vowels really allow a hiatus to occur? Shortly, We will offer direct insight into these two questions by implementing the notion of the empty category in conjunction with Element Theory. Before proceeding to the argument, it is necessary to introduce some basic concepts of the empty category in phonology.

3.   Empty constituents

3.1   Introduction

The following subsections are a brief description of empty constituents that are well established in the framework of Government Phonology (GP hereafter). The notion of 'empty' positions has a parallel with empty categories in syntax. §3.2 and §3.3 will explain empty nuclei and empty onsets, respectively.

3.2   Empty nuclei

Empty nuclei can occur in almost any place: word-initially, word-internallyand word-finally. Note that word-internal empty nuclei can be divided into two types: one which is properly governed (Kaye 1990) and another which is sandwiched between flanking onsets (Gussmann & Kaye 1993). Here we only take up a word-final empty nucleus because others

are not a central concern in this paper.

A consonant occurring word-finally is widely acknowledged as a 'coda', but most phonologists in the GP framework consider a word-final consonant as an onset which is followed by an empty nucleus. This means that there must always be a nucleus regardless of its phonetic realisation: empty or not. Kaye (1990) states that the parametric setting for a language determines whether the language allows the word-final consonant to occur; that is, languages that have consonants in a word-final coda position permit domain-final empty nuclei, but in languages where all words end with vowels, final nuclei must be filled with melodic contents and phonetically realised. While English, for example, belongs to the former group and thus licenses a domain-final empty nucleus, Italian which is a member of the latter does not license a domain-final empty nucleus. The configurations of the domain-final empty nucleus and filled one are illustrated in (7a) and (7b), respectively.

(1)   a. cap [capØ]   b. kappa [kapə]

```
    O   N   O   N            O   N   O   N
    |   |   |   |            |   |   |   |
    x   x   x   x            x   x   x   x
    |   |   |                |   |   |   |
    k   a   p                k   a   p   ə
```

3.3   Empty onsets

Empty onsets have not been a central issue as much as empty nuclei in the GP literature, and there are no particular licensing principles or parametric settings concerning empty onsets; they are just prosodically licensed by the following nucleus on the inter-constituent projection. Thus, it is not even clear whether an empty onset always exists before a nucleus when the onset position is not filled with melodic contents (we will return to this question presently). However, this state of affairs does not mean that empty onsets do not play a pivotal role in phonological processes. There are, indeed, good grounds for discussing their status in detail.

Clements & Keyser (1983) introduced the notion of empty onsets in the treatment of a phenomenon called *h-aspiré*, which is observed in French, but strictly speaking, this analysis was not done in the GP framework. Charette (1991) addressed this unique phonological phenomenon with this notion in the authentic GP framework. Harris (1994) also resorts to it to analyse English phonological processes such as *linking-r*, *intrusive-r* and glide formation (as we will see shortly in §4). In this way, the idea that an empty onset exists where no melodic content occupies an onset position has been exploited in the literature.

4. A hiatus resolution: empty onsets and glide formation in English

4.1 An element-based view

Recall that diphthongs in English, which are traditionally transcribed as /iː, eɪ, aɪ, ɔɪ, uː, əʊ(oʊ), aʊ/, allow another vowel to follow immediately, but neither other long vowels nor checked vowels are followed by another vowel without an intervening consonant. According to this characteristic of diphthongs, we can postulate that their ending point is a consonantal glide, but we should regard it as vocalic (just as the second part of a diphthong) not consonantal due to the facts we discussed in §2.2. The question, then, is this: why do only diphthongs behave like this? As noted in §2.1, all diphthongs share the [+high] feature in their endpoint. However, this fact only suggests that they form a natural class but offers little or no insight into the question.

We can elegantly deal with this issue by assuming that the subsegmental status of a phonological prime is monovalent (or privative), so the phonological contrast is viewed as specifications like [PRIME] vs. zero. In the GP framework, a monovalent subsegmental prime is called an 'element' and the theory concerning it is referred to as Element Theory. The traditional binary feature system does not account for the striking similarity of glides and corresponding high vowels (as seen in §2.2.1). The explanation for their commonality, on the other hand, can be achieved within the privative model of segmental structure since this model assumes that glides and corresponding high vowels share the same primes [I] and [U][8]. In this approach, they are segmentally identical but differ in their syllabic affiliation: high vowels at a syllable nucleus and glides at syllable margins (such as an onset) (Kaye & Lowenstamm 1984, Harris & Lindsey 1995). In terms of this privative approach, the second part of diphthongs has [I] or [U], and these elements are considered to be the cause of the unique behaviour of diphthongs.

4.2 *Harris's view*

Harris (1994: 104) presents the analysis of the creation of a hiatus-breaking glide across a word boundary. According to his analysis, glide formation occurs after a certain class of vowels, which are 'diphthongs' we call in this paper. The examples are as follows:

---

[8] One might think that two elements, [I] and [U], do not account for the reason why they behave in a unified fashion in a number of phonological processes. This was well captured by a traditional bivalent approach as they share the feature [+high]. Kaye, Lowenstamm & Vergnaud (1985) try to capture this nature by proposing that languages that have a canonical 5-vowel system collapse [I] and [U] tiers into one unified [I/U]-tier.

(8)   Harris (1994: 104)
    a. i:V → i:yV   three [y] and
        u:V → u:wV   two [w] of
    b. eyV → eyyV   day [y] of
        owV → owwV   go [w] of
   c. *Shah [y] of,   *Shah [w] of

Harris explains that which type of glide occurs is determined by the nature of the preceding vowel, and this process can be explained as the spreading of an element from the nucleus to the empty onset, illustrated in (9). Note that he also writes that a skeletal slot is automatically created in the onset to accommodate the relevant element.

(9)   Harris (1994: 104)
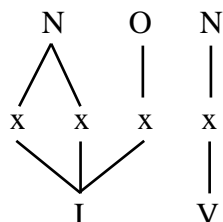
    a. i:V → i:yV   b. u:V → u:wV
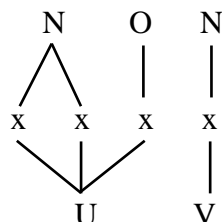
There are two issues we should concern here in this analysis. Firstly, two representations in (9) are illustrated as if the second nucleus were the head of nuclei, but this is inconsistent with the generalisation that the first slot of nuclei is always the head in English. If we follow this generalisation, however, the element lexically residing on the first nucleus spreads into the second and further into the vacant onset position; but this also seems to contravene the notion of STRICT LOCALITY. Secondly, this glide-forming process does occur not only across a word boundary but also across a morpheme boundary and within a morpheme (we will take these up in the next subsection).

4.3   Glide formation within a morpheme
    It is notable that Harris (1994) provides little or no explanation for glide formation in other environments than a word boundary. Backley (2011) extends the view presented by Harris as depicted in (8) and (9) to the analysis of the glide-forming process manifesting itself inter-morphemically. It may be easy to imagine the inter-morphemic case because the process occurring in the context is almost the same as that occurring across a word boundary; for example, a morpheme without an onset generates a skeletal slot in the onset when following

another morpheme that lacks a domain final consonant. But what about glide formation taking place in an intra-morpheme? Consider the examples of intra-morphemic vowel sequences below:

(10)

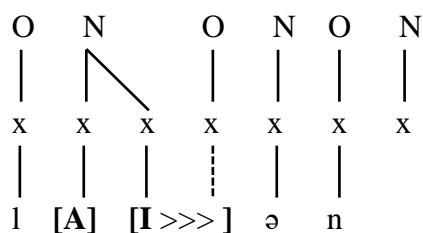|	
iːɔn	*aeon*
keɪɒs	*chaos*
vɔɪɪdʒ	*voyage*
laɪən	*lion*
fuːəl	*fuel*
pəʊɪt	*poet*
vaʊəl	*vowel*

Although one might think at first blush that these words are allowing a hiatus to occur just as transcriptions in the left column of (10), it is obvious that vowels in the first syllable of these words are indeed the 'diphthongs', and no other types of vowels can be immediately followed by another vowel in a morpheme (Lindsey 2019). This salient fact suggests that the same glide-forming process as in (9) takes place intra-morphemically. Should we then assume that an empty skeletal slot in the onset is automatically created to accommodate an element that comes from its preceding vowel in this case as well? It would be so in terms of Harris's account, but the appearance of a new onset position violates the STRUCTURE PRESERVATION PRINCIPLE stated as follows (especially in the intra-morpheme case):

(11)   STRUCTURE PRESERVATION PRINCIPLE (Harris 1994: 190)
       Licensing conditions holding of lexical representations also hold of derived representations.

If the glide-forming process in a monomorphemic word occurs cyclically, the derived structure differs from the lexical one since there is an insertion of a new onset position through the process. Thus, it seems natural to assume that there always exists an onset position before a nucleus irrespective of whether the onset position is filled with melodic contents or not; that is every syllable has an onset position. Adopting this assumption, we can explain an intra-morphemic glide-forming process as spreading of elements residing on the second nucleus into the following empty onset position as illustrated in (12) (where >>> denotes spreading).
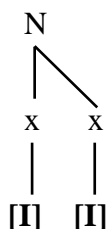
(12) laɪ[j]ən   *lion*

```
      O   N      O   N   O   N
      |   /\     |   |   |   |
      |  /  \    |   |   |   |
      x  x   x   x   x   x   x
      |  |   :   |   |   |
      |  |   :   |   |   |
      l [A] [I >>> ]  ə   n
```
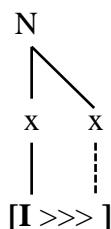
The view that an onset always exists before a nucleus is confirmed by the typological fact that there are no languages in the world that forbid onsets. Every language has an onset irrespective of whether it always requires an onset (e.g. Hua, Senufo, Temiar, etc.) or not (e.g. English, Italian, Japanese, etc.) (Zec 2006). Another fact to note is that an onset position is blind to the computation of syllable weight, so postulating that an onset position is always there does not change traditional phonological approaches to metrical structure.

In order to develop the idea that hiatus-breaking glide results from spreading of the relevant elements, [I] or [U], which reside on the preceding vowel, it is necessary to say something about the relationship between the structural status of long vowels (of course including diphthongs) and the elements that can be contained in it. As discussed in the previous subsection, the relevant elements in the case of (8a) and (9) must be considered to spread from the first nucleus to the second and then to the vacant onset position, but this violates the condition of STRICT LOCALITY. Thus, this process is best expressed by assuming that elements [I] and [U] are lexically specified in the righthand slot (i.e. the complement position) of a branching nucleus in the case of English 'diphthongs' as illustrated in (13a). When it comes to the analysis of English vowels, /iː/ and /uː/, the complement slot of a branching nucleus has generally been recognised as 'empty' and filled with elements lexically specified in the head position by spreading as given in (13b) (Harris 1994, Backley 2011).

(13)   a.   b.

```
        N                     N
        /\                    /\
       /  \                  /  \
      x    x                x    x
      |    |                |    :
      |    |                |    :
     [I]  [I]              [I >>> ]
```

If we follow the latter view, however, we will lose sight of the fact that /iː/ and /uː/ phonologically behave exactly the same as true diphthongs, /eɪ, aɪ, ɔɪ, əʊ(oʊ), aʊ/ that are

conventionally regarded as having the (13a) type of structure. Assuming that [I] or [U] is lexically encoded in the complement slot of a branching nucleus in the case of diphthongs enables us to account for the unified fashion of their phonological behaviour and address the issue confronting the condition of STRICT LOCALITY as argued earlier. Then it makes sense to view long monophthongs in non-rhotic varieties, as shown in the rightmost group of (3), as having the (13b) type of structure.

Taking account of the OBLIGATORY CONTOUR PRINCIPLE (OCP) as noted in (14), however, the idea we have developed so far is undesirable in that two identical elements can be lexically adjacent, for instance in (13a). This problem can be handled by reference to the headedness of the relevant elements; while elements in the lefthand (governing) position are headed, those in the righthand (governed) position are lexically non-headed.

(14)   OBLIGATORY CONTOUR PRINCIPLE (OCP)[9]
      The occurrence of adjacent identical melodic expressions is prohibited.

Moreover, as Harris (1994: 172) acknowledges, a branching nucleus can display a level complexity profile of elements in addition to a downward complexity slope, so it does not matter when the number of elements is the same in both governing and governed positions.

4.4   Other hiatus-breakers

Let us here consider the different types of hiatus-breaking processes other than glide formation. One of the most observed processes is an insertion of a glottal stop, which only occurs across a word boundary. This is accounted for by assuming that an element [ʔ] fills the otherwise vacant onset between the two nuclei. Another well-known process is smoothing, which manifests itself in all environments, such as across syllables ([fɑː] *fi.re*), morphemes ([plɛː] *player*) and sometimes words ([dəːt] *do it*) (Beaken 1971, Wells 1982). Unfortunately, lack of space precludes us from discussing this complicated process in any detail here. *Linking-r* and *intrusive-r* are also hiatus-breaking processes, which occur only across morphemes ([kɛːɹə] *carer*, [dɹɔːɹɪŋ] *drawing*) and words ([kɑːɹɪz] *car is*, [ʃɑːɹəv] *Shah of*) in non-rhotic dialects. Although we cannot provide a detailed account of these two processes due to the limitation of space, it is closely examined in the element-based approach by Harris (1994, 2013) and Backley (2011).

Indeed, there are various ways of hiatus-breaking processes, and any one of these processes is used to avoid hiatus in English. It is not certain how and why a certain process is

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[9] The formulation and implementation of the OCP given here is from Harris (1994, 1997).

selected, but these facts clearly indicate that hiatus is disfavoured in any domain (intra- and inter-morpheme and word boundaries) in English.

5. Conclusion

Although some long vowels in English appear to allow another vowel to follow immediately, this does necessarily mean that they allow hiatus, which is cross-linguistically disfavoured, to occur. Taking a closer look at their phonological status, we revealed that they not only form a natural class but also have both vocalic and consonantal natures. Despite the fact that the second part of those vowels exhibits consonant-like characteristics, it is best regarded as a vowel because the first and second parts of those vowels consistently show unified nature through both static distributional facts and dynamic processes of alternations.

The vowels in question should be called 'diphthongs' since their second part is necessarily [+high] in terms of the traditional binary feature or [I/U] in terms of element theory. Harris (1994) argues in an element-based account that elements, [I] and [U], form a glide across a word boundary to avoid hiatus. We extended this view to the explanation of the glide formation manifesting itself intra-morphemically and concluded that there is an onset before a nucleus irrespective of whether the onset position is empty and elements [I] and [U] that lexically reside in the second part of diphthongs spread into the vacant onset to break hiatus. The idea that every syllable has an onset is supported by the facts of both syllable typology and metrical phonology. Significantly, there are also several hiatus-breaking processes in English which were not closely focused on in this paper.

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宮崎の「無アクセント方言」の談話音調
–青島地区の場合–

郡 史郎

要旨 宮崎市の青島地区の談話イントネーションについて，明治生まれの話者による実態を音響分析と聴覚判断を併用して調査した。結果として，自然談話における声の高さの動きは，文節ごとの高さの動きの方向性として単調下降型，単調上昇型，平坦型という３種の音調型と，文節の冒頭や末尾にあらわれる境界音調に分解することができる。これは同市清武町の明治・大正生まれの話者の実態の検討結果と同じである。しかし，境界音調の種類とその使用頻度については両地点で違いがあり，青島では清武にくらべて冒頭上昇が多く，末尾上昇が少ない。また，青島には末尾下降があるのが特徴で，特に男性話者に多い。音調型の使いかたについては，青島の男性話者が平坦型を多用し，特にポーズ節の冒頭で多く，文末で少ないが，これは青島の女性話者や清武の男性・女性話者と異なる。これは地域性というよりも個人的特徴の可能性がある。青島と清武に共通する高さの動きの特徴として，各文節はその内部で急な高さの変化をさせないという意味で「平板的」に言うことが求められるが，談話のなかでは青島の男性話者以外，各文節をもっぱら下降傾向で，ときには平坦に，そしてときには上昇傾向で発音し，それらの末尾や冒頭に上昇または下降を適宜つける形になっている。終助詞類と間投助詞は固有の高さの動きを持つ。青島の男性話者は平坦型の使用も多いが，平坦型のあとに下降型は続きにくいことから，この２型の選択はランダムになされているわけではないようだ。高さの動きを左右する要因として意味の限定関係とフォーカス，感情があるが，意味の限定関係の影響力はあまり大きくなく，音調型と境界音調というふたつの音調要素の使いかたの自由度は，青島では清武よりもさらに高いように思われる。

1　はじめに

　東京方言や大阪方言などでは「雨」と「飴」のように同形の単語の区別を音の高さでおこなうことができる。おおまかな音の高低の動きを線の高低であらわすと，東京の「雨」は［ア｜メ］，「飴」は［ア｜メ］，大阪の現在の主流はそれぞれ［ア｜メ］［アメ］と言いわける。このような単語ごとの音の高さの動きのパターンをアクセントと言うが，各単語がそれぞれに固有のアクセントで発音されることを特徴とするこうした方言を「有アクセント方言」と呼ぶ。

　これに対し，そうした区別ができないいわゆる「無アクセント方言」が南東北から北関東にかけての地域や九州の中部・南部などにある。そうした方言では，かりに［ア｜メ］と言ったとしても［アメ］と言ったとしても，それによって指す単語が変わるということはない。

　ところが，いわゆる「無アクセント方言」でも文を読み上げる際や会話には地域ごとに独特の声の高さの動き（音調）の特徴，つまり独特のイントネーションがあり，また世代差も存在するようである。筆者は，各地の無アクセント方言におけるイントネーションの様相を知るべく，これまで九州の熊本（文の読み上げ）と宮崎（会話）の音調について，どのような特徴があるのか，どのような要因で声の高さの動きが決まるのかを調べてきた。

前稿「宮崎清武町における『無アクセント方言』の談話音調」（郡 2022）では，日向方言の中部地域にあたる（現）宮崎市清武町の明治・大正期の生まれの話者による会話資料（以下「清武談話」と略称）の分析をおこなった。結果として，清武談話には基本的に文節ごとに高さの動きの方向性として単調下降型，単調上昇型，平坦型の３種のいずれかの動き（音調型）があり，それが文節の最後での上昇と冒頭での上昇という境界音調と組みあわせて使われていると記述できること，そして意味の限定関係とフォーカス，意味的なまとまりや感情が音調型や境界音調の選択を左右していることを述べた。

2 本稿の目的

本稿では，日向方言の中部地域の談話イントネーションについてさらに詳しく知るため，前稿の清武町今泉から南東方向に直線距離で約 10km 離れた宮崎市青島地区（1951 年に旧宮崎郡から宮崎市に編入）での状況を，明治生まれの話者による会話資料（以下「青島談話」と略称）を使って，清武談話と同じ手法を用いて調査する。

青島地区を選んだのは，国立国語研究所（編）『全国方言談話データベース　日本のふるさとことば集成』第 18 巻「福岡・大分・宮崎」（国書刊行会刊行）に収録された談話があるためである。会話の収録担当，文字化と解説は，『宮崎県史・資料編・民俗 2』で方言の解説も担当されている比江島修一氏である。

話者は 1899 年生まれの男性と 1909 年生まれの女性で，録音されたのは 1981 年である。司会者として登場する湯地安美氏も青島のかたのようだが，発言量はごくわずかであるため本稿での分析の対象とはしない。なお，清武談話で分析の対象としたのは 1890 年（男），1902 年（女），1914 年（女）のそれぞれの生まれの話者で，ふたつの談話の話者は世代的に近い。この青島談話には合計 22 分半ほどの会話が収録されているが，その前半の約 12 分，男性話者が現役で漁師をしていたときを話題とした部分について検討する。

この青島談話を聞くと，清武談話よりもずっと平板的な話しかたであるような印象をまず受ける。ただ，青島談話では男性話者の発言量が多く，清武談話では女性話者の発言量が多い。清武談話でも男性話者は平板的な話し方がめだつことから，上記の印象は男性が平板的な話し方をしがちなことによるものかもしれない。あるいは，もともとの主たる生業が農業（清武）か漁業（青島）かという地域性の違いもあり，音調の特徴自体にも違いがある可能性はある。

3 高さの動きのとらえかた

前稿の清武談話については，先にも述べたように基本的に文節ごとに高さの動きの方向性として単調下降型，単調上昇型，平坦型の３種のいずれかの動き，すなわち音調型があり，それ

が文節の末尾での上昇と冒頭での上昇という境界音調と組みあわせて使われていると考えたが，それはこの青島談話にも基本的にあてはめることができるように思われる。

ただし，前稿と違い，本稿の青島談話では<u>文節の最後からその次の文節の冒頭に向けての下降</u>が何度も出てくるので，これを「末尾下降」として境界音調のひとつとしてとりあげる。もしこの音の動きは次の文節を低い音からはじめるためのものだと解釈するならば別の名称がふさわしいかもしれない。あるいは機能として先行文節に属すると言うべき場合と，後続文節に属すると言うべき場合のふたつを区別するのがふさわしいということがあるかもしれないが，今は区別せずまとめて仮に「末尾下降」と呼んでおく。

このタイプの高さの動きが清武談話にまったくなかったわけではないが，非常に少なく，また感情表現や言いよどみ，引用の助詞，疑問詞にともなっているものが多く，一定の表現機能をになう音調のように思われたわれため，前稿では境界音調として扱わず「アクセント的下降」という名称のもとに表現機能との関係を検討した。しかし，青島談話にはこの末尾下降がかなり多くあらわれ，また特定の形式や表現機能との強い結びつきもないように思われたため，境界音調とみなすことにする。

青島談話の典型的な高さの動きの例を図 1 と図 2 に示す。図では縦軸が高低をあらわすが，目盛は 50Hz を基準(0)とした半音値で，人間の通常の声域をほぼカバーする 24 半音分（2 オクターブ）を示している。横軸は時間で，目盛は秒である。図と本文でのカタカナ表記と標準語訳は『日本のふるさとことば集成』の比江島修一氏によるものを使用する。
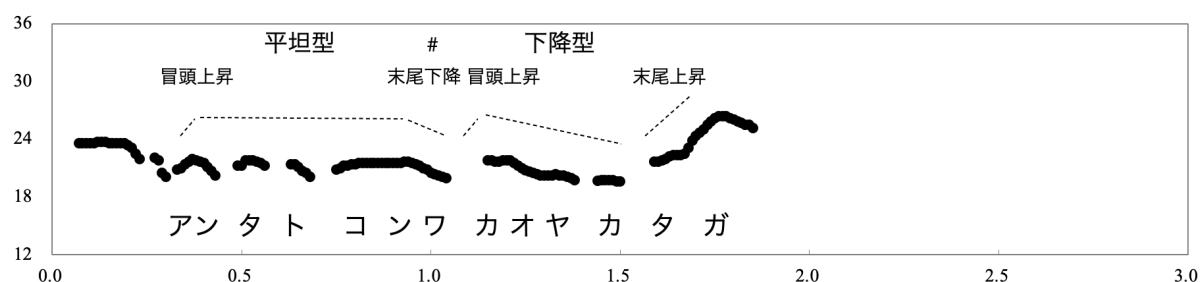
図 1 男性話者「あなたのところの若親方×」
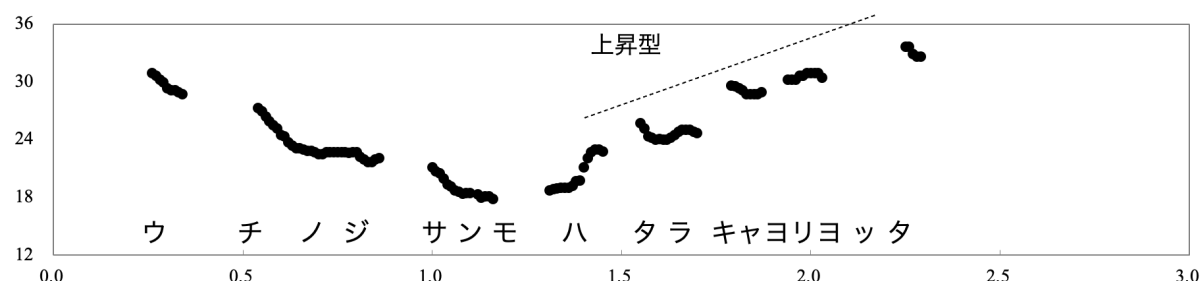
図 2 女性話者「うちのおじいさんも働かれていた」
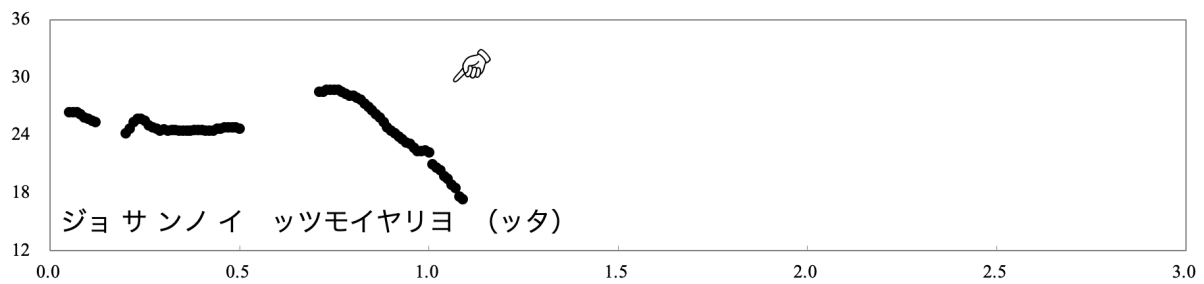
図3　男性話者「おじいさんはいつでも言っておられた」

　このほか，東京方言などの下降アクセント核の実現のような急で大きな下降もあるが，図3に示す例のようにそれはもっぱら文末部に限られる。図3の例は下降型に分類したが，文節の途中から下降する場合は，その文節は別の音調型と下降型からなる複合型として処理した。

　なお，高さの動きを分類する単位として，前稿と同じく補助動詞をその直前とあわせて1文節をなす1単位と考えた（理由については前稿の注10を参照）。補助動詞や複合語の各単位が音調的な独立性を持っていることがあるが，それについては4.5.1節で述べる。

　3つの音調型と3つの境界音調の詳細は以下のとおりである。

●単調下降型：略称「下降型」

　分節音の影響によるでこぼこはあっても，それを捨象するとおおむね単調に下がる動きになっているもの。1秒で2半音程度以上の割合で低くなるものとする。

●単調上昇型：略称「上昇型」

　分節音の影響によるでこぼこはあっても，それを捨象するとおおむね単調に上がる動きになっているもの。

●平坦型

　分節音の影響によるでこぼこはあっても，それを捨象するとおおむね平坦な動きになっているもの。

●文節冒頭での上昇：略称「冒頭上昇」
●文節末での段上昇：略称「末尾上昇」

　段上昇とは一段高くなってそのままの高さをおおむね保持するようなタイプの上昇で，筆者の東京方言の末尾音調の分類では「強調型上昇調」と呼んでいるものである（郡2020）。東京方言などの疑問文末にあらわれるような直線的に上がりつづけるタイプのもの（郡2020の「疑問型上昇調」）ではない。段上昇の上昇開始は末尾音節の冒頭付近からがほとんどだが，そのひとつ前の音節からのこともある。上昇が後続文節の冒頭まで続くこともよくある。

●文節末での下降：略称「末尾下降」

　末尾音節の内部，ときとして末尾音節の冒頭付近からの小下降。前稿の清武談話では前述の理由により境界音調の扱いをしていない。

　音調型の判断は Praat を利用した音響分析と聴覚を併用しておこなったが，文節が短いために音調型が判断できない場合は「判断保留」とする。

4　高さの動きの特徴

　以下では，前稿と同じく，ふたつ以上の文節が間にポーズをはさまないで続いている発言をとりだし，その各文節の音調型とその組み合わせの特徴について検討する。ここでは，他の話者の声との重畳の分離がむずかしく，音高の正確な観察・測定が困難な箇所は検討対象からはずす。結局，合計 790 文節が検討対象となったが，そのうち男性話者が 558 文節，女性話者が 232 文節で，男性話者のほうが多い。この談話では高さの動きの特徴が話者によって異なるので，以下ではもっぱら話者ごとに説明する。清武談話との相違点についても触れてゆく。

4.1 音調型の数から見た全体的な特徴

　本稿では各文節での高さの動きの方向性を 3 つの音調型に分けているが，ひとつの文節が複数の音調型からなると判断した場合がわずかにある（全体の 5%）。それについては別に考察することとし，まず 1 文節が 1 音調型の 752 例（男性話者 533, 女性話者 219）について検討する。

　ここでは使われる音調型の割合が話者によって異なる。図 4 に示すように男性話者は下降型（45%）と平坦型 (40%) の割合が拮抗しているが，女性話者は下降型の文節がずっと多い（65% 対 15%）。清武談話ではどの話者も下降型が多く平坦型が少なかった。ただし，青島でも下降型と平坦型の 2 型をあわせると男性 85%，女性 80%であり，清武の資料全体での 87%とほぼ同じ使用頻度になる。これは，下降型と平坦型が単なる変異形の関係にある可能性を思わせる。

　この青島談話では男性話者の発話量の多さにひきずられる形で談話全体での平坦型の割合が清武談話よりもずっと多くなっている（33% 対 10%）。青島談話が清武談話よりも平板的な
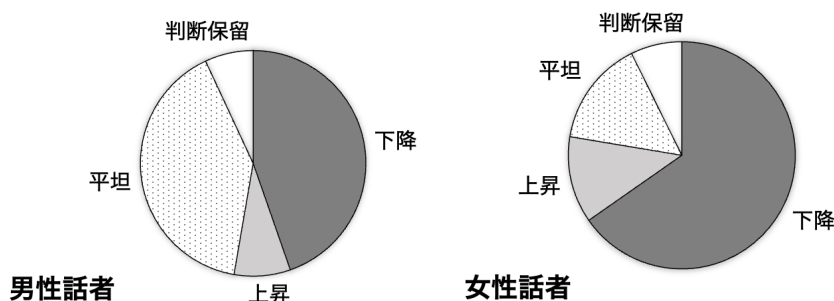
図 4　話者別の音調型の割合

話しかたであるように筆者が感じたひとつの原因がこれであろう。

　上昇型の割合は男性話者 8%，女性話者 12%で大差なく，清武談話でも資料全体で 10%なので，これについては両地点で同じような状況になっている。

4.2 それぞれの音調型の使われかた

　前節で見たように，使われる音調型の割合，特に下降型と平坦型の割合が話者によって大きく異なる。下降型か平坦型かについては選択の自由度が高いということになるだろうが，文内や談話内での機能に応じた使い分けはまったくないのだろうか。

　以下では，音調型の選択と関係するかもしれない特徴のうち数値化がしやすいものとして，その文節が「提題文節」であるかどうか，副詞節，並列節といった「節」の末尾であるかどうか，（文法的な）文末であるかどうか，そして，ポーズ段落の冒頭，つまりポーズを置いたあとの発言の最初の文節であるかどうかと音調型の使用割合の関係を検討する。

4.2.1 提題文節との関係

　助詞の「ワ（は）」などがついて文の主題の働きをする提題文節とそれ以外の文節における各音調型の割合をまず見てみる。提題の助詞「ワ」はこの談話では「シター（人は：シトワの例もあり）」「ムカシャー（昔は）」「ニンゲンナ（人間は）」「トキニャ（時には）」のように直前と融合していることが多い。

　結果をまとめたのが表 1 だが，提題文節かどうかで使われる音調型の割合が異なるということはなさそうである[1]。

4.2.2 節末での使われかた

　次に，文法的な切れ目の大きさとの関係を見るために，文末ではない文節で，後続文節との間の文法的な切れ目が相対的に大きなもの，すなわち副詞節（条件節含む）または並列節の末尾にある場合の各音調型の使われかたを検討する。節末であっても切れ目が相対的に小さい連体節，補足節，引用節の場合は含めない。

　結果をまとめたのが表 2 だが，副詞節または並列節の末尾かどうかで音調型の使われ方が異なるということもなさそうである[2]。

4.2.3 文末での使われかた

　次に，文法的な文末になっている文節かどうかで音調型の使われかたに違いがあるかを見る。条件をそろえるために，直後にポーズがある場合にかぎって比較をおこなう。終助詞類がつい

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1) 下降・上昇・平坦の３型の使用割合について正確確率検定をほどこすと，男性話者で p=0.647，女性話者で p=0.670 と，提題かどうかで使用割合に統計的に有意 (p<.05) な差はないという結果になった。

2) 下降・上昇・平坦の３型の使用割合について正確確率検定をほどこすと，男性話者で p=0.958，女性話者で p=0.256 と，節末かどうかで使用割合に統計的に有意な差はないという結果になった。

表1 提題文節と音調型の割合の関係

	男性話者				女性話者			
	提題文節		その他の文節		提題文節		その他の文節	
下降型	19	46%	219	42%	17	77%	126	60%
上昇型	5	12%	38	7%	2	9%	25	12%
平坦型	17	41%	198	38%	2	9%	31	15%
分類保留・複合音型	0	0%	62	12%	1	5%	28	13%

表2 節の末尾と音調型の割合の関係

	男性話者				女性話者			
	副詞節・並列節の末尾の文節		その他の文節		副詞節・並列節の末尾の文節		その他の文節	
下降型	31	45%	207	42%	11	73%	132	61%
上昇型	5	7%	38	8%	1	7%	26	12%
平坦型	26	38%	189	39%	0	0%	33	15%
分類保留・複合音型	7	10%	55	11%	3	20%	26	12%

表3 文末と音調型の割合の関係

	男性話者				女性話者			
	ポーズ前の文末		ポーズ前の非文末		ポーズ前の文末		ポーズ前の非文末	
下降型	31	54%	46	45%	28	70%	19	73%
上昇型	5	9%	5	5%	4	10%	0	0%
平坦型	10	18%	39	38%	1	3%	3	12%
分類保留・複合音型	11	19%	13	13%	7	18%	4	15%

ている場合も含める。なお，直後にポーズがあっても文末ではないというのは，それが後置文節か，言いさしている場合か，別話者との発言が重なって音調型の判断ができない場合である。

　結果をまとめたのが表3である。ここでは，文末かどうかによる違いが男性話者にはありそうである[3]。具体的には，平坦型の使用率が文末で少ない[4]。

　文末では平坦型が相対的に少ないというのは直感に反する結果ではないが，女性話者にはそうした傾向が特に見られないことが気になる。理由として，そもそも女性話者は平坦型をあまり使わず下降型が多いということがあるだろうが，ここで検討したのはあくまで「型」の使用率に違いがあるかどうかという点であることも考慮する必要がある。同じ下降型であっても，文末では下降のしかたが大きいという可能性はある。

　そこで，文末の文節とその直前の文節（次文末文節）がともに下降型になっていて，両者の間

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3) 下降・上昇・平坦の3型の使用割合について正確確率検定をほどこすと，男性話者で p=0.033，女性話者で p=0.115 だった。

4) 残差分析の結果では，調整済み標準化残差 2.482，p=0.013 と統計的に有意なかたよりがある。

にポーズ，境界音調や間投助詞が入っていない場合について，下降の大きさを該当区間の高さの動きを直線的に近似することで 1 秒に何半音下がるかという下降率の形にして比べてみた。ただし，該当する事例は両話者あわせて 19 例，そのうち女性話者は 4 例のみと少ない。下降率の分布をヒストグラムで示したのが図 5 である。ここでは話者をまとめて示している。

　この図から，25 半音/秒以上の大きな下降があることがわかるが，これらは文末文節のものである[5]。また，相対的に小さい下降は次文末に多い傾向もうかがえる。しかし，ひとつひとつの発話ごとに比べると文末の方が下降が小さいケースもあるため，全体として見ると次文末か文末かで下降型の下降の大きさに差はないようだ[6]。女性話者の 4 例だけを見ても，文末の方が下降が大きいケースが 2 例, ほぼ同じケースが 1 例, 小さいケースが 1 例とさまざまである。

4.2.4 ポーズ段落の冒頭での使われかた

　最後に，ポーズ段落の冒頭，つまりポーズを置いたあとに再開される発言の最初の文節であるかどうかとの関係を検討した。
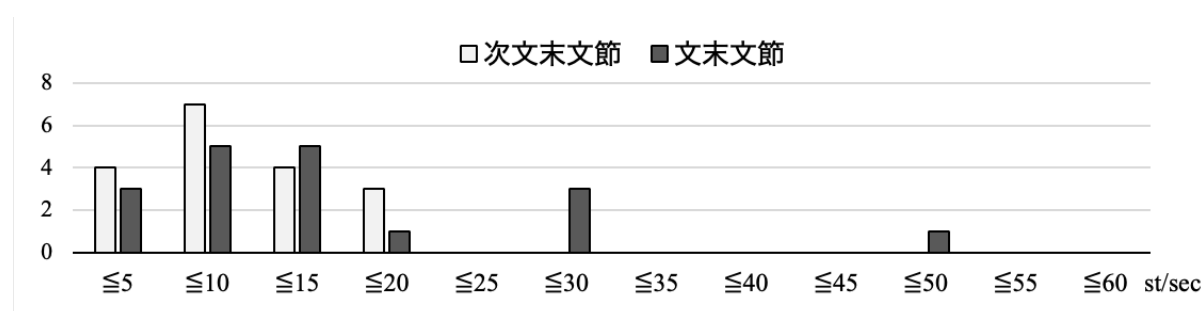
図 5　文末の文節とその直前の文節（次文末文節）での下降率

表 4　ポーズ段落の冒頭と音調型の割合の関係

	男性話者				女性話者			
	ポーズ段落の冒頭文節		その他の文節		ポーズ段落の冒頭文節		その他の文節	
下降型	58	36%	180	45%	39	59%	104	63%
上昇型	10	6%	33	8%	9	14%	18	11%
平坦型	78	49%	137	34%	12	18%	21	13%
分類保留・複合音型	14	9%	48	12%	6	9%	23	14%

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5) 具体的には，男性話者の［ジョサンノ］イッツモ　イヤリョッタ（おじいさんはいつでも言っておられた），［ムジュンシチョッ］トコガ　アット［ヨナ］（矛盾しているところがあるのよね），女性話者の［ゼンゼン　モー］オラン　ゴツナル［ワナ］（全然もういないようになるよね），女性の［ヨソン　シトオバ　ギョーサン］モゾガカッ　トコジャ［ジナ］（よその人を非常にかわいがるところだがね：文末とみなした）。

6) 対応のあるデータに対する t 検定の結果は t = -1.78, df = 18, p = 0.092。

結果をまとめたのが表4である。ここでは，男性話者には違いがありそうである[7]。具体的には，ポーズ段落冒頭ではその他の位置よりも下降型の割合が少なく，平坦型の割合が多い[8]。

4.2.5 上昇型と感情表現のむすびつき

上昇型が使われる文脈を見ると，感嘆や驚きなどの気持ちを込めた発言になっている例が目につく。それらは上昇量も大きい。これらの点は清武談話と同様である。それに下降が続く場合も下降は大きい。ただ，感嘆などの気持ちを込めた箇所すべてが上昇型になるわけではない。

典型例として，男性話者の ヒトジャッタラ メワ サメンワー （(普通の)人だったら目は覚めないよ：ヒトジャッタラでごく低い声域まで下げたあと上昇型が続き，そこで7.0半音上昇），ワタシー イヤッタッチャカリ モー （私に言われたのだから：5.0半音上昇），女性話者の モノスゴ リョーシヤッタヨー （ものすごく漁をされたよ：6.4半音上昇），ウチノ ジサンモ ハタラキャヨリヨッタ （うちのおじいさんも働かれていた：ハの最初からは 15.6半音上昇：図2参照），ナニ イーナットナ アンタ マタ （なに［を］いいなさるのか あなた［は］：ナニは上昇型で 6.9半音上昇するが，そのあと下降型が連続して 19.4半音下降）のそれぞれ下線部がある。

感嘆などの気持ちを込めた発言で上昇型をとらない例もある。たとえば女性話者の モー ホンーノ イザケデナ （もう本当に祝いでね：ホンでの 8.6半音の冒頭上昇のあとノの最後まで平坦）。

4.3 境界音調

4.3.1 冒頭上昇

文節の冒頭に上昇がつく文節は男性話者で全体の 20%，女性話者で 28%で，清武談話の資料全体での 14%という割合より多い。また，青島では下降型の文節全体の中で冒頭上昇がつくものの割合が男性で 31%，女性で 49%，平坦型では男性で 41%，女性で 58%と音調型によるかたよりはさほど大きくないが，多くが下降型の文節についていた清武とはこの点でも異なる。

青島談話での冒頭上昇の多くは，図6に示すように 3半音以下の小さい上昇である（ここではポーズなしで先行する文節がある場合にその末尾から測定できた上昇量のみを示している）。清武でも小さい上昇が多かったので，この点は両地点共通である。

ただし，強調がある場合は男性話者の ジョサンノ イッツモ イヤリヨッタ （おじいさんはいつでも言っておられた：下線部で 3.9半音上昇），女性話者の ムカシャ ホンデン リョーガ アリヨッタケンド （昔はそれでも漁があったけれど(今は…)：下線部でそれっぞれ 9.0, 4.4, 7.9半音上昇），

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7) 下降・上昇・平坦の3型の使用割合について正確確率検定をほどこすと，男性話者で p=0.012，女性話者で p=0.417 となった。

8) 残差分析の結果では，調整済み標準化残差と p 値は，下降型は -2.350, p=.019，平坦型は 2.989, p=.003 と統計的に有意なかたよりがある。

モー　ホンーノ　イザケデナ（もう本当に祝いでね：下線部で8.6半音上昇）のように比較的大きな
上昇が使われる。

4.3.2 末尾上昇

終助詞類や間投助詞にともなうものをのぞき，文節末に段上昇がつく文節は男性話者で全体
の16%，女性話者で8%に見られた。清武談話は資料全体で31%なので，それよりずっと少な
い。また，清武談話では多くが下降型の文節についていたのに対し，青島では男性が下降型の
文節全体の中で末尾上昇をつける割合が 18%，平坦型で 22%と大きなかたよりはなく，女性
は下降型で7%，平坦型で27%と，むしろ下降型での割合が少ない。
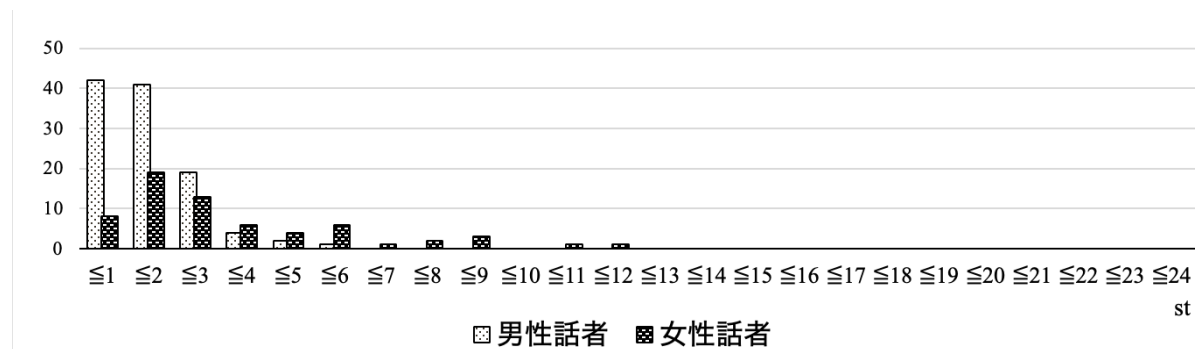
図６　冒頭上昇の大きさ
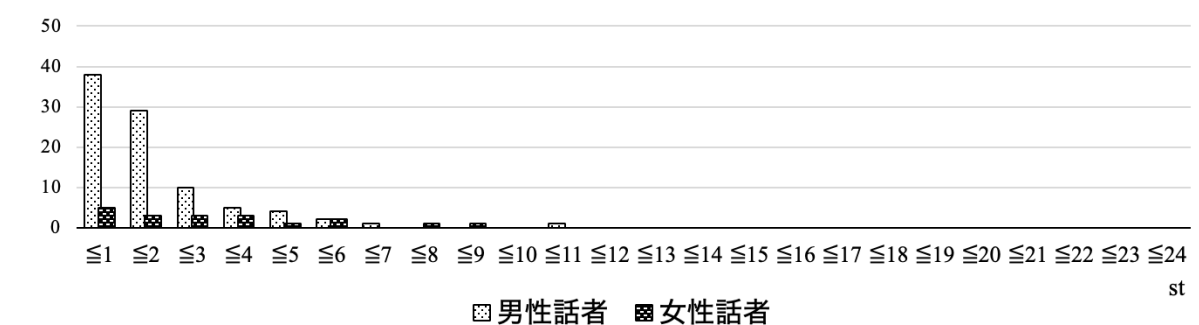
図７　末尾上昇の大きさ
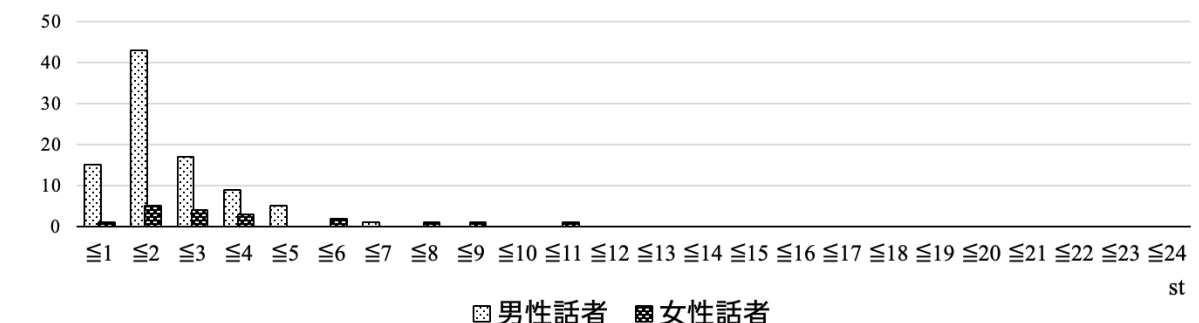
図８　末尾下降の大きさ

上昇の大きさは清武談話では 1 半音未満から 23 半音までと幅が広く，5 半音未満のものとそれ以上のものに分かれる分布だったが，青島では図 7 に示すようにごく小さいものが多い。

　　清武では提題文節には末尾上昇が多いということがあり，また，上昇の大きさは伝えたい気持ちが強い場合，述語文節の直前，感嘆の気持ちがある発言・興奮しての発言では大きい傾向があるなど，大きさの使い分けがありそうだった。青島では提題文節につく末尾上昇は逆にほとんどなく，男性の 2 例のみである。上昇の大きさについては，伝えたい気持ちが強い場合（フォーカスがある場合）と感嘆の気持ちがある発言・興奮しての発言には比較的大きな末尾上昇が見られる。たとえば，男性話者の イーツ タベン<u>ト</u> (いいのを食べないと：下線部で 5.9 半音上昇)，イェイヨー トッチョリャル<u>カリ</u> (栄養をとっておられるから：4.5 半音)，女性話者の ヨソン シトオバ ギョー<u>サン</u> モゾガッ トコジャジナー (よその人を非常にかわいがるところだがね：8.8 半音)，イッシューカン オキ イカンカッ<u>タラ</u> モー (1 週間沖［に］行かなかったらもう：7.1 半音)。

4.3.3 末尾下降

　文節末での下降については，終助詞類や間投助詞にともなう下降をのぞき，男性話者で全体の 16%，女性話者で 8% に見られた。男性話者は下降型の文節全体の中で末尾下降がつく割合が 9% であるのに対し，上昇型では 33%，平坦型では 27% と，下降型につくものは少ない。一方，女性話者は 3%，4%，21% と，下降型も少ないが上昇型も少ない。図 8 に示すように下降も小さいものがほとんどである。

　文節末で上昇してから下降するケースもあるが，それは男性話者で全文節の 4%，女性話者で 1% と，いずれもごく少ない。

4.4　音調型の組みあわせから見た特徴
4.4.1　2 文節が 1 音調句になる場合

　たとえば平坦型の文節のあとに境界音調なしにそのまま同じ平坦型の文節が続くならば，その 2 文節はひとつの「音調句」を形成することになる。下降型，上昇型についても同様である。そのようなひとつの音調句を形成する「純同音型の連続」の例が以下のようにある。

　「下降型＋下降型」：男性話者 13%　女性話者 13%

　「上昇型＋上昇型」：男性話者 2%　　女性話者 2%

　「平坦型＋平坦型」：男性話者 10%　女性話者 1%

　これらをあわせると 2 文節連続全体のうち 23% になるが (清武も 21% と同レベル)，青島では女性話者は平坦型がそもそも少ないためか，その連続がほぼない (1 例のみ)。

・音調型の組みあわせに見る意味的な制約（意味的限定とフォーカス）

　上のように２文節が１音調句を形成する要因として，清武談話では文節間の意味的な関係，具体的には最初の文節(たとえば「白い花が」なら「白い」)がそれに続く文節の中核となる語(「花」)を意味的に限定しているかどうかに着目し，それが１音調句を形成する要因になっていると考えられることを示した[9]。

　今回の青島談話についてもそれはあてはまるようである。意味的な限定関係がある全303例（男性235，女性68）の２文節連続のうち，１音調句になっている割合は男性話者で32%，女性話者で25%である。これに対し，意味的な限定関係がない全261例（男性163，女性98）の２文節連続のうち１音調句になっている割合は男性話者15%，女性話者10%であった。つまり，いずれの話者でも２文節が１音調句になる割合は，その文節間に意味的な限定関係がある場合が，ない場合の約２倍高い。
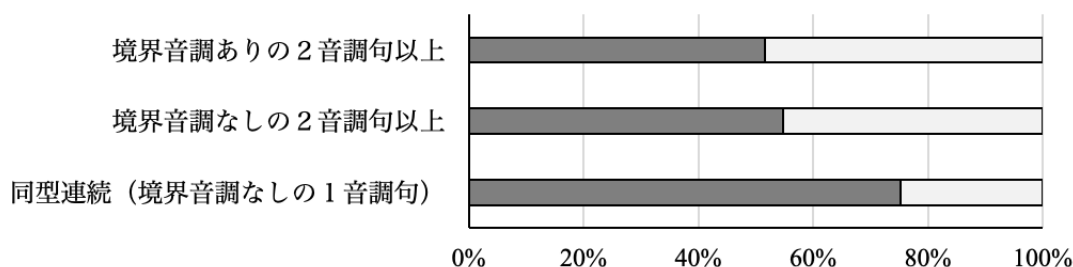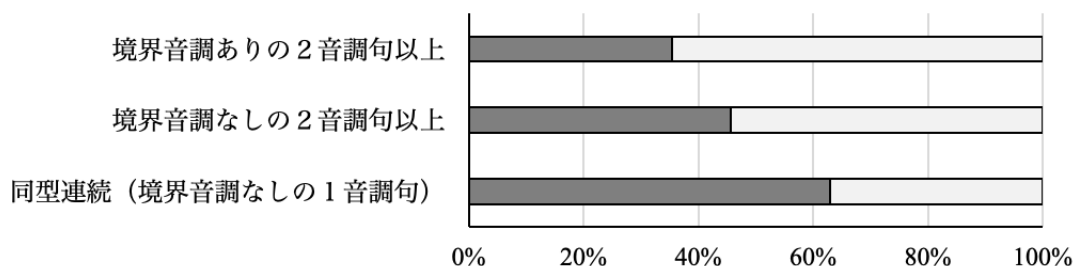
図９　意味的な限定関係と音調句

9)「意味的限定」とは，筆者が日本語のイントネーションの説明に用いている概念で，ある単語について，それが指し示すものや，それがあらわす動作や状態のありかたを限定する作用を指す。たとえば「花」という単語はそれが具体的に何を指すのかの可能性はさまざまあるが，「道に白い花が咲いていた」と言うときの「白い花」では，他の色の花でも単なる花でもなく白い花だと限定している。これに対して「道に白い雪が積もっていた」と言うときは，「雪の中でも白いもの」という意味で「白い雪」と言っているわけではない。雪はふつう白いからである。つまりこの「白い」は「雪」の意味を限定しておらず，視覚イメージを喚起するためなどの補足的情報になっている。東京方言では「白い花」と「白い花」のイントネーションは通常異なるが，それは意味的限定の有無による。

見方を変えて，1音調句になっている2文節のうちどれだけのものに意味的な限定関係があるかというと，全128例 (男性101，女性27) のうち男性話者で75%，女性話者で63%である。

図9には以上の関係を，2文節が境界音調なしでそれぞれ別の音調型をとる場合 (図の「境界音調なしの2音調句以上」：「以上」というのはここでは1文節がふたつの音型からなる場合も含めているため) と2文節の間に境界音調がある場合の割合とともに示している。この図からも推測できるように，意味の限定関係とかかわるのは境界音調があるかどうかではなく，同じ音型が境界音調なしに続いて1音調句になるかどうかである[10]。

意味的限定関係があればかならず1音調句になるというわけではない。特に，清武談話では意味的限定関係がある場合に1音調句になる割合は資料全体で47%だったが，青島では資料全体で31%とかなり低い。しかし，青島でも意味的限定の有無がイントネーションを左右する要因になっており，意味的限定があれば純同音型の連続になりやすいということは言える。

2文節以上が境界音調をはさまずに同じ音調型で連続する例には，このほか，男性話者の ジョサンノ イッツモ イヤリヨッタ (おじいさんはいつでも言っておられた)，ムカシャー イッシェンモ カシテクルッ シター オラジ (昔は1銭も貸してくれる人はいなくて) の下線部のような下降型の連続もある。これはフォーカス (ここでは「いっつも」「1銭も」) があるためにフォーカスのある文節とその後を含めた全体が1音調句になった例かと思われる[11]。つまり，フォーカスも談話音調を左右する要因になっているようだ。

4.4.2 男性話者における音調型の組みあわせ

青島の男性話者は，先述のように下降型と平坦型の使用率が全体のそれぞれ44%，40%と拮抗している。今，文節間に境界音調がある場合も含めて考えると，この話者では談話中で「下降型のあとに平坦型」が続く例が文節連続全体の9% (34例)であるのに対し，「平坦型のあとに下降型」が続く例は16% (63例) と，後者の方が多いというアンバランスな関係になっている。つまり，下降型のあとに平坦型は続けにくいという制約がありそうである。したがって，平坦型と下降型の選択はまったくランダムなものではないということは言えそうである。

4.5 その他の特徴

4.5.1 1文節が2音調型に分かれる場合

4.1 節で述べたように，ひとつの文節がふたつの音調句からなる場合がわずかながらある。

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10) 1音調句か2音調句の違いと意味的限定関係の有無の対応について正確確率検定をほどこすと，男性話者で p<0.001，女性話者で p=0.032 だが，2音調句であいだに境界音調があるかどうかの違いと意味的限定関係の有無の対応は男性話者で p=0.699，女性話者で p=0.271。

11) フォーカスがある文節がその直後の文節群とあわせて1音調句になる例は東京や大阪でも頻繁に見られる。東京については郡(2020)参照。

それは，補助動詞を含む文節，複合名詞からなる文節・接尾辞を含む文節，サ変動詞からなる文節，助動詞がある文節のように，ひとつの文節が文法的・形態的に一定の独立性を持つふたつの要素からなる場合，そして強調的に使われる２音節以上の助詞を含む場合である。

ただし，そうした文節がすべて２音調句になるわけではない。しかし，こうしたものは音調的に独立しうるということが言える。同様の傾向は清武談話にも見られた。

なお，上記のような場合に，どちらの要素も下降型で，後半の方が大きく下がる例もある。以下にそれぞれの典型例をあげる。記号｜は音調型の境界をあらわす。

・補助動詞を含む文節

カシテ｜クルルカンナ（貸してくれるからね：平坦＋下降），クーテ｜イコヤト（食べていこうよと：平坦＋境界音調＋平坦），カケ｜チョルワナ（欠けているよね：下降＋下降で後の下降度が大）。

・複合名詞からなる文節，接尾辞を含む名詞からなる文節

キカイ｜シェンガ（機械船が：下降＋冒頭上昇＋下降），サンブンノ｜イチモ（3分の1も：下降＋上昇），ニヒャク｜バリキヤ（200馬力や：下降＋平坦），ムスコ｜タチガ（息子たちが：下降＋冒頭上昇＋下降），スズキ(?)｜サンヨ（X5さんよ：下降＋冒頭上昇＋下降）

・サ変動詞からなる文節

ソートー｜スル（相当する：平坦＋下降），ソン｜スンナー（損するね：下降＋下降で後の下降度が大）

・助動詞がある文節

サメン｜ヨッタツ（覚めなかったよ：平坦＋下降），ナン｜ナッドガー（なりなさるだろうが：平坦＋下降），カマエ｜ヤッタガエ（構えられたよ：下降＋下降で後の下降度が大）

・２音節以上の助詞を含む文節

サンジューネン｜グライ（30年くらい：下降＋冒頭上昇＋判断保留），ジットン｜カンノ（10トンからの：下降＋冒頭上昇＋下降），ブラク｜カル（集落から：下降＋冒頭上昇＋下降），アリヨッタ｜ケンド（あったけれど：平坦＋下降），キンチャクアミ｜バッカッジャモンナー（巾着網ばっかりだものね：平坦＋冒頭上昇＋平坦）。上のブラク｜カル以下の例は，談話の流れのなかで別ものと対比させるなど，助詞の働きを強調しているケースと思われる。

以上にあてはまらない例もわずかながらある。具体的には，オヤカタ｜ジャモンナ（親方だものね：両方とも下降型で後半の下降度が大），アン｜マリナ（あまりね：下降＋冒頭上昇＋下降）。

4.5.2 終助詞類と間投助詞の音調

文末の述語には多くの場合終助詞類がついており，ほとんどの場合それらは固有の高さの動きを持っている。もっとも多い終助詞ナについては段上昇調（郡2020の「強調型上昇調」）と上昇下降調が同数程度になっていて，話者による違いもなさそうである。このほかナには直線的

な連続上昇調（郡 2020 の「疑問型上昇調」）や顕著な下降調（郡 2020），そして特に独自の動きがみとめられない無音調もわずかずつながらある。ワナ，モンナのような複合型ではナはほとんどの場合段上昇調。単独のワも多いが，その音調はさまざまである。ヨは段上昇調か顕著な下降調，ドは段上昇調か直線的な連続上昇調をとっている。ガは顕著な下降調か段上昇調か無音調。モンは顕著な下降調か無音調。

　このように終助詞の音調の使いかたには一定の傾向があり，使い分けがあることを思わせはするが，具体的な使い分けかたについては今回の談話資料だけでは知ることが困難である。

　文末以外の間投助詞については，特に多いのがナで，これは女性話者は段上昇調か上昇下降調をとるが，男性話者は段上昇調がほとんどである。ヨはすべて顕著な下降調だが，女性話者は１例の使用のみ。間投助詞はナかヨかで音調を使い分けているように見える。

4.5.3 裸の文末や裸の文内文節末の音調

　終助詞類がつかない「裸」の文末文節もいくつかあって，その最後に動きをともなう例がある。こうした末尾音調の使いかたは東京方言とも共通である。具体例として，オヤカタ（親方：呼びかけで最後のタが上昇下降調），ユーチョリャッタ（言っておられた：伝聞でタが段上昇調）。

　また，間投助詞がつかない文内の文節の末尾での例として，（キカンシオ）ヤルシー（機関士をするし）でシーに上昇下降調が，またナカヨクナッテ（仲よくなって）でテにやはり上昇下降調が使われている例がある。これも文内文節末での上昇下降調として東京方言と共通である。

5　まとめと清武談話との比較

　前稿に引きつづき，無アクセント方言である日向方言の中部地域の談話のイントネーションについて，今回は（現）宮崎市青島地区の 1899 年生まれの男性と 1909 年生まれの女性による会話資料を使って検討した。結果としてそのイントネーションのしくみが解明できたと言うにはほど遠く，かえって自由度の高さを強く感じさせるものとなったが，今回の分析内容を前稿の清武談話とあらためて対比させながらまとめる。

・**基本構造**：基本的に文節ごとの高さの動きの方向性として単調下降（下降型），単調上昇（上昇型），平坦（平板型）の３種の音調型があり，それがいくつかの種類の境界音調と組みあわせて使われていると考えられる。その点は前稿の清武談話と同じである。

・**音調型の使い分け**：３つの音調型のうち，下降型と平坦型の使用頻度は青島談話では話者による違いが大きく，男性には女性より平坦型がずっと多いことが特徴的である。女性は下降型が多く平坦型が少ないが，これは清武談話と共通である。ただし，青島でも下降型と平坦型の２型をあわせるとどちらの話者もほぼ同じ使用頻度になり，清武の資料全体での２型の使用頻度合計とも近いので，この２型は単なる変異形の関係にあることを思わせる。

本稿では型の使い分けについて「提題文節」であるかどうか，副詞節，並列節といった「節」の末尾であるかどうか，文末であるかどうか，そしてポーズ段落の冒頭であるかどうかとの関係を検討した。その結果，男性話者では文末で平坦型が少なく，ポーズ段落の冒頭で平坦型が多いという，文内の位置にかかわる使用傾向の違いが見られた。しかしこれは両話者に共通した傾向ではなく，下降型か平坦型かの選択の自由度は非常に高いように見受けられる。

　上昇型は，かならずではないが男性話者でも女性話者でも感嘆の気持ちを込めた発言によく見られる。これは清武でも同様であった。

・音調句（ふたつの文節がひとつの音調句に融合する場合）：同じ音調型を持つふたつの文節が境界音調なしで連続し，全体でひとつの音調句になる場合は，文節間の意味的な限定関係がかかわっている。意味的限定関係がある文節連続は1音調句になりやすい。ただし，青島ではその割合は男性話者で33%，女性話者で24%と，清武の資料全体で47%という割合よりも少し小さい。いずれにせよ，意味的限定関係があればかならず1音調句になるというわけではない。このほか，フォーカスの後で下降型が境界音調なしで連続する例が見られた。

・音調句（ひとつの文節がふたつの音調句からなる場合）：1文節が2音調型からなる例がわずかながらある。それは，補助動詞を含む文節，複合名詞からなる文節・接尾辞を含む文節，サ変動詞からなる文節，助動詞がある文節のように，ひとつの文節が一定の独立性を持つふたつの要素からなる場合である。また，2音節以上で強調的に使われる助詞を含む文節もある。かならずではないが，こうした要素は音調的にも独立しうるということになる。同じ傾向は清武談話にも見られた。

・境界音調：清武談話では文節の冒頭での上昇（冒頭上昇）と文節の最後での上昇（末尾上昇）の2種類だけで談話の高さの動きを説明できるように思われたが，今回の青島談話では文節の最後での下降（末尾下降）の使用が目立ち，これを独立の境界音調と考えた。

　冒頭上昇の使用は青島談話では清武談話よりも多い。大きさは清武談話とおなじく小さいものが多い。

　末尾上昇の使用は青島では清武よりも少ない。また，その大きさは清武にくらべて総体的に小さく，大きさの分布の幅も狭い。このことも，青島談話が清武談話よりも平板的な話しかたであるように筆者が感じたひとつの原因であろう。また，清武では提題文節の場合，伝えたい気持ちの強さ，述語文節の直前，感嘆の気持ち・興奮にともなって大きくなる傾向が見えたが，青島では提題文節とのむすびつきは逆に薄い。しかし，伝えたい気持ちの強さや感情にともなう大きな上昇は青島でも見られた。

　末尾下降は青島の男性話者に特に顕著に見られるものだが，下がりかたは小さいものが多い。大きさによる使い分けは考えにくい。

・**地域性と個人性**：青島談話でも清武談話でも，高さの動きが３種の音調型と境界音調から構成されるという基本構造は共通だが，境界音調の種類とその使用頻度についての違いがめだつ。境界音調の使いかたの違いは地域性の可能性がある。

　青島は清武と距離的には近いが，内陸部でもともとの主たる生業が漁業（青島）か，海岸部で農業（清武）かという地域性の違いもあって，明治・大正期の生まれの話者にことばづかいの違いがあっても不思議はない。

　一方，音調型の使いかたについては，青島の男性話者が平坦型を多用し，特にポーズ節の冒頭で多く，文末で少ないという使い分け傾向を示すという点で，青島の女性話者や清武の男性・女性話者と異なる。これは地域性というよりも個人的特徴の可能性がある。

・**青島と清武の音調の特徴の総括**：青島と清武に共通する高さの動きの特徴をまとめると，各文節はその内部で急な高さの変化をさせないという意味で「平板的」に言うことが求められるが，談話のなかでは。青島の男性話者以外それをもっぱら下降傾向で，ときには平坦に，そしてときには上昇傾向で発音し，それらの末尾や冒頭に上昇または下降を適宜つけるということになる。終助詞類と間投助詞は固有の高さの動きを持つ。青島の男性話者は平坦型が下降型と同程度に多いが，下降型のあとに平坦型は続きにくいことから，平坦型と下降型の選択はまったくランダムなものではないということが言えそうである。また，強調したり感情を込めるときには，大きな上昇型を使うか大きな冒頭上昇や末尾上昇を使う例が目につくが，文節の高低の幅をこのような形で大きくするのも特徴のひとつだと言える。

　青島でも清武同様，音の高さの動きを左右する要因として意味の限定関係，フォーカス，感情がある。しかし，意味の限定関係の影響力は清武より小さく，音調型と境界音調というふたつのイントネーション要素の使いかたの自由度は清武よりもさらに高いように思われる。

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Phonological analysis of consonance:
A case study of a 19th-century poet's works

Takuma Natsume

Abstract. Rhymes (as a poetic device) in English poetry can be roughly classified into two types: a perfect rhyme, in which both the nucleus and the coda of the last syllable in a line are repeated, and an imperfect rhyme, in which either the nucleus or the coda is identical. Among sub-classes of imperfect rhymes is consonance, which has an unmatching nucleus and an identical coda. Prior studies have shown that vowels in consonance pairs are phonologically restricted; Zwicky (1976) points out that the difference in features of the vowel in a pair must be one feature, and Okazaki (2014) argues that vowels in consonance pairs must be "a perfect rhyme at an underlying level" (p.119). This paper analyses the poems by Gerard Manley Hopkins using the same technique developed by Zwicky (1976), with a finer definition of features, and with examples containing weak vowels and diphthongs (which were not found in Zwicky (1976)'s data). After reading through the poems and collecting examples of consonance pairs, a list of words and the vowels used was created. Finally, phonological features of the vowels were compared to evaluate their similarity. The result shows that the "one-feature-apart rule" suggested by Zwicky (1976) also holds true for consonance pairs in poems by Hopkins, and also for pairs containing diphthongs and weak vowels.

1. Introduction

Rhyme is inarguably one of the most essential poetic devices in English poetry. Ever since the time of *Sir Gawain and the Green Knights*, poets have made maximum effort to choose the right word that comes at the end of each line and would create a soothing rhythmic effect as one read through the stanzas. Rhyme – a repetition of identical or similar sounds at line ends – is so widely

used that it can be found not only in most poems but also in the lyrics of popular songs. Almost every poet, except for when using blank verse or other special forms, follows the rule of rhyme as they weave their thoughts into English poems.

The essence of rhyme is the repetition of an identical or similar sound. This can be described using the terminology of phonology as repeating the nucleus and the coda (if any) of the last syllable in a line. Among the sub-class of rhyme is consonance, which is a slightly loosened version of a full rhyme. Consonance typically repeats the consonants but has a different vowel, as in the following example:

(1)   What immortal hand or *eye*   /aɪ/[1]

       Could frame thy fearful *symmetry*?   /sɪmətri/

                                                        William Blake, *The Tyger*

Here, consonance is used to rhyme *eye* and *symmetry*, a pair that would not be allowed in a familiar perfect rhyme.

Again, the essence of rhyme is the repetition of sounds; if the pair of nucleus and coda sounds too distinct, it cannot work as a rhyme. Then, the question arises: How similar must vowels be when a poet uses consonance? This paper looks at consonance in works of the 19th-century poet, namely Gerard Manley Hopkins, and examines phonological properties of sounds used in pairs of consonance.

2. Rhymes and their sub-classes

In poetry or lyrics of popular music, (a narrowly defined) rhyme is a repetition of an identical or similar nucleus and coda (if any) belonging to a line-final syllable. Here is an example:

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[1] Pronunciations of words cited in this paper are from *Longman Pronunciation Dictionary*, unless otherwise specified.

(2)

1. Who loves me here and has my *love*,

2. I think he will not tire of me,

3. But sing contented as the *dove*

4. That comes again to the woodland tree.

   […]

<div align="right">Gerard Manley Hopkins, *Daphne*</div>

<div align="right">(Line numbers and emphasis added)</div>

The nucleus and coda (if any) of a line-final syllable are 1. [ʌv] 2. [iː] 3. [ʌv] 4. [iː]. Here, the sounds are repeated at line ends, constituting a rhyme.

Some dictionaries and handbooks define rhyme differently. For instance, *the Princeton Handbook of Poetic Terms* (2016) describes rhyme 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"

<div align="right">(Greene & Cushman, 2016, p. 294)</div>

The difference from our definition is that it is not only a nucleus and coda of a line-final syllable but also phonemes following stressed vowels that should be identical. However, we can easily find examples in which only the nucleus and the coda of a line-final syllable are repeated, as cited below:

(3)

   […]

17. Things that she likes seems often to desp*ise*,

18. And loves – a fatal fault – to patron*ize*;

19. Has wit enough, if she would make it *kn<u>own</u>*

20. And charms-but they should be more freely *sh<u>ewn</u>*.

   […]

Here, only /aɪz/ is repeated in lines 17 and 18. Nevertheless, they function perfectly as a rhyme. Therefore, in our definition of rhyme, repetition does not necessarily have to be a stressed vowel and sounds following it; rhyme is a matter of line-final nucleus and coda.

We now proceed to a definition of sub-classes of rhyme. Rhyme is roughly classified into two types: perfect rhyme and imperfect rhyme. Perfect rhyme is the most typical of rhymes, and also the one that is used most often: a repetition of an identical nucleus and coda (if any) belonging to a line-final syllable. Imperfect rhyme, on the other hand, is a slightly loosened version of perfect rhyme: either or both of the line-final nucleus and coda (if any) are similar, but not identical. If the coda is different, it is called assonance, and if it is the nucleus that does not match, it is called consonance. An example of consonance is as follows:

(4)

> […]
> 17. There is a vapour stands in the *wind*;
> 18. It shapes itself in taper skeins:
> 19. You look again and cannot *find*,
> 20. Save in the body of the rains.
> […]

This example follows the so-called abab rhyming pattern (odd-numbered lines and even-numbered lines rhyming respectively), and *wind – find* is used as a rhyming pair. This pair shares the same coda, but has mismatching nuclei.

Finally, assonance and consonance can be used together, as in the following example:

(5)

> […]
>
> 15. The bell-drops in my mallow's *mouth*
>
> 16. Hów are théy quenchèd *not*?
>
> 17. These drops in starry shire they drew:
>
> 18. Which are théy? stars or dew?
>
> […]

<div align="right">

Gerard Manley Hopkins, *St.Dorothea*

(Line numbers and emphasis added)

</div>

This section of the poem follows an *aabb* pattern (two consecutive lines rhyming), and *mouth – not* is a rhyming pair. In this example, both the nucleus and the coda are different – /aʊ/ and /ɒ/, /θ/ and /t/. Although this kind of assonance-consonance hybrid pair is relatively rare, they are observed not only in poetry but also in lyrics of popular music.

3. Previous studies

There are only a few papers on consonance from a phonetic or phonological perspective.

3.1 Zwicky (1976)

Zwicky (1976) is a study on irregular rhymes in rock music lyrics. Zwicky (1976) states that most of the consonance (as well as assonance) pairs in rock music have vowels that "are one feature apart in anybody's feature system" (p. 691). The most frequent of these are cited below:

ɪ – ɛ :	19 examples
ʌ – ɔ :	10
i – e :	9
ʌ – a :	8

$$u - o : \qquad 6$$

$$\left.\begin{array}{l} \varepsilon - æ \\ \varepsilon - e \end{array}\right\} \quad 4$$

$$a - ɔ : \qquad 6$$

(Zwicky, 1976, p. 691)

Taking the first pair for example, /ɪ/ – /ɛ/ as in *winds – ends* (p. 691) share every feature except for their openness, with /ɪ/ being a *close* front unrounded vowel and /ɛ/ a *mid* front unrounded vowel. Zwicky (1976), based on these facts, calls consonance *feature rhymes*.

3.2 Okazaki (2014)

Okazaki (2014) is another study on consonance, focusing on its use by modern-day poets. Okazaki (2014) states that consonance can be grouped into the following three types:

 a) Pairs corresponding to a vowel alternation triggered by suffixation

 b) Pairs to a vowel alternation triggered by ablaut

 c) Pairs consisting of multiple pairs coupled by a common vowel

Examples:

 a) st*ee*l – t*e*ll   [i:] – [e]   <<   ser*e*ne – ser*e*nity

 b) h*i*m – n*a*me   [i] – [ei]   <<   g*i*ve – g*a*ve

 c) th*e*se – *eye*s   [i:] – [ai]   <<   *ea*t [i:] – *a*te [ei]

<div style="text-align:right">l*ay* [ei] – l*ie* [ai]</div>

(Okazaki, 2014, p. 114 - 120)

Taking a) for example, [i:] – [e] in *steel – tell* is the same pair of vowels seen in a pair of suffixed and unsuffixed words such as *serene – serenity*; the same goes for b). Okazaki (2014), based on this fact, claims that type a) and type b) are actually "a perfect rhyme at an underlying level" (p.119); just as *serene* and *serenity* share the underlying vowel (and their surface forms are derived through

complex phonological rules), it is claimed that *steel* and *tell* also shares the same underlying vowel, making them underlyingly a perfect rhyme (despite the fact that *steel* and *tell* are not morphologically related). As for c), Okazaki (2014) describes such cases as a pair consisting of two or more pairs of alternating vowels, which are mediated by a common vowel; in example c), [ei] meditates and connects the two pairs [i:] – [ei] and [ei] – [ai] to form a pair [i:] – [ai].

4. Problems

4.1 Zwicky (1976)

Zwicky (1976) provides an important insight into the character of consonance: the vowels involved must be similar. However, it has to be pointed out that "the feature system" Zwicky (1976) refers to is only vaguely defined, using the word "anybody's feature system" (p. 691). Zwicky (1976) has not even clarified whether the "features" are *phonetic* features or *phonological* features. Zwicky (1976) citing Chomsky and Halle (1968) (henceforth SPE) to show the two-feature difference observed in an exceptional pair a – ɔ (p. 691) might suggest that the "features" are phonological ones, proposed in studies of Generative Phonology. The problem is that the symbols used by Zwicky (1976) do not correspond to the symbols commonly used in the SPE. For instance, "a" does not appear in SPE's feature system. In addition, Zwicky (1976) writes that "ɔ" is [-low] in the SPE. However, SPE actually lists ɔ as [+low] (p. 176). Even if we interpret "ɔ" as ɔ̄, we still get [+low]. The discrepancies illustrated so far suggest that Zwicky (1976) is using their own set of symbols and a (phonetic or phonological) feature system, the detail of which is unfortunately not provided therein. The blurriness of the basis of the discussion is an issue that must be addressed.

Another problem with Zwicky (1976) is that the data listed does not seem to include diphthongs. It is unclear whether diphthongs were not found in the data by coincidence or this is due to the way Zwicky (1976) lists the vowels. In anyways, data that includes diphthongs in a pair is necessary for the observation of diphthongs' behaviour in consonance.

4.2 Okazaki (2014)

Okazaki (2014) proposes an interesting approach to an analysis of consonance: the pairs are actually a perfect rhyme at an underlying level. However, taking a closer look at examples provided by Okazaki (2014) reveals that the data includes some pairs that cast doubts on this assertion. Taking *tell – steel* (p. 115) for example, this pair is said to parallel *serene – serenity*, sharing the same vowel /ē/ underlyingly. Assuming that this is true, it follows that [i:] in *steel* and [e] in *tell* are both underlyingly /ē/. However, there is no evidence other than this analysis that suggests the underlying vowel of *tell* is long. The assumption also leaves a shortening of underlying /ē/ undescribed; there seems to be no phonological rule that derives the surface form [e] from the underlying /ē/ in this context. Similarly, *date – that* (p. 115), which parallels *nation – national*, lacks strong evidence that their underlying vowel is /æ/, and a vowel shortening in *that* is left unexplained. These examples suggest that consonance being underlyingly a perfect rhyme is doubtful.

Another problem of Okazaki (2014)'s analysis is that it is unclear how the coupling of alternating vowel pairs (as illustrated in Example c) above) contributes to the rhyming effect of consonance. As Okazaki (2014) admits, some pairs must be analysed as two or more vowel alternations coupled by their common surface form. This means such pairs cannot be regarded as underlyingly a perfect rhyme. Then, why are such pairs used? This question is unfortunately left unanswered.

5. Study on consonance

5.1 Goals and Methods

This paper aims to perform a similar analysis conducted by Zwicky (1976) with a finer definition of symbols and phonological features. As we are interested in consonance used in British poems, we collected data from works by a poet from the late-19th century, namely Gerard Manley Hopkins (1844 - 1889). After we read through the poems and collected examples of consonance, we created a list of words and the vowels used. Finally, we compared phonological features of the vowels to evaluate their similarity. Details of the steps taken are as follows.

5.1.1 Choosing a poet and their work

We chose Gerard Manley Hopkins as the subject of this case study. One of the reasons we chose Hopkins is that he is a poet from the late-19th century and thus the difference between the phonology of present-day English and English used at Hopkins's time is small enough to be ignored. Although there are minor changes in vowel positions, such as the position of [ʌ] (Barber, 1978, p. 130), since the 19th century, there are no significant changes to the English phonological system that have to be taken into consideration. Since we are conducting a phonological comparison of vowels and not a phonetic comparison, changes to a vowel position do not pose a serious problem to our analysis.

5.1.2 Collecting the data

In collecting the data, we read through *Gerard Manley Hopkins* (The Oxford Authors series), a collection of works by Hopkins. As we read through the poems, we identified the rhyming pattern of each poem such as *abab* or *aabb* by looking at lines that rhyme perfectly. Then we looked for a pair of words that are supposed to rhyme according to the rhyming pattern but do not have the same vowel in their final syllable. Such pairs were collected as consonance pairs. Here is an example:

(6)

1.   It was a hard thing to undo this <u>knot</u>.

2.   The rainbow shines, but only in the <u>thought</u>

3.   Of him that looks. Yet not in that *alone*,

4.   For who makes rainbows by *invention*?

5.   And many standing round a <u>waterfall</u>

6.   See one bow each, yet not the same to <u>all</u>,

7.   But each a hand's breadth further than the *next*.

8.   The sun on falling waters writes the *text*

9.   Which yet is in the eye or in the <u>thought</u>.

10.   It was a hard thing to undo this <u>knot</u>.

<div align="right">

Gerard Manley Hopkins, *It was a hard thing*

(Line numbers and emphasis added)

</div>

This poem has an aabb rhyming structure, as seen in *waterfall – all* (line 5 – 6), *next – text* (line 7 – 8). Following this pattern, it can be inferred that line 1 – 2, 3 – 4, 9 – 10 are also a rhyming pair. However, these lines end with words whose vowel in the final syllable does not perfectly match. Thus, we can conclude that they are consonance pairs.

There were some poems which have an unclear rhyming pattern and thus were impossible to identify rhyming pairs. An example is shown below:

(7)

1. He hath abolished the old <u>drouth</u>,
2. And rivers run where all was *<u>dry</u>*,
3. The field is sopp'd with merciful *dew*.
4. He hath put a new song in my <u>mouth</u>,
5. The words are old, the purport *new*,
6. And taught my lips to quote this word
7. That I shall live, I shall not *<u>die</u>*,
8. But I shall when the shocks are stored
9. See the salvation of the Lord.
10. We meet together, you and *<u>I</u>*,
11. Meet in one acre of one <u>land</u>,
12. And I will turn my looks to *you*,
13. And you shall meet me with *<u>reply</u>*,
14. We shall be sheavèd with one <u>band</u>
15. In harvest and in *<u>garnering</u>*,
16. When heavenly vales so thick shall stand

17. With corn that they shall laugh and *sing*.

<div align="right">Gerard Manley Hopkins, *He hath abolished the old drouth*</div>

<div align="right">(Line numbers and emphasis added)</div>

The poem does employ rhymes and is not a blank verse. However, there seems to be no pattern for which line rhymes with which. In such cases, the work had to be dismissed.

In checking the pronunciation of words, we referred to the Longman Pronunciation Dictionary 3rd edition (Wells, 2008) (henceforth LPD). Since Hopkins is a British poet, we cited Received Pronunciation. (Localized forms were not cited.) If there are multiple possible pronunciations in RP, we added every candidate to our consonance pair list.

Before proceeding to a comparison of phonological features, it is worth discussing whether symbols listed in LPD represent phones or phonemes. LPD calls its representation "generally phonetic" (p. xxxi). As inferred by the expression "generally", LPD does not adopt full phonetic representation, resulting in their transcription sometimes looking phonemic. For instance, LPD does not distinguish aspirated voiceless plosives from unaspirated voiceless plosives, transcribing, for example, *[pʰ]in* and *s[p]in* as *pɪn* (p. 614) and *spɪn* (p. 764), respectively. Indeed, it requires careful consideration before regarding LPD's symbols as phonemic – LPD makes an allophonic distinction regarding /t/ in American English pronunciation, for instance, transcribing *city* as *sɪt̬i*, *t̬* representing an allophone of /t/ (an alveolar tap). However, for most of the symbols representing English vowels and consonants, a distinction between allophones is not rigid. As for symbols representing vowels, LPD does not make an allophonic distinction at all (except for *i* and *u*, which will be discussed later). Therefore, we can treat vowel "phonetic" symbols in LPD as representing phonemes.

5.1.3 Defining the phonological features

Our last step is to define phonological features of the vowels. Our phonological feature system is largely based on a feature system proposed by Giegerich (1992). The merit of using Giegerich (1992)'s system is that its theoretical framework is simple and has enough number of

features to make a simple comparison between vowels. Features and their specifications are cited below:

	i	ɪ	u	ʊ	e	ɛ	o	ʌ	ɑ	a	ɔ	ɒ
[Consonantal]	-	-	-	-	-	-	-	-	-	-	-	-
[Sonorant]	+	+	+	+	+	+	+	+	+	+	+	+
[Continuant]	+	+	+	+	+	+	+	+	+	+	+	+
[Back]	-	-	+	+	-	-	+	+	+	-	+	+
[High]	+	+	+	+	-	-	-	-	-	-	-	-
[Low]	-	-	-	-	-	-	-	-	+	+	+	+
[Round]	-	-	+	+	-	-	+	-	-	-	+	+
[Tense]	+	-	+	-	+	-	+	-	+	-	+	-

Giegerich (1992, p. 110)

One of the problems in employing Giegerich (1992)'s system is that the symbols used by Giegerich (1992) are different from LPD. This requires us to "translate" the symbols when we wish to find feature specifications of vowels listed in LPD. Symbols in Giegerich (1992)'s feature system were interpreted as follows:

Giegerich (1992)	i	ɪ	u	ʊ	e	ɛ	o	ʌ	ɑ	a	ɔ	ɒ
LPD	iː	ɪ	uː	ʊ	eɪ	e	əʊ	ʌ	ɑː	æ	ɔː	ɒ

Another downside of Giegerich (1992)'s system is that it does not include diphthongs, schwa, or /ɜ/ (a neutralized vowel before /r/, as in *word*, *heard*, *bird*). To deal with the problem, we added further modifications to the proposed feature system, which are as follows.

First, we regarded diphthongs as a sequence of two vowels, each having its own phonological feature. For instance, /aɪ/ as in *find* is interpreted as /a + ɪ/. Note that /eɪ/ and /əʊ/, which are represented as diphthongs in LPD, are interpreted here as monophthongal tense vowels. The reason for this treatment is that, in RP, the diphthongization that results in /eɪ/ and /əʊ/ is autonomous. We therefore regard them to be monophthongs on a phonemic level, and on phonetic level diphthongs.[2]

---

[2] Even if we regard /eɪ/ and /əʊ/ as diphthongs on a phonemic level, the result in this study will not be affected; alternative analysis would make their feature specification [+high], but there were no examples that would deviate from the one-feature-apart rule if we adopt the new analysis.

Second, we added a new feature [place] which is defined as below:

[place]: a sound produced with its place-related features specified

Here, "place-related features" refer to a set of features that specify the place of articulation, namely [high], [low], [back], [round], and [tense].[3] In schwa and /ɜ/, which are defined as [-place], those sets of features are unspecified. This reflects the fact that schwa and /ɜ/ are neutralized vowels, positioned phonetically in the centre of the vowel space, which arose by full vowels losing their discriminatory features; full vowels weakened in unstressed syllables result in schwa, and in RP, /ʌ/, /ɪ/, and /e/ are neutralized before /r/, resulting in /ɜ/.

As for vowels transcribed as *i, u* in LPD, we treated them as having [tense] feature unspecified. Sometimes called a happY vowel, *i* denotes a neutralization of /iː/ and /ɪ/ in certain phonetic environments (Wells, 2014, p. 52); *u* is for neutralization of /uː/ and /ʊ/. In other words, vowels transcribed as *i* and *u* result from a loss of distinction between [+tense] and [-tense]. Therefore, we treated *i* and *u* as having no [tense] specification.

5.2 Results

The results are as listed below. Vowels on the left column in each table form a pair with vowels on the right column.

---

[3] [tense] is here classified as place-related feature because [+tense] vowels are generally produced with a tongue raised slightly higher than their [-tense] counterparts. (According to Ladefoged (2001, p. 40), a frequency of the first formant corresponds to a height of a vowel. Ladefoged (2001, p. 45) shows that vowel that we call [+tense] vowels have higher first formants than their [-tense] counterparts, except for /æ/ and /ɑ/.) [round] is also classified as place-related feature, because according to Halle (1992, p. 211), "± Rounded" belongs under the same node as other place-related features such as "±High", "±Low", and "±Back".

iː	i
iː	ɪ
iː	eɪ

ɪ	iː
ɪ	i
ɪ	e
ɪ	aɪ
ɪ	ə

i	iː
i	ɪ
i	aɪ

eɪ	iː
eɪ	e
eɪ	aɪ

e	ɪ
e	eɪ
e	æ
e	ə

æ	e

ə	ɪ
ə	e
ə	ɜː
ə	ɔː
ə	ʌ
ə	eə
ə	əʊ

ɜː	ɔː
ɜː	ə

ɪə	eə

eə	ɪə
eə	ə

aɪ	ɪ
aɪ	i
aɪ	eɪ

aʊ	uː
aʊ	ɒ

uː	ʊ
uː	ʌ
uː	ɒ
uː	aʊ
uː	əʊ

ʊ	uː

əʊ	uː
əʊ	ə

ʌ	uː
ʌ	ɒ
ʌ	ə

ɔː	ə
ɔː	ɜː
ɔː	ɒ
ɔː	ɑː

ɑː	ɔː

ɒ	uː
ɒ	ɔː
ɒ	ʌ
ɒ	aʊ

5.3 Discussion

The result was similar to Zwicky (1976)'s analysis: for most of the pairs, the difference is only one feature. In addition, we revealed how diphthongs, schwa, and /ɜ/ behave when they are used in a consonance pair: the rule that is applied to monophthong pairs is also applied to the second element of diphthongs, and to the [place] feature of /ɜ/ and schwa. As for *i* and *u*, their specification of [tense] feature is copied from another vowel in a pair. Details are discussed below.

5.3.1 Monophthongs and Diphthongs

Monophthongs (except schwa and /ɜ/) and diphthongs are vowels marked as [+place]. These vowels, when used in consonance, can be paired together as long as their difference is no more than one phonological feature. (We henceforth call this rule, referring to Zwicky (1976), "the one-feature-

apart rule".) When diphthongs are used, it is the secondary segment that is restricted under this rule. Here are some examples:

/ɪ/ – /e/   e.g. chapleted – head

Difference in features: [+high] – [-high]

/i:/ – /eɪ/   e.g. beat – Grate

Difference in features: [+tense] – [-tense]

/ɪ/ – /aɪ/e.g. wind – blind

Difference in features: None

/aɪ/ – /eɪ/   e.g. dies – ways

Difference in features: None

Note that in the second example, the secondary segment ɪ of /eɪ/, not the primary segment e, follows the one-feature-apart rule when /eɪ/ is coupled with /i:/. Features of a primary segment are irrelevant to whether a diphthong can form a pair with another vowel to be paired. Also note that as in a pair involving diphthongs, there could be no feature difference between a monophthong and the secondary segment of a diphthong (as in the third example), or between the secondary segment of diphthongs (as in the fourth example). This does not violate the one-feature-apart rule, since the rule states that the difference should be *less than* one, not that there *should be* one feature difference.

There were, however, some examples that do not follow this rule. The followings are exceptions, which have more than one feature difference:

/ʌ/ – /uː/   e.g. blood – food

                    Difference in features: [-high] – [+high]

                                                     [-tense] – [+tense]

                                                     [-round] – [+round]

/ɒ/ – /aʊ/   e.g. not – mouth

                    Difference in features: [-high] – [+high]

                                                     [+low] – [-low]

/ɒ/ – /uː/   e.g. of – approve

                    Difference in features: [-tense] – [+tense]

                                                     [-high] – [+high]

                                                     [+low] – [-low]

For some reason, those exceptions all involve back vowels, and /ɒ/ appears in 2 out of 3 cases. It is unknown whether this is by coincidence (due to a small number of samples collected in this study), or there is some reason for back vowels to override the general rule; we were unable to reach a conclusion.

5.3.2 Schwa and /ɜ/

    Schwa and /ɜ/ are vowels marked as [-place]. These vowels, when used in consonance, can be paired with any vowel. Here are some examples:

/ə/ – /e/   e.g. miracle – well

/ə/ – /əʊ/   e.g. invention – alone

/ɜ:/ – /ɔ:/   e.g. earth – forth

/ə/ – /ɜ:/   e.g. miniver – fur

Schwa and /ɜ/ can be coupled with any [+place] vowels (the first, second, and third example), or with any [-place] vowel (the fourth example). None of the examples violate the one-feature-difference rule, because the first three cases have one feature that is different, which is [place], and for the last case, the number of different features is zero.

5.3.3 /i/ and /u/

/i/ and /u/ are vowels with no [tense] specification. When they are used in consonance, their [tense] specification seems to be copied from their counterpart: if they are paired with [+tesne] vowel, they obtain [+tense] specification and become /i:/ and /u:/ retrospectively, and vice versa. Here are some examples:

/i/ – /i:/   e.g. Dorothy – see

                    /i/: [ø tense] → [+tense] – /i:/: [+tense]

/i/ – /ɪ/   e.g. lilies – is

                    /i/: [ø tense] → [-tense] – /ɪ/: [-tense]

/i/ – /aɪ/e.g. fixedly – apply

                    /i/: [ø tense] → [-tense] – /aɪ/: [-tense]

/i/ has no [tense] specification, which means it can be both [+tense] or [-tense]. When used in a rhyme, it acquires [tense] specification to match its counterpart's feature. Thus, in cases like the first and the second example, a consonance pair becomes a perfectly rhyming pair after /i/ has fully obtained its features. When read aloud, in *Dorothy – see*, a reader has to adjust the "length" of /i/ to /i:/ in order to match the "length" of *see*. It is only cases like the last example that are truly consonance pairs. This might sound contradictory – if the first and the second case are a perfect rhyme, then why should we view them as consonance? The answer is, in a typical perfect rhyme,

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which is defined as a perfect agreement of vowel (and consonants), /i/ can only be paired with /i/, with their [tense] feature both unspecified. *Dorothy* can only be paired with, say, *Mary*, *lilies* with *cherries*. By contrast, /i/ paired with /iː/ or /ɪ/ is not a perfect match; thus, we classified such cases as consonance.

6. Conclusion

Consonance is a sub-class of rhyme that has the same coda and a similar but mismatching nucleus. However, not much research have been conducted on to what extent a vowel in a nucleus should be similar to function as a consonance. Zwicky (1976) states that vowels used in consonance must be "one feature apart". Okazaki (2014) suggests that vowels used in consonance correspond to a vowel alternation observed in suffixation, and argues that they must be underlyingly a perfect rhyme. Although the previous studies provide important insights into a characteristic of consonance, they come with problems. Zwicky (1976) has not clarified the details of a feature system referred to in the work, and also does not mention how diphthongs, schwa, and /ɜː/ behave in consonance. Okazaki (2014)'s analysis unfortunately comes with some flaws. Therefore, we conducted a similar analysis as Zwicky (1976) with a finer definition of feature systems.

In this research, we chose Hopkins as the subject of the case study, and collected data from *Gerard Manley Hopkins* (The Oxford Authors series), a collection of works by Hopkins. After reading through the first 100 pages and figuring out the rhyming pattern of each poem, we regarded pairs that are supposed to rhyme perfectly following the rhyming pattern but have different vowels as consonance pairs. After data was collected, we used LPD to check their pronunciation. Lastly, we compared the phonological features of each vowel, using a modified version of Giegerich (1992)'s feature system.

The result was similar to Zwicky (1976)'s analysis, showing that the maximum difference between the vowel used in consonance is one phonological feature. Our research also exemplified that the same rule can also be applied to diphthongs, schwa and /ɜː/ if we interpret diphthongs as a

sequence of two sound segments, and schwa and /ɜː/ as having a [-place] specification, contrasting with the rest of the vowels which are specified as [+place].

It has to be admitted that our research leaves plenty of room for improvement. One of the major issues is that our analysis ignores the possibility of historical rhymes, conventional historical rhymes, and eye rhymes. In historical rhymes, a pair of words that once used to rhyme perfectly but are now pronounced with a different final nucleus. Some poets employ historical rhymes even if vowels are pronounced differently at the time of composition (Wyld, 1965, p. 11). These are called conventional historical rhymes. In eye rhymes, a poet uses a pair of words whose final nucleus does not sound identical at all, but has the same spelling, such as *love – prove*. These types of rhyme are indistinguishable from pure consonance, and might be mistakenly listed in this research.

Further research is needed to prove whether the "one-feature-apart rule" also applies to other poets and lyricists, or looser constraint is used by some writers. In addition, the number of samples must be increased to draw a firmer conclusion; there were only 68 instances of consonance collected in this research, which might not fully reflect the character of consonance used by Hopkins. Lastly, we have not yet proven how the "one-feature-apart rule" contributes to a rhyming effect, a rhythmic effect created by a repetition of sounds. Although it can be inferred that the closer the features are, the more similar they are to one's ear, for many speakers of English, pairs such as /ɒ/ – /ɔː/ might sound too distinct to function as a rhyme.

As Okazaki (2014) points out, the relationship between rhymes and phonology seems to be one of the least studied areas. Further research on this topic is anticipated.

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