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LICENSING OF VOWEL QUANTITY
AND THE SCOTTISH VOWEL LENGTH RULE[*]

A b s t r a c t. The claim of the article is that the distribution of vowel quantity in Standard Scottish English is sensitive to the substantive complexity of the following consonant, which may block the licensing originating in the V position that follows the potential long vowel (Licensing Absorption). Licensing Absorption interact with the scale of the preponderance of A element within the featural make-up of licensed vowels thus deriving the attested pattern of the distribution of vowel length in SSE.

Key words: licensing; Scottish English; substantive complexity; CV Phonology.

1. INTRODUCTION

The aim of this paper is to show that the Scottish Vowel Length Rule (SVLR) pattern is best explained as the consequence of the licensing relationship contracted between pieces of phonological representations (see Goldsmith 1990, Harris 1994, Cyran 2010). To be precise, the distribution of long vowels is dictated by their requirement to be licensed. The licensing of long vowels in SSE and elsewhere is regulated by the application of two general principles: Licensing Absorption, which captures the relation between long vowels and consonants they precede, and the scale of the preponderance of element A within the melodic make up of particular vowels. The paper is organised as follows: Section 2 makes the reader familiar with the details of SVLR in the relevant accents of Standard Scottish English

(SSE). Section 3 will be devoted to the presentation and discussion of some of the existing analyses of the SVLR environment. In Section 4 I provide a summary of the approaches to long vowels presented in previous works on CV Phonology framework, and argue that the distribution of vowel length in the languages of the world is regulated by the application of the principles mentioned above. I propose an analysis of the sound system of SSE within Element Theory (Kaye, Lowenstamm and Vergnaud 1990, Harris 1994, Backley 2011) and show how the two principles shape the quantitative properties of SSE. Section 5 contains general concluding remarks.

2. THE EMPIRICAL FINDINGS

2.1. THE INPUT INVENTORY

SVLR, also known as Aitken's Law, works to the effect that some SSE vowels are short irrespective of what sounds follow them, some remain long in all positions, while some are long or short depending on the environment. The problem of the vocalic input inventory of the rule has been discussed from various theoretical standpoints in McMahon (1991, 2000), Carr (1992), Anderson (1994), and Kamińska (1995). The exact details of those approaches are not directly relevant to this paper. The distribution of vowel length in the SSE vowel inventory is summarised in (1) on the basis of measurements presented in McKenna (1988) for Edinburgh Scottish English, Scobbie et al. (1999a/b) and Scobbie and Stuart-Smith (2006) for Glasgow Scottish English, Pukli (2006) for Ayrshire Scottish English and my own measurements and observations:

1. Distribution of length in SSE vowels:[1]
a) invariably short: *pit* /pɛ̆t/, *putt* /pʌt/, *lout* /ɫʌut/
b) invariably long: *pet* /pɛːt/, *wait* /weːt/, *pat* /paːt/, *cot* /kɔːt/, *boat* /boːt/, *choice* /tʃɔːis/, *lout*/ɫaːut/
c) of variable length: *meat* /mit/ vs. *steer* /stiːr/, *brood* /brʉd/ vs. *brewed* /brʉːd/, *side* /sʌid/ vs. *nitro* /naːitroː/

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[1] The front close-mid short object /ɛ̆/ is found in many speakers in words which possess the /ɪ/ vowel in Standard Southern British English. The vowel found in the words such as *lout* is either invariably short or invariably long. Individual speakers, however, are consistent as to its realisation.

(1c) above presents three canonical contexts in which SVLR is said to be operative: before voiced continuants and the rhotic ('leave' /liːv/), before morpheme boundary ('brewed' /brʉːd/) and in the open syllables of some words ('nitro' /naːitroː/).[2] However, some recent findings show that the story of the environment of SVLR is more complex than it has been believed to be.

Pukli (2006) [3] presents the most varied range of contexts in which SVLR is operative and the most representative number of vowels tested. In her work Pukli noted a large relative increase in the duration of /i/, /u/ voiced fricatives and a morphemic boundary. No such effect was reported for other vowels. No significant difference in realisation was observed in the *wife — wives* pair. On the other hand, the quantitative behaviour of the vowel in *hoof — hooves* is fully regular (120 ms of increase in *hooves*). Another interesting fact is that the results for the three vowels that show the variable length assigned to the working of SVLR are long before /g/ and /dʒ/. Last but not least, it must be said that the study by Pukli showed a short duration of /i/ and /u/[4] in open syllables.

All in all, the results of the Pukli's measurements presented above confirm that the long variants of /i/, /u/ and /aːi/~/ʌi/ occur only if some specific conditions are fulfilled. Namely, they may be found before /v, ð, z, ʒ, r/, morpheme-finally, and before /g/ and /dʒ/.

3. SVLR ENVIRONMENT: EXISTING ACCOUNTS

What follows is a recapitulation of two representative analyses of the environment in which SVLR applies: a Lexical Phonology analysis by McMahon (1991, 2000) and a Dependency Phonology analysis by Anderson (1993, 1994). After each expository part, the problems of the analyses discussed will be highlighted.[5]

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[2] The study by Pukli (2006) and Scobbie and Stuart-Smith (2006) show a lot of inter-speaker variability in the presence of the long and short variants of /aːi/~/ʌi/ in the bisyllbic trochees. Due to space restrictions I am unable to address the patterns of the distribution of the two diphthongs. For discussion and analysis of the patterns the reader is redirected to Zdziebko (2012: 148-218).

[3] In this, and the following, section I am faithful to the transcription conventions used in the accounts I relate.

[4] To be more precise, close vowels are short in open syllables before consonants that inhibit vowel length also in monosyllables e.g. *species, sepia, leader, Lucy, lupin* are short. Words such as *weary* and *leaven* (both pronounced with /i/ in SSE) have long vowels.

[5] For other analyses of the SVLR environment see Ewen (1977), Lass (1984) and Kamińska (1995).

McMahon's (2000) discussion of the phonetic naturalness of the SVLR environment pertains to assigning the consonants involved in the process a place on the universal syllabicity or sonority scale proposed by Harris (1985). Harris (1985) posits the classification of nasals as adjacent to voiced stops on the basis of the stricture of complete closure in the oral cavity, which the two classes of sounds involve. As to the distinction within the class of liquids, the sub-class of laterals is classified as [-continuant], whereas the /r/-types are [+continuant]. This is possible as soon as the definition of the feature value [-continuant] as involving the stricture of complete closure in the centre of the mouth is accepted. The voicing and continuance hierarchy used in Harris (1985) and McMahon (2000) is depicted in (2):

2. Voicing and continuance hierarchy (Harris 1985):

voiceless	voiceless	voiced stops	voiced fricatives
stops	fricatives	nasals, /l/	/r/

$\longrightarrow$

The duration of vowels preceding the objects enumerated in (2) increases in the direction of the arrow.

Even though the scales like the one above constitute a phonetically natural point of reference for phonetically based phonological investigation, their inadequacy has been recognised by many researchers, including the very proponents of sonority scales themselves (see Harris 2006).

(3) summarises the SVLR as postulated by McMahon.

3. The Scottish Vowel Length Rule (McMahon 1991, 2000):

$$X \rightarrow X \ X \ / \ \underline{\quad} \left\{ \begin{array}{l} + \text{voiced} \\ + \text{continuant} \\ ] \end{array} \right\}$$
$$| \quad \backslash \ / $$
$$[+ \text{tense}][+ \text{tense}]$$

McMahon's analysis makes it impossible to formulate the environment in a non-disjunctive way as the boundary and voiced continuants, do not form a natural class. McMahon (1991) counters potential criticism by claiming that the presence of long vowels morpheme-finally is the consequence of an '…independent condition, reflecting an English or Germanic restriction on domain-final stressed nuclei.' (1991: 44f). Although McMahon's argument

is historically adequate, it does not dispense with disjunctivity. In Section 4 I will argue that an approach which assumes that long vowels must be licensed provides a non-disjunctive explanation for the distribution of the long vowels in SSE, and, at the same time, recognises possibly different diachronic sources of the long objects in the word-final and word-internal environment.

There is, however, a more significant problem of McMahon's analysis. As has been explicitly shown in Pukli (2006), long vowels can be found in SSE before /ɡ/ and /dʒ/. This fact renders the approaches relying on the feature value [+continuant] inadequate. Sonority scales like the one presented in (2) fare only a little better in presenting the two segments as 'natural'. I do not suppose, however, that one would think of /ɡ/ and /dʒ/, seen through the prism of voicing and continuance scales, as better in conditioning vocalic length than nasals and laterals.

It would seem that the rule-driven analysis presented above fails to describe the environment of SVLR in a satisfactory way. The flaws of the approach in question are a disjunctive formulation of the environment of the rule and the inability to conform with the empirical situation found in SSE.

According to Anderson's Dependency Phonology (DP) analysis, SVLR constitutes a filter which prevents the default operation of the erection of suprasegmental structure from being applied before certain group of consonants. Consequently, whereas the environment of SVLR formulated in McMahon (1991, 2000) comprised the alleged set of phonological objects that condition the presence of long vowels, Anderson's environment singles out the consonants before which short vowels are found. Anderson's (1993, 1994) SVLR is presented below:

4. The Scottish Vowel Length Rule (Anderson 1993: 423)

$$V \ / >\!>\!>, + \{C\} \neq \{|V, \{V:C\}|\}$$

(4) says that the complex suprasegmental structure fails to be erected when a vowel precedes ('+') a consonant in a dependant ('>>>') position in a syllable, and when the relevant consonant is not composed of a |V| and a pair of mutually dependent |C| and |V| which, in the DP representational convention stand for all voiced fricatives and the rhotic.

According to Anderson's formulation, long vowels are allowed to appear in SSE only before voiced fricatives, /r/, a morpheme boundary and in open syllables. The consequence of the last assertion is that '...there will be no shortening syllable finally even before shortening consonants...' (1994: 20). Anderson dismisses seemingly problematic cases such as *idle* or *wider*, as the 'short' vowel of the former exists due to the late working of the /l/-syllabifying rule, while, in the latter, SVLR is active 'pre-cyclically', i.e. when the form is still mono-morphemic and mono-syllabic. Thanks to the assumption that SVLR is a pre-cyclic filter not affecting the presence of long vowels in open syllables, there is no need to postulate a word-boundary as a separate environment. This solves the notorious problem of the disjunctivity of the SVLR environment discussed above.

Anderson's formulation treats the open syllable context as a canonical SVLR environment. Nevertheless, his claim seems too strong. As has been pointed out in Section 2, Pukli (2006) has shown that close monophthongs are short in the open syllables before length inhibiting consonants. Scobbie and Stuart-Smith (2006), on the other hand, report the existence of an item with a 'short' vowel in the open syllable without a syllabic sonorant i.e. *crisis* and the existence of an item with a 'long' vowel and a syllabic sonorant (*libel)*.

To sum up, Anderson's vision of SVLR seems a step in the right direction in that it dispenses with disjunctivity in the statement of the environment of the rule. However, his formulation of the working of SVLR in open syllables seems not entirely adequate.

4. A LICENSING ACCOUNT

The framework I assume for the purposes of the current analysis is that of CV Phonology. In the following sections I focus only on the principles of the theory relevant for the analysis of vowel quantity is Scottish English. For more general assumption of the framework and their implications the reader is redirected to Lowenstamm (1996), Scheer (2004) and Cyran (2010).

An important tenet of CV Phonology that I adopt here after Cyran (2010) will be referred to as the Onset Licensing Principle:
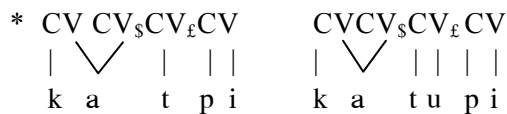
5. Onset Licensing Principle (Cyran 2010: 82):

Each nucleus must license its onset.

The Onset Licensing Principle says that a nuclear position (V) must obligatorily contract a licensing relation with the preceding onset (C) position. According to Cyran, the Onset Licensing Principle underpins several important properties of phonological representations and human speech in general, e.g. the Maximal Syllable Onset Principle (Selkirk 1982) and the role of the vowels as carriers of prosodic information (see Cyran 2010 for discussion).

The distribution of vocalic length constitutes one of the issues that are given neat representation-driven explanations under CV Phonology. Lowenstamm (1996) exemplifies this on the basis of two forms: an ungrammatical */kaːtpi/ and a fully grammatical /kaːtupi/. Given that syllables in all languages are composed of CV units, the representations of */kaːtpi/ and /kaːtupi/ are as presented in (6).

6. The representations of *kaːtpi and kaː$tupi$ (Lowenstamm 1996: 431)

$$* \quad \text{CV } \text{CV}_\$\text{CV}_£\text{CV} \qquad \text{CVCV}_\$\text{CV}_£\text{CV}$$

$$\text{k a} \quad \text{t p i} \qquad \text{k a} \quad \text{tu p i}$$

Lowenstamm explains the non-existence of the words with long vowels in closed syllables, by assuming that the long vowels may exist if, and only if, the nuclear position marked in (6) as $V_\$$ is the target of the licensing relation from the following nuclear position which Lowenstamm marks as $V_£$. Crucially for his solution, only pronounced nuclei may license preceding V's. Whereas the generalisation assumed by Lowenstamm (no long vowels in closed syllables) is true in many languages of the world, it has several notable exceptions. In English it is possible to find words such as *task* /tɑːsk/ and *corpse* /kɔːps/, *fiend* /fiːnd/, *pound* /paʊnd/ or *chamber* /tʃeɪmbə/. That the generalisation explained in Lowenstamm (1996) is not universal is also made clear by Standard Scottish English, where non-high long vowels appear in contexts not encountered in Standard Southern British English, e.g. before /ŋ/ as in *wrong* /rɔːŋ/ or *fact* /faːkt/.

A different CV approach to long vowels is presented in Scheer (2004). Scheer (2004) claims that all vowels indeed require licensing but it is not always the second V (Lowenstamm's $V_\$$) that has to be licensed. Scheer postulates the existence of two types of long vowels in the world's languages: head-initial and head-final vowels. In the former, a rightward spreading of the melody takes place, while in the latter we observe leftward spreading. The difference is presented in (7).
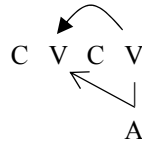
7. Two types of long vowels (Scheer 2004: 267)

  a)   b)

  C V C V   C V C V

          A   A
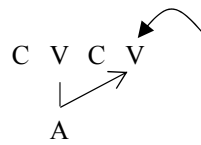
  a head-initial vowel   a head-final vowel

Where:

⌒ — Licensing

↖ — spreading

Scheer (2004) maintains that vowels that alternate in length are always head-initial, while non-alternating vowels must be head-final. What may raise doubts is that if vowels are non-alternating, what is the evidence for spreading?

Despite certain problems in the actual application of his idea, Scheer (2004) makes an intuitively correct claim about the distribution of long vowels in the systems of the world: long vowels are relatively marked and require licensing to exist.

One of the issues that seem problematic for the approaches to the distribution of long vowels presented in Lowenstamm (1996), as well as Scheer (2004), is the existence of systems in which the presence or absence of a long nucleus is contingent on the type of the following consonant, as it is in the case of close vowels in SSE. This kind of distribution cannot be neatly explained by a grammar in which nuclei are granted lateral potential or are simply deprived of it. In fact, the distribution of vowel length attested in Scottish English is accidental for the two approaches discussed above.

My current proposal is that the marked status of long vowels should be expressed by the need of the second V of a long object to receive a satisfactory amount of licensing. What is more, the presence or absence of long vowels may be sensitive to the type of the consonant that follows. The claim made in this article is that the property of the consonant that influences the presence or absence of a long vowel before it is its substantive complexity. Substantive complexity is defined as the number of primes of which a given consonant is composed. As the licensing is applied from right to left and according to the working of the Onset Licensing Principle, the C position is universally licensed first. If its substantive complexity is too great, it may

absorb the vast part of the licensing potential of the licenser, thus disallow-ing a nucleus to condition the linking of a melody to the V position. This ef-fect will be referred to as Licensing Absorption (LA).

8. Licensing Absorption

The licensing potential affecting a V is inversely proportional to the sub-stantive complexity of a following C.

In the following section I will show how LA derives the distribution of vowel length in Standard Scottish English.

The second aspect of the phonology of long vowels that needs to be men-tioned here are the universal tendencies in their melodic make-up. There ex-ists a considerable amount of research that shows that, all other things being equal, relatively open vowels are longer than relatively close vowels (see Lehiste 1970: 18 and the references found there). On the phonological side, it is true that all languages that possess long vowels possess long open vow-els. At the same time, high vowels are typically the last to occur as long in the languages of the world and their length implies the length of mid and open vowels.

The universal tendencies in the melodic make-up of long vowels will be expressed by means of the two scales presented below.

9.
a) {A} > {A.X} > {X}
b) {$\underline{A}$.X} >{A.X}> {A.$\underline{X}$}

'X' in (9) stands for a phonological expression composed of other elements than A. The symbol '>' stands for 'requires weaker licensing than'. The im-plication of (9a) is that every system that has a long close vowel and allows for complex vocalic PEs has to have at least one mid and at least one open vowel. A system that has a long mid vowel has to have a long low object. The reverse is not true. (9b) is a sub-scale saying that a system with a long close-mid vowel has to have at least one open-mid vowel.

In sum, there are two principles of phonological organisation that influ-ence the SSE quantitative patterns. The first of them is Licensing Absorp-tion, which says that a consonant absorbs a certain amount of its licenser's potential. Consequently, the more complex the C, the less licensing potential affects the V that precedes it. The second relevant factor is the relative pre-

ponderance of element A within a phonological expression. The more pre-ponderant A is in a given phonological expression, the less licensing this ex-pression requires to be long. The systemic consequence of this is that a lan-guage exploiting vowel quantity phonologically must possess at least one long vowel whose representation is A before it has an expression with A and (an)other element(s). Long vowels composed exclusively of other elements than A are the most difficult to license, and their presence implies the pres-ence of a doubly-linked phonological expression containing A.

4.1. THE SOUND SYSTEM OF SSE

The representations of SSE vowels in Element Theory (Kaye, Lowenstamm and Vergnaud 1990, Harris 1994, Backley 2011) are presented in (10), to-gether with examples of words that contain the relevant vowels.

10.
/i(ː)/ = {I} (MEAT, STEER)   /ʉ(ː)/ = {U.I} (ROOM, PUT, MOORE)
/eː/ = {I̲.A} (WAIT, THERE)   /oː/ = {U̲.A} (LOAD, MORE)
/ɛː/ = {I.A} (PET, ERR)   /ɔː/ = {U.A} (WAR, POT)
/ɛ̈/ = {I.A} (PIT, STIR)   /ʌ~ə/ = {_} (PUTT, CART$\underline{E}$R)
/aː/ = {A} (PAT, FAR)

/ʌi/={_}{I} (SIDE)
/aːi/={A}{I} (SIGH)
/aːu/~/ʌu/={A}{U}~{_}{U} (LOUT, NOW)
/ɔːi/= {A.U}{I} (BOY, CHOICE)
/iʉ(ː)/= {I}{I.U} (TUNE, DURING)

(11), on the other hand, shows the representations of SSE consonants.

11.
/j/ = {I}   /ð/ = {I.h}   /θ/ = {I.h.H}   /d/ = {I.h.ʔ}   /t/ = {I.h.ʔ.H}   /n/ = {I.ʔ.L̲}
/w/ = {U}   /z/ = {I̲.h̲}   /s/ = {I̲.h.H}   /b/ = {U.h.ʔ}   /p/ = {U.h.ʔ.H}   /m/= {U.ʔ.L̲}
/r/ = {I̲}   /v/ = {U.h}   /f/ = {U.h.H}   /g/ = {_.h.ʔ}   /k/ = {_.h.ʔ.H}   /ł/ = {U.I.ʔ}
             /ʒ/ = {I̲.h}   /ʃ/ = {I̲.h.H}   /dʒ/ = {I̲.ʔ}{I̲.h}   /tʃ/ = {I̲.ʔ}{I̲.h.H}   /ŋ/ = {_.ʔ.L̲}
             /x~h/ = {U̲.h.H}   /ʍ/ = {U̲.h.H}{U}

Let me remind the reader that close monophthongs in SSE may be long only when followed by the rhotic, voiced fricatives, /g/, /dʒ/ or are found at the end of a morpheme. Two vowels, /ɛ̈/ as in PIT and /ʌ/ as in PUTT, are always short. The rest of the monophthongs do not show the effects of

SVLR, and are long regardless of the environment. The diphthong in items such as NOW and LOUT is consistently pronounced as a 'short' /ʌu/ or a 'long' /aːu/ depending on a speaker. The descendant of Middle Scots /iː/ vowel appears in two variants: /aːi/ in the majority of the long environments, and /ʌi/ in the short environments. /ʌi/ is also found in the plural forms of several items that show the voicing of fricatives in the plural, as in *wive*s or *lives*. The distribution of /aːi/ and /ʌi/ in stressed open syllables is irregular, with a near minimal pair *libel* /ɫaːibəɫ/ - *bible* /bʌibəɫ/ reported by Scobbie and Stuart-Smith (2006).

In Section 3 where selected analyses of the SVLR environments were summarised, I pointed to the disjunctivity of the environment as one of the most pervasive problems. According to McMahon (1991: 44f), the length in the morpheme-final position may be seen as independent of SVLR, as virtually all dialects of Germanic must have long vowels in this position. This line of analysis will be pursued here, but only to a certain extent. The condition for the presence of long vowels is licensing, in other words, a vowel may be doubly attached if it receives licensing. Word-internally, the source of licensing is the following V position, including Final Empty Nuclei. Word-finally, however, the source of licensing is a language specific parameter parallel to the parameter for government of Final Empty Nuclei (Scheer 2004). The parameter is formulated in (12).
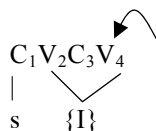
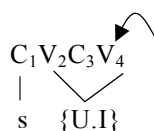12. Final Nuclei (FN) licensing parameter:

  License FN [ON]/OFF

The parameter is set at 'ON' in SSE. The representations in (13) present three words ending in vowels that show the SVLR effect. The arrow represents parametric licensing.

13. Paramatrically licensed Final Nuclei in SSE:

a) *see* /siː/   b) *Sue* /sʉː/   c) *sigh* /saːi/

Languages in which the parameter is set at 'OFF' cannot have long vowels at the end of morphemes. A relevant example is Italian, which shows tonic lengthening under licensing (see Scheer 1998, 2004 for details). Krämer (2009: 163) reports that the tonic lengthening does not affect final stressed vowels, which are not any longer when compared to unstressed finals.

Moving on to the word-internal context, the previous accounts of the SVLR environment claimed that the set of consonants before which SVLR applies can be defined as a set of voiced continuants (McMahon 1991, 2000, Kamińska 1995) or voiceless non-continuants (Anderson 1993, 1994). However, the empirical investigations into vowel length in SSE have shown that the environment in which long variants of the relevant vowels are found is wider. Pukli (2006: 171-173) has shown that the three vowels which show the SVLR effect are long before /g/ and /dʒ/. Similar observations are made by Sundkvist (2010) for SSE used in the town of Lerwick, in the Shetlands. In the face of these reports, those approaches that point to the property of continuance as the key to understanding SVLR are simply wrong. What is more, the voiced continuants, /g/ and /dʒ/, do not form a natural class according to any of the approaches discussed in Section 3.
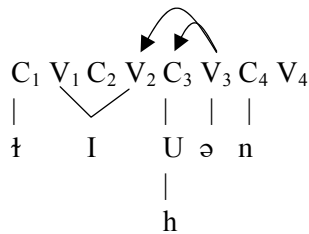
The claim made in this article is that vowel length in Standard Scottish English is not sensitive to properties like voicedness, voicelessness or continuance, but to the licensing relation. Licensing may be applied to a V position as a language specific parameter when this V is morpheme-final. In the majority of cases, however, the source of licensing is the following V position, either unpronounced or pronounced. The universal properties of the application of relations such as licensing and government are that they apply from right to left and must affect the C position to their left (in accordance with the Onset Licensing Principle). The licensing applied to a C position is partially absorbed by the phonological expression associated with this C. How much of the licensing is absorbed depends on the complexity of the expression that the C hosts. The more complex the expression, i.e. the more elements it contains, the more licensing is absorbed. Consequently, the V position that is affected by licensing receives only part of the licensing potential that the following V is equipped with. This effect is referred to as the Licensing Absorption. Under some circumstances, the licensing potential that reaches a V may not be enough to support the double attachment of a melody. This is exactly what is observed in SSE. The C positions that host phonological expressions which contain more than 2 elements absorb too

much licensing for close vowels to be doubly attached. The essence of Aitken's Law as understood here is that vocalic expressions not containing element A are not sufficiently licensed before phonological expressions of a complexity greater than 2.[6]
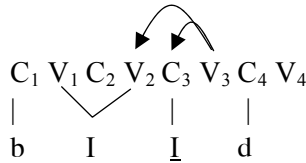
The representations in (14 a,b,c) exemplify words which contain long vowels in SSE. (14 d,e,f) show examples of words whose vowels must be short.
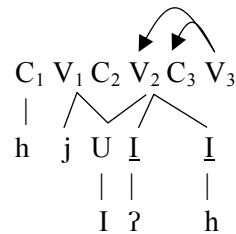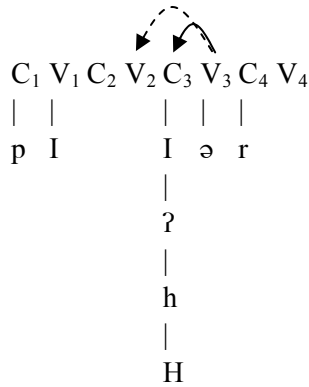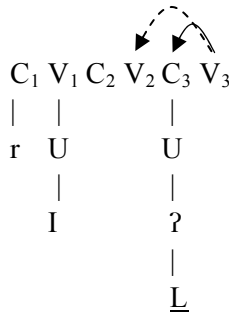
14.

a) *leaven* /ɬiːvən/

```
        ⌢⌢
C₁ V₁ C₂ V₂ C₃ V₃ C₄ V₄
|    ∨    |  |  |
ɬ    I    U  ə  n
            |
            h
```

b) *beard* /biːrd/

```
        ⌢⌢
C₁ V₁ C₂ V₂ C₃ V₃ C₄ V₄
|    ∨    |     |
b    I    I̱     d
```

c) *huge* /hjʉːdʒ/

```
        ⌢⌢
C₁ V₁ C₂ V₂ C₃ V₃
|    ∧ ∧
h  j U I̱      I̱
        | |    |
        I ʔ    h
```

d) *Peter* /pitəɾ/

```
        ⌐⌢
C₁ V₁ C₂ V₂ C₃ V₃ C₄ V₄
| |     | | |
p I     I ə r
        |
        ʔ
        |
        h
        |
        H
```

e) *room* /ɾʉm/

```
        ⌐⌢
C₁ V₁ C₂ V₂ C₃ V₃
| |     |
r U     U
  |     |
  I     ʔ
        |
        L̲
```

f) *week* /wik/

```
        ⌐⌢
C₁ V₁ C₂ V₂ C₃ V₃
| |     |
w I     h
        |
        ʔ
        |
        H
```
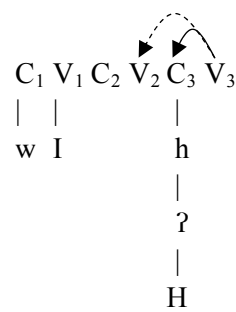
In the three upper examples, V₃ licenses the phonological expressions attached to C₃. As the substantive complexity of the phonological expressions attached to the C position does not exceed 2, V₃ is still able to license doubly attached /iː/ and /ʉː/. The situation in (19 d,e,f) is different, in that the sub-

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[6] The absence of /iː/ and /ʉː/ before /ŋ/ is a consequence of the historical distribution of long vowels in Old and Middle Scots as well as the pattern of application of SVLR lengthening, which affected only open and open-mid vowels. Short close vowels were not lengthened by Aitken's Law.

stantive complexity of the expressions associated with the relevant C position is greater than 2. In such cases, much of the licensing potential of V_3 is absorbed. The remaining licensing potential, represented by a dashed arrow, is applied to V_2 but it is too weak to license the double association of the A-less expressions. The vowels are short. V_2 is either silenced by means of government from V_3 or else deleted from the representation along with C_2.

The effects of Licensing Absorption are clearly visible in the case of close vowels. The situation of vowels containing element A is, however, different. According to the scale of the preponderance of A presented in (9), vowels that possess this element in their melodic make-up require weaker licensing in order to be doubly attached. This is reflected in the fact that long vowels not containing element A often have a narrower distribution than the long vowels that contain A. In SSE, expressions containing element A may be licensed to be long even in the contexts in which close vowels /i/ and /ʉ/, represented as {I} and {U.I} respectively, may not. In other words, mid and open vowels are less vulnerable to the Licensing Absorption effect than the vowels not possessing A.

The final point that needs to be addressed is the representation and distribution of the two variants of the descendant of the Middle Scots /iː/ vowel, i.e. /aːi/ and /ʌi/. In (10), where the elemental make-up of SSE vowels is presented, the two vowels are given different lexical representations. (15) illustrates the two representations:

15.
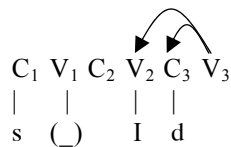
    a) *side* /sʌid/   b) *sigh* /saːi/
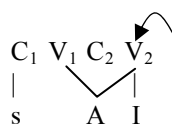
The empty expression (_) is pronounced /ʌ/ under stress. In unstressed syllables, /ʌ/ and /ə/, also represented as (_), appear in free variation. Importantly, the first portion of the diphthong in *side*, being melody-less, must not be long.

There are two arguments in favour of postulating separate lexical representations for the 'short' and 'long' variant of the ethymological /iː/. First of all, there are traces of the incipient lexical split discussed by Scobbie and Stuart-Smith (2006), such as the unpredictable distribution of the two vowels

in stressed open syllables and a near minimal pair *libel* /ɫaːibəɫ/ – *bible* /bʌibəɫ/. Another reason that could be taken in favour of the lexical distinction between the two vowels is the absence of alternations between the two diphthongs. Scobbie and Stuart-Smith (2006: 12) report an anecdotal introspection of speakers using the 'short' variant of the diphthong before the derived voiced fricatives in items such as *wives*, *lives*, *knives*. Pukli (2006) established that the speakers of Ayrshire SE consistently produce the 'short' diphthong in the word *wives*.[7]

5. CONCLUSIONS

The aim of this paper was to propose a novel analysis of a pervasive problem in English dialectology: the Scottish Vowel Length Rule. It was claimed that vowel length in Standard Scottish English and elsewhere must be licensed. The paper pointed to two factors that are relevant for the licensing of vowel length. The first factor is the substantive complexity of the phonological expressions that separate the licenser from the licensee. The greater the substantive complexity of the consonant, the more licensing it absorbs. As a result, consonants with greater substantive complexity are more likely to be preceded by short vowels. Languages may select a point along the scale of substantive complexity of consonants after which the amount of licensing that reaches the preceding V is not enough to license double association of melody. In the case of SSE this point is 2, which means that consonants composed of more than 2 elements absorb too much licensing for the long vowel to be licensed.

A general prediction is that if a system contains long vowels before consonants of a greater substantive complexity, then, all other things being equal, it will also contain long vowels before less complex consonants. The relevant 'other thing' in the prediction is the preponderance of the A element

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[7] See, however, Noske *et al.* (1982), who report on two dialects of what they refer to as Western Scottish English. In dialect A, the forms with Noun Plural Fricative Voicing, like *wives* and *lives*, are said to be pronounced with long variants of the diphthong, while in dialect B they retain the 'short' forms. As far as I know, the paper by Noske *et al.* is the only source that reports the alternation involving the two diphthongs. There is little reason to treat the data provided by them as less anecdotal than the reports provided by Scobbie and Stuart-Smith (2006), who point to the absence of any such alternation. Clearly, further research must be conducted to establish the status of a possible alternation between /aːi/ and /ʌi/, as well as the status of minor rules such as Noun Plural Fricative Voicing.

in the licensed vowel. Vowels with a greater preponderance of A require weaker licensing to maintain double association. As a consequence, the approach presented above predicts that if a system contains long vowels with a less preponderant A, it must contain long vowels with a more preponderant A in the same context. The two conditions for the licensing of vowel length allow for modelling fine-grained patterns of the distribution of vowel-length, and to predict the existence of systems with subtle differences between the distribution of long objects. The existence or non-existence of such patterns and systems, as well as the interaction of the two conditions with factors such as stress or vocalic harmony, constitute a promising perspective for a wide-ranging research programme.

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LICENCJONOWANIE JAKOŚCI SAMOGŁOSKI
A ZASADA DŁUGOŚCI SZKOCKIEJ SAMOGŁOSKI

S t r e s z c z e n i e

Autor artykułu wykazuje, iż dystrybucja długich samogłosek w szkockim dialekcie języka angiel-
skiego jest uzależniona od dwóch czynników. Pierwszym jest złożoność spółgłoski następującej
po potencjalnie długiej samogłosce. Im bardziej złożona jest spółgłoska, tym mniejsza możliwość
licencjonowania długości. Drugim czynnikiem jest aktywność elementu A w licencjonowanej
samogłosce. Im mniej aktywny jest element A, tym większa potrzeba licencjonowania. Interakcja
tych dwóch czynników jest odpowiedzialna za obecność lub brak obecności długich samogłosek
w pewnych kontekstach.

Słowa kluczowe: licencjonowanie; szkocki angielski; złożoność spółgłosek; Fonologia CV.

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