

Péter Szigetvári *Stressed schwa in English**

Descriptions of British English conventionally list seven short vowels, those of KIT, DRESS, TRAP, STRUT, LOT/CLOTH, FOOT, and LETTER/COMMA. In this paper I argue that distinguishing STRUT and LETTER/COMMA is redundant and inconsistent: these two are one and the same vowel. Accordingly, the short vowel inventory of Current British English comprises only six short vowels.¹

While this seems to be a minute detail in the description of English, it has some significant repercussions. Such an analysis entails that there is no vowel in English that would occur exclusively in unstressed position, so all members of the vowel inventory, including schwa, may occur stressed. Unstressed vowels form a proper subset of the whole inventory.

The implicit (i.e., transcriptional) categorization of English vowels introduced by Jones (1918), and kept up until today in most British dictionaries, is untenable for current British English. This is partly because two vowels (FLEECE and GOOSE) were miscategorized by Jones as long monophthongs, and partly because the system underwent changes, namely, we can observe the monophthongization of many sequences that were earlier bisyllabic, consisting of a diphthong followed by schwa, later simplified to a single schwa-ending diphthong, which then turned or is turning into a long monophthong (*near* *nijə* > *nɪə* > *nɪː*, *sour* *sawə* > *sæə* > *saː*). Therefore, I will depart from the orthodox system in two sets of cases: (i) I treat FLEECE and GOOSE as diphthongs (in fact, returning to the analysis of Sweet (1900)) and (ii) I treat NEAR, SQUARE, and CURE as long monophthongs (following a convention introduced by Jones (1918) for FORCE, extended by Upton (1995) for SQUARE and finalized to include the rest of these vowels by Lindsey (2012b), cf. Szigetvári (2014) for details and further discussion). The justification for this categorization is phonotactical. Firstly, together with the other diphthongs (FACE, PRICE, CHOICE, MOUTH, and GOAT), FLEECE and GOOSE may occur before a vowel within a morpheme (*neon* *nijɔn*, *muon* *mjuwɔn*). No other vowel can do that. Secondly, together with the other long vowels (START/PALM/BATH,

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¹ In fact, in Szigetvári 2016 I claim that this is the complete vowel inventory: diphthongs and long vowels are combinations of these vowels and glides.

NURSE, and NORTH/FORCE/THOUGHT), NEAR, SQUARE, and CURE may not occur before a vowel within a morpheme, but they may all occur word finally, while stressed short vowels may not. I also observe a further change in the analysis: in the case of word-final unstressed vowels apart from schwa (i.e., *i* and *u*), the diphthongal pronunciation has become the norm (*happy* 'hapij, *value* 'valjəw). This leaves unstressed schwa as the only short vowel to occur word finally.

The paper first examines structuralist considerations about the status of schwa in §1, I will try to refute Jones's conviction that STRUT and schwa are not the same vowel by showing that STRUT only occurs stressed, so if schwa can only be unstressed, they are in complementary distribution. In §2, we will examine the generative approach, in which schwa is a superficial phenomenon derived from other vowels. However, this process, vowel reduction, never occurs postlexically in English. A brief introduction to the development of the system of checked (i.e., short) vowels in English is offered in §3. The question whether English has two separate vowel systems, one for stressed and one for unstressed syllables, is discussed in §4, and finally the vowels that occur in unstressed position are shown in §5, together with an explanation for why it is exactly these vowels that occur unstressed. The paper is closed by conclusions in §6.

1 Structuralist considerations

Jones says "I clearly feel ə and ʌ to belong to two separate phonemes in my type of English, but I am unable to find proof by a pair of words differing solely by an exchange of one of these sounds for the other" (1967 : 40, §148). To compensate for the lack of minimal pairs, he then goes on to list words he considers similar that allegedly contrast these two vowels. These are shown in (1), in Jones's transcription.

(1) STRUT vs. schwa contrasts à la Jones

- | | |
|------------------------------|---------------------------------|
| a. <i>hiccup</i> 'hikʌp | vs. <i>syrup</i> 'sɪrəp |
| b. <i>humdrum</i> 'hʌmɔɹʌm | vs. <i>conundrum</i> kə'nʌndrəm |
| c. <i>catapult</i> 'kætəpʌlt | vs. <i>difficult</i> 'dɪfɪkəlt |

However, Jones is comparing apples and oranges here: in *hiccup*, *humdrum*, and *catapult* the final syllable is stressed, while in *syrup*, *conundrum*, and *difficult* it is not (though it may be in the last one, as discussed below).² This fact is obscured

² The reason for this difference might be that the first words in (1a) and (1b) are onomatopoeic and those in (1b) and (1c) may be interpreted as compounds, but not the second ones.

by the British transcribing tradition, which consistently fails to indicate posttonic stress. In (2) I give the transcription of the same words by Kenyon & Knott (1953) and the online Merriam-Webster.

(2) Kenyon & Knott's and Merriam-Webster's rendering of Jones's words

K&K	M-W	K&K	M-W
a. 'hɪkʌp, 'hɪkəp	'hi-(,)kəp	'sɪrəp, 'sɜːrəp, 'sɜːrəp	'sər-əp, 'sɪr-əp, 'sə-rəp
b. 'hʌm,drʌm	'həm-,drəm	kə'nʌndrəm	kə-'nən-drəm
c. 'kætə,pʌlt	'kə-tə-,pəlt	'dɪfə,kʌlt, 'dɪfəkəlt	'di-fi-(,)kəlt

Like Jones, K&K distinguish “stressed schwa” (ʌ) from “unstressed schwa” (ə) by using different symbols, but, in addition, they also use the stress mark. This practice is redundant. M-W use the same symbol and make the distinction only by the stress mark. In (1), Jones indicates the difference only by the use of two different vowel symbols.

We see that the only ʌ which occurs unstressed in (2) is in one variant of K&K's *hiccup*.³ Indeed, this dictionary often omits the stress mark before a syllable immediately following the tonic in noncompound words, where M-W consistently indicate it: cf. *alcove* K&K 'ælkov, M-W 'al-,kōv; *latex* K&K 'letɛks, M-W 'lā-,tɛks, *robot* K&K 'rɒbət, M-W 'rō-,bät.⁴ *Difficult*, like *hiccup*, has two variants, with and without stress on its last vowel, which is accordingly transcribed as stressed(!) ʌ or unstressed ə by K&K, and a parenthesized stress mark by M-W.

The issue then boils down to whether the vowel transcribed by Jones and his followers as ʌ may occur totally unstressed or not. If, as it seems to be the case, it always occurs stressed, while the vowel transcribed as ə always occurs unstressed in American transcriptions that do indicate posttonic stress, then they cannot possibly contrast. We can only have free variants accompanying the presence or absence of stress, like in *hiccup*, *difficult*, *robot*. It is a very unlikely scenario that the words affected would be different in the two accents, since in Jones stress is not indicated on the second part of compounds either (*underworld* J 'ʌndəwɜːld, K&K 'ʌndə,wɜːld, M-W 'ən-dər-,wɜːld), although all content words, like *world*, must carry stress. Therefore, with due respect to Jones's feelings as a native speaker of the language, I, a nonnative speaker, remain unconvinced that schwa and STRUT could ever contrast in English.

³ Note the stem-final final consonant is doubled in *hiccupping* and *humdrumming*. This convention is applied in spelling only after a stressed vowel.

⁴ Or with an unstressed ult: K&K 'rɒbət, M-W 'rō-bət.

But Jones does not give up, he says even if these two vowels are always distinguished by stress, he still opts for treating them as different qualities, because “from the point of view of legibility I believe this system [the one using stressed vs. unstressed ə, like M-W] would be inferior to the equally justifiable system of using the separate and easily distinguishable letters ʌ and ə” (1967 : 61, §206, explication mine). Legibility, however, is not a relevant issue in a theoretical decision. The stress mark must be used in any case, but Jones uses a surplus vowel symbol, as do Kenyon & Knott. Using ʌ for stressed schwa might have pedagogical advantages, but theoretically it is redundant. Furthermore, using different symbols for stressed and unstressed KIT (e.g., transcribing *civic* as 'sɪvɪk, following Bolinger (1986)) would be equally “superior” to using the same symbol (following Jones), yet this option is ignored. This is an inconsistent practice.

In the same vein, unstressed schwa does not contrast with any other vowel that occurs exclusively in stressed position. The potential examples typically include compounds, recent loans/coinages, noun–verb pairs, or suffixed words which keep stress on the relevant syllable: *papal* 'pɛj.pəl vs. *PayPal* 'pɛj.pəl, *document*, the noun 'dɒkjəmənt vs. the verb 'dɒkjəmənt, *murderous* 'mɜːdərəs vs. *murderess* 'mɜːdərəs. In fact, the fewest minimal pairs for short vowel and unstressed schwa are available with STRUT: *Segal* 'sɪgəl vs. *seagull* 'sɪ.gʌl or *Wauchope* (Saskatchewan, Canada) 'wɔːkəp vs. *walk-up* 'wɔːkʌp. It is clear that the ʌ is stressed in both compounds and the ə is unstressed in both monomorphemic names. The only vowel that schwa commonly contrasts with is unstressed ɪ, but in most of these cases this ɪ is in free variation with schwa: *accept* ək'sɛpt vs. *except* ɪk'sɛpt or ək'sɛpt, *immanent* 'ɪmənənt vs. *imminent* 'ɪmɪnənt or 'ɪmənənt, *pigeon* 'pɪdʒən vs. *pidgin* 'pɪdʒɪn or 'pɪdʒən, as well as the famous pair *Lennon* 'lɛnən vs. *Lenin* 'lɛnɪn or 'lɛnən. There are very few cases without variation, like *eunuchs* 'jʊnʊks vs. *Unix* 'jʊnɪks.

If one analyses diphthongs on a par with single segments, a large number of further minimal pairs become available, since three diphthongs — ij, ɐw, and əw — may occur unstressed in English. Hence we have hundreds of pairs like those in (3).

(3) Schwa and diphthong contrast in unstressed syllable

- a. *armour* 'ɑːmə ~ *army* 'ɑːmɪj
- copper* 'kɒpə ~ *copy* 'kɒpɪj
- b. *eager* 'ɪgə ~ *ego* 'ɪgəw
- hearer* 'hɪːrə ~ *hero* 'hɪːrəw

Since unstressed əw only occurs word finally, and unstressed ij occurs, in addition, prevocally, where ə, stressed or unstressed, does not, we find these contrasts only word finally. On the other hand, unstressed əw is generally preceded by a palatal consonant (*value* 'valjəw, *virtue* 'vɜ:tʃəw) and we have not found pairs where schwa would stand in opposition with a clearly unstressed əw. In any case, the practice of treating *eager* 'ijgə and *ego* 'ijgəw as a minimal pair is just as dubious as that of treating *keen* 'kijn and *queen* 'kwijn as one: in both cases the second word is a w longer than the first one. Therefore, I exclude diphthongs from this comparison. Long vowels do not come into the discussion at all, because they do not occur in unstressed syllables in the first place.

I conclude that in theory unstressed schwa could be an allophone of any short vowel, except unstressed i, with which it may contrast. In such cases, phonetic similarity is typically called for. Accordingly, the obvious candidate for being the allophone of schwa is STRUT, which, in some of its instances, is phonetically indistinguishable from unstressed schwa. As Cruttenden says: “The acoustic formants of /ə/ are [. . .] likely to be similar to those for /ɜ:/ or /ʌ/ according to the situation” (2014: 138). This more or less settles the question that if schwa and any short vowel are allophones, then that vowel is ʌ.

2 Generativist considerations

The generative phonological tradition describing English treats many instances of unstressed schwa as a surface phenomenon, a vowel which is derived from some other vowel. Deriving phonetically unrelated vowels from each other is, in fact, a general tendency of generative accounts. Among the vowel-related phenomena discussed in such works are vowel shift (e.g., (4a–c)), trisyllabic laxing (e.g., (4b)), CiV tensing, (e.g., (4c)), and, what is of most interest to us in this paper, vowel reduction (e.g., (4c–d)) (Chomsky & Halle 1968, Rubach 1984, Lahiri & Fikkert 1999).

(4) Vowel alternations

- a. *hide* hajd ~ *hid* hɪd
- b. *holy* həwli ~ *holiday* hɒlɪdeɪ
- c. *Arab* arəb ~ *Arabian* əreɪbjən
- d. *atom* atəm ~ *atomic* ətɒmɪk

All four word pairs in (4)—and hundreds of others like them—are related etymologically, and most of them are related semantically too, though many speakers are probably unaware of the connection between *holy* and *holiday* or between *house*

and *husband*, or *moon* and *Monday*, since their semantic relation is rather vague, if it exists at all. The phonological similarity between such word pairs is not very strong either: in the examples in (4)—and most others—it is confined to the identity (or similarity) of the consonants. That is, unless we are also ready to derive ablauted and unblauted forms from their base (like *sang* from *sing* or *teeth* from *tooth*), we should hesitate to do so with the word pairs exemplified in (4). The only difference between the pairs *tooth*~*teeth* and *hide*~*hid* is that the phonetic dissimilarity of the former existed much earlier than that of the latter (and, as a consequence, the standard orthography uses different letters in the former, but the same letter in the latter pair).

The point I would like to drive home is that if a word is semantically and/or etymologically related to another word, this does not entail that it must be derived from it phonologically. For example, *go* and *went* are semantically related, *father* and *paternal*, even *tooth* and *teeth* are both semantically and etymologically related, yet relating them phonologically is not common in current phonological practice. The same should hold of pairs like *hide* and *hid*. This is because phonological rules like $aj \rightarrow i$ or $i \rightarrow aj$ are highly unnatural, even if directed through intervening stages (e.g., $i \rightarrow i: \rightarrow ej \rightarrow aj$), where each step could be somehow motivated. These two forms have simply got too far away from each other phonologically. Furthermore, the conditioning of this and other similar alternations is difficult, and in any case too abstract: for example, we would have to hypothesize a consonant cluster that never surfaces at the end of *hid*, to explain why its vowel is shortened. Or claim that at the relevant point in the derivation *southern* $sæðən$ is three syllables, so trisyllabic laxing can apply to the vowel of *south* $saw\theta$. Such derivations replay several centuries of the history of English (sometimes, like in the case of velar softening or spirantization, even other languages). It is mainly the extreme conservatism of English spelling that suggests such derivations, in fact, as Chomsky & Halle claim: “English orthography, despite its often cited inconsistencies, comes remarkably close to being an optimal orthographic system for English” (1968: 49). This is only true if one accepts these very abstract relationships between sounds.

The situation with vowel reduction, (4c, d), is somewhat different. Here one could posit an underlying form $arab$ for both $árəb$ and $əɹéjbijən$ or $atəm$ for both $átəm$ and $ətómik$, and invoke rather natural-looking processes: $a \rightarrow ə$ and $ɔ \rightarrow ə$ (but for $arab$ we still would need the unnatural $a \rightarrow ej$ rule too), with an apparently perfect condition: “when unstressed”.

The pivotal question in the generative world is whether all schwas are derived (“reduction schwas”, or perhaps “epenthesis schwas” in van Oostendorp’s

(2003) terminology), or at least some are underlying (“stable schwas”). Chomsky & Halle compare *torrent* and *effort* claiming that in the former “we know that the vowel of the final syllable is *e* (cf. *torrential*)”, while in *effort* “there is no way of determining the phonological quality of the underlying vowel, which need not, therefore, be specified in the lexical entry for this formative” (1968 : 37). What is noteworthy, however, is that *all* vowel~schwa alternations of English are lexical. That is, no word-level affixation, compounding, or utterance-level modification of the stress pattern will trigger or inhibit vowel reduction. What is reduced will remain so, what is not reduced will not become so postlexically. That is, a lexically stressed vowel may be less prominently stressed in a compound or a longer phrase, but it may never lose its stress altogether. The vowel of *bird* 'bɜ:d or *bud* 'bʊd will never become unstressed ə, no matter how much we degrade its stress. These words are the least prominently stressed items in *blackbirds sing* and *rosebuds sink*, they will nonetheless contain stressed ə: and ə (ʌ if you like), never unstressed ə. The phonological relationship of *torrent* 'tɔrənt and *torrential* tə'rentʃəl exhausts in the identity of t-r-n, even the last consonant turns into something totally different (t → ʃ). Based on the spelling (and our knowledge of Latin and Old French), we can reconstruct the historical development of *torrential*, which includes high vowel gliding, spirantization, and palatalization in addition to vowel reduction, but it is highly unlikely that these historical processes should be part of the phonology of present-day English (Kaye 1995).

One could set up a “hierarchy of suppletiveness” along the lines shown in (5).

(5) Hierarchy of suppletiveness

- a. go gəw ~ went wɛnt
- b. father fɑ:ðə ~ paternal pətə:nəl
- c. hide həjd ~ hid hɪd
- d. atom atəm ~ atomic ətɔmɪk
- e. belief bəlɪf ~ believe bəlɪv
- f. happy həpj ~ happily həpə-lɪj
- g. care kɛ: ~ caring kɛ:-r-ɪŋ
- h. happy həpj ~ happiness həpj-nəs

This list shows that whether there is a phonological relationship between two words is not a categorical issue. At the bottom of the scale are word pairs where the second word contains the first one unchanged. Further up we find smaller, and then larger, fully and then less automatic modifications to the stem. Up to a point (for (5f–h)) the boundary between the stem and the suffix can be easily marked.

Where one puts the split between phonology and other modules is, to some extent, a matter of taste. In any case, vowel reduction is in the upper half of this hierarchy, closer to the “suppletive” end. The list in (5) may be extended at one’s will by many further phenomena, both “above” and “below” vowel reduction, (5d),⁵ but vowel reduction does not seem to be a purely phonological phenomenon.

3 History

The short vowel system of Old English consisted of seven vowels (Hogg 2002 : 10f): *i y e æ a o u*. Schwa was not among them. With the merger of *y* and *i*, on the one hand, and of *æ* and *a*, on the other, the set has been reduced to the canonical five-vowel inventory, *i e a o u*, in Middle English.⁶ Vowel reduction appears very early in English, but “the only evidence specifically supporting an early development of [ə] appears to be graphic ‘confusion’ in weak syllables in Early Middle English, and a tendency to write ⟨e⟩ (or in some dialects ⟨i⟩ or ⟨u⟩) for what were once distinct /e,i,u/” (Lass 1999 : 133). As developments like OE *na:ma* > ME *na:mə* > ModE *nɛjm* (*name*) or OE *no:zu* > ME *no:zə* > ModE *noz* (*nose*) indicate many of these schwas did not survive to current English, but others, notably non-word-final schwas, did. Thus, Middle English did have unstressed schwas, adding a further member to the inventory of short vowels, five of which could occur stressed, one, schwa, only unstressed.

Evidence for a very significant change affecting the short vowel system starts to appear in the 17th century (Lass 1999 : 89). In this change the earlier short *u* lowers and unrounds to *ʌ*. The significance of the change is that it did not affect all *u*’s, some, typically preceded by labial *p*, *b*, *f*, and *w* (but not *m*), remained (rather) high and rounded to this day (*put*, *bush*, *full*, *wolf*). However, in other words the unrounding and subsequent lowering did occur after the same labials (*puff*, *but*, *fuck*, *wonder*).⁷ Furthermore in a set of words earlier belonging to the GOOSE set the vowel has shortened and merged with the short *u*, especially, but not exclusively, before *k*: *book*, *cook*, *look*, *foot*, *good*, *sugar*. For this reason, the unrounded, lowered *u* and the unchanged/newly shortened *u* could contrast, as in

⁵ (5f) is not a case of vowel reduction, since here two unstressed/reduced vowels alternate, cf. §5.

⁶ The precise phonetic identity of these vowels is hard to determine (cf. Lass 1999 : 87f), and need not concern us here.

⁷ Note that ⟨wu⟩ > ⟨wo⟩ in *wolf* and *wonder* was merely an orthographical change to increase legibility.

buck vs. *book*, *luck* vs. *look*, or *putt* vs. *put*. This change, the PUT–STRUT split,⁸ has added a new member to the inventory of *stressed* short vowels.

The new vowel, STRUT, may be phonetically identical to schwa, as the following comment from Lass indicates: “So in discussion of pre-modern English ‘ʌ’ is not to be taken in its IPA sense (low mid back); it rather implies, as it still does when used as a label for the *cut* [i.e., STRUT] class in modern descriptions, a rather vague range of opener centralised-to-central vowel qualities” (1999: 90). That is, we must not take the symbol ʌ verbatim, it simply represents some central vowel, i.e., some kind of schwa. This equivalence is corroborated by Walker (1774, cited by Jespersen 1949: 271, §9.73): “unaccented vowels in final syllables terminated by a consonant, but especially *r*, have an obscure vowel that nearly approaches the short *u*. Thus *liar*, *lier*, *mayor*, *martyr*, etc. . . . might be written and pronounced *liur*, *liur*, *mayur*, *martur*, etc. without any perceptible change in the sound of the words.”

In some varieties of English the opening of STRUT has continued, reaching a fully open *a* for some speakers (Gimson 1989: 110, Wells 1982: 291f). Nevertheless, STRUT rarely merges with TRAP, which in the meanwhile has raised, hence is often transcribed as æ. Recently, however, this vowel shift has reversed, KIT, DRESS, and TRAP are now lowering, the last one to *a*. Such a shift inevitably pushes STRUT away from its low position, “back” to the centre of the vowel space. Fabricius (2007) reports on acoustic evidence for exactly this change in what she refers to as the RP accent of English: STRUT, a low, peripheral vowel at the beginning of the 20th century, has gradually shifted to a nonperipheral status in the later part of the century.

4 Distinguishing stressed and unstressed vocalism

One obvious reason for using different symbols for stressed and unstressed schwa is that in this way it can be maintained that ə only occurs in unstressed position, “to preserve the dogma that ‘schwa is never stressed’” (Lindsey 2012a). But this, of course, is begging the question: ə never occurs in stressed position, because when it does, we use a different symbol for it, ʌ or ɜ. This is basically Jones’s argument cited in §1.

⁸ Wells (1982) uses the name FOOT–STRUT split, however his choice of *foot* as the keyword for the lexical set featuring “unchanged *u*” is not fortunate in a historical discussion, since as we have just seen the vowel of this particular word came to be short only after the split. I use *put* instead.

An even clearer case of what we could call “stressed schwa avoidance” is the use of ɜ: for NURSE. Sweet (1900)⁹ and Jones (1918) transcribe this vowel as ə:, it is Gimson who introduces the new symbol. The result is that NURSE, which is always stressed, is not transcribed with ə. Phonetically, however, the only difference between schwa and NURSE is in length (Jones 1960:88, §342; Gimson 1989:123). Besides expelling schwa from stressed syllables, another reason for this purely esthetic symbol change is to have no short vowel symbol ever followed by the length mark. Jones uses the set shown in (6a),¹⁰ Gimson replaces them with those in (6b). With these changes, Gimson incorporates the American tradition of analysing vowels not as short–long, but as lax–tense pairs. His hybrid system, then, is redundantly showing both analyses.

(6) Jones’s and Gimson’s “short–long” pairs

a. i — i:	b. ɪ — i:
u — u:	ʊ — u:
ɔ — ɔ:	ɒ — ɔ:
ə — ə:	ɜ — ɜ:

Gimson also changes the symbol for GOAT, from Jones’s ou to əʊ. This is to reflect the unrounding of the first half of this diphthong in British English. Because we do not find this unrounding before coda l, which is extensively turning to w, a contrast has developed between əw and ow: *go* gəw vs. *goal* gow, *bow* bəw vs. *ball* bow. In the light of this development GOAT unrounding had to be indicated. However, to be fully consistent in the pursuit of “stressed coda avoidance”, Gimson had better used ɜʊ or ʌʊ for GOAT. Arguing that əʊ is a single symbol, hence schwa does not occur stressed, is invalid, because in that case ə: would also count as a single symbol.

Furthermore, there is little reason to maintain that schwa does not occur in a stressed syllable. English¹¹ is not the only language where it does, the long list of such languages includes Welsh, Rumanian, Bulgarian, to mention just some European systems. So while it is true that in some languages (e.g., Catalan or German)

⁹ To be precise, Sweet uses əə, which is equivalent to ə:.

¹⁰ The fifth short–long pair was distinguished by Jones, too: æ/a—ɑ:. Wells reports that it was rumoured that Jones wanted to switch to a—ɑ: (as well as o—o:), but his publisher refused to allow this (2006).

¹¹ In fact, New Zealand English is famous for having stressed ə as the KIT vowel.

schwa is only found unstressed, in many others, including English, schwa can occur in both stressed and unstressed syllables.

5 The unstressed vowel inventory

Wells (1990) increases the separation of the vocalism of stressed and unstressed syllables by introducing two new symbols, *i* and *u*, referred to as *schwee* and *schwoo*, respectively, by Lindsey (2012c). The former reflects the historical change from KIT to FLEECE in unstressed word-final and prevocalic position: *happy* 'hɑpɪ > 'hɑpɪj (hence transcribed as 'hæpi), *create* kri'eɪt > krij'eɪt (hence kri'eit); the latter a very similar change from FOOT (or rather PUT) to GOOSE in a number of unstressed syllables: *evaluate* i'vælju:ejt > i'væljuwejt (i'væljueit), *unite* ju'nait > juw'nait (ju'nait). Word finally the diphthongal pronunciation has stabilized earlier for most speakers (*value* 'væljuw). These two entities are not contrastive: speakers who pronounce “i” as ɪ cannot have unstressed ij, others, who pronounce it as ij cannot have ɪ either word finally or prevocalically, i.e., for them ɪ is a checked vowel. And there might be speakers for whom ɪ and ij are in free variation in unstressed position. The same holds for “u”. That is, these entities are not members of the vowel inventory, they are “abbreviatory notational conventions” (Wells 2010). So as in the case of “stressed schwa avoidance”, the effect of introducing novel symbols for unstressed FLEECE/KIT and GOOSE/PUT is that FLEECE and PUT do not occur in an unstressed syllable, while *schwee* and *schwoo* only occur there.

So in Wells’s (1990) system the three vowels ə i u occur exclusively in unstressed syllables. Three further vowels may also occur stressed. These are:

- (i) word-final ɰw (as in *value* 'væljuw or *Matthew* 'mæθjuw),¹²
- (ii) word-final əw (as in *motto* 'mɒtəw),¹³ and
- (iii) KIT.

These three vowels may occur in both stressed and unstressed position. (Examples for word-final stressed ɰw and əw are *imbue* ɪm'bjjuw and *below* bə'ləw, respectively.) Apart from them, stressed and unstressed vowels are discrete worlds in Wells’s transcription: i (HAPPY), u (there’s no standard keyword, let’s use UNITE),

¹² We assume that the final vowel in these words is unstressed, because if it were stressed, the yod could be deleted by some speakers: cf. *absolute* 'absə,l(j)ɰwt, *Methuen* mə'θ(j)ɰwən.

¹³ In this case the possibility of t-lenition hints at the lack of stress on the final syllable: 'mɒ?əw, 'mɒrəw.

and ə (COMMA/LETTER) only occur unstressed, the three vowels above are ambiguous, all other vowels only occur stressed to a greater or smaller degree.

Short ʊ (PUT) also can be unstressed, but its occurrences have mostly merged either with schwa (as in *accurate* 'ækjərət) or GOOSE (as in *value* 'valjʊw or *evaluate* ə'valjʊwejt), or both (as in *calculate* 'kalkjələjt or 'kalkjʊwələjt). The only context where this vowel still occurs unstressed is before w, that is, in the “diphthong” ʊw. This claim presupposes an analysis I have already hinted at: treating diphthongs as checked vowel+glide sequences (a detailed discussion is provided in Szigetvári 2016).

Many instances of unstressed KIT are undergoing similar changes. They merge with schwa before a consonant (*devil* 'dɛvəl), and with FLEECE before a vowel and word finally (*create* krij'ɛjt, *happy* 'hapij). Some unstressed occurrences of KIT, especially before ʃ, tʃ, dʒ, k, ŋ, and, of course, j, however, do not seem to move towards ə (*English* 'iŋɡliʃ, *ostrich* 'ɔstrɪʃ, *cottage* 'kɒtɪdʒ, *attic* 'atɪk, *shilling* 'ʃɪlɪŋ, *city* 'sɪtɪj).

Thus, we have three short vowels and three diphthongs in unstressed position. These are listed in (7).

(7) The unstressed vowels of British English

ɪ	ə	ʊ
ɪj	əw	ʊw

It is suspicious that while long vowels may not occur stressed, diphthongs may, furthermore, the diphthongs that occur unstressed are exactly the ones whose first half is a short vowel that itself may occur unstressed. If it is not accidental that beside KIT, STRUT, and PUT, it is FLEECE, GOOSE, and GOAT that happen to be the three “vowels” occurring in stressed position, then these latter three words also contain the same vowels as the former, respectively. So we take the vowel inventory of British English to be that in (8).¹⁴

(8) The (short) vowels of British English

	front	central	back
“high”	ɪ	ə	ʊ
“low”	ɛ	ɑ	ɔ

¹⁴ We here exclude the long monophthongs, which do not occur unstressed anyway.

Here we may identify the set occurring in unstressed position as the “high” vowels, where “high” is interpreted relative to the “low” vowel below it. Since stress is connected, among other phonetic characteristics, to sonority, i.e., the openness of the vowel, the arrangement in (8) explains the membership of the unstressed vowel inventory.

6 Conclusions

The unification of stressed (STRUT) and unstressed schwa (COMMA/LETTER) proposed in this paper leaves us with a minimalistic vowel inventory in English. Although as we have seen in §3 vowel reduction has created schwa much earlier than the unrounding and lowering of *u*, this latter process resulted in a vowel phonetically very similar, and, as argued here, phonologically identical to schwa. It is shown that these two objects do not contrast and deriving the unstressed schwa by a phonological vowel reduction rule leads to an undesirably strong model. Since the two vowels, KIT and FOOT/PUT, may occur both stressed and unstressed in English, there seems to be no reason why this could not also be the case with a third one, STRUT. In fact, a system that does not distinguish the stressed and the unstressed version of some vowels, but does distinguish those of another, STRUT, is inconsistent.

Along the same lines, one may contemplate that French exhibits a similar development: there is vowel reduction in unstressed syllables, the result of which is conventionally represented as *ə*, and called schwa, but it does not appear to be different from an independently existing, “acoustically central” vowel of the language, namely, *œ* (Anderson 1982: 537), or both *ø* and *œ*, depending on the context (Fagyal et al. 2006: 59).

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