Is vowel reduction in English phonological?

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The vowel inventory of English is commonly split into two sets, **full** (or **strong**) vowels and **reduced** (or **weak**) vowels. The term **stress** is used somewhat ambiguously in the literature: we here assume that any full vowel is stressed and any reduced vowel is unstressed. Views vary about the relationship of the two sets of vowels, whether they are complementary (Bolinger 1986), overlapping (Wells 1990), or the latter is a subset of the former (Merriam-Webster). We follow the last of these traditions, that is, we assume that all vowels may occur stressed, but only a subset, [i], [ə], [u] occur unstressed; [e], [a], [o], and long vowels (the R vowels of nonrhotic accents) are stressed in all of their occurrences. Some full/reduced alternations are shown in the first vowels of the word pairs in (1). The transcriptions are phonemic and represent the British reference accent.

(1) *full vowel*   *reduced vowel*
      edit [**é**dit]   edition [**i**díʃən]
      acid [**á**sid]   acidic [**ə**sídik]
      column [k**ó**ləm]   columnar [k**ə**lʌ́mnə]

The data in (1) also illustrate that a full and a reduced vowel may be melodically identical (recall, reduced vowels are a subset of full vowels): both the unstressed and the stressed second vowel of these word pairs are (here) transcribed with the same symbol. Nevertheless, reduced [i] is different from full [i] in that the former is in many (though not all) cases in free variation with [ə], cf. the alternative forms *edit* [édət], *edition* [ədíʃən], *acid* [ásəd] (but not *acidic* *[əsídək]). Furthermore, stressed [i] and [ə] may bear an accent as a result of the Rhythm Rule (cf. (2a,c,e)), while unstressed [i] and [ə] may not (cf. (2b,d,f,g)). The first vowel of *Qatar* shows free variation with respect to stress. If stressed the Rhythm Rule applies, as in (2e), if not, it does not, as in (2d). (In fact, the place of the accent is also freely variable in the citation form ([kátaː], [kə́taː], [kataː], [kətáː] are all listed in Wells 1990), but this is irrelevant in the present context. Note that the accent mark marks accent (cf. Kenyon & Knott 1953:xxiv), not stress, i.e., the full or reduced quality of the vowel.)

(2) *citation form*   *Rhythm Rule*   *no Rhythm rule*
  a. princess [prinsés]   Princess Lizzy [prínses lízij]
  b. sincere [sinsíː]   sincere wishes [sinsíː wíʃiz]
  c. Punjab [pəndʒáːb]   Punjab summit [pʌ́ndʒaːb sʌ́mit]
  d. Qatar [kətáː]   Qatar summit [kətáː sʌ́mit]
  e. Qatar [katáː]   Qatar summit [kátaː sʌ́mit]
  f. Madrid [mədríd]   Madrid summit [mədríd sʌ́mit]
  g. Ceylon [silón]   Ceylon summit [silón sʌ́mit]

Many descriptions of English conflate accent and stress, as witnessed by the alternative name of the Rhythm Rule: "Stress Reversal". This entails that several degrees of stress must be distinguished. What is identified as "secondary" or "tertiary" stress in such an account is here a stressed but unaccented vowel. The data in (2) clearly show that it is not stress that moves in words, but accent (also cf. Gussenhoven 1991, Vanderslice & Ladefoged 1972, Schane 1979, 2007). Apart from some special cases involving contrast, accent may only fall on a stressed vowel, therefore it cannot move where its target is unstressed (as in *sincere, Qatar* [kətáː], *Madrid,* or *Ceylon*). In the case of *sincere* and *Ceylon* the impossibility of moving the accent to the first vowel coincides with the free variation of this vowel ([sinsíː], [sənsíː]; [silón], [səlón]). The first vowel of *princess* does not

show such variability (*[prənsés]). This is because that vowel is stressed, the [i] is a full vowel in this word and, accordingly, may bear an accent.

There are several other cases where a vowel loses its accent. We mention but one here: the last component in a compound word is regularly deaccented, but **never** destressed (i.e., the quality of a vowel that loses its accent does not change): *doorstep* [dóːstep] (*[dóːstəp]), *snowman* [snə́wman] (*[snə́wmən]), *teapot* [tíːpot] (*[tíːpət]). As expected, no quality change occurs in the working of the Rhythm Rule either: *[prínsəs-], *[pə́ndʒəb-], cf. (2a) and (2c), respectively. In fact, a full vowel does not alternate with a reduced vowel in any postlexical event in English. (Only a lexically defined set of monosyllabic function words exhibit such an alternation — e.g., *have* [hav], [həv], [əv], [v], the variants with a reduced vowel, or without one, are clitics.)

What we have observed about the behaviour of full and reduced vowels so far suggests that the replacement of a full vowel with a reduced vowel (i.e., vowel reduction), or vice versa, only happens during what Kaye (1995) calls nonanalytical affixation. This is where other lexical processes like spirantization occur (e.g., in *edition*). The presence of the [n] in *columnar* is also evidence of nonanalytical suffixation (cf. analytical *column#ing* [kóləmiŋ] without the [n]).

It follows that analysts who draw the line between phonology proper and other lexical alternations between analytical and nonanalytical processes cannot treat vowel reduction in English as a phonological process. The alternation of full and reduced vowels is a historical relic in English, similarly to many other vowel alternations (e.g., *grain* [grejn] vs. *granular* [granjulə], *hide* [hajd] vs. *hid* [hid]) or the alternation of [t] (or [k]) and [s] (e.g., *pirate* [pajrət] vs. *piracy* [pajrəsij], *cyclic* [siklik] vs. *cyclicity* [siklisitij]), etc. Such processes can (and are often) phonologized in analyses, but such a view of phonology results in overly abstract representations.

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