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Dictionaries and Morphology

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Abstract

This paper explores the relationship between word formation and dictionary representation in general purpose monolingual dictionaries of English. The relationship between dictionary representation and morphological structure in languages with inflectional morphology, productive derivation and compounding, and conversion is complex for several reasons and varies across dictionaries. Historically, several important dictionaries of English have chosen to omit words because of their presumed transparent morphological structure. In addition, starting with dictionaries published in the latter half of the 19th century, many dictionaries of English have included affixes and combining forms as headwords, treating these ‘partial words’ in the dictionary like independent words, yet the information provided in the dictionary about the affix or combining form is often lacking from the standpoint of morphological description. The paper aims to show that while not a frequently discussed topic in current research on lexicography, the relationship between morphological structure and dictionary representation is essential to quality lexicographic products and should be reconsidered in light of digital consultation of dictionaries.

Keywords: Word-formation; inflection; derivation; affixes; compounding; English monolingual dictionaries

1 Introduction

In this paper I consider the relationship between morphology and dictionaries, specifically large-scale monolingual dictionaries. Dictionaries traditionally include definitions and other salient information related to individual words such as pronunciation, etymology, and usage commentary, but many include little or no information on the internal structure of words, how words are structurally related to one another, or how words might combine with other words to produce compounds (in languages in which compounding is productive). The relationship between dictionary representation and morphological structure in languages with inflectional morphology, productive derivation and compounding, and conversion is complex for several reasons and varies across dictionaries.

The impact of morphological structure on dictionary representation has not been a frequent research topic in publications on lexicography in recent years, as evidenced by its very limited presence in important texts such as that by Atkins & Rundell (2008), in which it is afforded only a few pages of discussion in a book over 500 pages long, or by its absence from conference proceedings such as those of EURALEX. Current emphasis, at least in research on dictionaries of English, is on learner’s dictionaries, the representation of collocation, and on corpus-based lexicography in general and this has resulted in a tendency to see words as units without internal structure, or at the very least as units the internal structure of which is uninteresting and perhaps even irrelevant to lexicographers. The relative lack of scholarly interest in the relationship between morphological structure and dictionary representation in English, contrasts with the progressive addition of morphological elements like affixes and neoclassical and other combining forms as headwords; these forms play an important role in the morphology of the language yet are not independent words. We also note that many well-respected dictionaries of English have long chosen not to define, or simply to omit, derived words the meaning of which lexicographers assume is known to the dictionary’s target users. To the extent that so-called partial words (in Atkins & Rundell’s terminology) are now headwords requiring definitions, examples and usage information, and delimiting a dictionary’s target audience in the context of digital consultation on the Internet is difficult at best, I submit that it is time to reconsider the role of morphology in dictionaries. I hope to show that this relationship is still of importance and point to how the representation of morphology in dictionaries of English could be improved in quality lexicographic products. In order to do so, I shall consider the general issues at hand and analyse the role morphology has had in a selection of dictionaries of English from the past 150 years.

2 Morphological issues in dictionaries of English

2.1 Overview of English morphology

In order to analyse how morphology interacts with the representation of words in dictionaries of English, it will be useful to first identify which aspects of morphology are particularly relevant to lexicographic projects. Morphology may be divided into two main branches: inflectional morphology and word formation, which, in turn, includes derivational affixation, conversion, compounding, neoclassical compounding, and other, less prominent structures such as blends, initialisms, and acronyms. In the case of English, inflection involves a small number of paradigms and morphemes in comparison with other Indo-European languages. As is well known, English has lost many of its inflections over hundreds of years (Baugh & Cable 1951), and its inflectional morphology has notably fewer forms than that of other

Germanic languages (Putnam & Page 2020). Most inflection in English may be classified as regular and adheres to well-established paradigms and as such is quite straight-forward, although there are a number of frequent forms that are irregular. Word-formation in English, in contrast, is quite complex: there are a large number of word-formation processes involved, with varying degrees of productivity; there are a large number of affixes playing a role in those word-formation processes, and many affixes seem to compete with one another in terms of form but are practically the same in terms of meaning;¹ some affixes are still available to speakers to create new words whereas others are unproductive; conversion, the process by which a word changes its lexical category (for instance, *light*_[noun] → *light*_[verb] or *jump*_[verb] → *jump*_[noun]) is extremely productive in English; compounding, especially noun-noun compounding, is difficult to constrain and even describe semantically; blending creates new words based on a combination of phonological and morphological factors and can result in the creation of a new combining form (e.g. *-oholic/-aholic*, arising from words such as *workaholic* or *shopaholic*, created on the model of *alcoholic*); these are just some of the main challenging characteristics facing the analyst of English word-formation..

2.2 Inclusion of inflectional morphology in dictionary entries

Inflectional forms of a word have often been listed as part of the dictionary entries in English, as there are relatively few forms involved. This practice, especially when the inflected form does not fall into the regular pattern, has a long history in English dictionaries. Samuel Johnson, in his *Preface to A Dictionary of the English Language*, wrote the following:

Among other derivatives I have been careful to insert and elucidate the anomalous plurals of nouns and preterites of verbs, which in the *Teutonick* dialects are very frequent, and, though familiar to those who have always used them, interrupt and embarrass the learners of our language. (Preface to Johnson 1755: paragraph 21)

Current dictionaries of English often include inflected forms under the headword, regardless of whether they are regular or not. The inclusion of inflected forms in the entries in *The American Heritage® Dictionary of the English Language* (2020)² is representative in this respect, and the following inflected forms are listed for the indicated types of words:

- Adjectives: comparative and superlative (if formed by suffixation or suppletion)
- Verbs: simple past, past participle (if different from the simple past), gerund, 3rd person sg. present tense
- Nouns; plural form if irregular; if regular, not expressly listed but often used in examples to display spelling

Dictionaries, of course, are not grammars, but in English they do exercise influence over the standard language, and as a result the inclusion of inflected forms provides valuable information to users who may not know a particular form or who may have doubts concerning the status of a form that they might assume is dialectal. Such variation in English is not uncommon in frequent words; for example, the verbs *dive* and *dream* have two possible preterite forms (*dived, dove* and *dreamed, dreamt*, respectively), the nouns *index* and *thesaurus* have two possible plural forms (*indexes, indices* and *thesauruses, thesauri*, respectively), and the debate on whether *toward* or *towards* is correct usage has gone on for more than 150 years (both are correct and common in American English, with use of *toward* being more prevalent; *towards* is more frequent in British English). Providing the standard inflectional form in individual entries in the dictionary never occupied much space in printed volumes because English has few inflections; we note that in dictionaries of languages with many inflected forms, such as Latin or the Romance languages, the dictionary typically identifies the entry as belonging to a specific conjugation or declension and the user must look up the referenced model elsewhere in the printed dictionary. With today's digital consultation, full conjugations and declensions in languages with a significant degree of inflection are often accessed from a click on the landing page, but in English the paucity of forms means that some dictionaries online include inflected words directly on the headword's landing page.

2.3 Inclusion of derivational morphology in dictionary entries

Derived words in dictionaries have been treated in different ways, depending on the degree of lexicalisation of the word. Lexicographers realised early on that regularity in derivational morphology could justify the omission of certain words from the dictionary, thus saving space. Samuel Johnson makes mention of this in his Preface, stating that while they are valid words, regular, semantically transparent derivatives such as adjectives ending in *-ish*, adverbs ending in *-ly*, or nouns ending in *-ness* are often omitted from his dictionary because their relationship to the root word is always the same. In fact, however, even for these relatively straight-forward affixes the data are not always so clear. Words like *goodness* or *greatness*, which Johnson lists in his dictionary, display the expected relationship to their stems *good* and *great*, respectively, but have also acquired additional nuances of meaning that should be included in a dictionary (that explains why Johnson did, in fact, define them). He states, "Words arbitrarily formed by a constant and settled analogy [...] were less diligently sought, and many sometimes have been omitted [...] because their relation to the primitive being always the same, their signification cannot be mistaken" (*Preface to Johnson 1755: paragraph 34*). The fine line between being entirely semantically transparent and only partially so is often blurred. Moreover, most derivational processes in English are not fully productive and have exceptions. In this sense, although lexicographers may state in the dictionary's front

¹ For example, English has many affixes producing nominalizations. For discussion of rivalry in language in general and in morphology specifically, see Štekauer (2018).

² The fifth edition of the *American Heritage® Dictionary of the English Language* was published in print form in 2005; entries presented in this paper have been taken from the online version which lists 2020 as its date of publication.

matter that a word's absence from the dictionary does not mean that the word does not exist, many users may not be aware of that proviso, especially when the dictionary is online and the front matter is nowhere to be found.³

Another possible way to treat derivational morphology is to list the derived word in the dictionary, but not define it. From the user's point of view, the usefulness of this strategy, which not only saves space but also is a boon to publishers interested in advertising the increased number of entries in the dictionary, depends on both the thoroughness of the list of forms as well as the definitions given for affixes. General purpose dictionaries of English have long afforded affixes, combining forms, and other bound morphemes headword status, but the type of information given for these elements differs greatly from dictionary to dictionary. Some dictionaries classify all word-forming elements as affixes; others discriminate more. Some treat etymologically different sources of a single affixal form as different senses of a single affix, whereas others provide a more detailed—and often etymologically based—analysis. From the viewpoint of morphological description, an affix must include a reference to the morpholexical class of the root or stem to which the affix attaches, a reference to the morpholexical class of the newly created word, some information on the productivity of the affix in current English, and, of course, an explanation of its meaning. It is the nature of many affixes to have abstract meanings because their meaning is both lexical and grammatical: for example, the meaning of a suffix that forms nouns from verbs is dependent to some degree on the lexical meaning of the verb, but it is also dependent on the grammatical nature of nouns as opposed to the grammatical nature of verbs. As a result, many dictionary users may not be able to successfully comprehend the abstract definitions of affixes when applied to the definitions of root words.

A special case of derivation that bears directly on the headword list is that of morphological conversion, when a word changes morpholexical class without affixation. The fact that morpholexical classes often display different inflected forms has meant that most dictionaries of English assign words that have undergone conversion to different entries; for example, *jump*_[verb] is a different headword from *jump*_[noun] because some of the inflected forms associated with *jump*_[verb] (*jumped*, *jumping*, *jumps*) are different from the inflected form associated with *jump*_[noun] (*jumps*). This approach is taken by the *Merriam-Webster's Collegiate Dictionary* (currently in its 11th edition). Nevertheless, this sort of presentation obscures the obvious close semantic relationship between the two words (in this case, the root verb and the derived noun), and, as a result, has not been adopted by all dictionaries. A competing dictionary, the *American Heritage® Dictionary*, treats the different morpholexical classes as different senses of a single headword.

2.4 Inclusion of compounding in dictionaries

Both regular compounding and neoclassical compounding in English prove particularly problematic for dictionaries because they are highly productive processes and, as Pius ten Hacken has noted:

In dictionaries for human users, word-formation is usually not seen as a major issue. There is an almost general consensus that can be summarized as follows: it is impossible to achieve completeness because of the productivity of word formation and at the same time unnecessary to aim for it because of the regularity of the new words. Of course, irregular cases should be treated, but there is no need to treat a compound like *textbook* as being any different from simple words such as *textile*. (ten Hacken 1998: 157)

This view was expressed by Johnson in the *Preface* to his dictionary (1755, paragraph 33), in which he gives the example that a word like 'woodman' needs to be defined in the dictionary but a word like 'thieflike' does not.

The situation is somewhat different for neoclassical compounding, because the constituent parts are not fully independent words in English but rather stems that are used in conjunction with another stem (typically in conjunction with one another). Neoclassical formants are easier to define than affixes because they are based on words with lexical meaning from Latin or Greek. Although lexicographers will not be able to represent all possible neoclassical compounds, there have been some creative attempts to indicate the degree of productivity to users. The *Random House Dictionary of the English Language* (1966) included a novel approach by giving long lists of undefined words with a prefixed neoclassical formant on a divided page. While not exhaustive, the list, which often runs over two or three printed pages and began on the page in which the neoclassical formant was defined, included syllabified words in boldface with prosodic stress marked and morpholexical class (generally *noun* or *adjective*) indicated. This sort of presentation provides users with some insight into the productivity of the formant, and also provides them with standard spelling and pronunciation. In essence, the list of words containing the formant is an extended run-on entry that is alphabetised according to the prefixed combining form.

3 Treatment of morphology in three dictionaries of English

3.1 Dictionaries analysed

Not all dictionaries of English approach the relationship between morphological structure and dictionary representation in the same way. In this section, we discuss issues related to morphology and dictionaries in a selection of three influential general-purpose dictionaries of English published in the past 150 years. Although this survey is necessarily limited in scope and concentrates on dictionaries published in the United States, it will show how different monolingual dictionaries have approached the questions identified in the previous section.

³ See DeCesaris and Marellò (2020) for a discussion of disappearing front matter in some online dictionaries of Spanish and Italian.

3.1.1 The *Century Dictionary* (1889-1891)

The *Century Dictionary*, edited by the eminent linguist and Sanscrit scholar William Dwight Whitney, is a multi-volume dictionary made on historical principles (Adams 2020). The *Century Dictionary* was based on the *Imperial Dictionary of the English Language* edited by John Ogilvie that had been published in Scotland. It is recognized as one of the great achievements of American lexicography. It is an important dictionary to include in this study not only because of its own influence, but also because it was the basis for two other successful dictionaries, the *American College Dictionary* (1947) and the *Random House Dictionary of the English Language* (1966).

In the preface to the *Century Dictionary*, Whitney gives the following justification for specifically omitting certain types of words from the dictionary:

No English dictionary, however, can well include every word or every form of a word that has been used by any English writer or speaker. There is a very large number of words and forms discoverable in the literature of all periods of the language, in the various dialects, and in colloquial use, which have no practical claim upon the notice of the lexicographer. A large group not meriting inclusion consists of words used only for the nonce by writers of all periods and of all degrees of authority, and especially by recent writers in newspapers and other ephemeral publications; of words intended by their inventors for wider use in popular or technical speech, but which have not been accepted; and of many special names of things, as of many chemical compounds, of many inventions, of patented commercial articles, and the like. Yet another group is composed of many substantive uses of adjectives, adjective uses of substantives (as of nouns of material), participial adjectives, verbal nouns ending in *-ing*, abstract nouns ending in *-ness*, adverbs ending in *-ly* from adjectives, adjectives ending in *-ish*, regular compounds, etc., which can be used at will in accordance with the established principles of the language, but which are too obvious, both in meaning and formation, and often too occasional in use, to need separate definition. (Preface to the *Century Dictionary*, pg. vi)

In essence, Whitney claims that users of the dictionary are familiar enough with meanings of certain derived words and compounds and their formation that these words need not be included in the dictionary. Given the size and scope of Whitney's dictionary, not including many regularly derived words because they are assumed to be "too obvious" in meaning and formation is an odd decision and contrasts with the practice of listing undefined forms as run-on entries that is adopted in Merriam-Webster dictionaries (as will be shown in §3.1.2). At the very least, providing the written form gives the reader notice that the word exists and is in use, and also establishes the spelling and syllabification. In fact, a cursory look at the dictionary indicates that Whitney did not always follow his own guidelines in this respect, as can be seen in Figure 1.



Figure 1: Entries for compounds and derived words from the *Century Dictionary*, p. 3448.

In this very small excerpt,⁴ the dictionary not only lists but also defines an adverb derived with *-ly* (*light-heartedly*), but also three derived nouns with *-ness*, one of which is labelled as rare and the other two of which are, to my mind, formally and semantically "obvious" or transparent (*lightfulness*, *light-headedness*, and *light-heartedness*, respectfully).

The *Century Dictionary* includes many affixes as headwords. The explanation of the affix is quite complete from the standpoint of morphological description: a thorough etymology is given, and the entry identifies the morpholexical class the affix attaches to, the morpholexical class of the newly formed word, and the expected meaning of the newly formed word. Several examples of derived words are listed, and some usage information is usually provided, as can be seen in the entry for *-less* (Figure 2).

⁴ Pages in the *Century Dictionary* are printed in three columns. The definition for *light-headed* is at the bottom of the second column on p. 3448 and the entry for *light-headedness* is at the top of the third column on the same page.

-less. [< ME. *-les, -leas*, < AS. *-lēds* = OS. *-lōs* = OFries. *-las* = D. *-los* = MLG. LG. *-los* = OHG. MHG. *-lōs*, G. *-los* = Icel. *-lauss* = Dan. Sw. *-lös* = Goth. *-laus*, a suffix meaning 'free from, without,' orig. an independent word, AS. *lēds*, etc., free, loose, governing the genitive, as in *dredma léas*, without joys, but becoming a mere suffix, as in *endeledás*, without end, endless, *scamledás*, without shame, shameless. See *lease*⁴, *loose*, a.] A common English suffix forming, from nouns, adjectives meaning 'without' (lacking, wanting, void of, destitute of) the thing or quality denoted by the noun: as, *childless*, without a child; *fatherless*, without a father; *endless*, without end; *hopeless*, without hope; *leafless*, without leaves; *shameless*, without shame; so *motherless*, *penniless*, *faithless*, *godless*, *graceless*, *lawless*, *witless*, *remediless*, *tasteless*, etc. It is applicable to any noun of which absence or destitution may be asserted. It is opposed to *-ful*, and is usually equivalent to the negative *un-* prefixed to an adjective in *-ful*, *-y1*, *-ing*², or *-ed*³, as *unhopeful*, *unwitty*, *unending*, *unmatched*, etc., equivalent to *hopeless*, *witless*, *endless*, *matchless*, etc. It is in some cases attached to a verb, or to a word rare as a noun while common as a verb, as in *ceaseless*, *doless*, *fadeless*, *relentless*, *repentless*, *shunless*, etc.

Figure 2: Entry for the suffix *-less* from the *Century Dictionary*.

Generally speaking, the definitions for affixes and combining forms in the *Century Dictionary* are the most complete of any general-purpose dictionary of English.

3.1.2 Webster's New International Dictionary (1909)

Noah Webster is the name most associated with American lexicography. The publishing line of dictionaries begun by Webster was continued by the Merriam brothers, who actively took part in the so-called first war of the dictionaries (Adams 2020: 160). Their 1864 edition of *An American Dictionary of the English Language, Royal Quarto Edition*, which incorporated new etymologies by the German scholar C. A. F. Mahn, set the standard for American dictionaries. A completely revised edition of that dictionary was published in 1909 under a new title; the one-volume dictionary had been expanded to 400,000 entries. With so many entries in a large, heavy book, efficient use of space became extremely important. The editors explain the space-saving measures they took in the Preface to the dictionary, and one is directly relevant to morphological structure:

The third device for saving space is the defining of many purely formal derivatives by references to their prefixes or suffixes. From a primary word or stem, derivatives can be formed, almost at will, by the addition of suffixes like *-hood*, *-ship*, *-ness*, *-ish*, or of such prefixes as *non-*, *anti-*, *contra-*, *infra-*, *super-*, *sub-*, *over-*, *un-*. Any word formed by means of such a general suffix or prefix, although occurring in literature in only one or two of the senses of the main word as modified by the suffix or prefix, might legitimately be used in nearly any other sense appropriate to that of the root word. Great care has been taken to show clearly the meaning of each prefix and suffix in the various combinations in which it may occur, and derivatives have been referred to the proper prefix or suffix, thus leading to an amount of information as to the actual or potential meanings of the derivative that could not possibly be given if each one received independent treatment. By this device the utility of the book has been distinctly increased, and the consulter has also been put in the way of acquiring a knowledge of the force of the formative parts of the English language that might otherwise be overlooked or neglected. (Preface to *Webster's New International Dictionary of the English Language*, p. 6)

The editors assume, in a somewhat cavalier fashion, that most derived words are semantically transparent, and that if affixes are properly defined, users should have no problem in deciphering the meaning of the word at hand. Furthermore, the editors point out that by forcing users to consult both the entry for the affix and that for the root word, users will benefit from becoming more familiar with English word-formation. The definitions of affixes, while quite good, are generally shorter than those given in the *Century Dictionary* because fewer examples are given, and the explanations are less complete. The entry for the suffix *-less* is given in Figure 3.

-less (-lēś). [AS. *-lēas*, also separately *lēas* free from, without, deceitful, false; akin to OS. *lōs* loose, false, D. *los* loose, *loos* false, sly, G. *los* loose, Icel. *lauss* loose, vacant, Goth. *laus* empty, vain, and also to E. *loose*, *lose*. See LOSE; cf. LOOSE, LEASING.] A privative adjective suffix, denoting: **a** With nouns, *without, destitute of, not having*; as in *witless*, *childless*, *fatherless*. **b** With verbs, *unable or without power* (to be acted on, or to act, as indicated by the verb); as in *resistless*, not to be resisted, *dauntless*, *quenchless*, *tireless*, *fadeless*, not fading, *ceaseless*.  The reference "See -LESS" is sometimes given as the only definition of a word ending in *-less*, if its meaning can readily be gathered from the definitions of the suffix and the root word.

Figure 3: Entry for the suffix *-less* from *Webster's New International Dictionary* (1909).

The dictionary does not contain run-on entries, a practice which Merriam-Webster adopts in its *Collegiate Dictionary* series.

3.1.3 Webster's New World Dictionary of the American Language (1953)

The period after World War II in the United States was one of great demand for desk-size dictionaries, as servicemen had returned from the war and many were enrolling in colleges and universities across the country, supported by education benefits provided by the federal government. As a result, several successful dictionaries competed at this time for what seemed to be an ever-growing market. Merriam-Webster published the sixth edition of its *Collegiate Dictionary* in 1949, Harper published the *American College Dictionary* (1947) edited by Clarence Barnhart and heavily influenced by studies on vocabulary and reading by Edward Thorndike, and the World Publishing Company headquartered in Cleveland, Ohio published its *Webster's New World Dictionary of the American Language* in 1953 under the direction of David B. Guralnik and Joseph H. Friend. This latter dictionary is particularly interesting with respect to the relationship between morphological structure and dictionary representation for several reasons. First, the editors expressly state that all words entered into the dictionary have full definitions: "Every word entered in this dictionary has been fully defined. Nothing has been left to supposition or guesswork" (*Webster's New World Dictionary of the American Language, Guide to the Use of the Dictionary*, p. ix). This dictionary, as opposed to both *Merriam-Webster's Collegiate Dictionary* series and the *American College Dictionary*, contains no run-on entries. The editors, recognizing that many derived words are easily understood from the meanings of their stems and affixes, state in the *Guide to the Use of the Dictionary* that they have omitted such derived words from the dictionary as a space-saving measure, in order to leave more space for words that are not semantically transparent. They justify their stance by stating that their definitions of prefixes and suffixes should allow users "to understand immediately the meanings of such derived words" (*Webster's New World Dictionary of the American Language, Guide to the Use of the Dictionary*, p. ix). In essence, they put into practice the guidelines that Whitney had developed for the *Century Dictionary* generations earlier. The definitions of affixes in this dictionary are, in my opinion, quite good in terms of semantics, but lacking in terms of structural information, as information on the morpholexical class of the stem and of the resulting new word is generally missing, as seen in the definition for *-less*, in Figure 4.

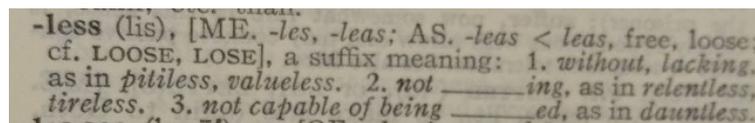


Figure 4. Entry for the suffix *-less*, *Webster's New World Dictionary of the American Language* (1953).

Moreover, the entry would have benefitted from additional examples such as those found in either of the dictionaries previously discussed, but presumably space considerations prevented the editors from including many more examples in this desk-size dictionary.

This dictionary also takes a different approach to the results of morphological conversion. In cases in which the word is not overly polysemous and the semantic relationship between the words belonging to different morpholexical categories is transparent, all categories of a word are defined under a single headword. For example, the word 'broadcast' is entered as a single headword and the various uses of the word—as a verb, adjective, noun, and adverb—are indicated for each sense (all uses share the same pronunciation). We can contrast that type of representation with that given in *Merriam-Webster's Collegiate Dictionary*, which contains three headwords for 'broadcast' and lists the use of the word in the derived category of adverb as a run-on entry to the definition of 'broadcast' as an adjective. As a result, *Webster's New World Dictionary of the American Language* has fewer headwords than the Merriam-Webster dictionary, although the coverage of word meaning in the two dictionaries is quite similar.

4 Discussion

A brief look at the relationship between morphological structure and dictionary representation in a few dictionaries of English yields a number of observations. First, lexicographers in the past understood dictionaries as reference works to be used in tasks of reading comprehension by native speakers, and as such make assumptions concerning how much information the dictionary's target audience can be expected to know. This assumption has led many dictionaries to either omit words considered to be semantically transparent by a majority of users or enter them into the dictionary without any definition at all, usually at the end of the entry corresponding to the derived word's stem. Compounds do not fare any better, as lexicographers as early as Johnson in the mid-18th century again justified their absence from dictionaries on the basis of semantic transparency. We note that in today's context of dictionary consultation, which generally takes place online and often on a small device like a telephone, the assumption that dictionaries are almost exclusively used in comprehension tasks is outdated. I would also suggest, rather impressionistically, that although dictionaries can certainly be targeted for use by native speakers, the amount of derivational morphological knowledge possessed by speakers may not be as homogeneous across the speech community as assumed. Interestingly, lexicographers never assumed such homogeneous knowledge of inflected forms, which are regularly provided and are seen as complying with the authoritative function of dictionaries.

Second, morphological conversion, which is certainly one of the most salient features of English word-formation, has been treated in several different ways by different lexicographers. Dictionaries which combine forms belonging to different morpholexical categories under a single headword (e.g. *Webster's New World Dictionary* and the *American*

Heritage[®] *Dictionary*) are better at displaying the semantic relationship across the forms, but the user must be attentive enough to see that different word classes have been brought together. At least for searches in a digital context, it is probably faster for users to have a drop-down menu at their disposal to choose from among the definitions of the word used as a noun, verb, or adjective, as opposed to scrolling down through a long entry. A larger number of headwords does not necessarily mean that the dictionary covers more meanings.

Third, the entries that dictionaries provide for affixes vary considerably from dictionary to dictionary. The two dictionaries from the 19th century actually provide quite complete descriptions of affixes that are, in fact, better from a linguistic standpoint than the descriptions provided by some current dictionaries. Perhaps the comparison is unfair because both of the 19th century dictionaries were much larger in size and scope than current desk-size dictionaries, but a simple look at the entry for *-less* in the *American Heritage*[®] *Dictionary* in Figure 5 shows that it is much less thorough than the definitions provided by either of the older dictionaries, and less informative than the comparably sized *Webster's New World Dictionary* (Figure 4).

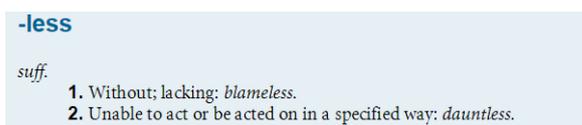


Figure 5. Entry for the suffix *-less* in the *American Heritage Dictionary* online (2020).

The entry for *-less* in *Merriam-Webster's Collegiate Dictionary* in Figure 6 is a bit more informative in that it indicates that *-less* forms adjectives, but it is still less so than the definition in the comparably sized *Webster's New World Dictionary* (Figure 4).

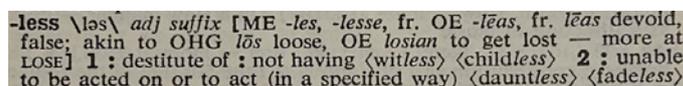


Figure 6. Entry for the suffix *-less* in *Merriam-Webster's Collegiate Dictionary* (2004).

Finally, the inclusion of a list of undefined words resulting from neoclassical compounding in the *Random House Dictionary* is interesting in that it attempts to deal with the impossible task of representing productivity in a static reference work. Dictionaries are not meant to be grammars and cannot be expected to explain how productive a particular combining form or affix is, but by providing a long list of words containing the combining form or affix users are given insight into the issue (not to mention guidance on pronunciation). This practice from the 1960s could easily be adapted to an online format, with users being able to access a list of forms from the landing page of the definition of the combining form or affix.

5 Conclusion

Dictionaries of English have long afforded affixes, combining forms and other bound morphemes headword status as a space-saving measure. Native speaker users, who have been assumed to know the derivational morphology of the language, are often expected to apply information present elsewhere in the dictionary to words the dictionary has listed, but not defined. This measure was designed to save space in print, but digital users are not necessarily aware of that; in the end, their dictionary look-up may turn out to be a frustrating experience, because the dictionary wants them to supply the definition but they see that—precisely—as the job of the dictionary. Some derived words, and many compounds, were expressly omitted from dictionaries in print because their meaning (and pronunciation) were all assumed to be transparent to speakers. These observations are not meant as criticisms because the dictionaries discussed herein were all published initially before digital consultation was possible. Nevertheless, now that consulting dictionaries online has become the norm as opposed to the exception, we should take the opportunity to reconsider some of the take-aways from our brief analysis with a view to improving our lexicographic products.

Treating ‘partial words’ which typically both have lexical meaning and play an important role in grammar as if they were independent words is more complicated than just providing information on meaning; in order to process the use of *-less* correctly, it is advisable to know what sort of stem it attaches to and it is essential to know the morpholexical category of the newly created word. This information could surely be added to online dictionary entries.

The practice of omitting words because speakers are assumed to be able to work out their meanings on the basis of their constituent parts developed because space in print was costly. To the extent that that cost factor is no longer applicable in a digital context, it needs to be readdressed. Much current work in corpus lexicography in English is concerned with incorporating collocations into dictionaries, but what about compounds? Are they not individual words worthy of a lexicographer’s attention?

The advantages or disadvantages of entries that combine morpholexical categories under a single headword as opposed to positing several independent headwords need to be studied empirically. My initial hypothesis is that online dictionaries that combine entries may be more difficult for users to navigate on a small device, but this needs to be tested with groups of native speakers. Much work has been done in testing how learners of English process the information in online dictionaries with a view to improving those dictionaries, but to my knowledge there has been much less enquiry into how to improve dictionaries for native speakers.

Finally, in a context in which general purpose dictionaries of English must compete with other online resources,

lexicographers should rethink the role of the native speaker monolingual dictionary as only a reference tool for text comprehension. Attempting to capture a combining form's productivity, as the *Random House Dictionary* did over fifty years ago, could be a starting point. Learners' lexicography has shown that dictionaries can play an important role in text production, and general-purpose dictionaries should at least consider how the information they already have at their disposal could improve text production by native speakers. As long ago as in 1909, the editors of *Webster's New International Dictionary* stated that by taking advantage of entries for affixes, they could help to inform users of the language's internal morphological structure that may be unknown to them. A noble goal indeed, and one that quality lexicographic projects should embrace.

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