

Segmentability and Transparency in English Latinate Prefixation

Abstract

English suffixes have been the object of sustained inquiry across most phonological schools and paradigms, *e.g.* Chomsky-Halle's SPE, Lexical Phonology, Distributed Phonology (see, *e.g.* Booij 2005; Scheer 2011; Chornogor 2007; Rakić 2007; Carr 1993, for overviews and a sample discussion). In the current article I assume a 'panchronic' view (*cf.* Pocięchina 2009) of selected issues implicated in English Latinate prefixation ({con-} and {ex-}) and I propose interpreting the apparent contrarities in their productivity and phonological behavior as a canonical case of segmentability (*cf.* Bynon [1977] 1996; Nagano 2007).

Keywords: English Latinate prefixes, segmentability, transparency, productivity.

1. Introduction: segmentability and back formation

The article focuses on English Latinate prefixation and argues that in the case of {con-} and {ex-} a process occurs called segmentability (reanalysis).¹ The following discussion addresses certain apparent paradoxes implicated in two Latinate prefixes: the fact that synchronic productivity of {con-} implies only forms with

1 The article forms a part of my larger Natural Phonology project on English prefixation, where the natural processes of voicing (in the case of {ex-}) and velar nasal POA (in the case of {con-}) are interpreted within the framework of Beats-and-Binding phonology. The reader is referred to these works for a more detailed description of the database and referential sources. The material for this discussion comes from a variety of dictionaries, in both paper and electronic form. Also used were online sources to check the pronunciation (*e.g.* Forvo) and for in-depth specialized vocabulary searches. As additional support, recordings of realizations by a native speaker were used for concatenations which did not appear in the dictionaries, for nonce words (*e.g.* *rhinegress*), and to corroborate basic dictionary versions. I also questioned other native speakers, asking them for their native intuitions and judgments on certain items.

{co-} and not with {con-/com-} (e.g. **con-production*). I also examine the difference in the phonological behavior of pairs such as, e.g. *exhilarate* and *ex-immigrant* (*ex-*): in *exhilarate*² there occurs an active, natural process of stress-driven lenition which consists in voicing the cluster and eliding the /h/. In, e.g. *ex-history*, the prefix cluster remains voiced and the /h/ remains, although the stress and phonological environments are the same as in *exhilarate*. Also, in, e.g. *exhortative*, the /h/ is elided, but in *cohortative* the /h/ remains.

There is a multitude of generative analyses that propose that *ex-* in, e.g. *ex-husband*, and *co-* in, e.g. *co-worker*, are separate phonological words,³ separate phases or separate cycles, while *con-* in, e.g. *concrete* is merged at an earlier stage and forms a part of the same phonological word (e.g. Scheer 2011: 6.2.2–6.5, for a review).⁴ Usually that is where the phonological explanations end, and the reader is not offered any explanations as to **why** *co-* in, e.g. *co-producer*, is a separate phonological word or **why** there is a phase boundary after *ex-* in *ex-president* but not in *express*.

In accordance with Natural Phonology tenets (e.g. Donegan & Stampe 2009; Dziubalska-Kołodziej (ed.) 2001), I assume the priority of explanations of real processes through which the mind works. One of the landmarks of Natural Phonology is the claim that language is “a natural reflection of the needs, capacities, and world of its users” (Donegan & Stampe 1979: 127), rather than a conventional institution. Stampe assumes that the underlying segments “are mental representations of sounds which are, at least in principle, pronounceable” (Stampe 1979: 35). Thus it follows that the notion of explanatory adequacy in phonology cannot be theory-internal but must be based on phonetic facts and on the nature of human communication: “if a given utterance is naturally pronounceable as the result of a certain intention, then that intention is a natural perception of the utterance” (Donegan & Stampe 1979: 163). I propose that the process, which has been discussed in linguistic research as segmentability, could serve as a natural explanation of the differences between apparent synchronic productivity of {con-} and the lack thereof, as well as of some paradoxes encountered in the morphology of the {ex-} prefix. In other words, since NP distinguishes between prototypical phonological processes and morphological processes (rules), then phonetic assimilation or the lack of the latter proves that they are morphemes.

Such a holistic and semiotic approach to linguistic phenomena is not unique to Natural Phonology, as can be seen, for example, in cognitive linguistic analyses or in William Diver’s *Phonology as a Human*

2 From *ex* ‘thoroughly’ and Lat. *hilarare* ‘to make cheerful’ vs. Lat. *hilarus* ‘cheerful.’ Source: <http://www.etymonline.com/index.php?term=exhilarate>. The basic form is, of course, the one without suffixation where the velar fricative is pronounced, hence there is ground to posit the elision in {ex-} derivatives.

3 For example, Booij, when defining a phonological word, mentioned that “by means of the notion of a phonological word we can express the fact that there is not always a one-to-one correspondence between syntactic words and their phonological correlates. In some languages, articles, clitics, and the like are not independent phonological words, but fuse phonologically with a preceding or a following word. Classic examples are Latin conjunctions *-que* ‘and’ and *-ve* ‘or’, which fuse with the preceding word. On the other hand, a phonological word may be smaller than a syntactic word. For example, the constituents of Dutch compounds and also certain affixes [...] have to be considered independent phonological words. This is clear from their syllabification patterns: the internal morphological boundaries of compounds always coincide with a syllable boundary, even when this would violate the Maximal Onset principle” (1985: 149). Booij (1985) provides an analysis of prefixation in German and Dutch by using the notion of a phonological word. By examining a wide selection of phonological evidence he concludes that the Dutch and German prefixes are non-cohering, which, however, does not imply that all prefixes have the status of phonological words by themselves. For prefixes such as *be-* and *ge-*, Booij proposes the status of an appendix to a phonological word (cf. Booij 1985: 155). A more detailed discussion on the cohering/non-cohering status is provided in Haładewicz-Grzelak (submitted). See also Scheer 2011 for a critique of the notion of a phonological word.

4 For example, “the class 2 affix *un-* but not the class 1 affix *in-* triggers the spell out of the root” (Scheer 2011: 251).

Behavior paradigm (Tobin (ed.) 2009). In general, most non-generative frameworks espouse the need to put linguistic behavior into the wider context of human cognitive factors. Along these lines, the discussion herein can also be inscribed into wider semiotic work on English prefixation along the concept of semantic integrality (SI) as elaborated by Tobin (*e.g.* 2011), in which the scholar proposes SI as a universal perceptual or cognitive semiotic feature in his explanation of various instances of English irregular plurals (Even-Simkin & Tobin 2011). Still, the analysis reported below assumes that the underlying set of tenets as elaborated within Natural Phonology is useful in fleshing out the nature of the morphonology of English prefixation.

Apart from data from English, the discussion also uses examples from Spanish. The reason for such a move is that these two languages, although they stand in opposition with respect to traditional taxonomies (*e.g.* stress-based vs. syllable-based), show a considerable portion of Latinate lexica in their native vocabularies, hence comparing various divergent phonetic and phonological outcomes could be of analytical interest.

The process of synchronic segmentation is concisely explained in Bynon ([1977] 1996), in her synopsis of the history of the English case system and the rise of the {-(-e)s} plural marker as a case for the Neogrammarian notion of analogy. Bynon observes that the phonological changes that took place in ME (affecting word-final unstressed vowels and final nasals) resulted in reducing the six separate forms of the OE noun paradigm to two phonologically distinct forms, *e.g.* in the case of the OE *stān* ‘stone’ to the common case *stone* and the gen. sing. and plural common *stones* (with the subsequent loss of *-e*). These processes led to the rise of a direct representation of the category of plural in the morphology (Bynon [1977] 1996: 32f). This, in turn, as Bynon further points out, could have been a result of the segmentability of plurals such as *stones* into *stone* and *-s*. The entire system of nouns was subsequently reshaped after the paradigm of this class of nouns, *i.e.* the relationship which Bynon proposes in the form of the equation “*stone* : *stones* = *wound* : *x*, where *x* is *wounds* rather than *wound*, the form which would be expected as the result of regular sound change” ([1977] 1996: 33f).⁵

The example as adduced above points to two elementary requirements for the analogical change to take place. First, it assumes “the functional identity in respect of some particular grammatical or semantic category (plural, agent noun, dative, etc.) of markers which are formally quite different and secondly it presupposes that the structure of the form which acts as a model be morphologically transparent for the native speaker” (Bynon [1977] 1996: 35). In what follows, I will argue for the transparent status of some Latinate prefixes which created the environment for a semantic reanalysis.⁶

5 Another telling example comes from Saussure’s *Écrits* ([2002] 2006: 125f), in which the scholar observes that linguistic analysis does not have to rely on etymology but on the “primitive link” between the forms, for which he gives two examples of plural formation. In the Germanic era, the plural form marker was *ō*, *e.g.* *kalbiz* – pl. *kalbizō*; and in the German era – *ir* : *kalb* – pl. *kalbir*. Furthermore, Saussure points out that because of the “phonetic necessity which happened to remove the singular *-iz* while preserving the plural, protected by the following vowel, and since language only ever judges on the basis of forms, it is inevitable that it divides *kalb/ir* and takes *ir* as the plural sign, even if originally it had nothing specifically plural about it. This is historically false, and yet it is true in terms of the morphology of the time in question. The life of language is riddled with such misunderstandings. Remember **that everything contained in the feeling that speaking subjects have for their language is a real phenomenon**” (Saussure [2002] 2006: 126, emphasis mine – M. H.-G.).

6 Zbierska-Sawala assumes a unidirectional inferential chain as far as productivity, transparency and analyzability are concerned, “so that in order to be productive a pattern must be analyzable, but not vice versa. Analyzability in turn is a cognitive function of transparency, and it is only the transparency of the pattern that is available for analysis in a diachronic study” (1993: 6). See also Kastovsky 1986, 1989.

A mention could also be made of a related process which is called “back formation” (BF). As Nagano (2007) points out, BF can be understood as a type of conversion supplemented by a deletion process. By examining what system underlies BF in English, Nagano observes that in its canonical form BF is understood as a process which relies on a reanalysis of the morphological structure of an input word; for example, “*beggar*_N is originally a monomorphemic word, but is reanalyzed as having the structure [[begg]-ar], based on which BF takes place and brings about *beg*_V. Similarly, the original N-N compound structure of *baby-sitter*_N is reanalyzed as [[[baby][sit]]er] or as [[babysit]er], which provides the ground for BF” (2007: 34). Nagano, basing on data such as, e.g. <attrition_N, attrit_V> or <emoticon_N, emot_V>, postulates that back formation is an active synchronic process, thus showing that the revised version of Marchand’s (1960, 1969) zero-derivation approach to BF (on which the process consists of clipping, conversion, a rule-based word-formation process and a non-rule-based speech-level process) can account, e.g. for the anti-iconicity of these forms of their semantic diversity (Nagano 2007: 68). Although back formation in English as such does not refer to prefixation, it is crucial to observe that the process relies on a reanalysis of the base form, which supports the present perspective of seeking common denominators for (mor)phonological phenomena.

Finally, it needs to be emphasized that the process of segmentability is not restricted to a single linguistic layer (morphology); for example, Kuryłowicz (1972: 181) stresses the importance of semiotic factors (deictic) in language change based on examples of revaluation (semantic change) in tense systems. He points out that the past tense (< perfect) in *-l* (ъ) in Polish, Russian, etc., originally denoted the predicate of a nominal sentence as the IE verbal adj. *in -lo-*. Along these lines, “Analytical’ pret. like *I have written, Fr.fai écrit, je suis venu, G ich habe geschrieben, ich bin gekommen* have the etymological value PRES. STATE or PRES. RESULT (of a former action)” (Kuryłowicz 1972: 181).

The following paper is structured as follows. In the next section I will sketch out the diachronic background for the current analysis. The third section discusses segmentability in the Latinate {con-}, positing {co-} as a reanalyzed form. In the following section I propose two levels of cognitive existence for the prefix {ex-}, both of which have the same phonetic form. The synchronically active {ex-}, as in *ex-husband*, is posited to be structurally parallel to the synchronically active {co-} and to arise similarly through segmentability. Finally, conclusions round off the argument.

2. English Latinate prefixes

English acquired most of its Latinate lexemes as far back as the Norman Conquest (Middle English period, ca. 1100), and nowadays they can be considered native. As Wefna (1978: 104) observes, new acquisitions were effectuated mainly via Northern French (also called Norman French), although direct Latin loans could have occurred as well, as most scholars (e.g. Millward & Hayes [1996] 2012) point out. Whether these lexemes were borrowed as compounds, *i.e.* whether the original meaning of the prefix was recoverable for Middle English speakers (Old French speakers), is a matter of debate that is beyond the thematic scope of the present research. Some of the prefixes were definitely still active, as etymological misspellings indicate.⁷ On the other hand, the same misspellings also imply that some prefixes might

7 For example, Algeo observes that *h* could have sometimes been inserted in English words of French origin, where it was not etymological – “for instance, *habundance* (mistakenly regarded as coming from *habere* ‘to have’) and *abominable* (supposed

have lost their original semantic load, which in practice means that most of the lexemes borrowed had already been assimilated – without a semantically active morpheme boundary.⁸ For example, the texts *De Marco Tullio Cicerōne* or *De aetāte aurēā* (Jurewicz *et al.* 2004: 59, 68–69) already feature *impositus* ‘imposed,’ *communis* ‘common’ or *incredibilis, imminens* ‘imminent,’ which in practical terms means that the assimilative paradigm was operative by the time of Vulgar Latin, far before Old French. Whatever the status of Latinate compounds in ME, the semantic content of a prefix is not synchronically recoverable in most of the original Latin compounds; for example, *ex* ‘out’ and *sistere* ‘stand’ yields ‘stand out,’ which is obviously not coterminous with ‘exists.’ Similarly, the Latin *com* ‘together’ and *pellere* ‘to drive’ are currently understood not as ‘to drive together’ but as ‘to compel’ – an individual vocabulary item (data from Flemons 1991: 21).⁹

3. Discussion: the {co-} prefix

As far as taxonomical insights are concerned, most reference sources that have been accessed give three allomorphs, *i.e.* {con-}, {com-} and {co-}, without indicating which are the assimilated variants. Sporadically, {com-} is preferred, *e.g.* “*com*: with, together. [*com-* before b, p, m; *cor-* before r; *col-* before l; *co-* before *h, gn* and usually before vowels; *con-* before all other consonants]. Examples: *colloquium* (a speaking together) *corrode* (gnaw thoroughly) *combine* (put two things together).”¹⁰ Sometimes, however, the sources give only one allomorph, namely {co-}, thus disregarding {con-} and {com-} (*e.g.* Prčić 1993, as cited in Rakić 2007: 51f). In this case the lexical examples as cited above comprise only the hyphenated type, as in ‘co-author.’ The relevant entry in Partridge’s etymological dictionary stipulates that {co-} is an allomorph preceding vowels and glides:

co- the form taken by *com-* (c/f of *cum*) before a vowel and often before *h* (*cohabit*) and *w* (*co-worker*). *coi-* in *coil* (q.v. in Dict), is for *col-*, q.v. at *cum-*.*col-*, with, etc. See *cum-*: *col-* is an assimilated

to be from Latin *ab* plus *homine*, explained as ‘away from humanity, hence bestial’). When Shakespeare’s pedant Holofernes by implication recommended this latter misspelling and the consequent mispronunciation with [h] in *Love’s Labour’s Lost* (“This is abominable, which he would call abbotinable”), he was in very good company, at least as far as the writing of the word is concerned, for the error had been current since Middle English times” (2010: 143).

- 8 An example for this strategy also comes from Algeo: “*Comptroller* is a pseudo-learned respelling of *controller*, taken by English from Old French. The fancy spelling is doubtless due to an erroneous association with French *compte* ‘count.’ The word has fairly recently acquired a new pronunciation based on the misspelling. *Receipt* and *indict*, both taken from Anglo-French, and *victual*, from Old French, have been similarly remodeled to give them a Latin look” (2010: 143). Also, Horobin & Smith (2002: 9, 22) testified to the existence of words such as *conclusion*, *temptation experience*, *complaynt* in *The Canterbury Tales*. Corrie (2006: 103), when discussing ME manuscripts, gives an example of a poem titled *The Prick of Conscience* which was written in English and in which words such as *unconna[n]d* or *conscience* or *confort* occur. Finally, Weřna (1978: 110), when discussing the vowel quality of French loanwords in (E)ME, gives, among others, examples such as *conçēve* ‘conceive,’ *coūntreřēte* ‘counterfeit,’ *incrēse* ‘increase,’ *decrēse* ‘decrease’ or *complēte* ‘complete.’
- 9 Algeo calls this a process of shifting a concrete meaning to an abstract one. He additionally observes that in OE the compound to *understand* “must have meant ‘to stand among,’ that is, ‘close to’— *under* presumably having had the meaning ‘among,’ as do its German and Latin cognates *unter* and *inter*. But this literal concrete meaning gave way to the abstract sense the word has today. Parallel shifts from concrete to abstract in words meaning ‘understand’ can be seen in German *verstehen* (‘to stand before’), Greek *epistamai* (‘I stand upon’), Latin *comprehendere* (‘to take hold of’)” (Algeo 2010: 209).
- 10 From <http://www.class.uidaho.edu/luschnig/EWO/24.htm> [ED August 2010] (notation as in the original, XXX).

form of *com-* before *l.com-*, with, etc. See *cum-*, of which it constitutes the basic *c/f* in *v* cpds. *co-* and *con-*, with, etc. The form taken by *com-* before any consonant except *b, h, l, m, p, r, w*, and often (as in *connect*) before *n*. See *cum*” (Partridge [1958] 2006: 3874, notation as in the original – M. H.-G.).

Taking into account that the data from Partridge also include items such as *co-worker*, we cannot state that he is describing only the original Latin distribution. If the description refers to the synchronic state, then it is definitely not the case that {*co-*} is an allomorph used only before vowels and glides:

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|--------|--------------------|----|----------------------|
| (1) a. | <i>co-variance</i> | d. | <i>co-dependency</i> |
| b. | <i>co-producer</i> | e. | <i>co-founder</i> |
| c. | <i>co-manager</i> | f. | <i>co-author</i> |

To compare, see also, *e.g.* a similar strategy for word formation in Polish with *współ* ‘co’:

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|--------|-----------------------|----|-----------------------|
| (2) a. | <i>współautor</i> | c. | <i>współproducent</i> |
| b. | <i>współzależność</i> | d. | <i>współpracownik</i> |

and with Spanish, although it must be admitted that ‘*co-*’ in Spanish is not used as widely as in English: (Sp.) *coautor, co-productor*.

We, thus, have an apparent paradox: on the one hand, the prefix {*con-*} is no longer semantically extractable, not only from words of the type *collate*, but also in cases where it persists orthographically, *e.g. nomen omen, compound*. In other words, the speakers of contemporary English do not perform an “online” concatenation of (Lat.) {*com-*} + {*latus*}.¹¹

Contemporary online sources listing English prefixes sometimes do not mention {*con-/com-*} at all.¹² On the other hand, the prefix {*co-*}, as in *coherence*, is definitely synchronically active (*cf.* the list in (2)). My scenario for the synchronic activities of {*co-*} is as follows: using the standard structural methodology of Claude Lévi-Strauss, it could be proposed that what happens here is a sort of “folk reinterpretation,” or, in linguistic terminology, a reanalysis or segmentability based on prior transparency of the form. In brief, some of the plethora of original meanings of {*con-*} were at some point taken out of context as a folk “common core”; {*co-*} is undeniably a common immutable surface component of all Latinate vocabulary diachronically involving {*con-*}, which was assimilated in most contexts in diachronic development, *e.g.*:

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|--------|---------------------------|----|-------------------------|
| (3) a. | <u><i>collaborate</i></u> | c. | <u><i>coherence</i></u> |
| b. | <u><i>compliance</i></u> | d. | <u><i>corrosive</i></u> |

This secondary, newly created morpheme {*co-*} then started to be grafted onto words in new contexts.¹³ A crucial stipulation here is that in order for the segmentability to have taken place (*cf.* Bynon above), the original prefix must no longer have been semantically active (it had to be transparent). In other words, the semantic content of {*con-(co-)*} in, *e.g. corrosive, coherence* or *condemn*, is no longer

11 Data from http://www.etymonline.com/index.php?allowed_in_frame=0&search=collate&searchmode=none

12 For example <http://dictionary.reference.com/browse/con->

13 Without making diachronic claims at this stage of the analysis as to when this could have taken place.

extractable.¹⁴ The process in question can also be called “semantic grafting,” and is also found in a given culture (for example, some aspects of the persona of the Bishop of Myra were appropriated into commercial contexts by a producer of fizzy drinks and are now extremely productive).¹⁵ We can thus assume that, synchronically, the Latinate {con-} is no longer active as a morpheme and that this created a classic prerequisite for segmentability, *i.e.* that the structure of the form that acts as a model must be morphologically transparent. The “folk” etymology therefore “extracted” such a “transparent” common core for the whole prefixed Latinate lexicon as {co-}, with the narrow meaning of ‘together with.’¹⁶

There are also phonological correlates to the peculiar status of some English prefixes, such as the previously analyzed {con-}. In brief, if the prefix and the root communicate, then the nasal and the plosive obey morpheme-internal restrictions. There are two criteria along which this communication can be tested in the case of prefixes ending in a nasal: (i) gemination and (ii) the ability to undergo “velar place of articulation assimilation” (POA assimilation henceforth) (for more detailed motivation of this criterion, see Haładewicz-Grzelak 2014a, 2014b). In what follows, I will briefly address each of these criteria.

As Sobkowiak points out, {mis-} and {dis-}, just like {un-}, are a source of geminates in English. “Like the case with geminate plosives, the articulation of geminate nonplosives involves the prolongation of the sound” (Sobkowiak 1996: 213). Some examples from the exhaustive list given in Sobkowiak (1996: 213f) are *misspell*, *disservice* or *dissent*. These geminates pattern with other prefixal geminates, suffixal gemination or gemination in compounds, *e.g.* *ex-service*, *sex-starved*, *spaceshuttle*, *barrenness*, *unnatural*, *unnecessary*, *oneness*. However, in English there is no gemination in Latinate compounds with {con-}, *e.g.* *connote* or *connive* are realized with the simplex nasal. It should also be noted that the <c> (/s/) in *except* is not pronounced, and there is no gemination of /s/ here, either.¹⁷ The gemination, like the lack of voicing, can be assumed to be a criterion related to blockage created by the presence of a morphological boundary in a given lexeme.

14 For example, according to *etymology online* (http://www.etymonline.com/index.php?allowed_in_frame=0&search=corrode&searchmode=none), ‘to corrode’ can be traced directly to the “Latin *corrodere* ‘to gnaw to bits, wear away,’ from *com-*, intensive prefix [...] + *rodere* ‘to gnaw.’” Etymology points to another crucial fact: the prefix not only meant ‘together with’ but also ‘in combination’ and could also be used with intensive meaning. The re-analysis, taking place, as I posit, in contemporary English, uses only one specific area out of the plethora of original Latin semantic components: ‘together with.’

15 *Hamburger* is an example from the catering register. Etymologically, the word *hamburger* is derived from the word *Hamburg* (*e.g.* <http://www.etymonline.com/index.php?term=hamburger>): “1610s, ‘native of Hamburg,’ the meat product so-called from 1884, hamburg steak, named for the German city of Hamburg, though no certain connection has ever been put forth.” As this entry goes on to point out, in the late 1930s the word was ‘reanalyzed’ as consisting of different components: *ham* and *burger*. Naturally, this new *burger* entity immediately became a generative rotor for other tasty derivatives, such as *beefburger* or *Double Big Cheeseburger*, *etc.*

16 At this point in the research I cannot provide an answer as to when the process started exactly. Assuming, however, that the assimilations in the Latinate vocabulary occurred by Classical Latin, we can disregard the question of whether the loans came into English through Norman French or directly from Latin: Latin phonology had effectuated the assimilations long before the cognates/original words entered the English lexicon. For example, in his list of morphemes in Chaucer’s English, Fisiak states the following: “*co-* modified nouns and adjectives conveying the meaning ‘together’ as in *co-empcioun* ‘coemption’ and *co-eterne* ‘coeternal.’ The prefix was non combinative and unproductive” (1965: 60).

17 To compare, in the Spanish realization of the word *excepción*, all the fricatives are retained: /e(k)s θep’θjon/. The Classical Latin spelling (Jurewicz *et al.* 2004: 58, text *de Marco Tullio Cicerone*) retains the orthographic forms as, *e.g.* *exsillio* ‘exile.’

The lack of gemination in, e.g. *connote*, is not that self-evident. Let us briefly inspect the relevant contexts for inter-morphemic nasal clusters as compared with, e.g. Spanish, which is another language where the Latinate lexica are abundant. The <-mn-> morpheme contact with respect to {con-} is indeed resolved by total assimilation in English, and this happens regardless of stress placement, e.g. *commotion* /kə'məʊʃən/, *commode* /kə'məʊd/ or *commute* /kə'mju:t/. In Spanish, however, degemination in such strings is not allowed: the realization is according to Spanish pronouncing dictionaries, with an assimilated but not elided formative final nasal, e.g. (Sp.) *commoción* [koŋmo'θjon] E 'commotion,' (Sp.) *commutable* [koŋmu'taβle] E 'commutable.' Moreover, Spanish orthography clearly reflects the fact that the morpheme boundary is more salient and that the two nasals are still perceived as separate entities. The /-nn-/ morpheme contact in English follows the pattern for /nm-/, i.e. it results in total assimilation and degemination: *connect* /kə'nekt/, *connubial* /kə'nju:biəl/. In such cases, total assimilation does not occur in Spanish, as was the case with <-nm->: *convivencia* /ko'ni'βenθja/, *convubio* /ko'n'nuβjo/. On the other hand, word-medial /-mn-/ clusters involving {som-} tend to be preserved in English, also across morpheme boundaries: *somnolent* /'sɒmnələnt/, *somnambulism* /sɒ'mnæm-/. In Spanish, such clusters are either obligatorily assimilated (e.g. *sonambulismo*) or optionally assimilated: *somnifero* /so(m)'nifero/.

The second criterion of the morphonological status as mentioned above was the ability to undergo velar POA assimilation. An exhaustive vocabulary check as well as recordings of native speaker pronunciation of nonce words revealed that the most susceptible element to velar POA assimilation (further conditioned by the presence of stress) is the prefix {con-}, e.g. *Congress*, *concave*, where in the tonic syllable the nasal assimilates to the velar POA of the following consonant. In the remaining prefixes, in particular {in-}, assimilation is either optional (and rarely seen) or illicit, as in, e.g. certain concatenations in the database of recordings in the native speaker data that the author of this article collected, e.g. *rhinegress* or *Mr Phongraff*.¹⁸

Finally, it should be pointed out that the phonetic forms of <co>, as in *collateral* /kə'lætərəl/, *collapse* or *corrosive*, are different from those as in, e.g. *co-worker*, *coercive*, *co-producer* or *co-host*. In the former there is a lax vowel, while in the latter there is a tense one. The contrast is best exemplified by the pair *collapse* vs. a hypothetical lexeme *co-lapsus linguae* (which would denote a slip of the tongue occurring with vs. particular one): /kə'læps/ vs. /kou'læpsəs 'lɪŋwɪ/.¹⁹ To understand why this should be the case it is enough to recall that in English phonology only tense vowels can occur in word-final open stressed syllables. Also, only tense vowels can occur freely at the end of one-syllable words. The contrast in the tenseness of <co->, as in *collateral* and *co-Lateran accords*, would only be one more criterion for positing that {co-} does not communicate with the root and is processed as word-final.

4. Discussion: the {ex-} prefix

In this section, while using insights from the previous section, I will attempt to solve an apparent paradox in pairs of the type: *exhilarate* vs. *ex-history*, *exhilarate* and *ex-immigrant* (*ex-*). As was pointed out in the introduction, in *exhilarate* we can observe a process of stress-driven lenition. In the English

18 See also the form as, e.g. E *circumnavigate*, where both nasals are pronounced.

19 The Oxford online dictionary gives a different pronunciation version of *lapsus linguae* – as /,læpsəs'lɪŋwɪ/ (<http://www.oxforddictionaries.com/definition/english/lapsus-linguae>).

Latinate vocabulary, the cluster in post-stress positions becomes voiced and the /h/ is elided. In, e.g. *ex-history*, the prefix cluster remains voiced and the /h/ remains, although the stress and phonological environments are the same as in *exhilarate*. In Haładewicz-Grzelak (submitted), I propose to account for the phonological differences within the paradigm of Beats-and-Binding phonology with the help of an extension to the theory in terms of stigmatized bindings. This extension of the original research contextualizes such phonological facts within a wider background.

In words such as *exhilarate* there is a voicing process which is triggered morpheme-internally in the presence of a /ks/ cluster, e.g. *auxiliary*, while in *ex-history*, although the phonological environment and stress pattern are practically the same, the two morphemes do not communicate. To recall, generative scholars usually propose {ex-} in, e.g. *ex-Hitlerian*, as being a separate phonological word and they note the lack of such status in *express*.

The apparent paradox of the productivity of the prefix and the synchronic monomorphemic status of, e.g. *expel*, could again be explained by applying the traditional concept of segmentability. I propose that a natural process similar to that in the pair {con-}/{co-} operates in the case of {ex-} as well. Synchronically, {ex-} with its whole original array of meanings is no longer productive, e.g. *existence*, just like *symbol* or *impel*, is no longer decomposed into two separate morphemes.²⁰ The Latinate {ex-} seems thus to have largely severed its semantic ties with the original prefixes. As a result, a sort of second loop of morphological activity has come into being, which we have seen in diachronic and synchronic perspective studies dealing with segmentability, and thus the synchronic productivity of {ex-} is in a sense derived.²¹ This second stage of the morphological trajectory is hyphenated in orthography (there is no hyphenation in, e.g. *misspell*).²²

The ensuing semantically-derived morpheme is structurally parallel with {co-} and might be denoted analytically as {ex-}₂. It also seems to have retained only one narrowly defined meaning ('former') from the plethora of original senses associated with the Latin {ex-}.²³ The different morphological status (different structural positions) of the doublets ({co-} and {ex-}₂ vs. {con-} and {ex-}₁) is corroborated by a total lack of assimilation in the former. This lack was, of course, not detectable with the {co-} prefix since the allomorph lacks a word-final consonant to establish whether there is assimilation. In the case of {ex-}, however, both the dictionary entries and the recordings of native speakers indicate unanimously that there is no voice assimilation in the case of the hyphenated version of {ex-} in any phonotactic environment (e.g. there is no voicing of the /ks/ cluster in *ex-immigrant*).

Furthermore, it is possible to disentangle semantic concatenations with {ex-} and {co-}, even if they precede the "original" prefixes, e.g. *an ex-exit* as a 'former exit,' *co-conversant* or *co-concubine* as referring to one of two concubines of the same partner, or something like *an ex-exhaust pipe* as referring to an installation of modern art (e.g. something that used to be an exhaust pipe and is now

20 As pointed out in, e.g. Denning *et al.*, concatenations with {ex-}, just as {in-} and {con-}, diachronically involved considerable assimilatory elisions, e.g. *ex + vade = evade*, *ex + mitt + ing = emitting* (Denning *et al.* [1995] 2007: 121).

21 For example, the process of such synchronic (fake) "segmentation" is the rotor for the pun: "What's Hercules' wife called? Fraucules!"

22 The hyphen might not, however, be necessary in technical words, e.g. *exfoliate*, *exfiltration*, *exsanguinate* (cf. Cummings 1992: 182). The same reference for specifications of assimilation patterns and holdouts with *ex*.

23 For example, 'out of,' 'completely,' 'from,' 'upwards,' 'deprive of,' 'without,' 'thoroughly,' and also 'former' (http://www.etymonline.com/index.php?allowed_in_frame=0&search=ex&searchmode=none).

a pivot for an artistic vision). This procedure is not possible for, e.g. {mis-} or {dis-}: in *mis-misspelling*, *dis-disinformation* the hyphenated prefix does not create any new meaning and even seems to obscure the original one. Also, contemporary prefixation with {co-} can also attach to Latinate forms with {ex-}, as, e.g. *coexecutor* or *coextend*.²⁴

Hence, {ex-}, meaning ‘former,’ is still a productive prefix in the contemporary English lexicon and is denoted by writing the prefix with a hyphen, e.g. *ex-girlfriend*. The generative potential of the new, hyphenated avatar of {ex-} can be seen in its use as an independent word, e.g. *Here comes my ex!*, implying the speaker’s former partner. Interestingly, some of the sources which provide lists of English prefixes²⁵ exemplify {ex-} entirely on vocabulary where the suffix is written separately with a hyphen. This could confirm the view that Latinate lexemes orthographically represented as one word (as such, e.g. *expire*) and where the particular semantic contribution of {ex-} can no longer be extracted might not be perceived as consisting of a prefix {ex-} plus a root at all.

5. Conclusions

Zbierska-Sawala (1993) argued for the vital importance of the cognitive perspective in diachronic analysis of prefixation. Inferences regarding the form/meaning, which the scholar concisely captures, are also valid for the present discussion, hence I would like to cite a relevant passage as a conclusion for the present discussion:

It should follow from the preceding discussion that a theory of word formation has to look for a mechanism by which morphological patterns and the corresponding functional (syntactic or semantic) changes are related. These mechanisms should be capable of accounting for various types of form/meaning asymmetry evident in word-formation in the form of co-functional and multifunctional formatives/operations and cumulative or extended exponence. Preferably, such mechanisms should be non-arbitrary, i.e. in addition to mapping the functions into relevant operations, they should capture the cognitive relationship between them. (Zbierska-Sawala 1993: 7)

This discussion was meant to be a contribution to the debate over the visibility of morphological boundaries on phonological rules. It could also be important for the debate concerning the historical development of the phonological structure of morphemes that have different origins. The research perspective, while framed as Natural Phonology due to the fact that this article is part of a larger NP project on English prefixation, could also be considered as support for a typology as a panchronic perspective which “as a universal research method removes contrarities between synchrony and diachrony” (Kotin 2012: 63).²⁶ This analysis shows that the contemporary status of the English prefixes {co-} and {ex-} results

24 {dis-} and {mis-} behave just like {co-}: there is no communication at all between the morphemes they concatenate with (compare: *irrelevant* vs. *disrespected*). With the reservation that {mis-} is not really a Latinate prefix, according to Burney ([1992] 2002); it is an Old English one that merged with Latinate {mes-}.

25 For example <http://www.learnenglish.de/grammar/prefixtext.htm>

26 See also the motivation in Pocietchina: “Типологическое описание в известной степени амбивалентно по отношению к строго разделяемым в структурном языкознании понятиям синхронии и диахронии. Принятый в данной работе панхронический подход обоснован с точки зрения объекта исследования — условий появления и особенностей функционирования грамматических вариантов именных основ в славянских языках” (2009: 10).

from the natural morphological process of segmentability, through which particular forms first become semantically transparent and then serve as a basis for new generative activity.

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