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PRESENT-DAY ENGLISH IRREGULAR VERBS REVISITED

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ABSTRACT

All the classifications of present-day English irregular verbs to be found in the most famous grammars basically do not differ considerably and, especially, consider them to be mere aggregates of irregularities.

This paper, on the other hand, aims to suggest a different classification by applying the basic tenets of Natural Morphology. This allows the author to divide irregular verbs into microclasses according to two main parameters: (i) the number of bases and (ii) rhymes. The latter is especially important, since empirical evidence demonstrates that the basic relationship existing among paradigms and families of paradigms is the one based on morphotactic similarity, whereas semantic similarities are absolutely peripheral. The two parameters are eventually exploited to provide a further scale, i.e. that of morphotactic transparency and of base uniformity, which is fundamental to organise a hierarchy of suppletion.

KEYWORDS: Natural Morphology; irregular verbs; English.

1. Introduction

The aim of this paper is to suggest a new classification of English irregular[1] verbs in the forms occurring in the contemporary British standard variety.[2] This classification differs somewhat from the previous ones (summarised in Section 2), which do not seem to particularly differ from one another, since they are based on the common assumption that these verbal forms are irregularities *tout court* and that there are no underlying patterns.

[1] "Irregular" is used here as a cover term, since a distinction between "strong" and the various types of irregularities would require a detailed analysis of a large number of phonological and morphological processes which is beyond the scope of this contribution.

[2] Of course the same could be done equally well for dialectal types of speech, which basically differ from the standard one as far as the lexical distribution of lexical items is concerned, whereas the structural features of the standard variety are generally represented – i.e. the same form for the infinitive, the past tense and the past participle, two forms (with three possible distributions: infinitive = past tense, infinitive = past participle and, finally, past tense = past participle) and three different forms.

In what follows I point out, instead, that there are well-defined patterns which link the different paradigm types.

The theoretical model applied is that of Natural Morphology (= NM), which will help me to demonstrate that irregularities can be classified and that, rather than making up an amorphous aggregate of lexical representations linked by any type of similarity, they make up a system with its inner logic. It will also be argued that, in static morphology, the basic relationship existing among paradigms and families (and not classes) of paradigms is the one based on morphotactic similarity, the rhyme being the most pertinent phonological feature, whereas semantic similarities are peripheral. Another important scale which I will use to classify present-day English irregular verbs is the one based on the number of bases.

2. Previous classifications

Speaking of present-day English irregular verbs means speaking of the past tense (= p.t.) and past participle (= p.p.) only, all the other forms being almost totally regular. Whereas the present participle/gerund is regular throughout, in the simple present tense there are still forms which are either weakly suppletive (*says*, *does* and *has*) or, in the case of the verb *to be* (*am*, *is* and *are*), strongly suppletive.

In the next sections, I will summarise the classifications of irregular verbs as they are provided by the most outstanding grammars of English published in the last few decades, as well as by Jespersen in his classic historical grammar.

2.1. Jespersen's *Modern English Grammar* (1942)

Jespersen's treatment of irregular verbs includes a lot of historical details which, for lack of space, cannot be considered here. He divides them into eleven classes.

Class 1 contains verbs with unchanged base and voiceless /t/ after voiced phonemes: e.g., *burn*, *dwell*, etc.

Class 2 contains verbs with unchanged forms, such as *cast*, *cut*, *shut*, etc., as well as, quite surprisingly, the modals *must* and *ought to* which are included here owing to their historical origins as preterites (OE *mōste*, and *āhte* respectively).

Class 3 contains verbs in which the base is changed owing to:

(a) root vowel shortening, and in which voiceless /t/ is suffixed after both voiceless phonemes (e.g., *sleep*) and, irregularly, after voiced phonemes (e.g., *deal*, *mean*, etc.);
(b) final consonant unvoicing, and in which, then, regular voiceless /t/ is added, as in *leave*, *lose*, etc.

Class 4 contains verbs in which the base is changed (final consonant unvoicing) and no suffix is added in the past tense/past participle, as in *bend* and *build*.

Class 5, too, contains verbs in which the base is changed (vowel shortening), as in *say*, *flee* and *hear*, and /d/ is added.

Also in Class 6 the base is changed (the final consonant is dropped), as in *have*, *make*, and in the modals *will*, *shall* and *can*.

Class 7 contains verbs with idiosyncratic changes of the base, such as *bring*, *buy*, *catch*, *teach*, etc., and the modals *may* and *dare*.

Class 8 contains verbs in which the base is changed and no suffix is added in the past tense/past participle; in subclasses (a) and (b) the root vowel is shortened, as in *bleed*, *meet*, *read*, and *light*, *slide* respectively. Subclass (c) contains verbs of the type *abide*, *glide*, etc., while subclass (d) contains such different verbs as *stand* (with consonant loss) and *hold*, and in subclass (e) there are verbs with different types of vocalic alternations: e.g., *sit*, *shoot*, *get* and *fight*, the last of which, instead, should be listed with *buy*, etc. Subclass (f) contains verbs with /ʌ/ in the p.t/p.p., such as *cling*, *fling* and *hang*, as well as *shine*, which is included here owing to the identity of p.t. and p.p. Next are listed verbs with the alternation /aɪ/ – /aʊ/ (*bind*, *find*, etc.), and the last subclass contains verbs with /ʌ/ in the past tense/past participle, such as *dig*, *strike*, which, instead, should have been included in subclass (f).

Class 9 contains verbs in which there is no suffixation and in which the root vowel is subject to ablaut alternations: e.g., *swim* and *begin*, as well as *run* and *come*.

In Class 10, we find verbs with three ablaut alternations and *-en* in the past participle, such as *drive* and *write*, as well as verbs with two ablaut alternations in which *-en* is added to the past tense to form the past participle, such as *bite*, *bear*, *tread*, *break*, etc. Besides these, Jespersen includes in this class also *cleave* because of the variants *clove* and *cloven*, and verbs such as *forsake*, *blow*, *see*, etc., and even *do*, in which, instead, *-en* is added to the base (with root vowel change) to form the past participle.

Class 11 contains verbs such as *mow*, *show*, *saw*, with regular past tense and past participle *-n* or *-ed*, and *shear* and *swell* with regular past tense and ablaut plus *-n* in the past participle. Finally, this class contains also the two suppletive verbs *be* and *go* owing to their p.p. *-n*.

2.2. Quirk et al.'s *Grammar of contemporary English* (1972)

In this grammar, the authors classify irregular verbs according to the following characteristics of the past tense and of the past participle:

(i) vowel identity (i.e. V-*ed*$_1$ = V-*ed*$_2$, as in *met*);
(ii) suffixation in V-*ed*$_1$ and/or V-*ed*$_2$, including both alveolar suffixes (e.g., *meant*) and the nasal suffix (e.g., *shaken*);
(iii) identity or change of the vowel of the base (e.g., *put* vs. both *speak* and *sing*).

Irregular verbs are divided into seven classes.

Class 1 includes quasi-regular verbs with:
(i) V-*ed*$_1$ = V-*ed*$_2$;
(ii) variable suffixation;
(iii) total vowel identity.

While *burn*, dwell (cl. 1a) and *bend*, *spend* (cl. 1b) can be considered to be "close to a regular verb" (Quirk et al. 1972: 110), *have* and *make* certainly cannot belong here in view of the loss of the final consonant of the base in the past tense/past participle.

Class 2 includes verbs with:
(i) V-*ed*$_1$ = V-*ed*$_2$;
(ii) variable suffixation;
(iii) change of the base vowel, with a rather inconsistent mixture of vowel shortenings (2a, 2c, 2e, 2f) and ablaut (2b, 2d). Instances of the verbs included in this class are:
  (a) verbs with vowel shortening and, in some cases, with voiceless /t/ after a voiced final consonant of the base (e.g., *deal*); this subclass includes also *bereave* and *leave*, with unvoicing of the final consonant of the base, which, therefore, should belong to a different group;
  (b) verbs with /ɔːt/ in the past tense/past participle (e.g., *buy*);
  (c) *lose*;
  (d) *sell*, *tell*;
  (e) *hear*;
  (f) *say*.

Class 3 includes all those verbs which are unchanged such as *cut*, *let*, etc.

Class 4 includes verbs with:
(i) V-*ed*$_1$ = V-*ed*$_2$;
(ii) vowel change;
(iii) no suffixation.

Instances of the verbs included in this class are:
  (a) verbs with vowel shortening, such as *bleed*, *meet*, etc., and, inconsistently, also *hold*, which instead has vowel alternation;
  (b) verbs with the alternation /ɪ/ – /ʌ/, such as *cling*, *stick*, etc.;
  (c) the verbs with the alternation /aɪ/ – /aʊ/, such as *bind*, *find*, etc.;

(d) verbs with vowel shortening such as *light*, *slide*, and verbs with ablaut such as *sit*, *spit*. The inclusion of *bleed*, *cling*, *light* and *sit* in the same class is unsatisfactory, since they undergo different changes (shortening in *bleed* and *light*, and ablaut in the others); the only similarity that these verbs share is past tense = past participle (≠ base);
(e) *get*, *shine*, *shoot*, with p.t./p.p. /ɒ/;
(f) *fight*, which instead should have been included in class 2b (p.t./p.p. = /ɔːt/);
(g) *stand*;
(h) *stride*, which clearly belongs to the *write*-type (although the past participle form *stridden* is rare), given the alternations /aɪ/ – /əʊ/ – /ɪ/.

Class 5 includes verbs with no vowel change and either *-en* or *-ed* in the p.p., such as *hew*, *mow*, etc.; however, it includes also *shear* and *swell*, which, owing to base vowel change in the past participle should belong to another group.

Class 6 includes verbs in which "V-*ed*$_1$ and V-*ed*$_2$ are different" (Quirk et al. 1972: 116), although in a large number of cases the past tense and the past participle have the same root vowel: 6Aa *break*; 6Ab *bear*; 6Ac *bite*; 6Ad *forget*; 6Ae *lie*; 6D *beat*.

Further instances of verbs belonging to this class are:

(Ba) *blow*;
(Bb) *forsake*;
(Bc) *forbid* and *give*;
(Bd) *draw*;
(Be) *fall*;
(Bf) *eat*;
(Bg) *see*;
(Bh) *slay*.

All these verbs have the same vowel in the base and in the past participle, which always has *-en*.

(Ca) verbs with the alternations /aɪ/ – /əʊ/ – /ɪ/, such as *drive*, *rise*, etc.;
(Cb) *fly*;
(Cc) *do*, which has suppletive past tense and past participle, and, therefore, cannot belong to any group;
(D) *beat*;
(E) *dive* (with p.t. *dove* in AmE only) and *thrive*, with p.t. *throve* and regular p.p. *thrived*.

As can be seen, this class contains verbs with two and verbs with three different root vowels, which, of course, should be kept apart.

Class 7 includes verbs with:

(i) V-*ed*$_1$ ≠ V-*ed*$_2$;

(ii) no suffixation;
(iii) change of the base vowel.

Instances of the verbs included in this class are:

(a) verbs with the alternations /ɪ/ – /æ/ – /ʌ/, such as *begin*, *sing*, etc.;
(b) *come* and *run*, with the same form for the base and the past participle;
(c) suppletive *go*.

2.3. Huddleston and Pullum's *The Cambridge grammar of contemporary English* (2002)

Regarding the past tense and the past participle, the authors make a distinction between written and spoken English (as with nouns) and, therefore, their statements are sometimes merely virtual: e.g., *read* would belong to the class of *cast*, etc. Their classification of irregular verbs is the following.

Class 1 contains verbs with the so-called 'secondary *-ed* formation', such as *burn*, *keep*, *hit*, *lose*, further subdivided into those which undergo:

(a) suffix devoicing: e.g., *burn*;
(b) vowel shortening: e.g., *keep*;
(c) the so-called consonantal reduction: e.g., *hit*, *spread*, etc. (=/hit/ < */hitt/, /spred/ < */spredd/, etc.);
(d) vowel shortening and suffix devoicing: e.g., *feel*, *mean*, etc.;
(e) consonant reduction with devoicing of the suffix: e.g., *bend* (= /bent/ < */bendd/);
(f) vowel shortening with consonant reduction: e.g., *bleed* (= /bled/ < */bledd/), and, with different vowels, *slide*, *light*, and *shoot*;
(g) devoicing of the last consonant of the base and root vowel shortening, the only instances being *leave* and *lose*, since *bereave* and *cleave* are usually regular.

Class 2 contains verbs with vowel alternations (also called 'back vowel formation').

(a) /ɪ/ – /æ/ – /ʌ/: e.g., *drink*;
(b) /ɪ/ ~ /ʌ/ ~ /ʌ/: e.g., *win*;
(c) /aɪ/ ~ /aʊ/ ~ /aʊ/: e.g., *find*;
(d) miscellaneous vowel alternations: e.g., *fight*, *get*, *hang*, *hold*, *shine*, etc.;
(e) vowel change in the past tense, the past participle being identical with the base, as in *come* and *run* only.

Class 3 contains verbs with the suffix *-en* in the past participle,

(a) regular past tense; *-en* is added to the base: e.g., *show*;
(b) regular past tense, and vowel change in the past participle. The only two verbs of this type are *swell* and *shear*;

(c) verbs with three ablaut vowels: e.g., *ride*;
(d) vowel shortening in the past tense and in the past participle: e.g., *bite*;
(e) vowel change in the past tense; in the past participle, *-en* is added to the base: e.g., *blow*, *know*;
(f) vowel change in the past tense; in the past participle, *-en* is added to the past tense: e.g., *break*, *speak*;
(g) vowel change in both the past tense and the past participle. The only two verbs of this type are *do* and *fly*;
(h) suppletive past tense and past participle with the suffix *-en*. The only two verbs of this type are *be* and *go*.

Class 4 contains verbs with miscellaneous vowel alternations:

(a) vowel shortening and suffix *-d* in both the past tense and the past participle, as in *flee*, *say* and *shoe*;
(b) vowel change and suffix *-d* in both the past tense and the past participle, as in *hear*, *sell*, *tell*. Arguably, *hear*, with vowel shortening, should belong to (a) above, and not to the group of *sell* and *tell*, which historically have umlaut alternations.
(c) loss of consonant, as in *have*, *make*, *stand*. Also in this case, the inclusion of verbs which undergo different structural changes seems rather inconsistent; particularly surprising is the statement that *have* and *make* "would be regular except for loss of /v/ and /k/" (Huddleston and Pullum 2002: 1608);
(d) forms with *-ought*/*-aught* in the past tense/past participle: e.g., *bring*, *think*. Of course, as Huddleston and Pullum write (2002: 1608), also *fight* should be included here, but since its base ends in /t/, it is included in subclass 2b;
(e) this subclass contains modal verbs. In view of their incomplete conjugation, modals cannot be taken into account in any classification of verbs with irregular past tense and past participle.

2.4. Palmer's *The English verb* (1974)

Palmer's classification of present-day English irregular verbs is the following.

(A) First of all, Palmer (1974: 247) lists what he defines "secondary *-ed* formation", which refers to those verbs "whose formation can be handled in terms of the addition of an alveolar plosive" and which, in a sense, are not so dissimilar from regular verbs. Three phonological rules are responsible for their irregularity:
(a) devoicing of the regular suffix in verbs ending in the lateral /l/ or in the alveolar nasal /n/, as in *spell*, *burn*, etc.;

(b) a "vowel shortening rule", as in *keep*, etc.;
(c) consonant reduction (which derives from suffix dropping), as in *hit*, which is preferable to saying that these verbs have "zero" past tense and past participle for two reasons: (i) because their final consonants are significant; (ii) because it helps to generalize the formation of *bled*, *met*, etc., which undergo vowel shortening and suffix deletion (= "consonant reduction").

These phonological features are used to classify a number of verbs.

Class 1: devoicing, as in *smell*, etc.; all these verbs end in an alveolar nasal or in a lateral consonant.

Class 2: vowel shortening, as in *keep*, etc., with regular devoicing of the suffix. This class includes also *flee* (the only one of this type), without devoicing, but, of course, should include also *hear*, *say* and *shoe*, which have vowel shortening and regular /d/;

Class 3: consonant reduction, as in *hit*, etc., all with a final alveolar plosive.

Class 4: suffix devoicing and vowel shortening, as in *mean*, etc., which, except for *dream*, end in an alveolar nasal or lateral, and thus combine (i) and (ii).

Class 5: devoicing and consonant reduction, as in *bend*, *send*, etc., which end in an alveolar nasal plus an alveolar plosive, and thus combine (a) and (c).

Class 6: vowel shortening and consonant reduction, as in *bleed*, etc., which end in an alveolar plosive; also *light* and *slide*, despite their different vowels, belong here. These verbs combine (b) and (c).

Palmer includes here *shoot* and *shoe* (despite the fact that they are similar to *bleed* and *flee*), as well as *leave* and *lose*, with devoicing of the final consonant.

According to Palmer, this group shows a remarkable regularity given the existence of a pattern.

(B) The second group is based on the so-called "back vowel formation" (Palmer 1974: § 9.3.3), since the front vowel of the base turns into a back vowel in one or both of the other two forms.

The first class of this group includes verbs with "the most striking pattern" (Palmer 1974: 250), since the three vowels involved are at the extremes of the vowel diagram, i.e. /ɪ/ – /æ/ – /ʌ/, as in *drink*, etc.[3]

[3] Actually, StE /ʌ/ is a centralised, delabialised vowel; Palmer's statement seems to point to the etymological vowel (i.e. /ʊ/), which, in the standard type of speech, has been retained in certain types of words only (e.g., *pull*, *push*, etc.), as opposed to some (typically Northern) varieties, in which /ʌ/ does not occur.

A similar pattern is found in the second class, in which /ʌ/ occurs both in the past tense and in the past participle, as in *win*, etc.

Class 3 contains only the verb *get*, which is characterised by "a straightforward change" (Palmer 1974: 251), since both vowels are half open, while in Class 4 it is only the last element of a diphthong that changes, as in *find*, etc.;
Class 5 contains "less clear-cut cases" (Palmer 1974: 251), such as *shine*, *fight*, *strike*, *stride* and archaic *abide* (which has also regular forms), in which the front diphthong of the base changes into a back vowel.

Class 6 includes verbs characterised by vowel changes which cannot be accounted for by "back vowel formation": *sit*, *spit*, and *hang*; idiosyncratic *hold*; *sell*, *hear* and *say*, with regular suffixation. However, in *sell* a "back vowel formation" rule operates, since the root vowel changes from front /e/ to a diphthong which begins at a central position and then moves in the direction of back /ʊ/. Regarding *hear* and *say*, the diphthong of the base is shortened in the past tense/past participle.

Finally, class 7 includes *come* and *run*, which are "even more idiosyncratic" (Palmer 1974: 252), since their past participle is identical with the base.

(C) The third group contains verbs with p.p. *-en*.

Class 1 contains verbs with a regular past tense, such as *sew*, etc., whereas *beat*, the only verb belonging to Class 2, has "secondary *-ed* formation with consonant reduction" (Palmer 1974: 252). In Class 3, there are two verbs (*bite* and *hide*), with "the secondary *-ed* formation with consonant reduction and vowel shortening" (*ibid*.), and Class 4 contains a number of verbs with a variety of vowel changes, such as *see*, *eat*, *bid*, *give*, *forsake*, *fall*, *grow*, and *slay*.[4]

Class 5 contains verbs with vowel change in the past tense and vowel shortening and *-en* in the past participle, as in *ride*, *write*, etc., whereas Class 6 contains verbs such as *forget*, etc., *break*, etc., *speak*, etc., *bear*, etc., *lie* and *choose*, with vowel change in the past tense and to which *-en* is added to form the past participle.

Classes 7 and 8 have only one verb each, respectively *fly*, with vowel change in all three forms, and *swell*, with regular past tense and vowel change plus *-en* in the past participle.

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[4] Despite Palmer's (1974: 252) claim that none of these vowel changes is "strictly in the back vowel formation", a number of these verbs – e.g., *see*, *forsake* – clearly undergo back vowel formation in the past tense. In *grow* (etc.), with a diphthong which begins at a central position in the base, the backness component of the root vowel is clearly increased in the past tense; in *see* and *forsake*, there is an obvious change from front to back. What characterises the verbs of this class is rather the fact that their past participle is formed by adding *-en* to the base.

(D) The last group contains verbs which have "idiosyncratic forms" and "even [...] some shape" (Palmer 1974: 253). These are *make* in Class 1, which "would be regular if we could account for the loss of final /k/" (Palmer 1974: 254), *stand* in Class 2, which "would belong with the vowel change verbs if the loss of the nasal consonant could be accounted for" (Palmer 1974: 254), and, in Class 3, *buy*, *bring*, etc., with /-ɔ:t/ in the past tense/past participle. Finally, Class 4 contains only *go*, the only verb with a suppletive past tense and with a vowel change in the past participle.[5]

3. Static vs. dynamic morphology in Natural Morphology

Natural Morphology (henceforth, NM) is a functionalist theory (i.e. it tries to establish to what extent form follows function), and in its hierarchical model the two most important functions are the communicative and the cognitive ones. Moreover, NM is a preference theory in which preferences are derived from extralinguistic bases; the concept of preference is evaluative and relational and enables us to order linguistic phenomena according to well-defined parameters. Therefore, NM rejects absolute constraints (Dziubalska-Kołaczyk 2001) and, consequently, nomological-deductive explanations. It consists of three sub-theories: Mayerthaler's theory of system-independent morphological naturalness, Wurzel's theory of system-dependent morphological naturalness, and Dressler's theory of universal morphological naturalness, in which naturalness derives also from semiotic parameters. Moreover, in Dressler's model, immediately below the level of universals (i.e. of system-independent morphological naturalness) and above the level of competence (i.e. of system-dependent morphological naturalness) is the typological level, which is the first filter to universals, and the level on which naturalness conflicts may be solved.[6]

Regarding inflectional morphology in particular, the sub-theory of system-dependent morphological naturalness describes the internal organisation of the morphology of a given language, its preferences and its normalcy, in the sense of what its speakers regard as morphologically "normal" or, in other words, what they consider to be the dominant patterns (i.e. those with the highest type frequency, as opposed to token frequency).[7] System-adequacy also tends to limit (and at times even to contradict) universal preferences; for instance, universal morphological naturalness favours word-based processes (given the semiotic primacy of words over themes and roots), but, whereas present-day English regular inflection is word-based throughout (and similarly

[5] Palmer treats the verbs *be*, *have* and *do* separately.

[6] For a detailed account of Natural Morphology, see Kilani-Schoch and Dressler (2005: I), and Bertacca (2009: chapters 8 and 9).

[7] The former refers to the number of lexemes which comply with a given pattern, whereas the latter refers to the number of occurrences of word-forms in running texts or in a corpus.

that part of word-formation which has native lexemes as inputs) and complies with this universal preference, inflecting/fusional languages generally have stem-based (and sometimes still retain root-based) inflection. Latin is a good example of the latter situation, with stem-based inflection (= root plus thematic vowel): e.g., *cant-a-t* 'he/she sings', *vid-e-t* 'he/she sees', etc., and *ros-a-m* 'rose (acc.sg.)', *bell-u-m* 'war (acc.sg.)', etc.). Similarly, Italian inflection is generally stem-based (e.g., *cas-a* 'house', pl. *cas-e* 'houses', etc.) and verbs even retain the etymological vowels in some categories (e.g., *cant-a-vo* 'I was singing/I used to sing' vs. *cad-e-vo* 'I fell/I was falling', etc.), as opposed to French verbal inflection, which is mainly word-based (Kilani-Schoch and Dressler 2005: II.2).

System-adequacy (Germ. *Systemangemessenheit*) is a basic concept in Wurzel's theory of system-dependent natural morphology (Wurzel 1984: §3.1), and, just like typological naturalness, it represents a filter and an elaboration of universal naturalness. Two further distinctions were added by Dressler: (i) that between potential system and institutional norms, and (ii) that between dynamic and static morphology (Dressler 2003; Kilani-Schoch and Dressler 2005: 118–121). Thus, in Dressler's model, there are two morphologies: dynamic morphology and static morphology. The former is based on productivity, while the latter is the domain of lexical storage (i.e., of inflected forms memorised in the mental lexicon, since they are based on no longer productive rules or are irregular *tout court*) and is concerned with their organisation.

The core of dynamic morphology consists of productive categories, rules and classes. For example, in English the only productive class is that of weak verbs and the unproductive patters (those of irregular verbs) are peripheral and diachronically recessive. Static morphology, on the other hand, is the domain of similarity, which is based on entirely stored inflected forms.[8] In short, dynamic morphology is "input-oriented", since it determines which patterns are applicable to base forms, whereas static morphology is "output-oriented", i.e. it is based on actual or superficial forms rather than on derivational principles, given the lack of rules. Therefore, contrary to what happens in dynamic morphology, in static morphology the notions of inflectional classes and of paradigms are not pertinent, and it is forms as such that matter much more than inter- or intra-paradigmatic relationships. Moreover, in static morphology, inflected forms are stored depending on their phonological similarity (e.g., rhymes), on which the organisation of families of unproductive microclasses depends. It is this phonological similarity that guarantees diachronic stability.[9]

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[8] The issue of storage and retrieval of forms from memory (vs. rule-governed forms) is beyond the scope of my paper. In this connection, I can only mention Bybee and Slobin (1982), Bertinetto (1994, 1995), Simonsen (2001), who compares Norwegian and English strong verbs, the papers in Bittner et al. (2003), Bybee (2008), and the neurolinguistic studies of Beretta et al. (2003) and of Newman et al. (2007).

[9] The notion of family, suggested by Kilani-Schoch and Dressler (2005: 178–179) derives from Wittgenstein, who writes: "Wir sehen ein kompliziertes Netz von Ähnlichkeiten, die einander üb und kreuzen. Ähnlichkeiten im Großen und Kleines" (Wittgenstein 1984: 278, no. 66), and concludes: "Ich kann diese Äh-

Therefore, a family of paradigms can be defined as a non-homogeneous group compared to a class of dynamic morphology, since these paradigms share a number of similarities which the paradigms external to the family do not share, whereas the microclasses of dynamic morphology are much more homogeneous, since they are based on identity. The mass of lexical representations is organised in families consisting of paradigms and parts of paradigms among which the weight of phonological similarities is higher. The central element of these phonological similarities is the prosodic rhyme, i.e. the nucleus plus the coda (e.g., *sell* and *tell*, or *bet*, *let*, *set*, *wet*, etc.). In detail, a family may consist of a microclass and of an isolated paradigm (e.g., mc. 11 of *cling*, etc., and the isolated paradigm *hang*, which rhyme on /ʌŋ/ in the past tense/past participle). Alternatively, a family may consist of parts of microclasses, as in the case of the part of mc. 1 (*dwell*, *smell*, *spell*) and of that part of mc. 2 (*deal*, *feel*, *kneel*) which have /-elt/ in the past tense/past participle.

This contrasts sharply with connexionism (Plunkett and Juola 1999) or with Bybee's model (1991), in which stored forms make up a non-organised set and may be linked by any type of similarity. In Italian, for instance, we could classify the verbs *salare* 'to salt', *sapere* 'to know', *salire* 'to climb/go up', etc. together, since they have the common initial open syllable /sa/, but families cannot be based on the beginning of words or on the onset of syllables. Thus, it would not be possible to have a family of English irregular verbs containing, for instance, *hear* and *hold* which share the common syllabic onset /h/. In fact, while the syllabic onset is essential for the lexical identification of a word, we cannot expect it to be relevant for the inclusion of a verb in a family. As has just been mentioned, the prosodic rhyme is key to the identification of phonological similarity (or identity): e.g., *teach* and *beseech*, with the rhyme /iːtʃ/, etc., vs. *beseech*, *beget*, *begin*, *beset*, all of which have initial unstressed /bɪ/, but which obviously cannot belong to the same family given their totally different paradigms. Note that prefixed verbs such as *undo* and *unbend*, *undersell* and *undertake*, etc., despite identical initial *un-* and *under-* respectively, necessarily belong to different microclasses, given their different past tense and past participle forms. Similarly, the French verbs *pouvoir* and *pleuvoir* make up a family based on the similarity of some forms (e.g., the third

nlichkeiten nicht besser charakterisieren als durch das Wort »Familienähnlichkeiten«" (Wittgenstein 1984: 278, no. 67). In our context, it is the logical and methodological use of this concept that matters, in the sense that in a family different relations obtain among its members, but these relations are not reducible to a single concept or principle (i.e. to identity). Therefore, they need not be reduced to a single type, since this notion implies that new relations can always be found.

Wittgenstein published his work in 1953, but his concept of "family" was already known and was explicitly used by Waismann (1936), who wrote that "the word 'number' does not designate a concept (in the sense of school logic), but 'a family of concepts'. By this we mean that the individual number types are related to each other in many ways even though they may not have one property or one trait in common". In the epilogue, Waismann acknowledged his indebtedness to Wittgenstein, although, as he wrote, he was not sure "how far his expositions agree with the ideas of Wittgenstein" (both quotations are from the English translation of Waismann's work, pp. 237 and 245 respectively).

person sing. of the indicative *il peut* (=/pø/) and *il pleut* (= /plø/), etc.; Kilani-Schoch and Dressler 2005: 179), whereas *valoir*, *valider*, *valser*, *varapper*, etc., despite the identical initial syllable /va/, do not belong to the same microclass (Kilani-Schoch and Dressler 2005: 180).

The typical relationships among families of paradigms are those of morphotactic similarity, i.e. intrafamiliar phonological properties superposed to morphological properties. On the other hand, phonological substance explains analogical innovations, which favour specific phonemes, whereas semantic similarities play only a marginal role in static morphology. That this factor is important is demonstrated, for instance, by the assignment of the loanword *strive* (aphetic adoption of OF *estriver*) to the microclass of *drive*, etc. in Middle English.[10]

Given the existence of two contrasting morphologies, Natural Morphology is, therefore, both a morphematic model (dynamic morphology) and a lexicalist model (static morphology). The presence of a double component in this model of inflectional morphology is motivated by the cognitive bases of NM, which take from psycholinguistic research the notion of a complex, or dual, mechanism: on the one hand, the procedures of decomposition by rules and, on the other hand, direct access of stored units (Pinker 1999; Markus 2000; Baayen and Schreuder 2003); this dual mechanism is opposed to the model based on competition between procedures (Frauenfelder and Schreuder 1992; Baayen and Schreuder 1999).

In performance, the two morphologies compete, since it is easier to retrieve very frequent regularly inflected forms through lexical access than to produce them by rule; in fact, their analysis is more complex and takes more time. On the other hand, transparent forms made up of productive affixes, but which are not very frequent, are unlikely to be stored and are more liable to be rule-governed, since their transparency and the productivity of the affix make the application of rules easier (see Bertinetto 1994 and 1995).

4. A new classification of English irregular verbs

In the following sections I suggest a new classification of irregular verbs as they occur in the present-day English standard variety.

4.1. Number of bases

The number of bases is the basic criterion in the organisation of (verbal, nominal, etc.) inflection, but while the number of bases is a primary parameter in dynamic morphol-

[10] For further details on the notion of family and of intrafamiliar relations, see Dressler (2003) and Kilani-Schoch and Dressler (2005: II.3).

ogy, in static morphology it is secondary, since storage is fundamentally global and implies the recognition of full word-forms.

As typically occurs in analytic languages, autonomous bases are the rule in English dynamic morphology (e.g., *play*, *watch*, etc., from which all the inflected forms of these verbs are derived) and there are no instances of non-autonomous bases (see below). In addition to this, there is no opposition between short and long bases, as in languages with more inflecting/fusional features: in Italian, for instance, in *finire* 'to finish' there is an opposition between a short base /fini/, as, e.g., in *fini-te* 'you (plur.) finish', etc., and a long one /finis-/, as in *finis-co* 'I finish', etc.

Moreover, monosyllabic bases are the rule in English, both in dynamic and in static morphology, especially in the native lexical stock, with the obvious exception of compounds (e.g., *fulfil*, *withdraw*, etc.); in the Latinate lexicon, instead, polysyllabic bases are quite common.

The following criterion is applied in order to identify a base:

X is a base in a form such as "X + y", in which it can be used for the derivation of inflected forms: e.g., *play* in the forms *play-ed* and *play-ing*, etc., where it is the input of inflectional processes. Neither *played* nor *playing* can be used as secondary bases for the generation of further inflected forms. In short, regular verbs have only one base. On the other hand, in a number of irregular verbs the past participle form derives from the infinitive plus *-n* (e.g., *blow* + *-n* → *blown*), while in others it derives from the past tense plus inflectional *-n* (e.g., *wore* (= /wɔː/) + *-n* → *worn*). However, these two processes are not rule-governed, because a no longer productive suffix is added and the base is idiosyncratically either the infinitive or the past tense form. Therefore, they are word-specific (i.e. the relevant information must appear in the lexical description of each verb) and they are totally different from the type of inflectional process which enables us to derive *played* form *play*, etc. This means that in present-day English static morphology there are a number of instances (e.g., *wore*, *blow*) which can occur both as autonomous word-forms and as autonomous bases; these contrast with *wrote*, *drank*, *got*, etc., which, on the contrary, are not bases but only word-forms. However, in most paradigms belonging to static morphology, there is only one base (see Section 4.1.2).

4.1.1. Autonomous vs. non-autonomous bases

In present-day standard English, both in dynamic and in static morphology, all the bases are autonomous and primary, and there are no non-autonomous roots in unproductive suppletive paradigms: for example, in *do*, *did*, *done*, we could consider /d/ to be the root, i.e. the smallest common denominator, and *did*, *done* suppletive forms, but this is not possible because the inflected forms *did* and done are not derived from the root by rule. Similarly, this is not possible for the past tense forms *was* and *were*, which have the same initial segment /w/ (the relic of I.E. **wes-*/**wēs-*), but which are not rule-governed. Thus, *to be* is definitely the most typical example of a totally suppletive verb.

The next point to be made is that in English there are no secondary bases (as, e.g., in French *parla-* (← *parl-* + *-a*) from which the first and second persons plural of the past tense *parlâmes* 'we spoke', *parlâtes* 'you (plur.) spoke' are derived), arguably because English has very few inflecting features: cf., for instance, the verbal inflection of French (Kilani-Schoch and Dressler 2005: 183ff.) and, especially, of Latin, Russian, Lithuanian, etc. (Dressler et al. 2006).

4.1.2. Microclasses and the number of bases

Whereas the classification of verbs (or of nouns) which belong to dynamic morphology is vertical, since it defines a hierarchy of classes and paradigms, static morphology has a horizontal classification based on the similarities between isolated paradigms and classes.[11] The basic concepts employed in the following classification are:

(i) An inflectional paradigm, which includes all the inflected forms of a lexeme – word, theme or root according to the inflectional type – within the same inflectional system (e.g., verbal conjugation or nominal declension); therefore, E. *the cooks* and *he/she cooks* belong to different paradigms. Suppletive paradigms (typically those of the verb *to be* in Indo-European languages, for instance) are those which have more than one base; the complementary distribution of these bases is not rule-governed.[12]

(ii) Similar paradigms make up a hierarchy of inflectional classes, which is organised from top to bottom in dynamic morphology. This hierarchy is organised into macroclasses, classes, sub-classes (sub-sub-classes, and so on) and, finally, microclasses depending on the number of shared properties, and is based on the principle of default inheritance of properties (Corbett and Fraser 1993). According to this principle, an inferior node automatically inherits the properties of the immediately dominant node unless the contrary is explicitly stated.

(iii) A microclass (henceforth, mc.) is a set of paradigms which share the same morphological and morphonological generalisations. A microclass contains identical paradigms and is distinguished from sets of similar paradigms, called families. For instance, E. *ox*, *child* and *brother*, despite the addition of the plural suffix *-en*, belong to different microclasses because they differ morphonologically: *ox* simply adds

[11] See, e.g., Kilani-Schoch and Dressler (2005: II.2–3) for French verbal inflection, and, regarding English nouns, Bertacca (2009: §§ 6.2, 7.3, and, especially, ch. 10, which provides a new classification of Old English nouns).

[12] Regarding inflectional paradigms (their structure, properties, etc.) the following must be mentioned: Carstairs (1987), Matthews (1991), Plank (1991), Stump (1991, 2001), Hall (1992), Carstairs-McCarthy (1998, 2000). On the implicative structure of inflectional paradigms, see Wurzel (1984: § 4.1).

-en, whereas *child* undergoes root vowel shortening and adds *-r-* to the base, and *brother* undergoes root vowel umlaut.

(iv) A minimicroclass has only two paradigms (and, eventually, also those with a transparent prefix: e.g., *undersell*, etc.).

(v) Isolated paradigms (henceforth, i.p.) are those which differ morphologically and morphonologically from all the other paradigms; in dynamic morphology, they can be considered satellites of the most similar microclasses, while in static morphology they do not have to be satellites of any microclasses.[13]

In what follows, paradigms are classified according to the number of bases. Note that compound verbs (e.g., *unbind*) are not listed.

One base

(A) Past tense = past participle

mc. 1: *burn*, *learn*; *dwell*, *smell*, *spell*; *spill*; *spoil* (one base plus an autonomous word-form);
mc. 2: *creep*, *keep*, *leap*, *sleep*, *sweep*, *weep* (one base plus an autonomous word-form);
mc. 3: *deal*, *feel*, *kneel*; *lean*, *mean*; *dream* (one base plus an autonomous word-form);
mc. 4: *cleave* (with p.t./p.p. *cleft*; see also mc. 23), *leave* (one base plus an autonomous word-form);
mc. 5: *bleed*, *breed*, *feed*, *feel*, *lead*, *read*, *speed*; *meet* (one base plus an autonomous word-form);
mc. 6: *bend*, *lend*, *rend*, *send*, *spend*; *build* (one base plus an autonomous word-form);
minimc. 7: *sell*, *tell* (one base plus an autonomous word-form);
minimc. 8: *beseech*, *teach* (one base plus an autonomous word-form);
minimc. 8 i.p.: *bring*; *buy*; *catch*; *fight*; *seek*; *think*;[14]
mc. 9: *Bind*, *find*, *grind*, *wind* (one base plus an autonomous word-form);

[13] For further details on these basic concepts, see Kilani-Schoch and Dressler (2005: II. 1.1).

[14] Except for *fight*, a strong verb of Old English Class 3 (originally belonging to Class 5), all the other verbs of this microclass were etymologically weak ones which were subject to *j*-umlaut in the present tense but not in the past tense and in the past participle; this led to the differentiation of the vocalic segments and, with the application of further phonological processes, to /ɔː/ in the past tense/past participle, to which weak /-t/ (instead of the expected voiced /d/) was added. *Catch* is a loanword from Anglo-Norman (ME *cac*(*c*)*hen* < AN/ONF *cachier*, variant of OF *chacier*, mod. Fr. *chasser*; *ODEE*, s.v.) which, according to the *ODEE* (s.v.), was modelled on *lahte*/*laught*(*e*), form *lache* 'latch', although analogy on *beseech*, *sēche* 'seek' and *thence* 'think' cannot be ruled out.

mc. 10: *sit*, *spit*, *shit* (one base plus an autonomous word-form). With p.t./p.p. *shat*, *shit* belongs to this microclass; if the p.t./p.p. is *shit*, instead, it belongs to mc. 13;
mc. 11: *cling*, *dig*, *fling*, *shrink*, *sling*, *slink*, *spin*, *stick*, *sting*, *string*, *swing*, *win*, *wring* (one base plus an autonomous word-form);
mc. 11 i.p.: *hang*;
mc. 11 i.p.: *strike*;
mc. 12: *bet*, *let*, *set*, *shed*, *spread*, *wed*, *wet* (one base, which is also an autonomous word-form in the past tense/past participle);
mc. 13: *bid*$_1$ ('offer to pay' and also *bid*$_2$ 'command'; but see mc. 19), *hit*, *knit*, *quit*, *rid*, *slit*, *split* (one base, which is also an autonomous word-form in the past tense/past participle);
mc. 14: *cut*, *shut*; *bust*, *thrust* (one base, which is also an autonomous word-form in the past tense/past participle);
mc. 14 i.p.: *put*.

(B) past tense ≠ past participle
mc. 15: *hew*, *strew* (one base plus an autonomous word-form);[15]
mc. 16: *mow*, *sew*, *show*, *sow* (one base plus an autonomous word-form);
mc. 16 i.p.: *saw* (one base plus an autonomous word-form);
mc. 17: *blow*, *grow*, *know*, *throw* (one base plus an autonomous word-form);
mc. 17 i.p.: *draw* (one base plus an autonomous word-form);
mc. 17 i.p.: *fly* (one base plus an autonomous word-form);
mc. 18: *forsake*, *shake*, *take* (one base plus an autonomous word-form);
mc. 19: *bid*$_2$ 'command' (if the p.t. is *bade* and the p.p. is *bidden*; but see also mc. 13), *forbid*; *give* (one base plus an autonomous word-form)[16];
mc. 20: *drive*, *ride*, (*a*)*rise*, *smite*, *stride*, *strive*, *write* (one base plus two autonomous word-forms);
mc. 20 i.p.: *thrive* (regular p.t. *thrived*).
mc. 21: *begin*, *drink*, *ring*, *sing*, *sink*, *spring*, *stink*, *swim* (one base plus two autonomous word-forms);
mc. 21 i.p.: *run*.

Two bases (both being autonomous)

minimc. 22:*break*, (*a*)*wake*, with /eɪ/ in base 1 and /əʊ/ in base 2;
mc. 22 i.p.: *choose*;

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[15] The verbs of mcs. 20 and 21 have a regular past tense form and in the past participle vary between *-ed* and *-n* suffixation. Their inclusion here is of course based on the existence of *n*-forms.

[16] *Bid* belongs to this microclass if the p.t. is /beɪd/; if, instead, it is /bæd/, the verb is isolated and is not a satellite of any microclass.

mc. 23: *cleave* (with p.t. *clove*, p.p. *cloven*; see also mc. 4 above), *freeze*, *speak*, *steal*, *weave*, with /iː/ in base 1 and /əʊ/ in base 2;
mc. 24: *bear*, *swear*, *tear*, *wear*, with /eə/ in base 1 and /ɔː/ in base 2;
mc. 24 i.p.: *shear* (regular past tense; p.p. *shorn* ~ *sheared*);
mc. 25: *beget*, *forget*, *tread*, with /e/ in base 1 and /ɒ/ in base 2;
mc. 26: *bite*, *hide*, with /aɪ/ in base 1 and /ɪ/ in base 2.

Obviously, forms such as *crept*, *fled*, *dealt*, *sold* and, even more so, *bought*, etc. cannot be segmented – i.e., /krep-t/, /fle-d/, /del-t/, /səʊl-d/ and /bɔː-t/ – and, therefore, it would not be tenable to assume the existence of non-autonomous bases /krep-/, /fle-/, /del-/, /səʊl-/, /bɔː-t/, etc., since there are no synchronic productive rules which change /kriːp/ into /krep/, etc.

Finally, in present-day English, there seem to be no verbs with three or more bases. The auxiliary *to be* has only the base *be* (→ *being*, *been*); *am*, *is*, *are*, *was* and *were* are all autonomous word-forms and none of them is a base. Since *be* is totally suppletive, it does not belong to any specific microclass, and its paradigm is totally isolated.[17]

4.2. Paradigms and rhymes

As was mentioned above, phonological similarities, especially rhymes, are the basic parameter in the organisation of families of paradigms and of unproductive microclasses, and help to guarantee their diachronic stability.

Prosodic rhymes determine how tight intrafamiliar links are, and these similarities can be classified on the following scale:

(i) The extension of the rhyme, i.e. the phonological identity/similarity in the syllabic structure of the base, ranging from the inclusion of one syllabic constituent only (e.g., the nucleus with coda zero, as in mc. 16: *mow*, *show*, etc.) or only the coda, as in minimc. 8 (*beseech*, *catch*, etc.) to the inclusion of both the nucleus and the coda, as in most English microclasses (e.g., mc.1 *burn*, *learn*; mc. 11 *cling*, *fling*, etc.).

(ii) The distinction between identity or similarity of the syllabic structure, in terms of shared phonological features: e.g., mc. 26 (*bite*, *hide*), with the same nucleus and similar alveolar final stops (voiceless vs. voiced).

(iii) The extension of identity or similarity of the prosodic rhyme within the paradigm, which may be extended to the whole paradigm, as in almost all microclasses in pre-

[17] The etymological I.E. root **es-*/**s-* is now recognisable in the 3rd person sing. of the pres. tense *is* (I.E. *sénti*), although no longer in the 1st person sing. *am* (I.E. **ésmi*). Also the Gmc. root **ar-* (< **or-*), of unknown origin, is still transparent in *are*.

sent-day English, or may be limited to a given number of sections of the paradigm, as in more typically inflecting/fusional languages.[18]

(iv) Finally, a distinction is made between those cases in which the identity/similarity is shared (a) by all the members of a microclass or of a family of paradigms (e.g., mc. 6 *bend*, *lend*, *rend*, *send*, *spend*); (b) by most members of a microclass or of a family of paradigms, another group sharing other types of identity/similarity (e.g., mc. 11 *cling*, *fling*, *sling*, *sting*, *string*, *swing*, *wring*; this microclass includes also *spin* and *win*, with a very similar but not identical rhyme).

The families of paradigms with the highest similarity have tighter and more stable links than those with weaker similarity, and in diachrony they tend to attract isolated paradigms or the paradigms of other (mini)microclasses.

A microclass or a family of paradigms with identical rhyme may share this feature with another microclass or with another family of paradigms (or with other microclasses or families), i.e. there may be verbs which, besides rhyming with verbs of their microclass/family, rhyme also with verbs belonging to another microclass or family: e.g., *sit* and *spit* (mc. 10) rhyme with each other and also with *hit*, *knit*, etc. (mc.13). The microclasses with the fewest extrafamiliar rhyme links are the most salient stored patterns and tend to attract other paradigms.

A classification of microclasses according to rhymes is as follows.

mc. 1: *burn*, *learn*; *dwell*, *smell*, *spell*: each group has a rhyming nucleus plus coda in the base, as well as in the past tense/past participle; *spill* and *build* rhyme in the past tense/past participle forms, whereas *spill* and *spoil* have the same onset and coda but a different nucleus;
mc. 2: *creep*, *keep*, *leap*, *sleep*, *sweep*, *weep*;
mc. 3: *deal*, *feel*, *kneel*; *lean*, *mean*; *dream*: rhyming nucleus and similarity of final consonants: (alveolar nasal vs. bilabial nasal);
mc. 4: *cleave*, *leave*;
mc. 5: *bleed*, *breed*, *feed*, *lead*, *read*, *speed* rhyme in all their forms, and, in the past tense/past participle, also with isolated *said* and *fled*; in addition, the past tense/past participle forms have the same nucleus as *met* but a contrasting final stop (voiced vs. voiceless);
mc. 6: *bend*, *lend*, *rend*, *send*, *spend*;

[18] In Italian, which retains more inflecting features than English, for instance, in the verbs *potere* 'can, to be able to' and *vedere* 'to see' the rhyming forms are widespread throughout the whole paradigm: present indicative first and second persons plural (*poss-iamo* 'we can/are able to', *ved-iamo* 'we see', and *pot-ete* 'you (plur.) can/are able to', *ved-ete* 'you (plur.) see', with a feminine rhyme in the third person plural *pòss-ono* 'they can/are able to', *véd-ono* 'they see'), imperfect, future, conditional, past participle, simple past tense second person singular (*pot-esti* 'you (sing.) could/were able to' and *ved-esti* 'you (sing.) saw'), and first and second persons plural (*pot-emmo* 'we could/were able to', *ved-emmo* 'we saw', and *pot-este* 'you (plur.) could/were able to', *ved-este* 'you (plur.) saw').

minimc. 7: *sell*, *tell* have a rhyming nucleus plus coda in the base and in the past tense/past participle;
minimc. 8: *beseech*, *teach* (nucleus plus coda), which rhyme also with their isolated paradigms *bring*, *buy*, *catch*, *fight*, *seek* and *think* in the past tense/past participle (nucleus plus coda: /-ɔ:t/);
mc. 9: *bind*, *find*, *grind*, *wind*;
mc. 10: *sit*, *spit*, *shit*;
mc. 11: *cling*, *fling*, *sling*, *sting*, *string*, *swing*, *wring*, which in the past tense also rhyme with *hung*. Another rhyming pair is *spin*, *win*;
mc. 12: *bet*, *let*, *set*, *wet* (which rhyme also with the past tense variant of *eat* pronounced /et/); *shed*, *spread*, *wed*;
mc. 13: *hit*, *knit*, *quit*, *shit*, *slit*, *split* (which in the past tense/past participle rhyme also with *lit*); *bid*, *rid*;
mc. 14: *cut*, *shut* (which rhyme also with *put* on /ʊt/ in northern varieties, in which, therefore, *put*, rather than being an isolated paradigm, belongs by right to mc. 14), and *bust*, *thrust*;
mc. 15: *hew*, *strew*: rhyming nucleus with coda zero in the base; rhyming nucleus + coda in the past participle. The base of these two verbs rhymes also with the past tense form *flew* (i.p. mc. 17);
mc. 16: *mow*, *sew*, *show*, *sow*: rhyming nucleus with coda zero in the base; rhyming nucleus + coda in the past participle. Moreover, these verbs rhyme in the past participle with the verbs of mc. 17;
mc. 17: *blow*, *grow*, *know*, *throw*: rhyming nucleus with coda zero in the base and in the past tense; rhyming nucleus and coda in the past participle;
mc. 18: *forsake*, *shake*, *take*: rhyming nucleus and coda of the stressed syllable in the base, in the past tense and in the past participle;
mc. 19: *bid* 'command', *forbid*, *give*: rhyming nucleus of the stressed syllable in the base, in the past tense and in the past participle (but cf. the variant past tense form /fəˈbæd/);
mc. 20: (*a*)*rise*; *drive*, *strive*; *ride*, *stride*; *write*, *smite*. All these verbs have a common nucleus in the base, in the past tense, and in the stressed syllable in the past participle, and each pair has a prosodic rhyme; moreover, the last two pairs differ in the voice feature of the alveolar stops in the coda. The other verb of this microclass (*rise*) shares with the others only a rhyming nucleus. Finally, the p.t. forms *drove* and strove rhyme with the p.t./p.p. *hove* as well as with the p.t. form *throve* (~ *thrived*);
mc. 21: *begin*, *drink*, *ring*, *sing*, *sink*, *spring*, *stink*, *swim*. All these verbs have the same nucleus (in the stressed syllable) in the base, past tense and past participle; *drink*, *sink*, *stink* and *ring*, *sing*, *spring* have the same rhyming nucleus plus coda (/V + ŋk/ and /V + ŋ/ respectively);
mc. 22: *break*, (*a*)*wake*, which in the past tense and in the past participle rhyme with *spoke*, *spoken* (mc. 23); they all have the same (rhyming) nucleus (as

well as unstressed final /(ə)n/) as isolated *chose*/*chosen*;

mc. 23: *cleave* and *weave* (nucleus plus coda in all their forms), while *freeze*, *speak* and *steal* have only a rhyming nucleus in the base, in the past tense and in the past participle;

mc. 24: *bear*, *swear*, *tear*, *wear*: the nucleus with coda zero in the present tense and in the past tense, and the nucleus plus the coda in the past participle, and in the 3rd pers. sing. of the present indicative. In the past participle, they also rhyme with *shorn*);

mc. 25: *beget*, *forget*; *tread*: nucleus plus coda, with an opposition between voiceless and voiced alveolar stops in the coda of the stressed syllable, respectively in the first two verbs, and in *tread*. Moreover, the past tense forms *begot* and *forgot* rhyme with *shot*, and *trod* rhymes with isolated *shod*;

mc. 26: *hide*; *bite*. These verbs have a rhyming nucleus and an opposition between voiced and voiceless alveolar stops in the coda in the base and in the past tense, and in the stressed syllable in the past participle.

4.3. Isolated paradigms

As was mentioned above, isolated paradigms are those which differ morphologically and morphonologically from all the other paradigms. The isolated paradigms which are satellites of a microclass were listed above (§ 4.1.2). Isolated paradigms which are not satellites of any microclasses are: *beat*, *bid* ('command', if the p.t. is /bæd/), *come*, *eat*, *fall*, *flee*, *get* (which in American English belongs to the microclass of *beget*, etc.), *have*, *hear*, *heave* (also regular), *hold*, *lie*, *light*, *lose*, *put*, *make*, *say*, *see*, *shear* (regular past tense), *shine*, *shoe*, *shoot*, *slay*, *stand*. A common structural change is shared by *flee*, *hear*, *say* and *shoe*, since before the addition of /d/, the long vowel or the diphthong of the base is shortened – respectively, /iː/ → /e/, /ɪə/ → /ɜː/, /eɪ/ → /e/, /uː/ → /ɒ/, a process which goes back to Middle English and which was based on the qualitative and quantitative relationships between ME /eː/ and /ɪ/ in *flee*, ME /ɛː/ and /e/ in *say*, ME /ɔː/ and /ɒ/ in *shoe*, while /ɜː/ in *heard* is the reflex of ME /er/, in which ME /e/ ← OAngl *ĕ* by shortening of *ē*.

Similarly, *bleed*, etc. (mc. 5) and the isolated paradigms *light* and *shoot* undergo vowel shortening, based on the above-mentioned qualitative and quantitative relationships (besides that between ME /iː/ and /ɪ/ in *light*). In *lose*, the same process applies, besides the unvoicing of the final consonant of the base, to which /t/ is added.

4.4. The scale of morphotactic transparency and of base uniformity

Another fundamental horizontal continuum is based on the parameter of morphotactic transparency, an intraparadigmatic scale which is the product of the scale based on the

number of bases and of the scale of morphotactic transparency. This may be defined the scale of morphotactic transparency and of uniformity of bases (see Kilani-Schoch and Dressler 2005: II. 3.3), and is key to the organisation of a hierarchy of suppletion, since, as has already been mentioned, in static morphology all alternations are to be treated as instances of suppletion. In the competition between dynamic and static morphology, if a morphological construction is transparent the probability that the rules of dynamic morphology will prevail over direct lexical access (static morphology) increases, and, vice versa, if a construction is opaque, this possibility decreases, and in fact the diachronic development of languages demonstrates that more transparent forms tend to be attracted by dynamic morphology (i.e. to be regularised) earlier than opaque ones (regarding English irregular verbs, see Krygier 1994).

In the present-day English standard variety, this scale extends from mc. 1 (*burn*), which has the fully transparent inflected p.t./p.p. form *burnt*, to the totally suppletive forms *went*, and *was*, *were* (besides the present tense forms *am*, *is*, *are*; cf. transparent *been*), in which the bases *go* and *be*, respectively, cannot be read, with a number of intermediate cases, shown in the table below.

On the scale of morphotactic transparency, there is a hierarchical relationship among the different inflected forms of a verb, ranging from the most transparent forms to the most opaque ones. This depends on whether these forms (or their bases) can or cannot be read in the base of the infinitive, which in English is the citation form and, morphosemantically, the simplest form of verbs.

In the most transparent types, all the bases can be read in the infinitive (e.g., /bɜːn/ in *burns*, *burning* and *burnt*), and are hierarchically organised according to the importance of the categories that they encode: from the most important (i.e. unmarked), to the least important (i.e. marked), in which "marked" is to be understood in the sense of G. *markiert*, referring to what is perceptually difficult/more complex, and not in the typically Praguian sense of "featured". From this point of view, the past participle is less marked than the simple past, and this is demonstrated by the fact that in the present-day English standard variety, the past participle forms of irregular verbs are generally more transparent than the corresponding past tense forms. In those cases in which both forms coincide, some verbs have fully transparent forms (e.g., *dwel-t*), others less transparent forms (e.g., *deal-t*), yet others are more opaque (e.g., *took*) or totally opaque (e.g., *bought*).

4.4.1. Verbs with transparent past tense and/or past participle forms

(A) No-change verbs. In these verbs, the past tense and/or the past participle forms can be read in the infinitive, which remains fully transparent.
   (i) Mc. 1: *burn*, *dwell*, etc.
   (ii) The past participle forms of the following microclasses:

(a) mc. 17 (*blow*, etc.) and its isolated paradigm (*draw*); mc. 18 (*forsake*, etc.);
(b) mc. 19 (*forbid*, etc.), and the totally isolated paradigm *eat*.

(iii) The past tense/past participle of mc. 12: *bet*, etc.; mc. 13: *hit*; etc.; mc. 14: *cut*, etc.; the isolated paradigm *put*, all with formally non-featured past tense and past participle forms, and the non-featured past participle forms of the isolated paradigms *come* and *run*.

(iv) Mc. 15: *hew*, *strew*; mc. 16: *mow*, etc., with irregular, but transparent, p.p. *hewn*, *mown*, etc. (cf. the regular past tense forms *hewed*, *mowed*).

4.4.2 Verbs with non-transparent past tense and/or past participle forms

In the following verbs, the base is increasingly more opaque owing to the application of a number of historical (now "frozen") phonological processes which change phonemes into other phonemes. The hierarchical order depends on the qualitative phonological difference between the base and the past tense and past participle forms and, of course, does not take into account the type of morphological process involved. From this perspective, then, a form such as, e.g., *crept*, despite its regular /-t/ after final /p/, is more marked than, e.g., *forsaken*, in which the base /fəˈseɪk/ is transparent, and both /et/ and /eɪt/ are less different from the base /iːt/ than /tʊk/ is from /teɪk/.

(1) Verbs with one change:

(i) the p.t./p.p. *bent*, etc., with /d/ > /t/ (mc. 6);
(ii) the p.t./p.p. *said*, with /eɪ/ > /e/ (i.p. *say*);
(iii) the p.t. *gave*, etc., with /ɪ/ > /eɪ/ (mc. 19; cf. the transparent p.p. *given*, etc.);
(iv) the p.t./p.p. *struck*, with /aɪ/ > /ʌ/ (i.p. *strike*);
(v) the p.t. *chose*/p.p. *chosen*, with /uː/ > /əʊ/ (i.p. *choose* mc. 22);
(vi) the p.t./p.p. *heard*, with /ɪə/ > /ɜː/ (i.p. *hear*);
(vii) the p.t. *froze*/p.p. *frozen*, etc., with /iː/ > /əʊ/ (mc. 23);
(viii) the p.t./p.p. *crept* (mc. 2), *dealt* (mc. 3), etc., *bled*, etc. (mc. 5), *fled* (i.p. *flee*), and the variant past tense /et/ (i.p. *eat*; cf. (ix) below), all with /iː/ > /e/;
(ix) the p.t. *ate* (= /eɪt/; cf. viii, above). Cf. the transparent p.p. *eaten*.
(x) The p.t./p.p. *bound*, etc., with /aɪ/ > /aʊ/ (mc. 9), and the p.t. *drew* (/ɔː/ > /uː/; i.p. mc. 17; cf. the transparent p.p. *drawn*);
(xi) the p.t. *blew*, etc., with /əʊ/ > /uː/ (mc. 17; cf. the transparent p.p. *blown*, etc.), in American English also in *knew* (cf. BrE /njuː/, with the more marked change /əʊ/ > /juː/). Similarly, the p.t. *chose* and the p.p. *chosen* (i.p. mc. 22), with the inverse change /uː/ > /əʊ/;
(xii) the p.t./p.p. *sold* and *told*, with /e/ > /əʊ/ (minimc. 7);

(xiii) the p.t. *ran*, with /æ/ > /ʌ/ (i.p. mc. 21; cf. the transparent p.p. *run*), and the p.t./p.p. *hung*, with the inverse change /æ/ > /ʌ/ (i.p. mc. 11);
(xiv) the p.t. *drove*, etc., with /aɪ/ > /əʊ/ (mc. 20);
(xv) the p.t./p.p. *sat*, etc. (mc. 10), and the p.t. *began*, etc. (mc. 21), with /ɪ/ > /æ/;
(xvi) the p.t. *took*, etc., with /eɪ/ > /uː/ (mc. 18); cf. the transparent p.p. *taken*, etc.;
(xvii) the p.t. *wore* and the p.p. *worn*, etc., with /eə/ > /ɔː/ (mc. 24);
(xviii) the p.t./p.p. *clung*, etc. (mc. 11), and the p.p. *begun*, etc. (mc. 21), with /ɪ/ > /ʌ/;
(xix) the p.t. *came*, with /ʌ/ > /eɪ/ (i.p.); cf. the transparent p.p. *come*;
(xx) the p.t. *bit* and the p.p. *bitten*, etc. (mc. 26); the past participle *driven*, etc. (mc. 20), all with /aɪ/ > /ɪ/;
(xxi) the p.t./p.p. *shod*, with /uː/ > /ɒ/ (i.p.);
(xxii) the p.t. *begot* (and the p.p. *got*) and the p.p. *begotten*, etc., with /e/ > /ɒ/ (mc. 25).

(2) Verbs with two changes:

The p.t./p.p. *left*, etc. (mc. 4), in which the long root vowel is shortened and the final voiced consonant of the base is devoiced.

(3) Verbs with idiosyncratic changes – subtraction and substitution (= alteration):

(i) In the isolated paradigms *have* and *make*, the base loses the last phoneme (the syllabic coda), which is replaced by the regular suffix /d/ (and by /z/ in the third person singular of the present tense *has*). In the p.t./p.p. forms *had* and *made*, the onset and the nucleus of the base are retained and can be read in the infinitive.

(ii) Minimc. 8 (*beseech* and *teach*) and its isolated paradigms: all these verbs retain only the syllabic onset (a consonant cluster in *bring*, only one segment in all the others), and /ɔːt/ is added. Also in the isolated paradigm *fly* (p.t. *flew* and p.p. *flown*), only the syllabic onset is retained.

(iii) Similarly, in the p.t. *lay* and in the p.p. *lain* (with /aɪ/ > /eɪ/), and in the p.t. *saw* (with /iː/ > /ɔː/; cf. the transparent p.p. *seen*), both belonging to isolated paradigms, only the initial consonant is retained.

(4) Total suppletion. The following forms of the isolated paradigms *be* and *go* cannot be read in the base: *am*, *is*, *are*, *was*, *were*, *went*.

4.5. Final remarks on present-day English irregular verbs

All regular verbs have only one base[19], and the alternation among /s/, /z/ and /ɪz/ in the third person singular of the present tense and that between /t/, /d/ and /ɪd/ are rule-governed and totally predictable. In both cases, the three phonetic forms are in complementary distribution, and, therefore, the use of one or of the other is due to a PR (and not to a MPR).

The low number of bases goes hand in hand with the reduced morphological richness of the language, and with its shift from the analytic to the isolating type; this is confirmed also by the fact that, e.g., the future and the conditional are encoded periphrastically – cf. the corresponding synthetic forms of Romance languages (It. *parlerò*, Fr. *je parlerai*, Sp. *hablaré*, 'I will speak', etc., and It. *parlerei*, Fr. *je parlerais*, Sp. *hablaría*, etc.).

Among irregular verbs, some microclasses have only one form for the past tense and the past participle, whereas others have two different forms. In particular, the former type can have:

(i) only one form for the base, the p.t. and the p.p. (e.g., *bet*; mc. 12);

(ii) two forms – i.e., one base plus autonomous word forms with "inner" change (e.g., *cling* vs. *clung*, *breed* vs. *bred*, etc.). Alternatively, /t/ (the default) or /d/ (only in *sell*/*tell*) is added – in some microclasses to the infinitive, in which the final segment of the base and the suffix differ in voice (voiceless /t/ after a voiced final segment of the base; e.g., *burnt*, mc. 1), whereas in other microclasses /t/ is added to a more or less opacified form of the infinitive (e.g., mc. 2 /krep-/) with progressively more marked irregularities – from root vowel shortening in *creep*, to root vowel shortening and lack of voice agreement in *deal* (mc. 3), to root vowel shortening and final consonant unvoicing in *leave* (mc. 4) and, finally, to umlaut and suffixation in *sell*, *teach* (minimc. 7), etc.

In the latter type, on the other hand, alternations make the verbs of this class generally more marked than those of the previous type, except for *hew* and *mow*, etc., which have only an irregular past participle form with /n/ as signans. Only the verbs of mc. 20 (e.g., *write*) and of mc. 21 (e.g., *drink*) have three different vowels (cf. the alternations in the Old English strong verbs of Class 1: *ī – ā – i – i*, and of Class 3: *ĭ – ă – ŭ – ŭ*); in mc. 20, moreover, hypercharacterising (and, therefore, non-functional) *-n* is added in the past participle, where root /ɪ/ already contrasts with /aɪ/ in the infinitive.

[19] Cf. present-day French verbal inflection, where also in the only productive macroclass (e.g., *parler*) there are instances of weak suppletion: e.g., *semer* 'to sow', etc. in which /ɛ/ ~ /ə/ depending on the position of the stress (Kilani-Schoch and Dressler 2005: 164).

As was mentioned above, it cannot be assumed that forms such as *dealt*, *left* and, even more so, *written* are derived from the secondary bases /del-/, /lef-/ and /wrɪt-/, and, since the changes /iː/ > /e/, etc. are no longer rule-governed.

We have also seen how irregular verbs are highly diversified, since most mcs. are the outcome of the operation of a large number of PRs which were eventually morphologised – and this type of evidence further supports Dressler's claim that PRs → MPRs → AMRs and that these processes are irreversible. On the other hand, dynamic morphology in present-day English (not only in verbs, but also in nouns and adjectives) is not only fully productive, but also iconic and morphosemantically and morphotactically transparent. From the typological point of view, it is basically agglutinating with full morphotactic and morphosemantic transparency, and the base is never affected by inflectional suffixes, although it may be undergo the application of PRs when *-ing* is added (e.g., the change from [ɬ] in *travel* to [l] in *travelling*, etc.).

On the contrary, irregular verbs are characterised by the presence of typically inflecting features (allomorphy, especially in the nucleus, as well as suffix alternations, from regular /t/ and /d/ to phonologically irregular /t/ after voiced /n/ in *burnt* and /l/ in *dwelt*, to irregular *-n* in the past participle, as, e.g., in *forsaken*, etc., and stem- and even root-based inflection.

These alternations in the base are relics of once productive rules which today lack their original transparency and motivation (e.g., the alternation between /s/ ad /r/, due to Verner's law, in *was*/*were* which once affected many more verbs, and which in *were* was eventually eliminated when final and preconsonantal /r/ was vocalised in early Modern English times).

It was also pointed out that both regular and irregular verbs have only one base which, as is typical of isolating languages, is autonomous. Finally, there are quite a few paradigm families which still display relics of ablaut (e.g., in *bind*, mc. 9, and in *begin*, mc. 21) or umlaut alternations (e.g., *sell*/*tell*, minimc. 7). However, over time a large number of these paradigms underwent analogical levelling of various types, and today only *drink*, etc. and *write*, etc. still have three different root vowels. Moreover, the absence of secondary bases confirms that present-day English retains only few traces of the old inflecting type.

5. Conclusion

In this paper, I have suggested a new classification of present-day English irregular verbs. The organisation of these irregular paradigms according to the number of bases, rhyme types, and morphotactic transparency demonstrates that also irregular forms can be organised according to well-defined parameters, and that they make up a system with its inner logic.

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