

THE SINGLE MORPHEME *-ED/-EN* OF THE ENGLISH PAST/PASSIVE

JOSEPH EMONDS

Department of English and American Studies
Palacky University
Olomouc 77201
Czech Republic
jeemonds@hotmail.com

Abstract: All English regular verbs and about half its irregular verbs have the same form for the finite past tense and the past participle. The finite past tense is different from the participle only for a closed class of about 100 irregular verbs. These latter can be analyzed by a lexical device of wide-ranging applicability called Alternative Realization. All other Past forms of Vs, finite and non-finite, can then be derived from a single morpheme *-ed* which appears in two contexts: one when V is finite and one when it is selected by a semantically empty stative verb, *have* or *be*. There is also a third use of *-ed* to form passive participles, in both verbal and adjectival passives.

The paper presents a formalized system of selection features for lexical items including but going beyond classical subcategorization. This system permits formulating a single full lexical entry for the suffix *-ed* that covers all its uses. The final version of this entry exemplifies how to specify Alternative Realization, uninterpretability of categories and disjunctive contexts, and independently justifies each of these notations.

Keywords: English passive participle, English past tense, grammatical lexicon, PF insertion, lexical entry, perfect tense

1. The identity of *-ed* and *-en* in semantics and productive morphology

Every standard analysis of English grammar, traditional, structuralist, pedagogical and generative, takes for granted and elaborates on the idea that the language contains two verbal suffixes that express, in different contexts, the “pastness” of verbal meanings. One is a finite past tense

suffix *-ed* that alternates with a 3rd singular present tense suffix *-s* and also underlies the special **finite past tense** form of about two hundred irregular English verb stems: *ate, broke, drank, drove, flew, gave, grew, rang, saw, spoke, swam, took, went, wrote*, etc. The second suffix, often written *-en* in these grammars, underlies a second special form for **past participles** (which doubles as a mark of the passive participle): *eaten, broken, drunk, driven, flown, given, grown, rung, seen, spoken, swum, taken, gone, written*, etc.

The feature system of verb suffixes in Halle–Marantz (1993) analyzes both the finite suffix *-ed* and the active participial suffix *-en* with the feature PAST. Though they give no explicit arguments for this, there are good reasons to accept this conclusion, perhaps the most convincing and obvious being the undisputed intuition of speakers that the perfect of an activity verb can report only Event Times unmistakably in the Past. For more thorough discussion of the “pastness” of English syntactic perfects, see Stowell (2007, sections 5.1–5.2; 2008, section 1).

- (1) The Event Time of a verb of the form *V-en* is unmistakably Past.

This holds even though the English present perfect is semantically incompatible with Past Time adverbs. Thus, *Mary has fallen down* and *I have now eaten* are incompatible with *Mary now falling* or *my eating* at the present moment. In contrast, the paradigms (2a–c), exemplified in (3a–c), show the compatibility of the past participle with Past Time adverbs in all tenses other than the finite present perfect (Hoffmann 1976; Emonds 1975).

- (2) (a) If the VP-external functional head I contains a (usually epistemic) modal or the infinitival marker *to*, the past participle is compatible with Past adverbs.
 (b) If a VP occurs with no I position (i.e., in present participles and gerunds), the past participle is also compatible with Past adverbs.
 (c) If *-ed* on a form in I indicates a counterfactual (after *if, wish, high time, . . .*), the past participle again indicates Past Time and is compatible with Past adverbs.
- (3) (a) Mary must have **rung you last week**.
 Prices need not have **fallen yesterday**.
 To have **known that last month** would have been helpful.
 (b) Having **taken leave of us yesterday**, she avoided the storm.
 I forgot about having **seen this movie last year**.
 (c) If she had **written the letter the day before yesterday**, he would have it now.
 I wish we had **grown tomatoes last summer**.

Thus, both *-ed* and *-en* share the lexical specifications of $\langle V __ \rangle$, PAST.

Beyond this, it is a well-known fact of English grammar, one often informally taken as a sign of its “simplicity”, that for **all regular verbs** and around half of the irregular ones, these two special forms are absolutely identical. The verbs *laughed*, *needed*, *seemed* and *spotted* exemplify the regular past in both forms, while undifferentiated irregular pasts include *bent*, *bled*, *brought*, *bought*, *cut*, *dug*, *felt*, *fought*, *found*, *hit*, *kept*, *led*, *left*, *lit*, *met*, *put*, *read*, *said*, *slept*, *sold*.

Thus, for all regular verbs the English grammatical lexicon contains **a single productive suffix** that can be interpreted as Past Tense. The basis of the lexical entry for this item is then (4):

- (4) **English Past:** *-ed*, $\langle V __ \rangle$, PAST, ...

To complete a grammar of this morpheme, we need only add that the host *V* must be either (i) finite, or (ii) the head of a complement of a semantically empty *have* or *be*. Perhaps it is more transparent to say that, subject to pragmatic sense, any interpreted *V* in English can be marked as Past with (4), provided:

- (5) **Distribution:** If *V-ed* is not finite, an empty stative auxiliary *have* or *be* must precede it.¹
- (6) (a) Mary must [_{VP} *(have) called you last week].
 Prices need not [_{VP} *(have) collapsed yesterday].
 To [_{VP} *(have) found that out last month] would have been helpful.
 *(α) means that α must appear.
- (b) Customers [_{VP} *(having) checked their baggage] can now enter.
 The last person to [_{VP} *(have) solved that problem] became famous.
 Sue is an important person to [_{VP} *(have) met].
- (c) Mary must [_{VP} *(be) finished].
 That guest need not [_{VP} *(be) gone yet].
 After working all day on our reports, my partner is done and I am done for.

Section 3 below returns to a formal account of (5). For now we can simply take it as an accurate descriptive generalization.

¹ Stowell (2008, section 2) gives arguments that the semantic Pastness of perfect constructions cannot be attributed to *have*, though later, admitting that he lacks a formal analysis, he maintains that tree structures associated with *have* should somehow indirectly contribute to Pastness.

However the single lexical entry for the Past is integrated into a fuller analysis, we have now parted company with the descriptive tradition of English grammar that maintains the ancient Proto-Germanic dichotomy between finite (*-ed*) and non-finite (*-en*) past forms. The preliminary unified entry (4), moreover, formalizes the untutored spontaneous tendency of today's English speakers:

- (7) (a) The number of irregular verbs in Standard English is steadily decreasing over time.²
- (b) In widespread non-standard American English, the number of verbs that exhibit distinct finite pasts and past participles in V positions has diminished to very few or almost none.³

With regard to (7b), all participial forms with phonological *-en* are fast disappearing, giving way to single past/passive forms: *the window got broke*; *nothing was took*; *the letter never got wrote*, etc.

The overall aim of this paper is to work out the consequences of what seems to be essentially the above *fait accompli* of the productive English verbal system: besides 3sg present agreement and the suffix *-ing*, **verbs accept only a single inflection *-ed***, which fully conflates what traditional grammars call the finite past tense, the past participle and the passive participle. Section 2 proposes a lexical analysis for the relatively few and decreasing number of verbs that retain a special finite past root. Section 3, in some ways the paper's keystone, accounts for the full distribution of the suffix *-ed* by means of a parsimonious disjunctive context, while section 4 introduces and justifies a second disjunction of context to encompass the suffix's third use for forming passive participles. A final section focuses on a residue to be more fully explicated in future research, how to formally characterize the notorious "Reference Time" of English perfect tenses.⁴

² In my speech, *alight*, *burn*, *clothe*, *dream*, *learn*, *shear*, *smell*, *spell*, *spoil* and *thrive* have become obligatorily regular, though the site www.usingenglish.com/reference/irregular-verbs, which includes 210 "common" irregular verbs, lists irregular forms for them. It also lists *knit*, *leap*, *spill*, *speed*, *sweat* and *wed*, which for me are now optionally (and usually) regular.

³ In non-standard American, the auxiliary *do* has the past form *did* in the I position outside VP, while the undifferentiated finite and participial past of *do* is *done*: *Who left that window open? I didn't do it, she done it, and she's done it before too*.

⁴ This study's general framework is a strong version of Distributed Morphology, which distributes the traditional "machinery" of morphology to other components of grammar (Halle–Marantz 1993). In this version, there is no need for

2. Lexical treatment of English irregular verbs

In spite of the conflation of two bound morphemes into a single productive Past suffix, some hundred or so very frequent irregular verbs have different finite and non-finite Pasts, which the English lexicon has to reflect in some systematic way. A preliminary to expressing this requires fixing ideas as to where in trees given syntactic features must, may or cannot appear. When any language-particular variation is allowed, lexical items play a crucial role in specifying language-particular distributions.

2.1. Canonical realization

The lexical entries of lexicons are based on universal syntactic configurations, what some current research calls “the functional sequence” of Universal Grammar. These configurations are in turn crucially related to, but not entirely determined by, interpretations in Logical Form.

- (8) **Canonical position.** Canonical positions of categories/features are those where they receive **their standard interpretations in LF**. However, under restricted structural conditions syntactic categories/features (those used in syntax) can appear in **other positions**.⁵

In addition, I claim that the lexical categories such as V, P, D, etc. directly represent in LF the basic meanings usually associated with them. The features often used to represent these meanings (Activity, Location, Reference, respectively) are in fact redundant. As will be seen later, only **syntactically marked** items in these categories lack these meanings, which are otherwise automatic.

In large part, this essay revolves around the canonical locations in trees of the most central categories of verbal modification, Tense and Mood. Emonds and Veselovská (to appear), developing Veselovská (2008), argue in detail for the following two generalizations, on the basis of the superficially very different verbal systems of Czech and English.

their autonomous level of Morphological Structure. Emonds (2000, chapters 3–4) lays out and justifies the general architecture of this approach; further detailed empirical arguments for it appear in Emonds (1991; 2006).

⁵ A category is “realized in a position” by being phonologically spelled out or by being licensed as empty by some principle of syntax, such as Binding Theory, conditions on ellipsis, etc. Other such principles are those of Economy, such as (15) below.

Given the centrality in English of the Modal and non-Modal realizations of finiteness, (9) comes as no surprise. \pm REALIS represents the fundamental division of grammatical mood in language, as convincingly argued in Palmer (1986); [I, +MODAL] is $-$ REALIS, while [I, $-$ MODAL] is $+$ REALIS.

- (9) **The feature REALIS.** The canonical position of REALIS is I, the functional head sister of VP.

However, Emonds and Veselovská (*op.cit.*) come to a quite different conclusion with respect to the canonical (interpreted) position of the feature PAST in Czech and English. Their conclusion (10), which conforms to that in section **I**, contravenes a standard generative assumption that associates the underlying position of Tense with a position outside VP.

- (10) **The feature PAST.** The canonical position of PAST is the highest interpreted V in VP.

In other words, PAST is interpreted on **any LF head of a VP**. The partial lexical entry of *-ed* (4), arrived at by examining the English paradigms (3) and (6), conforms to this conclusion.⁶

2.2. Finite Pasts and alternative realization

The distribution of English **irregular** finite Past forms is more restricted. These forms occur **only** when a maximal VP is additionally a sister of a head I marked as $+$ REALIS. If we violate this and substitute finite Pasts (*rang, fell, knew, took, saw, etc.*) for the past participles in (3), e.g., we place them after [I, $-$ REALIS] or use them when there is no I, ungrammaticality uniformly results.

⁶ A reviewer wishes to know the relation between “the highest interpreted V in VP” and the “little v” seen in recent syntactic analyses. Whatever features may differentiate v and V, van Riemsdijk’s (1998) arguments for his “Categorial Identity Thesis” show that v is a type of V, so when v is interpreted (contributes to LF), v is the canonical position of PAST. On the other hand, all uses of *be* and many of *have* are not interpreted, and so are not canonical positions for PAST. Which verbs count as v and which are not v seems to vary across authors, so only they can really answer the reviewer’s question.

- (11) *Mary must have rang you last week.
 *Prices need not have fell yesterday.
 *To have knew that last month would have been helpful.
 *Having took leave of us yesterday, she avoided the storm.
 *I forgot about having saw this movie last year.

So the lexical entries for these allomorphs must indicate that their VP projections are sisters to [I, +REALIS].

This type of **contextual specification** has been central in my research on the Grammatical Lexicon. Its key concept Alternative Realization, a lexical device for achieving Economy, is defined and extensively justified in, e.g., Emonds (2000, chapter 4; 2007a) and Emonds–Veselovská (to appear).

- (12) **Alternative Realization (“AR”)**: Syntactic features F canonically positioned on an α^0 that lacks purely semantic features can be “alternatively realized” as a **closed class item** under β^0 , provided that **some projections of α and β are sisters**.

Though AR has previously been used only to account for properties of members of grammatical categories, it is perfectly suited for specifying non-productive “irregular” inflectional forms of N, V, and A. The special irregular finite Past stems of English verbs are a closed class of V^0 (a non-productive list of about 100), whose VP projections are sisters of I^0 . Since the canonical position of +REALIS is on I, +REALIS can **be alternatively realized under the immediately following V^0** .

As in previous work, I use small f_i for the many purely semantic features **not used in syntactic derivations**, whose combinations create the thousands of open class entries in the lexical categories N, V, A, and P. In these terms, a lexical entry for a verb with an irregular finite Past is then specified as in (13). In light of the empirical reality of these paradigms, no simpler entry could be expected, nor can the information in the entry be predicted from any other synchronic aspect of the language.

- (13) V, f_i , {*wrote*, REALIS / *written*}, PAST / *write*

This entry is to be read, “the spelling of [V, f_i] is *wrote* if both PAST and alternatively realized REALIS are present; if only PAST, then the spelling is *written*; if neither, then *write*.”

This simple formulation is of course more or less what adult language learners (and native speakers, if they have any explicit knowledge of grammar) say about a verb like *write*. But cavemen also said that cold water freezes, and it wasn't science until a formal restricted theory of chemistry could also predict that—and when—cold water freezes. If we want syntax to be a science, statements such as (13) must be expressed in formalized lexical entries and embedded in a lexico-syntactic theory with principles that specify their possibilities and restrictions. Alternative Realization is such a principle (it is not a type of transformational movement), because it is a device that sanctions lexical entries of a certain form.⁷

The exact effects of AR in all cases are still to be worked out. For example, because a single morpheme such as *wrote* spells out two features with **differing** canonical positions, here PAST and REALIS, a question arises as to which is in its canonical position and which is alternatively realized. For grammatical morphemes with purely semantic features, the question is almost trivial; the purely semantic feature(s) f_i as in (13) must be linked to a lexical category in its canonical position (AR is not defined for the purely semantic f_i), and the only such category in the entry is V. This precludes V and its feature PAST from being alternative realizations in (13); they must be in canonical positions.

However, as will be seen in specifying a full lexical entry for *-ed* in sections **3** and **4**, it is no trivial task to differentiate canonical and alternatively realized features in an entry lacking open class f_i . Emonds and Veselovská (to appear) conclude that lexical entries for grammatical morphemes require a mechanism for stipulating that a feature **may** be (**not** “must be”) alternatively realized, and propose **graphic underlining** for this purpose, as in fact already introduced in (13). The final unified entry for all uses of *-ed* in section **4** will utilize this notation crucially and extensively.

⁷ Since lexicons are at bottom lists, they do not include productive processes or generative devices. Thus, even though the most common verbs with the rhyme *-ind* (*bind, find, grind, wind, rewind*) have irregular Pasts, it is utterly unimaginable that their pattern would “generalize” to other verbs like *blind, mind* and *remind*. The only possible “analogy” or simplification is regularization, such as to *binded*. Frequency of use of lexical items or the number of lexical tokens exhibiting the same irregularity thus have next to nothing to do with diachronic loss of irregular forms.

The desirable simplicity of lexical entries constructed with the aid of AR nonetheless must confront two attendant theoretical problems.

2.3. Contributions of AR to Economy

The finite Past forms of English occur in the highest V **only if the I sister of VP is empty**, as in (14a). Predicting this is not trivial, since the highest V position in a clause can also easily contain interpreted **non-finite** Pasts. This can happen when I is realized as a form of *have* or *be*, as in (14b):

- (14) (a) Mary [_I \emptyset /*did/*could] rang you last week.
 Prices [_I \emptyset /*did/*could] fell yesterday.
 She [_I \emptyset /*did/*could] took a train yesterday.
 We [_I \emptyset /*did/*could] grew tomatoes last summer.
- (b) John [_I has] [_{VP} [_V, PAST **eaten/purchased/*ate**] his lunch already].
 Ann [_I was] [_{VP} [_V, PAST **done/finished/*did**] with her work at noon].

It seems like the very fact of REALIS being alternatively realized on V (in either irregular or regular Pasts) somehow entails that its canonical position in I should be empty. If grammatical theory can ensure this, the judgments in (14) follow.

In general, AR is part and parcel of a theory of Economy of Representation, because it favors derivations in which the content of two separately interpreted α and β are fused and expressed as one word, in the position of one or the other. To take a different example, the English grading adverb *more* can be alternatively realized with the Adjective that it modifies under a single A^0 , yielding, e.g., *smaller*, *rounder*, etc. A substantial number of such analyses using AR, e.g., in Emonds (2000, chapter 4; 2007a, chapter 7), lead to the following general conclusion:

- (15) **Economy of unmarked AR:** In the absence of further lexical stipulation (permitting AR as “doubling”), the canonical position α of an alternatively realized feature must be empty.

Thus, if REALIS is alternatively realized under V, either by the productive suffix *-ed* or by an irregular finite Past form as in (14a), the canonical position of REALIS on I must be empty. This complementary distribution is what gives the impression of “affix movement” in Chomsky (1957).

A second interaction with Economy concerns the alternatively realized position. Combining a verb with an irregular Past with a productive

AR suffix is generally excluded, whether the basic root or the irregular form of the verb is used:

- (16) *Mary ringed/ranged you last week.
 *Prices falled/felled yesterday.
 *She taked/tooked a train yesterday.
 *We growed/grewed tomatoes last summer.

To account for these exclusions, we need only make the following rather obvious statement:

- (17) **Morphological Economy:** A given X^0 in LF should be realized with as few morphemes as possible.

This second aspect of Economy subsumes the Blocking Principle of Aronoff (1976), which privileges an irregular form over a regular root with a productive affix. The Blocking Principle is limited in its scope, however, and was not formulated from the perspective of Economy. Nor does it stop regular morphology from “doubling” an irregular root, i.e., the second examples in the pairs in (16). Consequently, it seems preferable to maintain the more general (17).⁸

This section has given an account of how a closed class of English lexical verbs can continue to retain special lexical forms for the **finite Past Tense**, even though this category no longer has any reality in the productive morphology of the current language. It seems likely that these special forms will sooner or later disappear, especially in non-standard dialects and idiolects that are free of the linguistically conservative efforts of formal education. What will then be the situation of grammatical analyses of English? Present-day linguistics generally claims to be free of prejudice against non-standard dialects, and yet until now all accepted analyses of the English verbal system still crucially depend on a fundamental distinction between finite *-ed* and non-finite *-en*. If only a decreasing number of irregular forms reflect such a distinction, the traditional analysis basically serves only to describe the English of the past. It might thus be wiser to elaborate the analysis of a unified English Past, as pursued in this study, so as to avoid the embarrassment of syntax having nothing to say about the verbal system of the world’s most widespread communication system.

⁸ Curiously, this aspect of Economy would seem to be imposed rather late in the acquisition process since, impressionistically, mistakes as in (16) do seem to occur even in relatively advanced stages of child language.

3. A full lexical entry for the single English Past *-ed*

The revised picture of the English verbal system developed to this point claims that its lexical verbs V^0 have **only four forms**. That is, children learning English hear three (not four) productive morphological inflections on verbs, and they create a lexical system for such inflection with exactly this number of underlying morphemes:

- (18) (a) an uninflected lexical root form, i.e., a sort of elsewhere or default form;
 (b) a *V-ing* form (cf. Emonds 1991) and
 (c) a 3sg present form, not treated in this paper;
 (d) a single past/passive form *V-ed*, replaced with a single irregular form for about 100 roots: *bent, bled, bought, brought, cut, dug, felt, fought, found, hit, kept, led, left, lit, met*, etc.⁹

Moreover, in Standard English, a set of about other 100 verbs have entries on the model of (13), they have a second irregular form that is used for Vs in the canonical position of the feature PAST, **if** they can alternatively realize the feature REALIS of a neighboring I. Thus for e.g. the root *write*, the past/passive form is *written* (more economical than bi-morphemic *write + ed*), and the additional special form for [V, PAST, REALIS] is *wrote*. In non-standard dialects, these second irregular forms are rapidly disappearing diachronically, and to some extent also in the standard. For example, the regular non-standard past/passive form is *wrote*; as a verb form *written* is lost and survives at best as a lexicalized passive adjective (for instance, perhaps in *the written word* and *handwritten letters*).

This section now undertakes to fully specify **a full lexical entry for the multi-purpose** (= “polyfunctional”) **morpheme *-ed***. Such entries are crucial for implementing the widely endorsed idea of Borer (1984) that lexical entries of grammatical morphemes (“Grammatical Lexicons”) are **the essence of particular grammars**.¹⁰ And in order to express this entry

⁹ A reviewer wishes to know whether “*-ed* is underlying all irregular forms.” I see no reason to say that irregular forms are derived from or “replace” regular forms. All morphemes spell out (small) bundles of syntactic features directly. He/She also wishes to know why the symbol *-ed* is chosen. Simply because it is the conventional but natural orthographic notation for the set of phonetically conditioned allomorphs /ɪd/, /t/, /d/.

¹⁰ To my knowledge, Government and Binding and Minimalist research has given rise to no serious proposals other than Borer’s for what constitutes particular grammars. If instead one completely lays aside the issue of particular grammars,

(or any others) in notation that is both empirically justified and fully formal, we must reverse the widespread practice in syntax of putting aside questions about which symbols are needed in lexical entries and of how exactly they are defined. Instead, these symbols and definitions must become a primary concern in formal syntax.

3.1. Selection by higher heads

Focusing now on *-ed*, section **1** concluded that the host V of the suffix [PAST, V] must be either (i) finite (in terms of section **2**, it alternatively realizes REALIS), or (ii) the head of a complement of a semantically empty *have* or *be*.

How is this second condition on a lexical item to be expressed? In fact, there are many well-known configurations in which some item must be selected by **certain higher grammatical items**:

- Certain lexical heads must **be selected by** a given grammatical verb, such as the words *headway* and *cognizance*. These idiomatic facts must be part of their lexical entries.
- (19) (a) make/*take [_N headway]; take/*make [_N cognizance] of;
 go/*be/*run [_P berserk]
- (b) The headway she {made/*did/*got/*accomplished/*took} didn't seem sufficient.
- Past participles of intransitive verbs in several languages must **be selected by** certain auxiliaries. Though volumes have been written on the cross-linguistic differences, no formal way to express this language-particular selection has been integrated with other lexical

then syntactic theory **lacks any formal means of distinguishing sentences in one language from those in another**, i.e., it cannot distinguish the grammatical from the ungrammatical in a given language. (For example, with no particular grammars, Universal Grammar can generate both *John it sees* and *John sees it*.) Whatever such a Universal Grammar would be, it is unrelated to Chomsky's early definition of generative grammar:

The fundamental aim in the linguistic analysis of a language L is to separate the *grammatical* sequences which are the sentences of L from the *ungrammatical* sequences which are not sentences of L and to study the structure of the grammatical sequences. The grammar of L will thus be a device which generates all the grammatical sequences of L and none of the ungrammatical ones. (Chomsky 1957, 13)

formalisms. Thus, the selecting auxiliary in French is *avoir* ‘have’ except that a listed subset of “unaccusative” verbs (*mourir* ‘die’, *partir* ‘leave’, *tomber* ‘fall’, etc.) must follow *être* ‘be’.

- Van Riemsdijk (2002) justifies an empty motion verb in many Germanic languages. Among other properties, this lexical item must **be selected by** a modal. German examples:

- (20) (a) Wir müssen ins Dorf, um Wein zu kaufen.
 ‘We must [go] to the town, to buy wine.’
 (b) *Wir bald ins Dorf, um Wein zu kaufen.
 ‘We soon [go] to the town, to buy wine.’

There are also volumes on how negative and question polarity items, which differ from language to language, must **be selected by** c-commanding negative or question constituents in carefully defined local domains. And once again, no lexical mechanism for this has been integrated with other formalisms of selection.

3.2. General formalisms for lexical selection features

To remedy the absence of a way to specify obligatory selection by c-commanding grammatical items, Emonds (2005) proposes and justifies the notational scheme in (21). The scheme incorporates assumptions that lexical context features should not mention phrasal categories and should conflate phrasal and word-internal subcategorization. These claims are justified in Emonds (2000, chapter 3).

- (21) Contextual selection features
- (a) X, $_\langle F \rangle$ means ‘X selects a phrasal complement whose head has the feature/category F.’
 - (b) X, $\langle F \rangle __$ means ‘X is the head of a phrasal complement selected by the higher syntactic category F.’ At least in examples here, Fs are always closed class grammatical items.
 - (c) X, $\langle F __ \rangle / \langle __ F \rangle$ means ‘X is a bound morpheme following/preceding F in a single word.’ These are the word-internal subcategorization features of Lieber (1980).

—⟨DEF, Φ ⟩ for the idiom *make it* and —⟨REFL, Φ ⟩ for French *s'évanouir*. A similar selection feature involving meaningless stative verbs (the auxiliaries *have* and *be*) will play a crucial role in the unified lexical entries below for *-ed*.

As is well known, the lexicon contains a relatively small class of stative verbs (*have, possess, exist, need, want, like, own, owe, know*, etc.), which do not denote the “activity” of open class verbs. This can be attributed to their having **the lexical features [V, Φ]**, which mean “this item lacks the usual activity interpretation of its syntactic category V.” The Absence of Content feature Φ is a **marked** feature, because there are only a few dozen stative verbs, in contrast to thousands of activity verbs. Thus stative verbs are [V, Φ], non-locational Ps (*of, for, without, despite*) are [P, Φ], expletive pronouns are [D, Φ], etc. The archetypical **stative verbs** are *have* (in most uses) and *be* (in all uses); these two minimally specified Vs of the Grammatical Lexicon differ in their selection features, but have no inherent features other than V and Φ .¹²

3.3. The lexical entry for PAST

This “algebra of selection” in (21) and (23) provides a way to state the selectional generalizations involving the multi-faceted morpheme [_{PAST} *-ed*]. Section I concluded with the descriptive generalization (5) that this morpheme occurs as a head of a VP sister to I, **or** as the head of a complement of a semantically empty *have* or *be*. In the first case, *-ed* alternatively realizes an empty [I, REALIS] (e.g. *the box* [I, REALIS \emptyset] *contain-ed pencils*) as in the first line of the entry (24). For the second line, recall that *have* and *be* are both stative verbs, i.e., both are [V, Φ]. According to (23), if a lexical item must be selected by such a feature pair, then only **uninterpreted Vs** qualify; consequently, only *have* and *be* can select V-*ed*, as seen earlier in the paradigms of (6).¹³

¹² The feature Φ on α does not mean, “ α is meaningless” but rather, “ α lacks the usual LF content of its main syntactic category”. For instance, both *for* and *about* (usually) lack any locational sense and are hence + Φ , but *a poem for John* and *a poem about John* differ both syntactically and semantically by virtue of the different syntactic features of *for* and *about*.

¹³ Another use of the grammatical selection feature [V, Φ]— is in the lexical entry of the future collocation *going to/gonna*. Lees (1960) observes with examples that *going to* must follow a finite form of *be*: **To be going to have an operation is unpleasant*. Its lexical entry is thus as in (i):

- (24) **English Past** (tentative): $-ed$, $\langle V \underline{\quad} \rangle$, $PAST$, $\left\{ \begin{array}{l} \underline{REALIS} \\ \langle V, \Phi \rangle \underline{\quad} \end{array} \right\}$

As in section 2, underlining means that a feature may be alternatively as well as canonically realized. The reason for underlining the uninterpreted verb $[V, \Phi]$ that selects $-ed$ is that *have* can indeed be both alternatively realized as in (25a–b) and canonically realized as in (25c).

- (25) (a) Our friends $[I, +REALIS [V, \Phi, -PAST \textit{have}]]$ $[VP [V \textit{abandon} +PAST] \textit{us}]$.
 (b) Our friends $[I, +REALIS [V, \Phi, +PAST \textit{had}]]$ $[VP [V \textit{abandon} +PAST] \textit{us}]$.
 (c) Our friends $[I, -REALIS \textit{must}]$ $[VP [V, \Phi \textit{have}] [V \textit{abandon} +PAST] \textit{us}]$.

As widely recognized, two semantically empty English Vs can be in I rather than in VP, namely the auxiliaries *do* and *have*; (25a–b) are examples.¹⁴ When this happens, REALIS is in its canonical position I, and the combination “ $\langle V \underline{\quad} \rangle$, PAST” in (24) is alternatively realized outside VP. This final possibility is accounted for by further extending underlining in the entry for $-ed$.

- (26) **English Past** (all uses): $-ed$, $\langle \underline{V} \underline{\quad} \rangle$, \underline{PAST} , $\left\{ \begin{array}{l} \underline{REALIS} \\ \langle \underline{V}, \Phi \rangle \underline{\quad} \end{array} \right\}$

For such unusually “flexible” lexical entries, where every listed feature has the possibility of being alternatively realized, I assume a general convention that, prior to transformational operations (e.g., I to C movement), **at least one feature in an entry must appear in trees in its canonical position**. In this example, either PAST must be canonical (it must be on the LF head of a VP), or REALIS must be (it must be in I).

(i) *going*, V , $\langle \underline{V}, \Phi \rangle \underline{\quad} \langle V \rangle$

Notice that in (i), the V in the left context must be **uninterpreted**, while no such restriction affects the complement phrase selected by $\underline{\quad} \langle V \rangle$. This is the right empirical result: any verb can appear after this future form.

¹⁴ The lexical entries for these grammatical verbs that provide for this option are worked out in Emonds–Veselovská (to appear). The agreeing finite forms *is*, *are*, etc. are not actually “forms of *be*” but rather are AR in I of its sole syntactic feature Φ . There are also two **interpreted** grammatical verbs that can appear in I, namely negative polarity *need* and *dare*.

4. A unified lexical entry for all uses of *-ed*

If current English speakers treated **only** the finite “*-ed*” and the non-finite Past “*-en*” as a single morpheme, (26) could stand as lexically representing a final conflation of the two Pasts. However, English *-ed* as in (18d) is also the regular **passive participle** inflection as well as the PAST suffix.

4.1. A single lexical entry for all passive participles

My previous work on the use of *-en* in both verbal and adjectival passives also culminates in a single lexical entry for all English passives (Emonds 2007b, 279), reproduced here as (27).¹⁵ Underlining again represents that AR is possible.

(27) **English passive participle** (all uses): *-ed*, ⟨V —⟩, A, (Φ), D

I discuss in turn the three non-contextual categories/features in this entry.

(i) **The category A.** There are good arguments that **all** English passive participles are located in trees in canonical positions of adjective phrases (APs), whether they are interpreted as adjectives (so-called adjectival passives) or not (so-called verbal passives). These arguments include but are by no means limited to (i) selection only by verbs that take AP complements, and (ii) adjectival morphology in Germanic and Romance languages, whose passives are structurally very much like English (Emonds 2007a, chapter 8).

(ii) **The underlined category D.** Emonds (2006) develops proposals of McA’Nulty (1983) and Lefebvre (1988) that passive participles spell out (e.g. alternatively realize, hence the underlining) syntactic features of their sister noun phrase, i.e., of an object DP. Their essays focus on the agreeing “phi-features” of French adjectives, while mine argues for extending this idea to passive participles in other Romance, Germanic and Slavic languages. The core of this analysis is that some feature(s) of

¹⁵ That is, the passive participle in both verbal and adjectival passives is the same morpheme. Previous work has used the standard abbreviation *-en*, which as per above is replaced here with *-ed*. Emonds (2007b) also uses a different formalism for the feature Φ, which I do not reproduce here.

D is/are expressed by AR in all these passives, but nothing requires that these are necessarily phi-features (not overt in English).¹⁶

(iii) **The optional feature Φ .** Emonds (2006) argues that the paradigms typical of **adjectival passives** (Levin–Rappaport 1986; Siegel 1973; Wasow 1977) all result from *-en* being inserted under A **prior to Spell Out**, so that then $[_A V-en]$ receives a standard LF interpretation of A as a “property”. This reading results when (Φ) is **not** chosen with A in (27).

If Φ is chosen in (27), then the passive *-ed* (previously notated *-en*) has **no interpretable features**: A is not interpretable because Φ is not, $\langle V_ \rangle$ is a context feature, and D is an AR feature inserted in PF. Consequently, the passive morpheme is itself not inserted until PF, which means that V is the only part of *V-en* visible in syntax and LF. Emonds (2006) shows that this conjuncture gives rise to all the properties of verbal passives noted in literature since Wasow (1977).

4.2. The formal economy of disjunctive entries: is there empirical support?

The analyses of this paper and previous work on passive constructions have converged on the following conclusion: There are two syntactic context statements for a single phonologically specified English verbal suffix *-ed*, one for when it expresses the feature PAST (26) and one for when it expresses the Passives (27). This brings into focus two possible questions:

- (28) (a) Do these morphemes overlap in content? In particular, is the passive use of *-ed* sometimes and somehow inherently past?
- (b) If the syntactic properties of the two lexical entries are truly disjoint, as the formulations (26)–(27) suggest, is it appropriate to reformulate them with brackets $\{\alpha/\beta\}$ as a single entry?

The first question is addressed directly in Stowell (2008, section 3). He argues, conclusively to my mind, that the English passive participle is never responsible for past tense semantics, even in non-finite clauses with no other interpretation such as: *Any tenant evicted by Karen should take*

¹⁶ The unmarked AR of D in (27) ensures that an empty DP object is present in its canonical position, which is correct for English and Spanish passives. In some related languages with impersonal and intransitive passives (French, German, Norwegian), D is parenthesized, giving rise to gapless passives with expletive subjects and participles that lack agreement; cf. Emonds (2006).

swimming lessons.¹⁷ As he summarizes, this participle “occurs in several constructions other than the perfect construction, and in all of these constructions it functions as a passive form and fails to exhibit a past-shifting semantics”.

This negative answer to (28a) leaves us then with only the second question, which concerns justification for the next step. I propose to disjunctively combine the two entries for *-ed* as in (29).

$$(29) \text{ Unified English past/passive entry: } -ed, \langle \underline{V} \text{ —} \rangle, \left\{ \frac{\text{PAST}}{\text{A}, (\Phi), \underline{D}}, \left\{ \frac{\text{REALIS}}{\langle \underline{V}, \Phi \rangle \text{ —}} \right\} \right\}$$

Is this a contentless and purely formal step, or does this “saving” of two lexical symbols (the word-internal context feature and the participle’s phonological form) reflect a psychologically real economy of representation? Several authors (for example, Bresnan 1982) have observed that if the two homonymous *-en* participles were separate morphemes, they would not so perfectly share irregular forms. (By way of contrast, English nouns do not share irregular plurals with their usually homophonous possessives: *men* vs. *man’s*, *children* vs. *child’s*.) I can add that when an irregular verb regularizes, as in my lifetime for *knit*, *leap*, *spill*, *speed*, *sweat* and *wed*, there are no cases where the passive or the perfective form regularizes first, with the other regularizing later. Thus in my speech, **The water was spilt* and **She has spilt the water* are equally unacceptable. Such facts indicate that a single morpheme is involved.

I conclude then that the unity of the syntactically different uses of the *-en/-ed* participle is psychologically real, and that the Modern English Grammatical Lexicon has combined both uses of *-ed*, the Pasts in (26) and the Passives in (27), into a single entry (29).

4.3. Parsimonious formalism vs. intuitive simplicity

Now of course I understand that a sort of mental knee-jerk reaction might be, “the entry (29) for a single grammatical morpheme is just too complex”. This reaction contains a **tiny** grain of truth, or perhaps intuition, in that native speakers are trying hard, against the might of tradition in

¹⁷ Similarly, we do not say that the adjective expresses past tense in examples like *Three pensioners famous as child actors will be interviewed on tomorrow’s show*.

both schools and administrative/business writing, to get rid of two contexts for expressing the Past, as seen in section 2. Moreover, in untutored speech, it seems that uncontracted perfective *have* is disappearing, and that its contracted version is getting misspelled *of*, i.e., is felt as unrelated to the morpheme *have*.

On the other hand, the system implied by (29) has been stable in Standard English for centuries. One need only peruse Jonathan Swift's writing of some three centuries ago to see today's Standard English use of *-ed* fully in place. Consequently, tens of millions of native speakers, including this one, have had no trouble in mastering it and passing it on. So does entry (29) really give an overly complicated picture of the sort of non-genetic specifications that native speakers have to learn?

In my view, the only reason for a negative reaction to (29) is that formal syntacticians just haven't paid regular attention to language-particular patterns and generalizations. Many think they don't exist (or aren't interesting) because they haven't looked. Yet:

- No article has argued against the lexical mechanism of Alternative Realization, introduced in Emonds (1987) and fully exploited in (29). In fact, adherents of Distributed Morphology have used it in special cases of AR called “Merger” in Halle–Marantz (1993) and “Dissociation” in Embick–Noyer (2001).
- None of the eight syntactic categories in (29) could be eliminated in some “simpler” theory of the lexicon. Every one of them is needed for distributional generalizations about *-ed*. Although unstructured “lists of syntactic and semantic features” are sometimes proposed as sufficient for lexical models, these proposals say nothing about characterizing or restricting such features. Unfortunately, *a priori* simple lists, often dismissed as being “only lexical”, when taken seriously, will contain elaborate and redundant specifications. Their advocates therefore imply that children have more to learn, not less.
- Can such imagined (if not existing) “simpler” theories express the language-particular generalizations in (29) that (i) English verbal passives are V-like in LF but A-like in PF (Japanese passives are never A-like), (ii) English perfects and finite pasts both indicate PAST Event Times (Czech has no such perfect), (iii) English passives always involve an empty DP object (in different ways, those of German and Japanese do not), or that (iv) English non-finite PastS always involve an empty grammatical verb, etc. etc.? I am aware of

no formal treatments or even serious mention of such paradigms by advocates of theoretically “simple” lexical lists.

- There is no redundancy at all in (29) and no symbol or category is used *ad hoc*. Every one of its features and symbols has widespread independent justification in articles cited here in their support.

The fact is, if syntacticians finally start to seriously characterize what English children learn when they fully acquire polyfunctional morphemes such as *as, for, if, just, one, that*, etc. and what French children learn when they master *à, de, le, plus, que, se*, etc., I am confident that (29) won't appear complex at all, but rather delightfully simple. Actually, if lexical entries could win prizes, I'd submit it in a competition.

5. A research residue: LF interpretations of alternatively realized Pasts

In my view, Alternative Realization, crucially used in (29) and extensively in other works cited (and many not cited), has proved its scientific worth ten times over, as a replacement for over-reliance on *ad hoc* head movements of particular items, morphological templates, and a number of vague and *sui generis* language-particular parameters. But as we might expect with a formal concept with such wide coverage, there lurk in its general formulation ambiguities that can be sharpened by further research.

- (12) **Alternative Realization (“AR”)**: Syntactic features F canonically positioned on an α^0 that lacks purely semantic features can be “alternatively realized” as a **closed class item** under β^0 , provided that **some projections of α and β are sisters**.

The text has indicated some of these uncertainties. For example, how do we indicate that the **canonical position** of some AR morpheme, such as number agreement with the subject on an I or V, must be or need not be covert? In the usual case, an empty canonical position seems required with AR, but even dialects of a single language (e.g. of Welsh) can vary; “pro-drop” of a subject is necessary for verbal number agreement in one dialect, but not in another.

Another issue concerns the full utilization of, as well as limits on, the “LF cancellation feature” Φ , which has only recently been utilized in conjunction with AR. Does this feature occur only with head categories α^0 , or can it more generally accompany any syntactic feature? Other

questions of this sort arise, but cannot be treated in a paper of limited scope.

We can, however, conclude with a question that this study leads to directly. As in previous research on AR, I take (30) as an integral part of the AR framework, and moreover have always adhered to (31) as well.

- (30) **PF Insertion:** If α lacks features interpretable in LF, α is inserted in PF only after its phasal domain has been sent to LF, i.e., **after Spell Out**.
- (31) **Uninterpretable Features:** (i) Context features, (ii) categories marked for Absence of Content [F, Φ], and (iii) Alternatively Realized features are **not interpretable in LF**.

Nonetheless, on the basis of the present essay, (31iii) is called into question; it may be that LF can “see” certain instances of AR.

5.1. Present and Past Reference Time

The English auxiliary [*have*, \pm PAST], under the strict condition that it be in I and not V, has a special interpretation which studies of Tense and Aspect have called “Reference Time,” in contrast to the “Event Time” of a clause’s lexical verb. In the following, Reference Time is underlined. The verb with PAST Event Time is in bold:

- (32) **Present Perfect:**

Jane [_I have [–PAST s]] now [_V finish [**PAST ed**]] with her work.
 Jane [_I –PAST is] now [_V finish [**PAST ed**]] with her work.
 Jane has/is now/*yesterday/*last week finished with her work.

Here, the Reference Time –PAST is “now,” while the Event Time **PAST** is prior to now.

- (33) **Past Perfect:**

If Bill [_I have [PAST ed]] [_V eat [**PAST ed**]] lunch at noon,
 he later [_V return [**PAST ed**]] happy.
 If Bill had eaten lunch at noon, he later returned happy.

Here, the Reference Time PAST is interpreted as prior to the **PAST** Event Time of the main clause.

It appears that the canonical feature \pm PAST on V can be **optionally** alternatively realized on a stative verb in I, and there contributes to the

calculation of Reference Time. The underlined instances of \pm PAST in the examples in (32) and (33) then appear to include **instances of AR which contribute to LF**, counter to (31iii). That is, after canonical Tense is interpreted on a VP, Tense outside its canonical position on V can again be interpreted by a rule something like the following:

- (34) **English Reference Time:** After [VP, PAST] is interpreted for Tense in English, then [I, Φ \pm PAST] can express a clause's "Reference Time".

This rule of interpretation is the source of the English "Perfect Tenses." In accord with Canonical Realization (8), this secondary interpretation of Tense in I is not the standard and presumably universal Past Event Time. The rule also seems to be language-particular, since some languages, e.g. Czech, seem to have no grammatical means to separately express Reference Time.

There is only one robust syntactic paradigm that involves Reference Time, namely, the incompatibility of the perfective *have* with Past adverbs mentioned earlier, from Hoffmann (1976) and Emonds (1975): *Jane has/is now/*yesterday/*last week finished with her work.*¹⁸

This novel use of **interpreted Alternative Realization** seems to bring us closer to formally accounting for the puzzling patterns of adverbial modification and intuitive interpretations of English "perfect tenses". And we can note that these patterns, and hence their formal account in terms of AR, are quite language-particular. Languages such as French, German and Spanish have structurally and morphologically similar tense forms,

¹⁸ A not insignificant amount of work on relations between tenses and time adverbials proceeds on the assumption that Event Times and Reference Times of single clauses (IPs) can co-occur with different (post-verbal) time adverbs. This seems to be incorrect: **John finished drinking tea during the break at the end of the break.* As a result, study of these time adverbials may not reveal very much about the syntax of non-finite embedding.

Along these lines, Stowell's (2007) example (i) seems to me to be a performance error, derived from the grammatical (ii).

- (i) He is rumoured to have seen her [Event Time only once before]
[Reference Time when I met him].
(ii) He was rumoured to have seen her [Infin. Time only once before]
[Main Time when I met him].

If one freely combines time adverbs on the model of (i), one quickly runs into unacceptability: *Kennedy was rumoured to have had many affairs when he was President (*in the 1964 campaign).* This becomes grammatical only if *in the 1964 campaign* is placed somewhere before *to*.

but with differing rules of interpretation, while Czech seems to entirely lack any such perfect forms.

These considerations lead to a tentative foray into a new area for using alternative realization:

- (35) **Interpreted Alternative Realization:** Marked, language-particular LF rules can use AR features, which then enter derivations prior to Spell Out. Otherwise, AR is present only in PF.

This important change from my previous view expressed in (31iii) deserves further research.

In conclusion, whatever the needed modifications and extensions in the definition and use of AR in designing Grammatical Lexicons, very little current research seems both built around the concept of an explanatory Universal Grammar and yet focused on making progress in constructing the particular grammars that necessarily supplement it. That is, the AR framework, to some extent pursued with different labels in Distributed Morphology, is presently the **only real contender** for constructing actual **empirically based** generative grammars, as defined in Chomsky (1957) and cited here in note 10.

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