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Multiple exponence: where we are and where we are going

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Abstract
This is an introductory paper to a special issue on *Multiple Exponence*. We aim to provide a comprehensive overview of empirical and theoretical aspects of the study of this phenomenon by identifying its potential causes, methods of empirical study, and the most recent formal approaches. We highlight various diachronic, synchronic, and language acquisition facets of multiple exponence, showing where we are in its study and where we feel we are going. Throughout, we reference the literature as well as the papers of this special issue.

Keywords Exponence · Mapping · Economy · Redundancy · Diachrony · Acquisition · Secondary features

1 Introduction

The most economical way of mapping meaning onto form is associating one exponent (the form) with one grammatical function of feature (the meaning), for example nouns are pluralized in Spanish by an exponent *-(e)s* in virtually all cases (i.e. [PLURAL] ↔ /-s/). However, one does not have to look far to find deviations from this ideal mapping in any given language. The kind of deviation this paper is interested in is 'Multiple Exponence' (ME), the one-to-many mapping of particular features onto exponents, such that a single feature is realized by multiple exponents (see Matthews, 1972, 1974; Caballero & Harris, 2012; Harris, 2017; Fenger, 2023). For concreteness

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and restrictiveness purposes, we adopt the following definition from Harris (2017, 9):

(1) Multiple exponence: The occurrence of multiple realizations of a single morphosemantic feature, bundle of features, or derivational category within a word

To exemplify, consider data from Camling (Kiranti, Tibeto-Burman) in (2). Harris (2017) uses this as an illustration of the so-called *periodic* multiple exponence, where an exponent of a feature F appears next to a bound morpheme, and then appears again accompanying the entire stem. Example (2) illustrates two key properties of ME: the expression of a single feature twice (e.g. 3rd person participant, or 1st person agreement), as well as the affected domain being a word.

(2) ME in Camling (Harris, 2017, 56) (based on Ebert, 1997, 20)

a. lod-u-ng-c-u-ng
tell-3.PAT-1.SG-3.NONSG.PAT-3.PAT-1.SG
'I told them'

b. lod-u-m-c-u-m-ka
tell-3.PAT-1/2.PL.AG-3NONSG.PAT-3.PAT-1/2.PL.AG-EXCL
'we told them'

With respect to the domain in particular (earlier left somewhat vague – Caballero & Harris, 2012, 65), Harris (2017, 9) explicitly delimits it to a word in order to exclude patterns on a sentence level that look like ME, but can ultimately be more adequately analysed as concord, doubling, reduplication, *etc*. The challenge of delimiting the domain to a word and how to properly define it has been tackled recently by Fenger (2023). Even though a word is generally taken to be an independent grammatical and prosodic unit, Fenger argues that in many languages the boundaries of such units are not quite clear-cut, since phonological, morphological and syntactic criteria of wordhood do not always overlap.

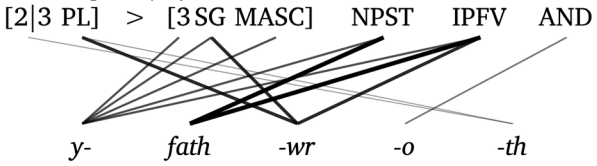
Moreover, a major issue in ME is how to distinguish it from other types of one-to-many and many-to-one mappings both empirically and terminologically, examples including discontinuous exponence, distributed exponence, extended exponence, cumulative exponence, *inter alia*. Starting from the last, cumulative exponence is often taken to be the mirror-image of ME, involving many-to-one mappings (e.g. portmanteaux in Fenger, 2023). Furthermore, the terms discontinuous and extended exponence are often interchangeable, denoting "the use of two morphemes to realize two features that are felt to belong together" (Harris, 2017, 20 and references therein). In the literature, Fenger (2023) equates discontinuous and extended exponence, whereas for Grofulović and Müller (2023) extended exponence (in some cases) overlaps with multiple exponence. Finally, distributed exponence is the kind of mapping where multiple morphs express one category, but the morphs themselves cannot be assigned a single meaning (Harris, 2017, 20).

While the types of ME described by Caballero and Harris (2012) and Harris (2017) can indeed be found in many languages across the world, many recently emerging examples involve no neat form-meaning pairs, making classification somewhat challenging. For instance, Döhler (2018, 178) provides the following example from

Komnzo (Yam, 'Papuan'), which can be glossed in an Item-and-Arrangement style decomposition as in (3). However, Döhler also stresses that "some of the grammatical values...cannot be shown on the gloss line because they can be inferred only after integrating several exponents", and takes this as supporting a Word-and-Paradigm approach (Matthews, 1974) reflected in the second row of 'glossing' in (3). Regardless of theory, Döhler provides the figure in (4) to graphically represent the complex web of connections between meaningful features and the exponents which realize them.

(3) *yfathwroth*
y-fath-wr-o-th
3SG.MASC.α-hold.EXT-NONDUAL-ANDATIVE-2|3NSG
(2|3PL:SBJ>3SG.MASC:OBJ:NPST:IPFV:AND/hold)
'They hold him away.' (Döhler, 2018, 179)

(4) *The complexity of Komnzo verb* (Döhler, 2018, 178)



The cross-linguistic origins of ME such as that seen in Komnzo are still being debated, but one common convergence is ME relieving some central tension that emerges in this process. There is both a desire to (i) make the signal as clear as possible, as well as (ii) use as little resources as possible. This essentially means that basic language principles of redundancy and expressiveness on the one hand compete with non-redundancy and economy on the other, and ME may result. The challenge is to tie particular data to explicit proposals involving these opposing forces, whether within a diachronic timeline (multiple stages with and without ME) or from a synchronic standpoint (layers of embedding or cycles involved in the derivation).

The remainder of this introduction will situate ME within its larger context, asking where we are in our understanding (Sect. 2), where we appear to be going (Sect. 3), and then briefly recap the papers of this volume, critical to these inquiries (Sect. 4).

2 Where we are: the state of multiple exponence

2.1 The role of diachrony

From the diachronic point of view, ME is often thought to emerge through layers of inflection that get added to a form, 'trapping' earlier exponence inside of a newer type. Herce (2022) offers an illustration from Chichimec (Otomanguean), in the expression of possession. While most nouns are inflected in an analytic expression where the possessor precedes the head noun and minimally affects it (e.g. [nírʔi símʔér] 'your coat' vs. [nintʔí simʔér] 'his/her coat'), a minority of nouns show a synthetic pattern which involve a prefix, a stem change, and/or a tonal change (e.g.

Table 1 Paradigm of Chichimec 'friend.SG' (Herce, 2022, 4)

	SG	DU	PL
1 EX	na-hí	na-hí-ʔũ	na-hí-hũ
1 INC	-	na-hí-s	na-hí-n
2	ú-nho	ú-nho-s	ú-nho-n
3	e-nhí	e-nhí-s	bú-nho

[únho] 'your friend' vs. [enhí] 'his/her friend'). A paradigm of this synthetic strategy is provided in Table 1.

Although this class of nouns is quite idiosyncratic and closed, Herce (2022) identifies some regularities, such as that stem alternations distinguish 45.3% of all pairs of cells, tone distinguishes 49.8% of them, and prefixes 54%. Important to our discussion, the expression of individual possessor feature bundles (person and number) is distributed across prefixes, stem alternations, tone alternations and suffixes. In particular, Herce argues that of the three strategies (prefixation, stem change, tone change), not every strategy is equally informative. Prefixes mostly provide information on 1st person, stem changes apply to identify 3rd person plural, while tonal change mostly affects 2nd person, yielding a unique type of distributed exponence across the whole system.

Historical change is at least partially responsible for this redundancy in marking. Building on earlier work in Gibson and Bartholomew (1979, 309) for the related language Central Pame, an older system of inflection was characterized by modifications of stem-initial consonant and tone-stress. This led to partial ambiguity due to phonological changes in the language, and a new affixal system emerged to disambiguate the forms, the latter marking categories more explicitly. The interaction of such a morphological layering with coalescence (which creates unique roots) yields the wide spectrum of different forms seen in Table 1. The addition of morphological layers for the purposes of disambiguation and distinguishing of grammatical categories can thus be considered one of the causes of multiple (or in this case distributed) exponence.

A similar conclusion is reached by Amiridze (2025, this issue), who studies placeholder verbs in Georgian. Placeholder verbs substitute for regular verbs to fill in for lexical or knowledge gaps by the speakers, or to avoid using inappropriate language. Consider the pair in (5), where the example (5-a) illustrates a regular lexical verb in Georgian, whereas (5-b) shows the placeholder verb that can substitute for it. The placeholder verb is built on a semantically bleached root meaning 'do, make' and its characteristic parts are several prefixes that precede it. Among them, the preradical vowel (PRV) in (5-b) can indicate voice, reflexivity or valency, preverbs (PV) express direction and orientation in space, and agreement markers indicate agreement relations with the verb's arguments. To that, the verb contains the placeholder marker (PHM) *imas*, which otherwise serves as a distal demonstrative.

(5) Georgian regular vs. placeholder verb (Amiridze, 2025, this issue)

a. (me) (mas) (is) ga-v-u-cxel-e.
I.ERG (s)he.DAT it.NOM PV-S1.SG-PRV-heat-SM
'I heated it for him/her.' (e.g. the lunch)

b. (me) (mas) (is) ga-v-u-**imas**-**ken**-i.
I.ERG (s)he.DAT it.NOM PV-S1.SG-PRV-PHM-do-SM
'I *thingamajig*-ed[1] it for him/her.'

Amiridze (2025, this issue) contributes novel data showing that speakers of Georgian produce placeholder verbs involving ME, whereby agreement markers and preradical vowels appear both preceding and following the placeholder marker *imas*. The locus of ME is boxed in (6).

(6) *ME in Georgian* (Amiridze, 2025, this issue)
še-[g-i]-**imas**-[g-i]-**kn**-a.
PV-IO2.SG-PRV-PHM-IO2.SG-PRV-do-S3.SG.AOR
'(S)he *thingamajig*-ed it to you (inwards).'

She goes on to argue that this pattern currently coexists in the language with two other patterns, still available from previous stages of the language's development. Pattern (7-a) was recorded in 1920s, pattern (7-b) from the 1970s on, and pattern (7-c) displaying ME from the 1990s and thereafter.

(7) a. Pattern A: PV-[AGR-PRV]-imas-Root-...
b. Pattern B: PV-imas-[AGR-PRV]-Root-...
c. Pattern C: PV-[AGR-PRV]-imas-[AGR-PRV]-Root-...

Multiple Exponence emerges as a result of a diachronic change, by expanding on the previously available patterns in the language and in a way 'combining' them.

2.2 Theoretical angles

Multiple Exponence has been particularly profitable to morphological theory, whose relevance spans the many current models and sub-models (e.g. Paradigm Function Morphology, Word and Paradigm Morphology, Construction Morphology, Distributed Morphology, Nanosyntax, Optimality Theory, *inter alia*). In this section we will compare and contrast some formal approaches to ME (though for space reasons, we cannot entertain all).

To begin, one of the central puzzles in the study of Multiple Exponence has been the so-called *partially superfluous exponence*, identified by Caballero and Harris (2012) and exemplified in (8-a). This type of ME involves a subset relation between two exponents that realize the same feature. This contrasts against two other types of ME, *overlapping exponence* in (8-b) where exponents share a feature but without a subset relation, and *fully superfluous exponence* in (8-c) where the exponents have an identical feature specification. The three types are formally schematized by Grofulović and Müller (2023) in (8). As a reference, we exemplify partially superfluous exponence using plurality in Archi (Nakh-Daghestanian) (9), where the plural number is exponed twice, once independently and once together with the ergative case.

[1] In (5-b), as placeholder verbs have no obvious lexical meaning, the author translates them using the English placeholder noun *thingamajig* to illustrate their bleached semantics.

(8) *ME patterns by cumulation/separation type* (Caballero & Harris, 2012, 175, Grofulović & Müller, 2023, 160,162)

a. *Partially superfluous exponence*:
/a/ ↔ [f_1]
/b/ ↔ [f_1,f_2]

b. *Overlapping exponence*:
/a/ ↔ [f_1, f_2]
/b/ ↔ [f_1,f_3]

c. *Fully superfluous exponence*:
/a/ ↔ [f_1, f_2]
/b/ ↔ [f_1,f_2]

(9) *Partially Superfluous ME in Archi* (Kibrik, 1991)

a. gel-um-čaj
cup-PL-ERG.PL

b. gel-li
cup.ERG

c. *gel-čaj
cup.ERG.PL

According to Grofulović and Müller (2023, 164), partially superfluous exponence raises a serious problem for restrictive theories of inflectional morphology: why does the existence of a more specific exponent (i.e. /b/ ↔ [f_1,f_2] from (8)) not block the more general (and seemingly redundant) one (i.e. /a/ ↔ [f_1])? In short, in Archi why does *-čaj* ERG.PL not preclude *-um* PL?

Grofulović and Müller (2023) compare and contrast possible solutions to this issue under both Optimality Theory and Distributed Morphology. Starting from standard, fully parallel Optimality Theory (OT) (Prince & Smolensky, 2004), they argue that a more specific exponent would always block the more general one. From the side of economy, the less specific exponent has nothing to contribute that has not already been provided by the more specific one. In Optimality Theory, every exponent will incur a violation of some low-ranked constraint that essentially blocks exponence. Candidates with more exponents will incur more violations, and will hence never be chosen as optimal. Taking the number exponence in Archi in (9) as a test case, Grofulović and Müller (2023) sketch a possible derivation of the pattern under this approach.[1] The tableau in (10) provides the assumed input (I_1), with features [-obl(ique), +gov(erned)] representing ergative case. The output candidates contain all of the features of the input, satisfying the highest-ranked identity constraint (ID-F). The candidates in the middle lack either number or case exponent, thus violating the other two faithfullness constraints (MAX). Finally, the candidate with multiple realizations of the feature [+pl], which is the intended winner, is ruled out due to multiple

[1] For the sake of concreteness, they assume that the following constraints are at work: ID(ENT)-F(EATURE) in charge of feature specification, and that the candidates contain subsets of features specified in the input; MAXNUM and MAXCASE stating that output exponents should realize the number and case features present in the input, which ensure compatibility and specificity; and *STRUC(TURE) ensuring economy of representation, as every grammatical operation comes at a cost.

violations of the economy constraint. This tableau's winning candidate is O_{11}, which incurs fewer violations and is thus more optimal, but this is not the actually attested form (indicated by a blacked out finger). Rather the less optimal O_{14} is (indicated by a star).

(10) *ME in Standard Parallel OT* (Grofulović & Müller, 2023, 166)

I_1: /[$_N$ gel:[+pl,–obl,+gov]]/	Id-F	MaxNum	MaxCase	*Struc
☛ O_{11}: gel[+pl,–obl,+gov]-čaj[+pl,–obl,+gov]				*
O_{12}: gel[+pl,–obl,+gov]-um[+pl]			!*!	*
O_{13}: gel[+pl,–obl,+gov]-li[–obl,+gov]		*!		*
☆ O_{14}: gel[+pl,–obl,+gov]-um[+pl]-čaj[+pl,–obl,+gov]				**!

While parallel OT is unsuitable here, Grofulović and Müller (2023) demonstrate that a derivational version of OT can indeed solve many of the present problems. Following in the spirit of Caballero and Inkelas (2013), Stiebels (2015), Müller (2020), they argue that the solution must involve several sequential optimizations, whereby the exponents are gradually added to the output over several cycles, instead of appearing at once as in (10). The logic is as follows. Assume that for the first cycle of optimization, only the more general exponent is available, of the /a/↔[f_1] type. In the following cycle, the more specific exponent (i.e. the /b/↔[f_1,f_2] type) becomes available and is selected based on considerations of optimality. This would instantiate a case of *counter-bleeding*, as the realization of the more general exponent /a/ would have been blocked by /b/, but /b/ was added to the derivation too late to block (bleed) /a/.

Regardless of the specific mechanism of derivation (e.g. *strata* by Caballero & Inkelas, 2013, *functional sequence* by Stiebels, 2015, or specific constraints such as *Minimize Satisfaction* by Müller, 2020), such an approach makes the prediction that the more general exponent should be realised closer to the stem than the more specific one (Grofulović & Müller, 2023, 167). As argued by Fenger (2023), the empirical status of this prediction is still an open issue, as several counterexamples have been identified in the literature (see this work for an overview).

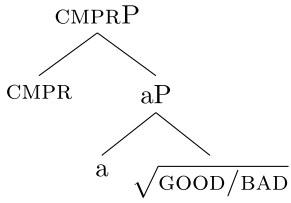
The idea of adding inflection on different *cycles* resonates with the idea of adding *layers* of inflection diachronically, as suggested by Herce (2022) and Amiridze (2025, this issue) in Sect. 2.1 above. The two explanations thus need not be mutually exclusive, but may rather tackle the same issue from two compatible angles.

In addition to OT, let us examine a proposal from the current volume, Caha (2024, this issue) working in the syntactically-oriented morphological framework of Nanosyntax (Starke, 2018). This work explicitly eschews treating Multiple Exponence as contextual allomorphy. Caha (2024, this issue) discusses the well-cited ME found in English comparatives. In (11-a), the comparative meaning of *better* is expressed twice, namely by means of stem suppletion as well as affixation. In contrast, (11-b) may be considered an instance of cumulative exponence, as both the meaning 'good' and the comparative meaning are expressed in a single form *worse*.

(11) a. good ∼ bett-er
b. bad ∼ worse

Multiple Exponence of the type in (11) is most often analysed in Distributed Morphology (Halle & Marantz, 1993, 1994) by recourse to secondary, or contextual features (Grofulović & Müller, 2023, 168), i.e. by defining a context under which a particular exponent is inserted in the base of the adjective in order to realise the appropriate (suppletive) stem. Assuming that the comparative is built by adding a Comparative (CMPR) structural layer above the adjectival phrase in the syntax as in (12) (Bobaljik, 2012), the realisation of the base *bett-* can be derived by specifying that this allomorph appears in the presence of the CMPR feature/phrase (13-b), in contrast to the elsewhere form *good* (13-a).

(12)



(13) *ME via context-sensitive rules* (Caha, 2024, this issue, based on Bobaljik, 2012)

a. $\sqrt{\text{GOOD}} \Leftrightarrow$ *good*
b. $\sqrt{\text{GOOD}} \Leftrightarrow$ *bett-* /] CMPR]
c. CMPR $\Leftrightarrow$ *-er*

Although appealing for its simplicity, Caha (2024, this issue) ultimately finds such an analysis insufficient to derive more complex cases of Multiple Exponence. He argues that contextual allomorphy is insufficient to derive particular patterns of "special nominatives", making the wrong predictions. Specifically, he utilizes primary exponents only and eliminates the need for secondary features, in what can be called the 'No Multiple Exponence' model of ME.

To expand, let us return to the simple English comparatives *good* ~ *better* and *bad* ~ *worse*, from (14). For the latter, Caha posits the rules in (14), while for the former he posits (15). The crucial difference between the two is in the size of the structure lexicalized by a particular exponent. In (14), the root and the adjectival head are realized together by the morpheme *bad*, whereas *worse* lexicalizes both this structure and the additional comparative layer. On the other hand, while *good* realises the root and the adjectival head as well, the suppletive stem *bett-* is assumed to lexicalize a smaller chunk of the structure, namely the root only. The adjectivizing head and the comparative head are then lexicalized by the suffix *-er*.

(14) *Portmanteau exponence as phrasal lexicalisation* (Caha, 2024, this issue)

a. [$\sqrt{\text{BAD}}$ *a*] $\Leftrightarrow$ *bad*
b. [[$\sqrt{\text{BAD}}$ *a*] CMPR] $\Leftrightarrow$ *worse*

(15) *'No Multiple Exponence' model of ME* (Caha, 2024, this issue)

a. [$\sqrt{\text{GOOD}}$ *a*] $\Leftrightarrow$ *good*
b. [$\sqrt{\text{GOOD}}$] $\Leftrightarrow$ *bett-*
c. [[*a*] CMPR] $\Leftrightarrow$ *-er*

Table 2 Paradigm of Latin *senec* 'old man' (Caha, 2024, this issue)

	SG		PL	
NOM	**senec**	**-s**	sen	-ēs
ACC	sen	-em	sen	-ēs
GEN	sen	-is	sen	-um
DAT	sen	-ī	sen	-ibus
ABL	sen	-e	sen	-ibus

In total, the core idea is thus that suppletion does not involve context specification, but rather the positive and comparative stem realize different features.

In Caha (2024, this issue), the main concern however is so-called 'special nominatives', such as those presented in Table 2. He argues that they can be derived essentially under the same 'No Multiple Exponence' approach as the comparatives above. The specific puzzle consists in the form of the nominative singular stem *senec-* being different from all other stems in the paradigm (*sen-* being used elsewhere).

He assumes that the stem of a noun involves features REF (for 'referential expression') and CLASS (for gender, borrowing from Harley & Ritter, 2002), number is represented somewhat simplistically using the feature #, and case features form a hierarchy (Caha, 2009), here simply rendered F1, F2, F3. Caha's assumed structure of the nominal phrase is given in (16). In the case of the Latin noun *senecs* 'old man', the lexicalization rules are given in (17).

(16) [F3 F3 [$_{F2}$ F2 [$_{F1}$ F1 [$_{\#}$ # [$_{CLASS}$ CLASS [$_{REF}$ REF]]]]]]

(17) a. [[REF CLASS] #] ⇔ *senec*
b. [F1] ⇔ *s*
c. [[[#] F1] F2] ⇔ *em*
d. [REF CLASS] ⇔ *sen*
e. [[[[#] F1] F2] F3] ↔ *is*

The basic idea is that the root *senec-* is special in that it realises three syntactic nodes REF, CLASS and #, as in (17-a). In contrast, the more general form *sen-* involves a smaller structure that lacks the number node (17-d). What is also special is that the nominative singular case exponent *-s* realizes only the nominative case feature (17-b), while all other case exponents are portmanteaus involving number and one or more case features (17-c,d).

Caha's (2024, this issue) approach to lexicalization of course requires additional machinery in order to work properly, such as the Superset Principle (Starke, 2009) and the Elsewhere Condition (e.g. Neeleman & Szendröi, 2007). The former requires that a lexical item realize the structure that it contains, while the latter ensures that, given two rules that can lexicalize the given structure, the more specific rule is given precedence. Both are relevant when the rules (17-a) and (17-d) compete at lexicalizing a given structure. If the #-phrase is present, the Superset Principle will require the application of the rule (17-a), since the structural description of the rule in (17-d) is included in (17-a). On the other hand, if the tree to be lexicalized consists only of [REF] and [CLASS] features, both rules could in principle apply, but the Elsewhere Condition will require the application of (17-d), as (17-a) has a superfluous # feature.

He thus ultimately argues that ME can be derived such that no feature is exponed multiple times, and only utilizing the primary features available from the syntactic structure.

This Nanosyntactic account sets it apart from a DM approach advanced in Grofulović and Müller (2023) specifically with regard to (a) associating every syntactic functional head with a single vocabulary item, as standardly assumed in DM (*disjunctive blocking*) (b) requiring post-syntactic feature copying, and (c) utilizing cyclicity in a bottom-up derivation. See this work for a complete derivation of partially superfluous ME (8) in various contexts.

2.3 Multiple exponence in language acquisition

Another domain that contributes novel insights into the study of Multiple Exponence is language acquisition. Hein, Driemel et al. (2024, this issue) investigate the acquisition of the past tense in English, as this involves a paradigm of errors that contain ME, produced by children at various stages of language acquisition. They propose an analysis based on a combination of particular mechanics of head movement and context-sensitive rules on the realization of syntactic structures, couched in Distributed Morphology.

The kinds of errors investigated in this paper involve overregularization errors such as those illustrated in (18-a-b), as well as the so-called 'overtensing' errors of the type in (18-c). The overregularization error in (18-b) arguably involves ME, since the past tense is realized twice, on the verbal stem and on the suffix. ME is also present in (18-c), as past tense is present both on the auxiliary *do* and on the lexical verb. The corpus study of Hein, Driemel et al. (2024, this issue) classifies the errors produced by children more precisely into three distinct types: *redundant* (18-b) (past tense expressed twice on one word), *distributive* (18-a) (past tense and root information distributed across two exponents within one word) and *periphrastic* (involving *do*-support (18-c)).

(18) *Errors in the acquisition of English past tense* (Hein, Driemel et al. 2024, this issue)

a. I eated my breakfast.
b. I ated my breakfast.
c. I didn't ate my breakfast.

In a study involving all British and North American English-language corpora of typically developing children aged 1;01 to 15;11 which they accessed through the CHILDES database (MacWhinney, 2000), Hein, Driemel et al. (2024, this issue) searched for patterns of 37 English irregular verbs. The children mostly produced the forms correctly, with a 2.81% overall error rate. Importantly, errors coexist with correct patterns. The redundant errors were the least frequent, periphrastic errors were also not very common, while distributive errors were the most frequent (no redundancy, no ME).

Their formal proposal locates the root cause of the error in the mapping between syntax and morphology. They propose an analysis in terms of head movement, based on Arregi and Pietraszko (2021). In particular, they assume that the verbal elements

(the V and the T head) build a complex verb through head movement, though not in the classical sense, as the two heads are ultimately not adjoined to each other. Head movement results in an object that has an internal structure of a complex head, which includes complex morphological feature values that still have some internal hierarchical structure and may be associated with the lower and the higher head. Finally, *do*-support applies when something intervenes between the two heads, thereby disrupting their morphological feature complex and leading to disassociation of some of the shared features.

Adopting the premises of Distributed Morphology, the regular verb form is derived by assuming that Vocabulary Insertion proceeds cyclically in a bottom-up fashion, crucially not targeting syntactic heads as terminals, but rather the terminals of the complex morphological structure created by head movement (constrained by certain principles). Within the morphological complex, the V head is the first to undergo lexicalization, and in the case of an irregular verb such as *eat* (19), the contextual allomorph *ate* will be inserted in the presence of a past tense feature (19-b). This is achieved by context specification, where the tense feature acts as a secondary feature that conditions the realization of the root/stem. The same applies to the insertion of past tense exponents in the context of particular roots (19-d).

(19) *Some Vocabulary Items for English past tense* (Hein, Driemel et al. 2024, this issue)

a. $[\sqrt{\text{EAT}}]$ *eat*
b. $[\sqrt{\text{EAT}}]$/ [PST] ⇔ *ate*
c. [PST] ⇔ *-ed*
d. [PST] / [{$\sqrt{\text{EAT}}$, $\sqrt{\text{BRING}}$, . . . }] ⇔ ∅

Crucially, Hein, Driemel et al. (2024, this issue) argue that the reason why children make errors in past tense formation is that they ignore the secondary features. Without them, they lack the context for the insertion of the particular exponent, which results in an irregular form. For instance, an overtensing error (involving ME) will result if children apply the rule (19-b) correctly, but when trying to realize the past tense feature, they ignore the secondary features that provide the context for the realization of tense as null in this particular case, and apply the rule (19-c) instead. This results in the insertion of the regular past tense marker *-ed*. Periphrastic errors are derived in a similar fashion, involving additional assumptions on the realisation of features when an additional negation head or the C-head are present in the structure.

The overall contribution of this study is thus a comprehensive corpus-based analysis of various patterns of errors in the past tense of irregular verbs, coupled with a formal analysis, whose leading idea is that feature representations are not always stable during language acquisition. Due to this instability, some features (or operations) may be neglected during the morphological realization of syntactic structures, which results in one-to-one mappings, which are known to be preferred by children.

3 Where do we go?

Having discussed the various aspects of the study of Multiple Exponence, we now turn to the issue of how to make even more progress in understanding this phe-

nomenon. In this section, we will discuss some of the empirical and theoretical challenges and potential fruitful perspectives in the future exploration of ME.

Given the diversity of the instances of ME presented above and its versatility as a phenomenon, there is a need for detailed and highly targeted studies of individual cases of Multiple Exponence, which would further enrich our empirical landscape. We have witnessed valuable new insights from fieldwork on understudied and/or endangered languages (e.g. Döhler, 2018; Herce, 2022, 2023) or the use of corpora (Hein, Driemel et al. 2024, this issue). Looking into family internal typologies can also shed light on a particular issue, as seen in Sect. 2.1 on the example of Herce (2022), who analyzed a pattern of Multiple Exponence in Chichimec based on a paradigm in the related language Central Pame, both belonging to the Otomanguean family (see also Arkadiev, 2022 for a similar comparison across Caucasian languages). Studying ME in the domains of sociolinguistics (Amiridze, 2025, this issue) and language acquisition (Hein, Driemel et al. 2024, this issue) provides novel data on a wider spectrum. Importantly, Multiple Exponence is not something we can simply see – in order to find the right data, it has to be posited (Nordlinger, 2010; Nordlinger & Mansfield, 2021; Caballero & Harris, 2012).

In order to develop adequate theoretical accounts, several factors need to be considered. For instance, having seen the complementary roles of diachrony and formal approaches, one may endeavor to explore ways in which the role of language use and language change (external pressures) may be balanced with the role of linguistic architecture (internal pressures) in explaining ME. The variety of empirical approaches mentioned above should open new possibilities for theoretical innovations (e.g. copied features as in Grofulović & Müller, 2023, secondary features as in Hein, Driemel et al. 2025, phrasal lexicalization as in Caha, 2024, this issue, or simply reduplicants Luís, 2019).

In order to move the field forward, it is necessary to ask precise questions. For instance, we may wonder where in the string of morphs is there redundancy and where is the point of disambiguation, and where are these in relation to the root (Grofulović & Müller, 2023). On the other hand, we may take the exponents themselves as reference points (cf. Amiridze, 2025, this issue above) and view their relations in terms of structural locality, linear locality or directionality. Our theories should ultimately be able to extend to other types of exponence such as distributive or cumulative exponence (cf. Fenger, 2023), as well as predict when ME will occur. What should be of use here is searching for the tipping point when ME should develop, which is tightly connected to issues concerning and measuring 'Informativeness' of a word-form (see Carroll, 2022 for further discussion).

4 Contributions to the special issue

This issue comprises three papers on Multiple Exponence, whose main contributions have been presented above. The first is Caha (2024, this issue), which investigates root and stem allomorphy with particular focus on 'special nominatives' which have a unique stem that is not present in any other place in the nominal paradigm. Much like most instances of ME, stem suppletion has been previously analysed by employing context-sensitive rules, i.e. secondary features that provide a context for the

realisation of the particular stem that is somehow special, or one that realises one of the exponents in the case of ME (as in *good* ∼ *better* in English comparatives). Caha argues against this, stating that stem suppletion can be analyzed only on the basis of primary features available in the syntactic structure, by employing phrasal lexicalization and lexicalization-driven movement (Starke, 2018), the basic tenets of the Nanosyntax model of grammar. Different exponents realize different amounts of an articulated syntactic tree, and no exponent in a given string realizes the exact same feature or feature set (hence Caha's title 'without multiple exponence').

An opposite view is defended by Hein, Driemel et al. (2024, this issue), who argue that precisely a theory relying on secondary features can account for cases of ME found in the production of the past tense by children acquiring English. Based on a corpus study, they identify patterns of ME produced during the acquisition of the past tense of English irregular verbs (such as an overregularization error in *I ated my breakfast*). They propose an analysis in terms of generalized head movement (Arregi & Pietraszko, 2021) and a spell-out algorithm couched in Distributed Morphology that derives irregular verbs in terms of context specification. Their main claim is that children will produce errors in the formation of the past tense if they do not take the secondary features into account when realizing syntactic structures. This negligence of secondary features (or morphological operations) is thus the main culprit for the ME in language acquisition.

A variationist study of Multiple Exponence in Georgian is presented by Amiridze (2025, this issue). She investigates ME in Georgian placeholder verbs, which are used to substitute for regular verbs, fill in for lexical or knowledge gaps by the speakers, or to avoid using inappropriate language. Based on data from literary texts and fieldwork, she presents a comparative analysis of placeholder verbs across three time periods: 1920's, 1970's and present day (from 199's on), demonstrating that only present-day Georgian involves ME. Contrary to previous accounts, such as Harris (2017) and Haspelmath (1993), who argue that ME results from opposing forces of internalization and externalization of inflection, this contribution argues that Georgian placeholder verbs with ME should be best analyzed as nesting structures, involving only the (semantically bleached) verb *do* with its morphology to which the placeholder marker is added. Multiple Exponence thus emerges as a result of a diachronic change, by expanding on the previously available patterns in the language.

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