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Zoltán Bánréti · Tamás Váradi *Editors*

Boundaries Crossed, at the Interfaces of Morphosyntax, Phonology, Pragmatics and Semantics

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Editors
Huba Bartos
Research Institute for Linguistics
Hungarian Academy of Sciences
Budapest
Hungary

Zoltán Bánréti
Research Institute for Linguistics
Hungarian Academy of Sciences
Budapest
Hungary

Marcel den Dikken
Research Institute for Linguistics
Hungarian Academy of Sciences
Budapest
Hungary

Tamás Váradi
Research Institute for Linguistics
Hungarian Academy of Sciences
Budapest
Hungary

This book is dedicated to István Kenesei, on the occasion of his 70th birthday and retirement from his positions at the Research Institute for Linguistics of the Hungarian Academy of Sciences and at the University of Szeged—in appreciation and admiration of his inspired and inspiring work tirelessly furthering the state of the art in research at the interfaces of all subdisciplines of theoretical linguistics, and at the service of Academia in Hungary, Europe and beyond.

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Contributors

Gábor Alberti University of Pécs, Pécs, Hungary

Julia Bacskai-Atkari Department Linguistik, Universität Potsdam, Potsdam, Germany

Marianne Bakró-Nagy Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Károly Bibok Department of Russian Philology, University of Szeged, Szeged, Hungary

Michael Brody Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Zoltán Bánréti Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Peter Cole Department of Linguistics and Cognitive Science, University of Delaware, Newark, DE, USA

Marcel den Dikken Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Katalin É. Kiss Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Judit Farkas University of Pécs, Pécs, Hungary

Judit Gervain Laboratoire Psychologie de la Perception - UMR 8242, CNRS & Université Paris Descartes, Paris, France

Beáta Gyuris Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Veronika Hegedűs Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Gabriella Hermon Department of Linguistics and Cognitive Science, University of Delaware, Newark, DE, USA

Ferenc Kiefer Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Jaklin Kornfilt Department of Languages, Literatures and Linguistics, Syracuse University, Syracuse, NY, USA

László Kálmán Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary

Anikó Lipták Leiden University Centre for Linguistics, Leiden, The Netherlands

Timothy Mckinnon Engineering, Perfecta, Springfield, VA, USA

Boglárka Németh Department of Hungarian and General Linguistics, Babeş–Bolyai University, Cluj-Napoca, Romania

Marta Ruda Institute of English Studies, Jagiellonian University, Kraków, Poland

Balázs Surányi Research Institute for Linguistics, Hungarian Academy of Sciences & Pázmány Péter Catholic University, Budapest, Hungary

Anna Szabolcsi Department of Linguistics, New York University, New York, NY, USA

Krisztina Szécsényi Department of English Linguistics, SEAS, Eötvös Loránd University, Budapest, Hungary

Christina Tortora Linguistics Program, The Graduate Center, CUNY, New York, USA

Robert Vago Queens College and the Graduate Center, The City University of New York, Queens, USA

Henk van Riemsdijk Arezzo, Italy

Irene Vogel University of Delaware, Newark, USA

Yanti Applied English Linguistics, Faculty of Education and Language, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

Introduction

Linguistic inquiry has always been marked, perhaps marred, by a trend towards 'Balkanisation', the creation of small autonomous territories that typically are not signatories to an equivalent of the Schengen agreement for free cross-border travel. Some traditional subdisciplines of linguistics have even seen themselves split between two such territories. Thus, morphology is practised in two very different ways in modern linguistics, focused on the lexicon or instead on its interaction with syntax. On the meaning side of the spectrum, the jurisdictions of the traditional territories of pragmatics and semantics are often not clearly delineated; and the interface between meaning (both formal semantics and information structure) and syntax is a contested boundary as well. Although talk of union and cooperation may often ring hollow or even false in current civil society, a United States of Linguistics, with unconstrained and productive joint ventures crossing traditional and more recently created boundaries, is indisputably the path towards an enlightened future. It is in this light that, coming from the heart of Central Europe (and containing several studies addressing facts from the languages of the area) but with contributions from around the world (and on languages as diverse as English and Jangkat), this volume has brought together a wide range of studies that each contribute, in one way or another, to the general goal of 'de-Balkanisation' of linguistics—boundaries crossed.

The volume is organised into four main sections, roughly equal in length, each straddling one or more traditional boundaries. Part I is on the lexicon and morphophonology, and contains studies on loanword phonology, argument–structure alternation, noun incorporation, the inflectional/derivational divide and lexical recursion in aphasia. Part II addresses morphology and syntax, with contributions to the analysis of nominal, prepositional, verbal and functional structures. In Part III, the focus is on the interface between morphosyntax and meaning (both semantics and pragmatics), with discussions of interrogative particles, information structure and negation; one paper in this part even crosses into linguistic philosophy. Finally, Part IV looks in diverse ways at the relationship between morphosyntax and phonology, from the perspectives of linear precedence, silence (pro-drop as well as

ellipsis), stress in complex compounds, syntactically conditioned phonological root alternations and the role of prosody in language acquisition.

In this introduction, our purpose is to build explicit bridges between the twenty-four contributions to the volume, giving the reader a proper sense of how the volume coheres, as well as opening up a variety of different journeys through these United States of Linguistics. It is our hope that no matter which of these journeys you, the reader, may embark upon, you will always discover valuable empirical findings and analytical perspectives, fruitful points of contact between the various subdisciplines, and exciting new avenues for research that sees linguistic boundaries crossed.

Part I   The Lexicon and Morphophonology

We start our journey in the lexicon, at the interface of linguistic theory and the study of language disorders, with a paper by **Zoltán Bánréti** reporting on experimental work on lexical recursion in Hungarian compounding and the problems that this poses to different types of aphasics. (For readers particularly interested in experimental approaches, it will be fruitful to look at Judit Gervain's contribution to Part IV of the volume in tandem with this.) Broca's and conduction aphasics actively attempt lexically recursive compounding, illustrated by cases such as *víz-tisztító-szerelő-oktató* 'water-cleaner-fitter-instructor'—but they often see their attempts fail; as a backup strategy, they resort to the search for morphologically simpler hyperonyms or synonyms for the target word. On the other hand, patients with anomic aphasia avoid recursive compounding and often have recourse to descriptions of the target item employing complex syntactic structures—occasionally involving sentential embedding or possessed noun phrases, two familiar cases of self-embedding recursion (clause within clause, noun phrase within noun phrase) in syntax. This latter behaviour shows quite strikingly that problems with recursion in the construction of compounds are independent of problems with recursion in general: recursion in syntax and morphology are apparently dissociated. Bánréti argues that this dissociation can be understood if 'words behave as impenetrable units for the purposes of sentential syntax and the rules of compounding differ from syntactic rules'—a conclusion which emphasises the boundary between syntax and lexical morphology. For those who would rather see that boundary dissolve, an alternative interpretation of Bánréti's experimental findings might capitalise on something that sets lexical and syntactic structures apart, and which is known to be something that different types of aphasia deal with discretely: the distribution of functional structure. If self-embedding recursion is beholden to a restriction that says that a constituent of a particular category can be embedded in a larger constituent of the same category only if the two are separated by at least one functional head (as is argued in a recent *Syntax* paper by Den Dikken and Dékány), the limited availability of functional structure in morphological complexes (compared to the abundance of functional material in (unimpaired)

syntactic structures) may help explain the difficulties posed by lexical recursion in compounding. (We will encounter another take on self-embedding recursion later in the volume, in Van Riemsdijk's contribution.)

Compound formation bookends this volume, with Zoltán Bánréti's study as its opener and Irene Vogel's chapter as the closer of Part IV. A specific type of compounding construction is under investigation in **Ferenc Kiefer and Boglárka Németh**'s study as well: bare-noun+verb incorporation complexes in Hungarian. Kiefer and Németh's theme is the interaction of incorporation with aspectual classes. By 'incorporation', they refer to the juxtaposition of a bare noun (which may, however, bear case and plural inflection; cf. *János verseket ír* 'János writes poems', where *-k* is the plural marker and *-t* the accusative suffix) and a verb—a process which is occasionally referred to in the literature as 'pseudo-incorporation'. The authors show that with respect to both event aspect (*Aktionsart*) and viewpoint aspect, Hungarian bare-noun+verb incorporation clusters are of interest. In the realm of *Aktionsart*, they confirm Kiefer's earlier finding that atelic activity verbs readily give rise to such noun incorporation constructions, and that telic and stative ones tend not to—but the authors add that while the first conjunct is certainly true, the second should be handled with care in the light of the fact that incorporation complexes featuring telic and stative verbs can pass muster if the interpretation of the eventualities that they describe is in accordance with the restrictions imposed on the formation of bare-noun+verb complexes. An interesting contrast highlighted in the paper is the one between grammatical *Tamás diót tört a kalákán* 'Tamás was cracking walnuts at the group work' and (usually) unacceptable **Tamás poharat tört a konyhában* 'Tamás broke a glass in the kitchen': whereas the latter is interpreted episodically, the former has an iterative, habitual interpretation; and as the authors point out, if Tamás has the peculiar habit to break glasses in the kitchen, the second example becomes acceptable. The fact that the interpretation of the first example is simultaneously habitual and progressive tells us that these two view-point aspects are compatible with bare-noun+verb incorporation complexes in Hungarian. The authors point out that such constructs can also occasionally be generic (typically when the incorporated noun is plural). Most of these properties of bare-noun+verb incorporation constructions do not directly adjudicate between a lexicalist or a syntactic approach to their composition—but the telicity of the individual events that are part of the iterative, habitual reading of *Tamás diót tört* 'Tamás was cracking walnuts' may suggest that the bare noun should project a phrase in syntax, on 'constructivist' approaches to *Aktionsart* at the interface of syntax and event semantics.

The morphosyntax and interpretation of lexical expressions is also in the spot-light in **Károly Bibok**'s contribution to Part I. Surveying a range of approaches to argument–structure alternations on offer in the literature, Bibok outlines a lexical-constructional approach extending to lexical pragmatics, focused on the classic alternation between *John sliced the salami with a knife* (where the instru-ment is represented in an adjunct PP) and *A knife sliced the salami* (where it is the subject NP). This alternation is notoriously selective with respect to the verbs that undergo it: thus, while *slice* gives us the two variants given above, for *John wrote*

the paper with a typewriter there is no instrument–subject version (**A typewriter wrote the paper*). Building on his earlier work, Bibok argues for a perspective on this problem in which the verb has an underspecified meaning representation, and encyclopaedic and contextual information work together to turn encoded word meanings into full-fledged concepts. Central in the analysis of the instrument–subject alternation proposed in the paper is a pragmatically oriented weaker notion of causation, first introduced in work by Jean-Pierre Koenig and colleagues, one in which an event 'helps' (rather than directly causes) the occurrence of another event. Bibok's study finds itself at the boundaries of the lexicon and meaning—we placed it in Part I because its primary focus is on the lexical representation of verbs, but readers interested in pragmatics should find it worth their while to consider it in tandem with some of the contributions to Part III.

The last two chapters in Part I find themselves at the boundaries of lexical morphology and phonology, and therefore rub shoulders the theme of Part IV. **Marianne Bakró-Nagy** looks at the phonological loanword adaptation strategies employed by different dialects of Mansi, an endangered Uralic language spoken in Siberia. Mansi is a language that does not tolerate complex onsets; so when confronted with Russian loans whose onsets are complex, the language must resort to a repair of some sort. A familiar repair strategy is epenthesis—the insertion of a vowel (whose location and quality in Mansi depend on a number of factors that are described in detail in the paper) to break up the complex onset of the loanword. Another common escape route, available to Mansi speakers as well, is deletion of one of the consonants of the complex cluster. But, rather unusually from a comparative perspective, Mansi (like other Samoyedic languages in the Uralic family) also avails itself of a third strategy in its loanword phonology, a metathesis process whereby a vowel underlyingly present in the word is reordered *vis-à-vis* the preceding consonants, wiggling its way in between the consonants of the cluster. Thus, Russian *truba* 'chimney' is adapted as *turpa*. Here, the boundaries of the suprasegmental organisation of the loanword are crossed, and the syllabic structure is reorganised. One of the puzzles that the paper unearths, and which theoretical approaches will want to address in future work, is the division of labour between epenthesis and metathesis strategies, whose domains of application overlap.

A classic distinction in the literature on lexical morphology is that between derivational and inflectional morphemes. In his contribution to the volume, **Robert Vago** revisits Kenesei's classic reassessment of the traditional outlook on the modal suffix *-hat/het* 'can, may' in Hungarian. Vago juxtaposes Kenesei's morphologically based arguments for an inflectional treatment of *-hat/het* to a detailed phonological examination of the way in which this suffix patterns in the vowel–height alternations seen in the Hungarian vowel-harmony system. He considers three different analyses of Hungarian vowel–height alternations and shows that for two of them a classification of *-hat/het* as an inflectional suffix is problematic. But on an approach in terms of two co-phonologies (one for stems and another for words), couched in the framework of Stratal Optimality Theory, an inflectional treatment of *-hat/het* is vindicated. Vago lands on the side of the Stratal OT approach, and thereby erases the last remaining boundary between *-hat/het* and

inflectional status. This then gains us open access to a syntactic treatment of *-hat/het* on a par with that of modals in other languages, and ushers us into Part II of the volume, which contains contributions which, like some included in Part I, deal with issues at the boundary of morphology and syntax, but which place their analyses squarely in the realm of syntax.

Part II   Morphology and Syntax

Like Vago's paper, the piece contributed by **Katalin É. Kiss** addresses the issue of the boundary between inflection and derivation head-on. She argues that for a case of grammaticalisation in the Uralic languages involving the reanalysis of inflectional markers of agreement (signalling a phonologically silent possessor) as derivational suffixes marking partitivity, the elements *-ik* and *-JA* both originate as inflections but in synchronic Hungarian have functions that seem derivational in nature. É. Kiss argues that these suffixes represent two discrete stages of the grammaticalisation path from inflectional to derivational morpheme: while *-JA*, alongside its grammaticalised incarnation as a partitivity marker, is still used as a marker of possession, the element *-ik* has entirely severed its ties to its original agreement function. (In Den Dikken's paper, later in this part, we will also encounter the element *-JA*, both in its role as marker of possession in the noun phrase and as the so-called definiteness agreement marker in the clause.)

    Veronika Hegedűs talks about a problem that is again tied in crucially with the derivational/inflectional distinction, this time with reference to the suffix *-i*, which is traditionally classified as a derivational morpheme but was argued by recent work by Kenesei to be a functional head. Hegedűs looks specifically at the attachment of *-i* to adpositional modifiers of nouns, and addresses the diachronic changes in the distribution of *-i* as well as the question why *-i* is not used with directional and goal PPs (as opposed to locative and source PPs). The answer to this question given by Hegedűs is two-pronged: in most cases, a semantic mismatch makes the use of *-i* impossible; and in cases in which the directional/goal PP can be construed as an argument, no *-i* suffix appears because no functional head is needed to accommodate the PP. The latter situation presents itself in the case of deverbal nouns—a case which provides us with a natural segue to the next paper in the volume.

    For **Henk van Riemsdijk**, the main explanandum is the morphosyntax of nominal and verbal gerunds, constructions which famously muddy the waters at the boundary of nominal and verbal constructs. A familiar chestnut in this realm is the hybrid status of expressions such as *John's quickly reading the book*, which show external nominal properties (here the presence of the Saxon genitive *John's*) but internal verbal properties (the licensing of the direct object *the book* and the adverb *quickly*)—apparently in defiance of Van Riemsdijk's Categorial Identity Thesis, which wants extended projections to be internally uniform with respect to categorial specification. The crux of Van Riemsdijk's proposal is a rethinking of the traditional system of categorial features, making use of single-valued features instead

of the familiar binary ones ([±N, ±V]). The problem posed by hybrid gerunds does not immediately evaporate by the adoption of single-valued features (or elements) —but in conjunction with an autosegmental, tier-based approach to the representation of syntactic categories, the problem may be overcome. Van Riemsdijk here brings the planar representations of autosegmental phonology into the syntactic realm, as part of his programme to erase the boundaries between syntax and phonology.

Marta Ruda's contribution is concerned with a very different kind of boundary: that between a matrix clause and a subordinate clause. She addresses two cases of apparent long-distance relations across an embedded infinitival clause, with particular reference to empirical material from Hungarian and Polish. In the Hungarian case, this long-distance relation involves definiteness agreement; the Polish examples are about the licensing of the genitive of negation across the infinitival clause boundary. For both cases, Ruda argues that no actual long-distance dependencies are established in syntax—rather, what we are presented with in these constructions is a succession of local links, between the embedded transitive verb and its object and between the verbal heads on the clausal spine. The proposal squares the Hungarian and Polish facts with the Phase Impenetrability Condition, and is informative regarding the way in which morphological dependencies are established across syntactic boundaries.

Like Ruda, **Marcel den Dikken** focuses his paper on inflection; and like Van Riemsdijk, he juxtaposes the nominal and verbal domains. The central topic of Den Dikken's paper is the systematic parallels between the two domains in their inflectional paradigms in Hungarian. He presents a plea for an integrated approach to Hungarian possessive and definiteness marking, centred around the morphosyntax of clitics—quintessential boundary players. The existence of clitics in the grammar of Hungarian is not usually recognised in the literature. But Den Dikken shows that with the marker -*JA* (which shows up both as a 'possessive morpheme' in the noun phrase and as a 'definiteness agreement marker' in present tense clauses) analysed in such terms, the distribution of this element—both in Proto-Uralic and in present-day Hungarian—falls into place with an appeal to (*a*) the Person Case Constraint familiar from languages with clitics, and with the help of (*b*) a particular outlook on the structural difference between alienable and inalienable possession as well as (*c*) an analysis of Hungarian past tense forms as inalienably possessed inflected participles.

In item (*c*) (i.e. its analysis of the Hungarian simple past as a participial construction), Den Dikken's paper has a link to **Christina Tortora**'s contribution, whose topic is tense and auxiliation in English varieties. Tortora's central argument, in its strongest form, is that all English tenses are cases of verbal periphrasis—with the auxiliary being silent in the apparently simple tenses. Tortora argues that the three non-modal auxiliaries of English (*be*, *have* and the 'dummy' *do*) play a much more extensive role in English verb-based constructions than is customarily assumed, and she presents support for the claim that these three auxiliaries are underlyingly the same element. She does the latter in part on the basis of the observation that *have* does not in any obvious sense have more meaning than *be* or

do (arguing that familiar labels such as 'perfective *have*', 'progressive *be*' and 'dummy *do*' are, as she puts it, 'misleading reifications of epiphenomena'), and also with reference to the distribution across different varieties of English of the contracted form *ain't*, which can represent *isn't*, *hasn't* and *don't*. Thanks to the fact that Tortora concerns herself with an issue that stands at the interfaces of morphology (including silent morphemes), syntax and interpretation, her paper is a natural bridgehead towards Part III.

Part III   Morphosyntax and Meaning

At the other head of the bridge from Part II to Part III stands **Julia Bacskai-Atkari**'s study of the position of the Hungarian polar interrogative marker *-e* in the functional left periphery of the clause, and the distribution of this marker across different clause types, with the role of finiteness being the central player. Bacskai-Atkari argues that *-e* is a functional element heading a projection in the low left periphery which, when *-e* is not there, serves as the host of *wh*-elements and fronted foci. The feature [fin] is an essential ingredient of this functional category. When this feature is present on the functional head, it has to be lexicalised—usually by verb movement, except when *-e* is present in the head and its complement is marked for ellipsis. (We will revisit ellipsis at more length in Part IV, with Anikó Lipták's contribution.)

Though Bacskai-Atkari does not focus on this, she notes that interrogatives with *-e* and their counterparts without it are subtly different pragmatically, as shown in earlier work by **Beáta Gyuris**, who is also a contributor to this part of the volume. Gyuris' paper here looks at a particle which arguably contains Bacskai-Atkari's *-e*, viz., *ugye*. Gyuris argues that this particle 'requires a prior commitment to the semantic content *φ* of the sentence containing the particle on the part of the counterpart(s) of the default perspective centre of the speech act'. She demonstrates that there are two distinct uses of *ugye*—one with a characteristic rise–fall intonation, found in questions, and one which is pervasively found in declaratives, with a falling intonation. (We would like to refer readers interested in prosody to the last two contributions to Part IV as well.) First laying out the chronological development of *ugye* (in a five-stage process from a sentence-final tag with transparent morphology (*úgy* 'so' + *-e*, the polar interrogative particle) and a clear prosodic signature to a morphologically opaque form with no fixed prosodic marking), Gyuris then argues not only that a unified formal analysis of *ugye* (couched in the framework of dynamic semantics) is possible but also that the meaning change resulting in declarative *ugye* can be adequately modelled by such an analysis. Gyuris' paper is strategically located right in the middle of the volume—appropriately so, because it is the one contribution in which all boundaries mentioned in the volume's title are being crossed: morphosyntax, phonology, pragmatics and semantics.

Straddling the boundaries of linguistics and philosophy, the next chapter stands out a bit from the other contributions to this volume. **László Kálmán** mounts a challenge for the approach to sense and meaning that has long established itself as the field's standard, arguing that interpretation is more complex than the standard approach makes it out to be. Kálmán presents a plea for the idea that 'senses are best seen as conglomerates or constellations of memory traces associated with (evoked by) natural-language expressions, which help conveying a message because the same expressions give rise to similar associations in the addressees' minds'. A major discussion point is compositionality and bottom-up computation of propositional meaning. The standard Fregean approach is usually thought to be dictated by the principle of compositionality—but as Kálmán points out, compositionality *per se* does not commit one to a particular direction in which to perform semantic computation. The well-known problems that intensional contexts pose for the bottom-up approach to the construction of meaning (the fact that a sentence such as *John believes that Mary is smart*, on this approach, forces us to suspend the attribution of a truth value to the subordinate proposition) are straightforwardly avoided once Kálmán's neo-Lockean perspective is adopted. The fact that Kálmán offers an alternative to the standard bottom-up outlook on the composition of meaning is of interest not just for semantic and philosophical reasons but also in the light of recent work in syntax and its boundaries with meaning and sentence processing confronting the bottom-up approach to structure building standard in the Chomskyan tradition with a top-down alternative.

Having herewith made our way back from linguistic philosophy to the interface of morphosyntax and interpretation, we now venture into two realms in which Hungarian has long played a pioneering role: negation and negative concord, and focus. **Anna Szabolcsi** shows that Surányi's descriptively rich but analytically heterogeneous approach to Hungarian negative concord can be improved to yield an account in which Hungarian is analysed uniformly, as a strict negative concord language in the sense of work by Chierchia and Zeijlstra. But unlike what Chierchia and Zeijlstra had proposed for strict negative concord languages, Szabolcsi presents an argument to the effect that the Hungarian sentential negation particle (*nem*) is best treated as an expression of semantic negation. While *nem* is a marker of sentential negation, its counterpart *sem* is treated as a focus particle (*is* 'too, even') under negation, requiring in its specifier a constituent in focus.

Focus is without a doubt the domain *par excellence* where Hungarian has made its mark in the literature at the boundary of syntax and meaning. We will see focus play a subsidiary role in Krisztina Szécsényi's paper later in this part, but **Balázs Surányi** makes a major contribution to both the syntactic and the interpretive sides of focus in a piece which concentrates on a rarely discussed phenomenon to which Surányi refers (following Fanselow) as '*pars pro toto* (PPT) focusing'. The signature of PPT focusing is that the constituent that undergoes focus fronting in syntax is a subpart of the phrase that is interpreted as the focus of the utterance. This gives rise to an apparent mismatch between syntax and information structure. Surányi argues for Hungarian that there is in fact only a partial mismatch: the focus-fronted constituent and the larger constituent of which it is a part are both in

focus, with PPT-focus constructions having a nested focus structure. As such, the Hungarian PPT-focus cases do not threaten the configurational approach to focus interpretation, for which Hungarian has long been the poster child. Though Czech and German continue to stand out as problems for a tight connection between syntax and information structure in the domain of focus, for Hungarian it seems that traffic across this boundary remains orderly.

We keep at least a couple of toes in the pool of information structure moving on to the next two papers in this part, which are both on Hungarian as well. **Gábor Alberti and Judit Farkas** analyse the relative distributions of the two anaphoric pronouns *az* 'that/it' and *ő* '(s)he'. In their canonical uses, *az* refers to a non-human antecedent or entity in the extralinguistic discourse, whereas *ő* is only suitable for reference to humans. But there are exceptions to these canonical uses, in both cases. A pro-dropped [+HUMAN] pronoun can refer to a proposition. And conversely, the demonstrative *az* can be used for humans in certain environments (something which readers familiar with Dutch or German might have suspected: in Dutch *Jan wilde Piet bellen, maar hij/deze was zijn mobieltje kwijt* 'Jan wanted to call Piet, but he/this couldn't find his mobile phone', the use of the demonstrative pronoun *deze*, which ordinarily is not used to make reference to humans, is called upon to signal that the object rather than the subject of the first conjunct is the antecedent). The authors argue for a complex interrelationship between animacy features, information-structural functions, degrees of referentiality and number—crossing multiple boundaries in the process.

Anaphoric pronouns, the main players in Alberti and Farkas' paper, also rear their heads in **Krisztina Szécsényi**'s contribution, whose focus is on subjects of infinitival complement clauses. Endorsing the movement theory of control, she argues that pronunciation of a subject inside the infinitival clause is regulated by scope and, most of all, information-structural considerations. In cases in which there is an overt subject in the matrix clause as well (such as *János nem akar* [*csak ő menni busszal*] 'János doesn't want it to be the case that only he is going by bus', a construction type first discussed for Hungarian in Anna Szabolcsi's work), we see the exponence of multiple members of the subject's movement chain, with the subject of the infinitival clause spelled out as a focused nominative pronoun. Szécsényi argues that such multiple exponence is legitimate if the spelled-out copies have different information-structural profiles. Readers interested in multiple copy spell-out will want to consider Szécsényi's paper in tandem with the one by Anikó Lipták in Part IV. Szécsényi's paper also has clear ties with Jaklin Kornfilt's contribution, which opens Part IV.

Part IV   Morphosyntax and Phonology

In Krisztina Szécsényi's paper, we were confronted with the division of labour between overt and covert pronominal subjects of clauses. This problem, which lies at the boundary of morphosyntax and phonology, is also at the forefront of **Jaklin**

Kornfilt's piece, which looks at the syntactic properties of two distinct silent pronominal elements, *pro* and PRO, with particular reference to Turkish. Kornfilt argues for the need to recognise both the Chomsky's Avoid Pronoun Principle and Kiparsky's Elsewhere Principle (the latter first applied to the distribution of pronominal elements by Bouchard)—because neither could do the job of accounting for the distribution of overt and silent pronouns in Turkish all by itself. The Avoid Pronoun Principle regulates the selection of a silent pure pronoun (*pro*) instead of an overt pronominal element. The Elsewhere Principle, on the other hand, adjudicates the selection of an anaphoric element instead of a pure pronominal: an anaphoric element is more marked than a pronominal one, the latter being the 'elsewhere case'. Whereas the APP cares about sound versus silence, the EP is blind to that and cares only about the anaphor/pronoun dichotomy. Kornfilt's paper recognises both *pro* and PRO, in contradistinction to work based on the movement theory of control, which Szécsényi aligned herself with in her paper in Part III. Kornfilt's discussion of agreement and tense in Turkish inflected infinitival and nominalised clauses is another point of contact between these two papers.

For silent subjects, especially in (constructions in) languages which have relatively free word order, it is often not a straightforward matter to determine whether they precede or follow their predicates: because of their silence, their placement cannot be determined by simply listening for them in the utterance. The hierarchical position of a subject, even when silent, can usually be settled on the basis of familiar c-command tests, independently of linear order. This may lead one to think that hierarchy (dominance and c-command relations) is more fundamental to syntax than linear precedence. Indeed, Kayne's antisymmetry thesis has it that precedence is entirely derivative of asymmetric c-command, so the theory of syntax does not need to make reference both to hierarchy and to precedence (though in his most recent work, Kayne argues for precedence as an integral part of syntax, seeking a principled explanation for universal Spec–Head–Complement order from the workings of Merge). In his contribution to the volume, **Michael Brody** starts out by agreeing that having two very similar ordering primitives (precedence and dominance) is undesirable. He then goes on to pursue an approach according to which 'domination' is a linear ordering by precedence, with a complete linear order of constituents being projected from the partial precedence order provided by precedence trees, by ordering sister nodes with respect to each other, in accordance with language- or construction-specific constraints. For Brody, it is not symmetry but the lack thereof that requires explanation. In line with this, the empirical discussion in Brody's paper is focused on mirror effects of the type discussed in recent work by Neeleman, for which antisymmetry-based proposals typically need complex syntactic derivations.

One of the conundrums that Kayne's Linear Correspondence Axiom (which regulates the translation of syntactic hierarchical structures into linear strings) needs to grapple with is the fact that movement dependencies sometimes give rise on the surface to what appear to be multiple copies of a single morphosyntactic element. We encountered this problem already in Szécsényi's paper in Part III. It rears its head again, and particularly prominently, in **Anikó Lipták**'s piece, which looks in

detail at Hungarian constructions involving inflected reduplicating adpositional particles (such as *rá* in *János rá nézett Mari-ra* 'János looked at Mari'), and focuses on their behaviour in clausal ellipsis constructions. If the relation between the particle *rá* and the affixal postposition *-ra* is one involving reduplication, and if this reduplication comes about in syntax as a result of the exponence of multiple members of a movement chain, we have to ask ourselves whether such multiple exponence is in keeping with the Linear Correspondence Axiom. It has been suggested in the literature that it is, thanks to the performance on the higher copy of an operation called morphosyntactic reanalysis: such reanalysis makes the higher copy in the chain 'not count' for the purposes of the Linear Correspondence Axiom, and hence both it and the lower copy can be spelled out. In her paper, Lipták argues (among other things) that the ellipsis facts in constructions with reduplicating adpositional particles call the role of morphosyntactic reanalysis into question: such particles are spared by clausal ellipsis, which is understandable only if they undergo no reanalysis with the verb.

While the previous contributions to this part looked at the boundary between morphosyntax and phonology from the perspective of the former, the remaining three papers take their cue from the phonological side. **Timothy Mckinnon, Gabriella Hermon, Yanti and Peter Cole** look at some root alternations in the morphophonology of the Malayic languages, with particular reference to Jangkat, a language of Sumatra that is related to Kerinci, whose root alternations have been studied in more detail in the past. The root alternations found in Kerinci correspond to two discrete root alternation types in Jangkat, both of which are given a close look in the paper. These alternations both affect the rhyme of root-final syllables. One of them is sensitive to syntactic phrase boundaries. This phrase-level alternation sees the rhyme of final syllable of the root realised in what the authors call the phrase-medial form when a nominal root is followed by a possessor, an attributive adjective, or a demonstrative, and when a verbal root is followed by a direct object; one instead finds the phrase-final form of the root when it is followed by a relative clause, a numeral+classifier, or a PP. The examples that the authors give of PPs following the root, for both the nominal and the verbal domain, correspond quite uncontroversially to adjuncts (*the nuts from Bungo*; *that person often steals in the market*). Since relative clauses pattern with adjuncts (and are themselves traditionally analysed as adjuncts), the form of the root seen in combination with a relative clause or adjunct PP thus seems to be final in its syntactic phrase—true to the name that Mckinnon et al. have given to this form ('phrase-final'). For combinations of a nominal root and a following numeral+classifier, a treatment of the post-root material as an adjunct would not be in line with the majority view on classifier constructions, according to which they take the core noun phrase as their complement. But the fact that the numeral+classifier complex surfaces to the right of the nominal root may suggest an approach in which the core noun phrase moves into a specifier position to the left of the numeral+classifier, as a result of which there will again be a closing phrase boundary between the root and what linearly follows it. Viewed this way, the Jangkat facts throw interesting light not

just on the boundaries between morphology, phonology and syntax, but also on syntactic derivation and the boundaries between constituents in syntactic structures.

The last two contributions to the volume both zoom in on prosody, though in very different ways. **Judit Gervain** argues that prosody plays a pivotal role in early language acquisition: it prosody that provides the link between prenatal and post-natal language experience. Gervain's paper carefully reviews the evidence that suggests that the prosody—rhythm as well as melody—of a child's native language(s) as perceived *in utero* (starting in the last trimester) is essential in shaping the infant's speech perception abilities. Later in infancy, prosody continues to play an important role in the language acquisition process, with infants being highly sensitive to its correlations with lexical structure, syntax and semantics. Prosody thus eminently serves the child at the boundaries of linguistic structure. Gervain proposes a sketch of a developmental scenario that allows us to understand the significance of prosody in acquisition, and therewith defines an agenda for future research.

Irene Vogel closes the volume by taking us back to the very beginning: the lexicon. Her paper looks at the stress pattern of unusually complex compounds such as the one found in *his 'don't ever do that again' expression*, where an entire clause occurs as the left-hand member of a nominal compound. She argues that such compounds are not just interesting for living at the boundary of morphology and syntax, but also, and perhaps particularly, because their derivations seem to present a loop from word formation to phrase formation back to word formation, and because their stress pattern seems to wipe out the prosodic differences that one usually finds between the various kinds of syntactic constructs that such compounds can embed. Thus, while *Did that really happen?* and *Don't you ever let that happen!* normally have very different prosodies (on the prosody of polar inter-rogatives, recall also Gyuris' contribution to Part III of this volume), in the complex compounds *his 'did that really happen?' expression* and *his 'don't you ever let that happen' expression* we see their differences come out in the wash, with a main prosodic peak on *happen* in both cases. This wiping out of intonational distinctions may remind some readers of something similar seen at the interface between syntax and semantics: whereas *He didn't leave because he was angry* has two quite different prosodic contours depending the scope assigned to the negation ('He didn't leave, and that was because he was angry' versus 'He left, but that was not because he was angry'), this intonational difference disappears under embedding under *(al)though* or conditional *if*, as in *Though/If he didn't leave because he was angry*, …, where the two readings have identical prosodies. For the stress pattern of complex compounds Vogel advocates an approach that works with general stress templates, and argues for an intermediary between the phonological word (ω) and the phonological phrase (φ) called the Composite Group (κ) (in some sense a reincarnation of Nespor & Vogel's Clitic Group, although the original CG was never designed to accommodate compounds). The Composite Group is argued to be the locus of the Compound Stress Rule, as well as of a variety of elements that cannot be adequately parsed by either ω or φ, including 'level 2' affixes (in the sense of Lexical Phonology) and function words. Though Vogel thus advocates

multiple boundaries within lexical morphophonology, she does so with a view towards facilitating crossovers between phrasal and lexical constructs.

Crossovers have been at the heart of this volume throughout. Its editors hope that you, the reader, will have benefited from this brief road map through the volume, and will perhaps have discovered points at which individual papers cross paths at their boundaries beyond the links that we have highlighted in our introduction. With all the various paths along and across the boundaries of linguistic organisation drawn, it is time to proceed to the studies themselves. We wish you an enjoyable journey through the linguistic borderlands.

Part I
The Lexicon and Morphophonology

Lexical Recursion in Aphasia: Case Studies

Zoltán Bánréti

Abstract The processes of lexical recursion is examined by word-picture matching tests requiring the recursive construction of compound words. We used productive endocentric compounds whose rightmost constituent is a deverbal noun involving the affix *-ó/-ő*. Such heads take left-hand dependents in the role of complements, for instance: *víz-tisztító-szerelő-oktató* 'water-cleaner-fitter-instructor'. Normal and aphasic subjects participated in the word-picture matching tests. Aphasics fell into two groups in terms of their patterns of responses. Anomic aphasics exhibited severe impairment in lexical recursion. They attempted compensatory strategies involving "*exit to syntax*" as a substitute for constructing the target compound words: they produced sentences or syntactic phrases rather than complex compounds. In this group lexical recursive operations turned out to be more impaired than sentence recursion. The compensation strategy involves a switch from the impaired subsystem to the unimpaired or less impaired subsystem. The other aphasic group involved Broca's and conduction aphasics. They reacted to tasks requiring lexical recursion by the strategy of *lexical search*: they preferred the use of very simplex synonyms or hyperonyms to constructing the target compounds. Their recursive lexical operations showed a deficit and their recursive syntactic operations were also limited. There was no linguistic compensation strategy available for them.

Keywords Productive compound · Lexical recursion · Syntactic recursion Compensatory strategy

Z. Bánréti (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: banreti.zoltan@nytud.mta.hu

1 Introduction

1.1 Previous Studies

The relationship between recursive sentence embedding and theory-of-mind (ToM) inference was investigated in three persons with Broca's aphasia and two persons with Wernicke's aphasia in Bánréti et al. (2016). The results reveal a pattern of dissociation: Broca's aphasics were unable to access recursive sentence embedding but they could perform appropriate ToM reasoning represented in very simple syntactic forms. In another previous study (Bánréti et al. 2013; Hoffmann et al. 2011) we found that persons with mild Alzheimer's disease (AD) exhibited slightly impaired capacity of lexical recursion in compounding but moderate AD participants showed severe impairment in lexical recursion.

1.2 This Study

We hypothesised that language impairments in aphasia affect lexical recursion. Furthermore, we wanted to find out whether there were compensatory strategies used by various groups of aphasic subjects in the case of recursive compound construction. The processes of lexical recursion were examined by tests requiring the productive and recursive construction of compound words. Both aphasic and normal control subjects participated in these tests.

2 On the Grammar of Hungarian Compounding

2.1. The rule system that productively creates compounds has a special status. Basically, the rules involved may be lexical ones, given that compounds are opaque with respect to syntactic rules building phrase structures: the latter do not have access to the internal structure of the former (cf. Kenesei 2008). Some compounds have a binary branching structure in which the individual constituents are also binary constructions consisting of further words in turn. These compounds are said to be recursively structured (cf. e.g. Dressler 2006). Hence, we use the notion of 'lexical recursion' to describe the structure of such compounds. This approach to recursion was first proposed by Kiefer (2000:528). In the Morphology volume of *A structural grammar of Hungarian*, Kiefer defines compounds as follows: "morphological constructions consisting of several words and being words themselves in a syntactic sense" (Kiefer 2000: 521).

In Hungarian endocentric compounds, the head (the rightmost constituent in Hungarian) determines their morphological and syntactic properties, as well as part of their semantic properties. It is not only in Hungarian but also in German and

English that compounds tend to be right-headed. If both constituents are of the same category (e.g., both are nouns, as in *autó-kormány* 'car's steering wheel', or both are adjectives, as in *bal-liberális* 'left-wing liberal'), the head can be defined positionally as the rightmost constituent. Wherever the constituents are not of the same category, the head can be identified on the basis of its position and function: e.g., *hideg-front* 'cold front' has a nominal head, whereas *kő-kemény* 'stone hard' has an adjectival one. Note that no overt syntactic linking element or head marker is present in the construction. In what follows, we will use the term *head* in this lexical-constructional sense.

2.2. In the tests we use productive endocentric compounds whose rightmost constituent is a deverbal noun involving the affix *-ó/-ő*. Such heads take left-hand dependents in the role of complements. For instance, in *víz-tisztító-szerelő-oktató* 'water-cleaner-fitter-instructor', the head *oktató* 'instructor' has a direct object complement *víz-tisztító-szerelő* 'water-cleaner-fitter' and the embedded head *szerelő* 'fitter' has a direct object complement *víz-tisztító* 'water cleaner'. Such compounds are invariably binary branching (they have two immediate constituents) and the process that creates them is productive and can be carried on endlessly, at least in principle. See Fig. 1.

The Hungarian endocentric compounds are consisting of words and being words themselves. The structure of these compounds cannot be altered by syntactic operations whose function is to generate phrases. The phrase structure rules do not have access to the internal structure of the compound. The presence of a word involving the affix *-ó/-ő* is crucial since it is what makes the repetition of the process of compounding possible by being able to take the former compound as a complement: (((*víz-tisztító*)-*szerelő*)-*oktató*) '(((water-clean**er**)-fit(t)**er**)-instruct**or**)'.

Fig. 1 The structure of recursively binary compound. AF = affix, which is a deverbal derivational suffix forming a word (V + AF → N) that is considered as relative or absolute head within the compound
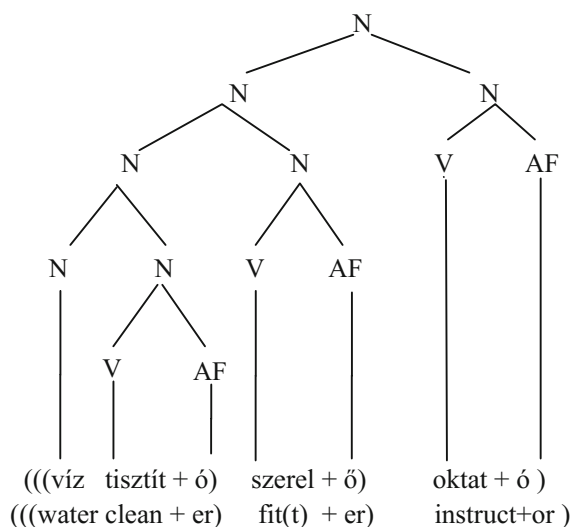
In the present study, we will be concerned with compounds whose head is derived by *-ó/-ő* and is invariably to the right of its complement, at the right edge of the compound. For instance, in *lap-vágó* 'sheet cutter', the head determining the behaviour of the compound is *vágó* 'cutter'. If the same constituent occurs on the left, as in *vágó-lap* 'cutter sheet → clipboard', the head determining the behaviour of the compound is *lap* 'sheet'.

Depending on the overall complexity of the compound, recursively binary compounds may involve absolute and relative heads. In our example *víz-tisztító-szerelő-oktató*, there are two relative heads: (…) - *tisztító* 'cleaner' and ((…) - *szerelő*) 'fitter', and an absolute head: (((…) - *oktató*))) 'instructor'. The property they all share is that whatever is to the left of them constitutes their complement. A semantic peculiarity of the latter is that it usually has a generic reading. For instance, in *víz-tisztító-szerelő*, the constituent (*víz-tisztító*) is non-specifically construed, as opposed to the phrase *a víz-tisztítónak a szerelője* 'the fitter of the water cleaner' in which the possessive *a víz-tisztítónak* 'of the water cleaner' may refer to a specific device for cleaning the water.

The meaning of compounds with a deverbal head in *-ó/-ő* is normally predictable (transparent), although the head may not fully retain the argument structure of the base verb. In the readings, there may be context-dependent aspects. The head may refer to an agent, a place, or an instrument, depending on the base verb and on the context. The left-hand constituent is normally a direct object (patient) complement of the base verb. Here are a few examples:

- agent head + direct object complement: *autó-szerelő* 'car mechanic' ('person who repairs cars'),
- instrument head + direct object complement: *fal-véső* 'wall chisel' ('tool for cutting away wall'),
- place head + direct object complement: *csónak-tároló* 'boathouse' ('building where you store boats').

A characteristic feature of such interpretations is that the subject argument of the base verb is bound, it cannot be overtly mentioned within the compound; the agent is implied by the head noun itself. This is even the case where the head may mean instrument or place (cf. *vírus-irtó* 'antivirus [program]', i.e., *szoftver, amivel irtják a vírust* 'software with which one kills off viruses': here we have a generic agent, the person who uses the tool). Since the subject argument is bound, intransitive (one-argument) verbs cannot be used in this type of construction (**gyerek-síró* '*infant crier' but *gyereksírás* 'infant cry'). Other arguments of the base verb (direct object etc.) are free and can be bound by the left-hand constituent, typically in a patient role.

In the examples cited above, the complement was invariably a patient, irrespective of the function or semantic category of the head. It is relevant for lexical recursion that the head in *-ó/-ő* "inherits" the patient argument slot of the base verb that is satisfied by the complement (*víz-tisztító* 'water-cleaner', *autó-szerelő* 'car-fitter', *bolha-irtó* 'depulisator' ('powder for exterminating fleas'), *fal-véső*

'wall-chisel' ('tool for cutting away wall'), etc.). The relationship between the head and the complement is established via semantic arguments (thematic roles). This relationship is **not** grammatically obligatory: heads like *szerelő* 'fitter', *véső* 'chisel', *tároló* 'store', etc. are not ill-formed in themselves; they do not **have to** take complements, it is just that some of their semantic potentials fail to be specified if they do not. When they serve as heads, they follow the semantic pattern in which the left-hand constituent, the **patient**, has to be in a semantic (thematic) relationship with them. This gives us the readings of compounds as follows. The pattern just says that in some XY compound X is a patient of Y. Taking XY to be a unit now, in a compound (XY) + Z a similar thematic relationship may obtain between (XY) and Z. This gives rise to a lexical unit (XYZ) to which a head Q can be added ((XYZ) + Q), and so on. This sequence of operations is what we call *lexical recursion* here. In the lexical recursion the order of elements is strictly obligatory, the presence of a constituent involving the affix *-ó/-ő* is crucial in that it makes the recursive process of compounding possible by being able to take the former compound as a complement of the final head. These processes are productive.

2.3. Multiple Routes for Compound Words

It is a fundamental issue in what way endocentric compounds whose head is derived by *-ó/-ő* are stored in the lexicon. One possibility is wholesale storage, without decomposition. The other possibility is that such compounds are produced by lexical-morphological rules and are understood in terms of such rules, too. It is not probable that each and every compound is stored as a whole as this would require too large a memory capacity and would not be economical. On the other hand, the rule-based approach does not explain the creation of non-transparent forms. A third possibility is the dual mechanism approach, also sometimes called the 'words and rules' approach (Pinker 1999). This assumes that productive forms are created by rule, whereas non-productive, semantically opaque forms are stored in the lexicon. But regular forms can also be stored as wholes if they are frequently used (Mondini et al. 2004; MacGregor and Shtyrov 2013).

In the test to be described below, we dealt with this issue as follows. The subjects had to create compounds of two, three, and then four ultimate constituents in response to verbally administered questions in the context of pictures. In assessing their ability to build compounds recursively, we automatically took their performance with respect to two-constituent compounds as results of activating units stored as wholes. It was their performance in producing **three- and four-constituent compounds** that we took to be relevant with respect to their recursive abilities. Of course, mental lexicons of the individual subjects may have differed in which two-part compounds were lexicalised in them and in what meanings. Lexicalisation is a gradual process and may have a number of distinct degrees. In the case of longer compounds, we attempted to present stimuli that

actually required recursive online creation of compounds. We also considered frequency of occurrence of the target compounds in assessing the subjects' performance.

3   Participants

All aphasic participants had a left unilateral brain lesion. Participants were assigned to aphasia types on the basis of CT results and the Western Aphasia Battery (WAB) tests (Kertesz 1982) and the Token test (de Renzi and Vignolo 1962). WAB test and Token test were adapted to Hungarian by Osmanné, Sági (1983, 1991).

Information about the aphasic participants in relation to demographical and lesion data, and the type of aphasia is provided in Table 1.

The healthy control participants, matched in age to the aphasic participants, are shown in Table 2.

Table 1   Data of the aphasic participants

Participant	C.Z.	L.M.	H.N.	V.K.
Age	53	33	59	51
Education	12	12	12	11
Sex	F	M	F	M
Handed	Right	Right	Right	Right
Lesion	Left medial moderately widespread tissue defect, primarily due to ischaemial infarct	Post-haemorrhage parenchymal laesio in left tempo-frontal area	Ischaemia on the area of the left arteria cerebri media	Chronic vascular laesio on the left arteria cerebri media, left multiplex ischaemial laesio
Time post-stroke (months)	11	12	13	13
Token test WAB fluency WAB comprehension WAB repetition WAB naming	29 4 9 7.4 6	27.5 7 9 6.6 4.2	22 7 8.15 8.3 7	25 6 7.8 9.6 6.8
Diagnosis	Moderate severe Broca's aphasia	Conduction aphasia	Anomic aphasia	Anomic aphasia

Participant	D.Gy.	B.E.	S.H.	K.M.
Age	59	58	35	52
Education	11	14	12	12
Sex	M	F	F	M
Handed	Right	Right	Right	Right

Table 2 Data of the control group

4 Materials and Methods

4.1. The test material consisted of 63 pictures, each accompanied by a statement referring to it. The photographs were presented on a 19-in. computer screen. 10 of these photographs were used in a pre-test practice phase. (First a pre-test was conducted so that the subjects understood the task and practised giving responses of the expected type, a compound in each case). While the subjects were looking at the photographs, they heard statements like *Ezen tartják a kottát* 'This is where music sheets are kept'. Then a question was asked like *Mi lehet a neve?* 'What might it be called?' Next picture came and subjects heard another statement like: *Ő lakkozza azt* 'He gives it a coat of varnish'. Then a new question was asked like: *Mi lehet a foglalkozása?* 'What might be his job?'. The subjects were instructed to respond by uttering a compound. The test was self-paced; the photographs were presented one by one when the participant pressed the space key. Three seconds after the photograph appeared on the screen, the related statement and question was heard from a sound file. The participant herself/himself decided on the amount of time devoted to each answer. When the answer was completed or when the participant gave up answering, s/he pressed the space key again. Then, a blank grey screen appeared. No evaluation or comment was given on the answers during the test. The space key being pressed again, the next photograph appeared, and three seconds later, the next statement and question was heard. The degree of difficulty of the task rose from two-part compounds to four-part compounds; after the pre-test, these occurred in a random order.

4.2. With respect to recursive constructions, we only studied three- and four-part responses since two-part compounds can be seen as lexicalised to some degree. Three- and four-part responses had to be constructed by the subjects on the spot, with the help of the picture and the accompanying statements. The target three- or four-part compounds were all headed by a deverbal noun (the two-part compounds were not necessarily so). That is, the subjects had to construct deverbal nouns from the verbs they heard, using the suffix *-ó/-ő* and link it to the complements in the correct order. At the same time, they had to delete the case marker of the complement. First they invariably had to supply a two-part compound (of more or less lexicalised meaning), then build a three-part compound based on it, and then a four-part compound based on the latter. For instance, see Fig. 2.

Picture 1

The statement and question heard:
Ez forralja a vizet. Mi ez? 'This boils water. What is this?'
Expected answer: → *vízforraló* 'water-boiler [kettle]'

Picture 2

The statement and question heard:
Ez a szer tisztítja a vízforralót. Mi lehet a neve?
'This fluid cleans kettles. What might it be called?'
Expected answer: → *vízforraló-tisztító* 'water boiler cleaner [kettle-cleaner]'

Picture 3

The statement and question heard:
Ezzel adagolják a vízforraló-tisztítót. Mi lehet a neve?
'This is for measuring out kettle cleaning fluid. What might its name be?'
Expected answer: → *víz-forraló-tisztító-adagoló* 'water boiler cleaner measurer'

Fig. 2 A complex example from the test material

For Picture **1**, the initial two-part compound is deverbal, and its constituent ending in *-ó/-ő* was the point of departure for the three- and four-part compounds also ending in *-ó/-ő*.

For Picture **2** and Picture **3**, the expected responses are recursively constructed three- and four-part compounds, respectively. We evaluated subjects' responses with regard to their ability to build compounds recursively.

5   Results

5.1   The Performance of the Normal Group

Normal participants did not give a single wrong answer for two-part compounds. In the case of three- and four-part compounds, the errors were **not** ungrammatical word constructions or fragments; they concerned a relative head that was omitted or changed. It is important that they never omitted the rightmost absolute head (Table 3).

Here are a few examples of incorrect responses given by normal participants; the part omitted in the response is underlined:

gyertyatartó-készítő 'candlestick maker' → *gyertya-készítő* 'candle maker'
szappanbuborék-fújó 'soap bubble blower' → *buborék-fújó* 'bubble blower'
játszótértakarító-felügyelő 'playground cleaner supervisor' → *játszótér-felügyelő* 'playground supervisor'
kullancsirtófújó-gyártó 'tick exterminator sprayer maker' → *kullancsirtó-gyártó* 'tick exterminator maker'.

5.2   An Overview of the Types of Responses by Aphasic Participants

The responses we received from our aphasic participants were classified as follows:

(i)   Successful production of the three-part and four-part target compounds (e.g. *kottatartó-lakkozó* 'music stand varnisher')

Table 3   Percentages of correct and incorrect responses in the normal group

4 normal participants	Percentage correct (%)	Percentage incorrect (%)
Two-part compounds (n = 84)	100	0
Three-part compounds (n = 84)	97.7	2.3
Four-part compounds (n = 84)	89.3	10.7

(ii) Incomplete target (*lakkozó* 'varnisher' for *kottatartó-lakkozó* 'music stand varnisher'; or *felügyelő* 'supervisor' for *mozgó-lépcső-szerelő-felügyelő* 'escalator fitter's supervisor')

(iii) Simple words with **synonymous** meaning (*látszerész* 'optician' for *nap-szemüveg-tervező* 'sunglass designer'; or the brand name *Domestos* for *víz-forraló-tisztító-adagoló* 'water boiler cleaner measurer')

Table 4 Percentages of results with aphasic participants, three- and four-part compounds

Name	Three-part compounds			Four-part compounds		
	Category		%	Category		%
C.Z. Broca's aphasic all relevant responses to three-part targets: **26** all relevant responses to four-part targets: **24**	Target **(10)**		38.5	Target **(0)**		0
	Incomplete target **(10)**	3/ 1+3/	38.5	Incomplete target **(21)**	4/ 3+4/	87.5
	Simple synonymous word **(6)**		23	Simple synonymous word **(3)**		12.5
L.M. conduction aphasic all relevant responses to three-part targets: **31** all relevant responses to four-part targets: **24**	Target **(18)**		58	Target **(4)**		16.7
	Incomplete target **(8)**	3/ 1+3/ 2+3/	25.8	Incomplete target **(17)**	4/ 1+2+4/ 1+4/ 2+3+4/	70.8
	Simple synonymous word **(5)**		16.1	Simple synonymous word **(2)**		8.3
	Noun Phrase **(0)**		0	Noun Phrase **(1)**		4.2
H.N. anomic aphasic all relevant responses to three-part targets: **26** all relevant responses to four-part targets: **24**	Target **(0)**		0	Target **(0)**		0
	Incomplete target **(5)**	1+3/ 2+3/	19.2	Incomplete target **(4)**	4/	16.7
	Simple synonymous word **(11)**		42.3	Simple synonymous word **(5)**		20.8
	Noun Phrase **(1)**		3.8	Noun Phrase **(0)**		0
	Possessive construction **(0)**		0	Recursive possessive construction **(3)**		12.5
	Sentence **(9)**		34.6	Sentence **(12)**		50
V.K. anomic aphasic all relevant responses to three-part targets: **27** all relevant responses to four-part targets: **24**	Target **(3)**		11.1	Target **(3)**		12.5
	Incomplete target **(8)**	1+3/ 2+3/ 3/	29.6	Incomplete target **(4)**	4/ 1+4/ 2+4/	16.7
	Simple synonymous word **(9)**		33.3	Simple synonymous word **(4)**		16.7
	Sentence **(7)**		26	Sentence **(13)**		54.1

Legend: the sheer numbers of responses are presented in bold characters; the number before/shows which part of the compound is produced, for instance: $1 + 3/$ = production of first and third parts in a three-part target compound

(iv)   Using a **phrase** (e.g. a possessive construction) instead of the target compound (*a napszemüvegnek a tervezője* 'the designer of the sunglasses' for *napszemüveg-tervező* 'sunglass designer'), or responding with a **sentence** (*Takarítja a játszóteret és a hintát* 'He cleans the playground and the swing' for *játszó-tér-takarító* playground cleaner').

See below for the percentages of the types of responses by aphasic participants for three- and four-part compound targets. In Table 4 blue color shows the strategy of search in the system of lexicon, red color shows: exit to syntax strategy.

6   Discussion

As Table 4 shows, a compound building deficit is already present with three-part compounds and it grows with increasing complexity of the target compound. The ratio of successfully produced compounds significantly decreases for four-part compounds as compared to three-part ones. Linguistic impairment affects recursive compound construction with all subjects, but in different ways. Participants C.Z. and L.M. were able to produce compounds up to three parts in a number of cases (38.5 and 58%); but with four-part compounds, C.Z. is not at all successful, and L. M. is successful in only 16.7% of the cases. Participant H.N. was unable to produce the full target word even for three-part compounds. V.K.'s performance is also poor already for three-part compounds.

We searched in the Hungarian *Szószablya* database for the frequency of **two-part** compounds that were used as **inputs** for three-member compound building in our test. We found that the frequency of the first two constituents had an effect on the creation of **three-part** compounds in the case of C.Z. (Broca's aphasic) alone: there were significantly fewer correct target word responses among infrequent than among frequent targets. In L.M. (conduction aphasia), H.N. and V. K. (anomic aphasia), we found no frequency effect at all.

The subjects did not only produce complete or incomplete target items but also gave other answers that were in some way related to the target. Some "other" answers were in a lexical relationship with the target, as in the case of replacement by synonyms, and there were also syntactic paths: the production of sentences or phrases referring to the meaning of the target. These were produced **instead of** the inaccessible target compounds; hence we take them to be results of compensatory strategies. Note that compensation strategies by which the subjects were able to produce acceptable grammatical performance were diverse. Taking the degree of impairment of recursive operations and the ways of avoiding recursion into consideration, the subjects employed the following main strategies.

6.1 Lexical Search

A clear case is presented by C.Z. (Broca's aphasic), who tried to employ recursive compound building operations in creating three-part compounds and attempted to do that for four-part compounds as well but in the latter case responses were incomplete targets or simple synonymous words. In 'incomplete target' responses, she typically got as far as the bare deverbal head (e.g. *felügyelő* 'supervisor' for *mozgólépcső-szerelő-felügyelő* 'escalator fitter's supervisor'), suggesting a major impairment in constructing compounds. In avoiding lexical recursion, she retrieved an existing item from her mental lexicon. Such lexical "oversearch" was associative in nature but resulted in accessing a simple synonym/hyperonym. A similar strategy was exhibited by L.M. (conduction aphasic): he also made attempts at recursive compound building even for four-part compounds and was even successful in 16.7% of the cases. The majority of his 'incomplete target' responses consisted of more than one part, they were recursively constructed, suggesting a less severe impairment of the ability to build compounds. In the resulting compounds, it was almost exclusively the case that absolute heads were included, and some relative heads were lost during construction (e.g. *játszótér-felügyelő* 'playground supervisor' for *játszótér-takarító-felügyelő* 'playground cleaner's supervisor'). As an avoidance strategy, he employed accessing simple synonyms, too. Among his responses, we also found an NP (attribute–noun) construction, resulting from lexical "oversearch" in his case, too; i.e., he used an attribute–noun construction instead of **one** of the parts of the four-part compound (e.g. *jelző-lámpa-[műszaki tervező]* 'traffic lights [technical designer]' for *jelző-lámpa-irányító-tervező* 'traffic light controller designer → designer of traffic lights control mechanism').

   A shared feature of the two subjects' performance was that they tried to construct compounds recursively, with more or less success depending on the degree of impairment. The extent to which impairment became manifest was proportionate to the number of compound constituents. As a compensatory strategy, lexical "oversearch", i.e. search for hyperonyms/synonyms in the mental lexicon, was a typical option, especially in the case of three-part compounds; for four-part compounds the share of such responses decreased while the proportion of 'incomplete target' responses increased.

6.2 "Exit" to Syntax

The most extensive deficit of compound construction was found with H.N. (anomic aphasic): she was unable to produce the full target word even for three-part compounds. In a few cases, she built incomplete target words recursively. But in the case of four-part compounds, she exclusively produced the absolute head (e.g. *takarító* 'cleaner' for *fa-faragó-műhely-takarító* 'wood carver's workshop cleaner'), nothing else. Her avoidance strategy went beyond lexicon-internal operations,

though lexical search was present here, too. In the case of three-member compounds, she provided a hyperonym/synonym of the target word in 42.3% of the cases (e.g. *raktár* 'store' for *hó-lapát-tároló* 'snow shovel storage'), but with four-part compounds, the proportion of synonyms decreased (20.8%), because it was increasingly difficult to retrieve "ready-made", equivalent lexical items for very special ideas (like *mozgó-lépcső-szerelő-felügyelő* 'escalator fitter's supervisor'). With decreasing chances for successful lexical search, the proportion of responses involving sentence structures increased (e.g. *Felügyel, ott felügyel* 'He supervises, he supervises there' for *játszótér-takarító-felügyelő* 'playground cleaner's supervisor'). It was typical that such syntactic structures occurred already for three-member compounds (in 34.6%), but their share increased with the complexity of the target compound. In the case of four-part compounds, already 62.5% of the responses were sentences or possessive constructions. These sentences did pertain to the picture and/or the instructions coming from the experimenter, and they often included a repetition of the verb used in the instruction. In a few cases, they even contained syntactic embedding (e.g. *Felügyeli, hogy jól végzi a munkáját* 'He supervises that he works properly' for *mozgólépcső-szerelő-felügyelő* 'escalator fitter's supervisor') and they also contained **recursive** possessive constructions: e.g. *hegymászó irányítójának az oktatója* 'mountaineer's guide's instructor' for *hegymászó-irányító-oktató* 'mountaneer guiding instructor'.

Given that the original task required recursive lexical operations but for four-part target compounds sentence structures (50.0%) and recursive possessive DPs (12.5%) were present, this pattern of responses will be called the strategy of "exit" to syntax.

A similar strategy was exhibited by V.K. (anomic aphasic). For three-part targets, he tried to employ recursive operations of compound construction: this was successful in 11.1% of the cases and yielded incomplete target words in another 29.6%. He came up with synonyms/hyperonyms in 33.3%, whereas 26% of his responses were sentences. For four-part items, the proportion of successfully constructed compounds was 12.5%, and the proportion of recursively built but incomplete target words decreased to 16.7%. Substitution by some synonymous lexical item decreased from 33.3% (a relatively high level) to 16.7%. On the other hand, 54.1% of the responses to four-part compounds were sentences (e.g. *Takarítja a játszóteret és a hintát* 'He cleans the playground and the swing' for *játszó-tér-takarító* 'playground cleaner'). With the complexity of expected targets growing to four parts, the production of incomplete target responses and the share of synonyms decreased, but that of sentences increased in the subject's responses.

Summary of the Complexity Effect
The search in the lexicon strategy

When the complexity of the target increased from three-part to four-part compounds:

(i) the proportion of complete target responses decreased from a moderate level to a very low level or they were omitted,

 (ii)   the proportion of incomplete target responses strongly increased,
(iii)   the share of synonyms decreased to a low level,
(iv)   there were no 'sentence structure' responses.

   The "exit" to syntax strategy

When the complexity of the target increased from three-part to four-part compounds:

 (i)   the proportion of 'sentence structure' responses increased,
 (ii)   the proportion of complete target responses remained low or they were omitted,
(iii)   the proportion of incomplete target responses slightly decreased,
(iv)   the share of synonymous word responses decreased.

6.3   Statistical Significance

Our results are validated by using statistical significance tests in order to investigate whether there are significant differences in the distribution of types of responses between two groups (i.e. the group of C.Zs. + L.M and the group of H.N. + V.K.). Below we provide the level of significance:

 (i)   The distribution of lexical responses (blue color) and sentence-phrasal responses (red color) to three part targets and four part targets shows significant differences among the group of C.Zs. + L.M and the group of H.N. + V.K. (Fisher's exact test, $p < 0.01$).
 (ii)   The number of complete target responses and incomplete target responses (black color) is significantly higher in the C.Zs. + L.M group than in the H.N. + V.K. group. (Pearson's chi-squared test, $p < 10^{-17}$).

7   General Discussion: Dissociations

7.1. All aphasic subjects gave synonyms/hyperonyms as responses, but their share was surpassed by syntactic-structural solutions in anomic aphasics' responses in the case of four-part targets.

   Two major strategies were observed: lexical search and "exit" to syntax. The Broca's aphasic and conduction aphasic subjects basically employed the strategy of lexical search (and avoidance of lexical recursion) as the complexity of the target grew. As a consequence, the proportion of incomplete target responses exhibited a sudden jump in responses to four-part targets, and the share of synonymous word responses decreased to a low level. The Broca's aphasic subject did not try to

replace the correct response by syntactic structures at all, and—beyond the 4.2% attribute–noun combinations he gave for four-part targets—the conduction aphasic did not seek refuge in a syntactic-structural strategy, either. On the other hand, the two anomic aphasics used the compensatory strategy of "exit" to syntax as well. With the constituents of the target compound growing to four, the proportion of syntactic structures increased in their responses. Some recursive phrase structures were produced, too (in possessive DPs and sentence embeddings). In these cases lexical recursive operations turned out to be more impaired than syntactic recursion.

7.2. With reference to Hauser et al. (2002), we can say that language has recursion outside syntax, too: this is lexical recursion.[1] The diverse patterns of responses of the two groups of aphasic subjects (Broca's and conduction aphasics vs. anomic aphasics) are based on selective deficits of lexical recursion.

In Broca's and conduction aphasics recursive lexical operations showed a deficit and syntactic operations were also severely impaired. A deficit of productive application of lexical recursion was highly sensitive to the complexity of the compound word to be constructed.

Anomic aphasics exhibited severe impairment in lexical recursion; lexical recursive operations turned out to be more limited than syntactic recursion. On the other hand, they produced grammatical sentences or phrases. In a few cases, these even contained recursive constructions.

7.3. The results show that a deficit in the recursive construction of compounds does not directly entail a deficit in syntactic recursion. These systems can be dissociated in aphasia. Theoretically, the dissociation is possible because words behave as impenetrable units for the purposes of sentential syntax and the rules of compounding differ from syntactic rules. Some rules of word formation are not recursive to begin with, but compounds involving a head in *-ó/-ő* are among the exceptions: these are recursive. Given that such compounds follow construction schemas, the relationship between compound members is based on semantic arguments (thematic roles). The order of elements is strictly obligatory. The schema simply says that in XY compound X is the patient of Y. Taking the emerging form to be a unit, a similar relation can be established for (XY) + Z. This may result in a lexical unit (XYZ) that can be joined by a further item Q and so on. This is what we called lexical recursion. In this, the relations between individual words within the compound are not marked by syntax, what is more, overt syntactic markers like finite verb forms or case markers must be "suppressed", and the subject of the base

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[1]Using a kind of inductive definition of lexical recursion: we define it as the embedding of a word in a word of the same type in compound constructions. These constructions are left branching in the case of Hungarian. Lexical recursion builds complex compounds by increasing embedding depth and can be carried on endlessly, at least in principle. See some specific details in the paragraphs 2.2 and 7.3.

verb cannot be overtly mentioned within the compound. The basis of lexical recursion is the repetition of a construction schema and not that of a syntactic rule.

However, these operations are not independent of one another: the impairment of lexical recursion may trigger the use of "exit" to syntax strategy as a compensation. The compensation strategy involves a switch from the impaired subsystem to the unimpaired or less impaired subsystem.

In Broca's and conduction aphasics recursive lexical operations were impaired and syntactic operations were also severely impaired. There was no linguistic compensation strategy available for them.

In anomic aphasics, along with impairments in recursive lexical operations, recursive syntactic operations may remain selectively unimpaired. Hence, in order to compensate for the deficiency, anomic aphasics resorted to the syntactic system.

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Aspectual Constraints on Noun Incorporation in Hungarian

Ferenc Kiefer and Boglárka Németh

Abstract This paper summarizes and expands on some earlier findings concerning noun incorporation in Hungarian. An incorporated construction comes about by juxtaposing a bare noun and a verb. The bare noun occupies a preverbal position. Incorporated constructions share some features with compounds: these constitute a single phonological unit, they easily get lexicalized, the bare noun is non-referential and non-modifiable. It will be argued that the eventuality designated by the incorporated construction has to be perceived as a recognizable unitary concept. Furthermore, it will be shown that the construction interacts with the aspectual properties of the verb in interesting ways: while activity and process verbs do admit the construction, it is normally blocked in the case of statives and accomplishment and achievement verbs.

Keywords Bare nouns · Incorporation · Compounds · Referentiality
Lexicalization

1 Introduction

In the present paper we are going to summarize some earlier findings concerning noun incorporation in Hungarian, and show how aspectual classes interact with incorporation. Formally an incorporated construction comes about by juxtaposing a bare noun and a verb (in brief BNV). The key characteristic of BNVs is that a bare noun occupies a preverbal position, whereas full-fledged DPs commonly occur after the verb. Unlike DP + Verb constructions BNVs share some features with

F. Kiefer (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: kiefer@nytud.hu

B. Németh
Department of Hungarian and General Linguistics, Babeș–Bolyai University,
Cluj-Napoca, Romania
e-mail: nemeth.boglarka@ubbcluj.ro

compounds: they constitute a single phonological unit and can easily get lexicalized. Furthermore the bare noun is non-referential and non-modifiable. On the generic reading BNVs admit plural nouns as well. Furthermore under certain conditions singular BNVs may express a habitual reading. Though in Hungarian noun incorporation is not restricted to bare object nouns, in what follows we will restrict the discussion to such BNVs.

2   The Construction Type: A General Overview

Most of the literature on the phenomenon labelled as noun incorporation deals with construction types present in polysynthetic languages, however, we may find similar phenomena in other types of languages, for example in Hungarian, as well. This section provides a general overview of the main characteristics of bare object noun incorporation in Hungarian.

According to the literature (Kiefer 1990; Farkas and de Swart 2003), Hungarian 'bare noun + verb' constructions can be considered instances of type I noun incorporation in terms of Mithun (1984). Mithun describes the phenomenon of noun incorporation as a type of compounding where a verb and a noun (with the semantic function of patient, location or instrument) combine to form a new complex verb. The eventuality designated by the NV construction is not just a random co-occurrence of an entity and an eventuality, but it is perceived as a recognizable, unitary concept worth labelling (cf. Mithun 1984: 848–849).

We consider the Hungarian BNV construction type as a special case of composition by juxtaposition, the general characteristics of which are briefly captured by Mithun as follows: "A number of languages contain a construction in which a V and its direct object are simply juxtaposed to form an especially tight bond. The V and N remain separate words phonologically; but as in all compounding, the N loses its syntactic status as an argument of the sentence, and the VN unit functions as an intransitive predicate. The semantic effect is the same as in other compounding: the phrase denotes a unitary activity, in which the components lose their individual salience" (Mithun 1984: 849). One of the examples cited by the author is the case of Oceanic incorporation demonstrated in (1) below, where (1a) has an independent object as opposed to (1b) which contains an incorporated object.

(1)   a. *Ngoah kohkoa oaring-kai.*
             I   grind   coconut-these
             'I am grinding these coconuts.'
         b. *Ngoah ko   oaring.*
             I   grind   coconut
             'I am coconut-grinding.'   (Mithun 1984: 849)

 The examples in (2–5) below demonstrate some of the commonly recognized features of the Hungarian BNV construction type.

(2) a. *'Péter 'újságot   olvas / 'zenét   hallgat / 'tanulmányt ír /*
        Peter   newspaper-acc read / music-acc listen / article-acc   write /
        'keresztrejtvényt fejt / 'ruhát   próbál.
        crossword-acc   solve / outfit-acc try on
        'Peter is reading (a) newspaper(s) / listening to music / writing an article / solving (a)
        crossword puzzle(s) / trying on (an) outfit(s).'
     b. *'Péter 'olvassa   az 'újságot   / 'hallgatja a 'zenét /   'írja*
        Peter read3p.def the newspaper-acc / listen3p.def the music-acc/ write3p.def
        a 'tanulmányt / ?'fejti   a 'keresztrejtvényt / ? 'próbálja a 'ruhát.
        the article-acc / solve3p.def the crossword-acc / tryon3p.def the outfit-acc
        'Peter is reading the newspaper / listening to the music / writing the article / solving
        the crossword puzzle / trying on the outfit.'

(3)   **Péter   újságot   olvas / zenét   hallgat / tanulmányt ír /*
       Peter   newspaper-acc read / music-acc listen / article-acc write /
       keresztrejtvényt fejt / ruhát   próbál, és   elégedett vele.
       crossword-acc   solve / outfit-acc try on and content   instr
       'Peter is reading (a) newspaper(s) / listening to music / writing an article / solving (a)
       crossword puzzle(s) / trying on (an) outfit(s), and he is content with it.'

 As pointed out by Kiefer (1990: 153–154) and shown in (2) above, Hungarian BNVs form one single phonological unit from the point of view of stress assignment (i.e., only the subject and the incorporated object bear stress on their first syllable, cf. 2a), while their V + DP counterparts show the opposite pattern (i.e., the subject, the verb and the direct object all bear separate stress on their first syllable, cf. 2b). The ill-formedness of some of the constructions in (2b) is due to the fact that some of these BNVs, namely *keresztrejtvényt fejt* 'solve crossword puzzles' and *ruhát próbál* 'try on outfits' seem to be lexicalized units without exact syntactic paraphrases, e.g. V + DP counterparts.

 One of the key semantic features of direct object incorporation, often mentioned in the literature (cf. Mithun 1984; Kiefer 1990; Farkas and de Swart 2003), is the non-referentiality of the bare object noun, which means that the nouns in these BNV constructions do not denote any specific, identifiable entity in the world. This feature can be tested by adding an anaphoric pronominal constituent to the sentence, as in (3) above. The examples in (3) are ill-formed because the nouns in each construction have a type referring function, i.e. they only add a specific classificatory feature/component to the eventuality expressed by the verb.

(4) a. *Péter   érdekes   újságot   olvas / tanulmányt ír,   és   elégedett vele*.
        Peter   interesting newspaper-acc read / article-acc write and content   instr
        'Peter is reading an interesting newspaper / writing an interesting article, and he is
        content with it.'

     b. *Péter   egy érdekes   újságot   olvas / tanulmányt ír,   és   elégedett*
        Peter   an interesting newspaper-acc read / article-acc write and content
        vele.
        instr
        'Peter is reading an interesting newspaper / writing an interesting article, and he is
        content with it.'

The constructions in (4a)[1] above are meant to demonstrate the effects of modification on BNV constructions. The inserted adjective overrides the non-referentiality property of the object noun and—as a consequence—the complex eventuality meaning of the BNVs. This means that we are dealing with at least two different construction types from the point of view of semantics and discourse transparency, as shown by the fact that, contrary to the case of (3), the modified version of the construction admits the insertion of an anaphoric pronominal constituent into the sentence. As noted in Kiefer (1990: 152), the constructions like those in (4a) seem to be some kind of stylistic variants of the full fledged construction types shown in (4b). We are going to come back to this pattern in Sect. 3.2 below.

The number neutrality of the singular incorporated noun is another important characteristic of BNVs, and it is strongly connected to the above mentioned non-referentiality feature. As Farkas and de Swart (2003: 13–14) point out, morphologically singular incorporated nouns are compatible with both atomic and non-atomic interpretations. Most of the examples in (2a) above are underspecified regarding the number of objects involved in the eventualities described by the BNVs. The singular noun in the BNV *újságot olvas* 'read (a) newspaper(s)', for instance, allows for both an atomic (singular) and a non-atomic (plural) interpretation, i.e. the BNV does not specify whether Peter is reading one newspaper or several newspapers one after the other. As shown by the examples in (5) below, the varying interpretations are influenced by pragmatic (contextual) information. The BNV in (5a) triggers an atomic interpretation due to extra linguistic knowledge about marriage related customs (though it would allow for a non-atomic interpretation in the context of legal bigamy), the one in (5b) clearly triggers an atomic interpretation (without any cultural variation), finally, the one in (5c) unambiguously triggers a non-atomic interpretation.

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[1]Similar things were discussed in considerable detail in Maleczki (1994).

(5) a. *Feri feleséget keres*.
    Feri wife-acc search
    'Feri is looking for a wife' (Farkas and de Swart 2003: 14)
  b. *Anna napfelkeltét néz az erkélyen*.
    Ann sunrise-acc watch the balcony-loc
    'Ann is watching the sunrise on the balcony.'
  c. *Mari bélyeget gyűjt*. (Farkas and de Swart 2003: 13)
    Mary stamp-acc collect
    'Mary is collecting stamps.'

As far as plural bare objects are concerned, the following generalization holds: plural bare object nouns form grammatical BNVs, however, as shown in (6) below, their discourse transparency properties are similar to the ones of modified singular objects, as shown in (4a) above. The semantic effects of pluralization will be discussed in more detail in Sect. 3.2.

(6) a. *Anna leveleket ír, és elküldi őket*.
    Ann letter-Plural-acc write and send-3p.def them
    'Ann writes letters and sends them.'
  b. *Az orvos betegeket vizsgál, és megpróbál segíteni*
    The doctor patient-Plural-acc examine and pref-try help-Participle
    rajtuk.
    on-3p.Plural
    'The doctor examines patients and tries to help them.'

Finally, a distinction must be made between fully productive and idiomatic cases. As pointed out in Kiefer (1990), the meaning of idiomatic BNVs cannot be derived from a corresponding free construction (see the examples in (7–8) below), while fully productive BNVs generally have matching syntactic paraphrases as already demonstrated by the examples in (2a–b) above.

(7) a. *A behaviorista szemlélet gyökeret vert a nyelvészetben is.*
    the behaviourist approach root-acc beat-Past the linguistics-loc too
    'The behaviourist approach invaded linguistics as well.'
  b. *Péter bocsánatot kért a barátjától.*
    Peter forgiveness-acc ask-Past the friend-3poss.sg-loc
    'Peter apologized to his friend.'
  c. *Az autó tegnap gazdát cserélt.*
    the car yesterday owner-acc change-Past
    'The car changed owners yesterday.'
  d. *Mari gyereket vár.*
    Mary child-acc wait
    'Mary is pregnant.'

(8)   a. *_A behaviorista szemlélet verte   a   gyökeret a   nyelvészetben is._
          the behaviourist approach beat-Past-3p.def the root-acc the linguistics-loc too
       b. *_Péter kérte   a   bocsánatot   a   barátjától._
           Peter ask-Past-3p.def the forgiveness-acc the   friend-3poss.sg-loc
       c. *_Az autó tegnap   cserélte   a   gazdá(já)t._
          the car yesterday change-Past-3p.def the owner-3poss.sg
       d. _Mari várja   a   gyereket / vár egy gyereket._
          Mari wait-3p.def the child-acc / wait a   child-acc
          'Mary is waiting for the / a kid.'

The difference between the lexicalized BNVs in (7a–c) and (7d) is that the former type cannot be grammatically matched with a syntactic paraphrase (see (8a–c)), while the latter construction type has a well-formed syntactic paraphrase, however, (synchronically) this paraphrase has nothing to do with the meaning of its BNV counterpart (compare (7d) and (8d)).

3   Productivity and Aspectual Variation

After a brief general overview of the main characteristics of Hungarian BNVs, this section discusses some problematic questions related to the productivity and the aspectual properties of the construction type. The phenomena and criteria under discussion may account for the varying productivity and the semantic and discourse theoretic diversity of BNVs.

3.1   Pragmatic Principles Filtering the Range of Input Nouns

The most prominent and universal semantic and pragmatic feature of BNVs is that the eventuality designated by the construction has to be perceived as a recognizable, unitary concept worth separately labelling. Thus, this 'institutionalized' character of the complex activity expressed by the BNV seems to be a strong criterion regarding the derivation of the construction type.

Thus it does not come as a surprise that not all bare objects are admitted in BNV constructions with equal ease. Consider the examples in (9b and d) which, as opposed to those in (9a and c), are odd on their generic reading.

(9)   a. *Edit   (épp)   újságot   olvas   a   szobájában.*
           Edith just   newspaper-acc read   the   room-3poss.sg-loc
           'Edith is reading the newspaper in her room.'
       b. *Edit   (épp)   csomagolást olvas   a   húsrészlegen.*
           Edith just   package-acc   read   the meat-aisle-loc
           'Edith is reading (a) package(s) in the meat aisle.'
       c. *Virágék   (épp)   vendéget   várnak.*
           Virág-Plural   just   guest-acc   wait-3p.pl
           'The Virágs are waiting for (a) guest(s).'
       d. *Virágék   (épp)   világvégét   várnak.*
           Virág-Plural   just   apocalypse-acc   wait-3p.pl
           'The Virágs are waiting for the end of the world.'

The oddness of (9b) is caused by the fact that, generally speaking, reading packages is not considered a recognizable, re-occurring complex eventuality, however, the BNV in question becomes acceptable if matched with a proper context: if, for example, the participants of the speech situation know that Edith has a habit of reading the package of meat products trying to avoid certain ingredients (due to general health considerations or to being allergic to them). The same holds true for (9d) as well: waiting for the end of the world is generally not perceived as an 'institutionalized' activity (especially because it is supposed to be a one-time occurrence), nevertheless, the use of the BNV is justified in the context of knowing that the Virágs have prepared for the end of the world on several occasions in the past due to false predictions.

These types of marginal examples show that, although there may be some pragmatic factors that influence the derivation of BNVs, if the contextual factors match the corresponding pragmatic criteria, even seemingly odd BNVs will be considered well-formed.

In the following subsection we try to capture the semantic, more specifically the aspectual properties of both the range of potential input verbs and the different types of BNVs.

3.2   Aspectual Patterns of BNVs

3.2.1   Input Verb Restrictions

Based on the available language data and the literature, there seems to be a set of aspectual restrictions filtering the range of input verbs. The generalization is as follows: activity/process verbs, i.e. [+Dynamic, −Telic] verbs potentiate well-formed BNVs, while accomplishment and achievement verbs, i.e. [+Dynamic, +Telic] verbs as well as stative, i.e. [−Dynamic, −Telic] verbs do not tend to form

grammatical constructions (cf. Kiefer 1990), as shown by the examples in (10) below.[2]

(10)   a. *_Péter újságot   elolvasott/   zenét   meghallgatott/_
          Peter newspaper-acc pref-read-Past/ music-acc pref-listen-Past
          keresztrejtvényt   megfejtett.
          crossword-acc   pref-solve-Past
          'Peter read the newspaper / listened to music / solved a cross-word puzzle.'

    b. ?_István keze   autót   érintett   az   utcán._
          Stephen hand-3p.poss car-acc touch-Past the   street-loc
          'Stephen's hand touched a car on the street.'

    c. ?_Anna barátot   hívott,   mert   egyedül nem tudta   megoldani   a_
          Ann   friend-acc call-Past because alone   not   can-Past solve-Participle the
          problémát.
          problem-acc
          'Ann called (for) a friend, as she could not solve the problem alone.'

    d. *_Tamás poharat tört   a   konyhában, és   rögtön_
          Tom   glass-acc break-Past the kitchen-loc and immediately
          bocsánatot   kért.
          forgiveness-acc ask-Past
          'Tom broke a glass in the kitchen and immediately apologized for it.'

    e. *_Éva fiút   szeretett, de nem lett   jó   vége._
          Eva boy-acc love-Past but not become good end-3p.poss
          'Eva loved a boy, but it did not end well.'

    f. *_Laci hegyet   látott   a   kiránduláson/, amikor fölhívtam._
          Laci mountain-acc see-Past the trip-loc/   when   call-Past-1p.def
          'Laci saw a mountain on the trip / when I called him.'

    g. *_Matyi titkot   tudott,   és   hosszú ideig   nem_
          Matthew secret-acc know-Past and long   time-Temp not
          mondhatta   el   senkinek.
          tell-Cond-Past pref nobody-dat
          'Matthew knew a secret, and he was not allowed to tell it to anyone for a long time.'

According to the examples in (10a–g), the above generalization seems to hold true for Hungarian BNVs. The constructions in (10a–d) derived from telic verbs are ungrammatical, although a distinction should be made between prefixed and unprefixed telic verbs, as the latter are invariably ungrammatical in these constructions, while in some cases the former may serve as acceptable input verbs (as

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[2]We use the terms _activity_, _achievement_, _accomplishment_ and _state_ according to the Vendlerian tradition well known in the literature on aspect. Vendler (1967) isolated four situation types: states (e.g. _to love_, _to know_, etc.), activities (e.g. _to run_), achievements (e.g. _to reach the summit_) and accomplishments (e.g. _to draw a circle_). For more on these aspectual categories, see Smith (1991), Tenny (1994), Kiefer (2006), etc.

shown in (11a–b) below.[3] The ungrammatical BNVs like those in (10e–g) lead to the conclusion that stative verbs are indeed excluded from the range of possible input verbs, however, as shown in (11d–e), we may find some grammatical BNVs derived from stative verbs as well.

(11) a. *István keze labdát érintett, és a biró észrevette.*
Stephen hand-3p.poss ball-acc touch-Past and the referee observe-Past
'Stephen's hand touched the ball, and the referee saw it.'

b. *Anna mentőt hívott, mert egyedül nem tudta megoldani*
Ana ambulance-acc call-Past because alone not can-Past solve-Participle
a problémát.
the problem-acc
'Ann called an ambulance, as she could not solve the problem alone.'

c. *Tamás diót tört a kalákán.*
Tom nut-acc break-Past the group work-loc
'Tom was cracking nuts at the group work.'

d. *Mari fájdalmat érzett a bal lábában, ezért orvoshoz ment.*
Mary pain-acc feel-Past the left foot-3p.poss-loc hence doctor-loc go-Past
'Mary felt pain in his left leg, so he went to the doctor.'

e. *Az éjjeliőr zajt hallott, ezért újra ellenőrizte a*
the night-watchman noise-acc hear-Past hence again check-Past the
folyosókat.
hallway-Plural-acc
'The night watchman heard noise, so he checked the hallways again.'

The well-formed examples in (11) violate the aspectual criteria formulated above, so we need to take a closer look at the semantic and pragmatic features of these BNVs. The sentences in (11a–b) contain BNVs derived from telic verbs, while the ones in (11d and e) contain stative verbs. The example in (11c), contrasted with (10d), is meant to demonstrate how contextual non-atomicity entailments induce aspectual coercion in the case of punctual verbs (the BNV triggers an iterative interpretation, otherwise, with an atomic interpretation, it would be considered ill-formed, like the one in (10d) above; and reversely: the BNV *poharat tör* 'break glasses' becomes well-formed with an iterative and habitual interpretation).

The common feature of these BNVs is that they all denote institutionalized, re-occurring eventualities. The institutionalized nature of the eventualities expressed by (11a and b) is also shown by their contrast with the constructions in (10b–c) above: in football, touching the ball with one's hand is a frequent, punishable occurrence. The same institutionalized character holds true for the eventuality of calling an ambulance and for the stative predicates in (11d and e).

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[3]The distributional properties of these verb classes are captured in Kiefer (1990: 169) as follows: "Syntactically, both the bare noun and the prefix belong to the same class of elements, often referred to as preverb since under normal circumstances an element of this class occupies the position immediately preceding the verb. Consequently, two preverbs can never co-occur.".

Based on these observations, we conclude that the aspectual criterion described above should be reduced to a remark regarding the prevalency of process verbs in BNVs, as the range of verbs which (potentially) denote institutionalized eventualities strongly overlaps with the category of process verbs, however, some telic and stative verbs also describe eventualities which satisfy the pragmatic criterion controlling BNV formation.

3.2.2 The Aspectual Functions of BNVs

As part of our discussion of the aspectual features of Hungarian BNVs mention must be made of the viewpoint aspect patterns shown by the constructions. Based on our observations, we distinguish three main aspectual functions of BNVs. Each of them are demonstrated in (12–14) below.

(12)   a. *Péter (épp) újságot   olvasott / zenét   hallgatott / tanulmányt*
            Peter   just   newspaper-acc read-Past / music-acc listen-Past / article-acc
            írt /   keresztrejtvényt fejtett/   ruhát   próbált,   amikor
            write-Past/ crossword-acc   solve-Past/ outfit-acc try on-Past when
            megérkeztünk.
            pref-arrive-Past-1p.pl
            'Peter was reading (a) newspaper(s) / listening to music / writing an article / solving (a) crossword puzzle(s) / trying on (an) outfit(s), when we arrived.'
        b. *Péter egész életében   újságot   olvasott / zenét   hallgatott/*
            Peter   whole life-3p.poss-loc newspaper-acc read-Past / music-acc listen-Past
            tanulmányt írt/   keresztrejtvényt fejtett/   ruhát   próbált.
            article-acc   write-Past/ crossword-acc   solve-Past/ outfit-acc try on-Past
            'Peter read newspaper(s) / was listening to music / wrote articles / solved crossword puzzles / tried on outfits all his life.'
        c. *Péter délután   (általában) újságot   olvas/ zenét   hallgat/*
            Peter   afternoon   generally newspaper-acc read/ music-acc listen/
            tanulmányt ír/   keresztrejtvényt fejt/   ruhát   próbál.
            article-acc write/ crossword-acc   solve/ outfit-acc   try on
            'Peter usually reads newspapers / listens to music / writes articles / solves crossword puzzles / tries on outfits in the afternoon.'

(13)   a. *A költő verseket   ír.*
            the poet   poem-Plural-acc   write
            'The poet writes poems.'
        b. *Az orvos betegeket   gyógyít.*
            the doctor patient-Plural-acc   cure
            'The doctor cures patients.'
        c. *A festő képeket   fest.*
            the painter picture-Plural-acc   paint
            'The painter paints pictures.'

(14)   *Mi   a   foglalkozása Tamásnak?*
         what   the   occupation   Tom-dat
         'What does Tom do for a living?'

   a.   *Illusztrációkat rajzol egy   reklámcégnek.*
         illustration-Plural-acc draw a   ad-company-dat
         'He draws illustrations for an ad company.'

   b.   *Lányokat   futtat.*
         girl-Plural-acc   run-Causative
         'Tom is a pimp.'

The examples in (12a) show the **progressive** use of BNVs, while the sentences[4] in (12b–c) demonstrate the **habitual** use of BNVs formed with morphologically singular nouns. In order to elicit a habitual interpretation, generally the presence of some kind of adverbial constituent is needed in these constructions (as in the case of most Hungarian verbs), otherwise we get a progressive interpretation.[5]

Finally, the examples in (13) are meant to show the **generic** use of BNVs formed with morphologically plural nouns. As shown in (13a–c), as opposed to their singular BNV counterparts which trigger a progressive interpretation, plural BNVs may be used to express a generic meaning without any adverbial specification. The examples in (14) show how these constructions can be used to specify someone's profession in default of a proper nominal term or as a euphemism. Note that the morphologically singular counterpart of the lexicalized plural BNV in (14b) (*lányt futtat) is ill-formed.

4   Conclusion

To summarize, we saw that BNVs must be considered a highly productive construction type in Hungarian which is in many aspects radically different from DP constructions. In contrast to DP constructions BNVs are non-modifiable and they are neutral with respect to number. Pragmatically they denote an institutionalized activity (i.e. the eventuality designated by the construction must be perceived as a recognizable, unitary concept worth separately labelling). Moreover, there seem to exist a set of aspectual restrictions filtering the range of input verbs. It was also noted that BNVs may have various aspectual functions.

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[4]Edith Kádár's example.

[5]Some verbs may trigger a habitual interpretation without such adverbial specification (e.g., *iszik* 'drink, be an alcoholic', *drogozik* 'take drugs, be a drug-addict', *sportol* 'do sports', etc.).

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Instrument–Subject Alternation: A Further Case Study in Lexical Pragmatics

Károly Bibok

Abstract The instrument–subject alternation is a cross-linguistic phenomenon in which a verb's semantic argument with an instrument thematic role can be expressed syntactically not only as an adverbial phrase but also as a subject instead of an agentive subject. Using data from Hungarian, in the present paper I attempt to work out an account of this alternation that has the following advantageous features. First, by means of a pragmatically oriented weaker notion of causation (Koenig et al., J Semant 25:175–220, 2008) a solid basis is assumed to determine which verbs alternate and which verbs do not. Second, syntactic alternations are not treated as lexical or constructional phenomena (as are in lexical or constructional approaches, respectively). However, they fit a lexical-constructional approach which naturally extends to lexical pragmatics (Bibok, From syntactic alternations to lexical pragmatics, 2010). After establishing corresponding verbal meaning representations the lexical pragmatic account can also contribute to the understanding of the syntactic alternation under discussion presumably in other languages than Hungarian.

Keywords Syntactic alternation · Underspecified meaning representation
World (encyclopedic) knowledge · Lexical-constructional analysis
Lexical pragmatics

1 Introduction

The instrument–subject alternation is a cross-linguistic phenomenon in which a verb's semantic argument with an instrument thematic role can be expressed syntactically not only as an adverbial phrase but also as a subject instead of an agentive subject. It is illustrated by the examples below in Hungarian.

K. Bibok (✉)
Department of Russian Philology, University of Szeged, Szeged, Hungary
e-mail: kbibok@lit.u-szeged.hu

(1) (a) *Rita-Ø   betör-te   egy hajszárító-val   az ablak-ot.*
          Rita-NOM   break-PST.DEF.3SG   a   hair.dryer-INS   the window-ACC
          'Rita broke the window with a hair dryer.'

     (b) *A hajszárító-Ø   betör-te   az   ablak- ot.*
          the hair.dryer-NOM   break-PST.DEF.3SG   the   window-ACC
          'The hair dryer broke the window.'

(2) (a) *Rita-Ø   megszárít-otta   egy   hajszárító-val az ablak-ot.*
          Rita.NOM   dry-PST.DEF.3SG   a   hair.dryer-INS the window-ACC
          'Rita dried the window with a hair dryer.'

     (b) *A   hajszárító-Ø   megszárít-otta   az   ablak-ot.*
          the   hair.dryer-NOM   dry-PST.DEF.3SG   the   window-ACC
          'The hair dryer dried the window.'

(3) (a) *Rita-Ø   megrak-ta   egy   targoncá-val   a   teherautó-t.*
          Rita-NOM   load-PST.DEF.3SG   a   forklift-INS   the   truck-ACC
          'Rita loaded the truck with a forklift.'

     (b) *A   targonca-Ø   megrak-ta   a   teherautó-t.*
          the   forklift-NOM load-PST.DEF.3SG   the   truck-ACC
          'The forklift loaded the truck.'

While in sentences (1a),[1] (2a) and (3a) the instruments are realized as adverbial phrases, in sentences (1b), (2b) and (3b)—as subjects. However, with other Hungarian verbs the alternation at stake cannot appear. Cf.:

(4) (a) *Rita-Ø   felmos-ta   egy   felmosórongy-gyal a   padló-t.*
          Rita-NOM   wash-PST.DEF.3SG   a   floor-cloth-INS   the floor-ACC
          'Rita washed the floor with a floor-cloth.'

     (b) **A   felmosórongy-Ø   felmos-ta   a   padló-t.*
          the   floor-cloth-NOM   wash-PST.DEF.3SG   the   floor-ACC
          'The floor-cloth washed the floor.'

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[1]The glosses are not intended to capture all morphological properties but indicate the necessary ones for the present purposes. The abbreviations used in the glosses throughout this paper are the following: 3SG = third person singular, ACC = accusative, DEF = definite (conjugation), ILL = illative, INDF = indefinite (conjugation), INE = inessive, INS = instrumental, NOM = nominative, PRS = present (tense), PST = past (tense), SUB = sublative and SUP = superessive.

(5) (a) *Rita-Ø   felsöpör-te   egy   söprű-vel   a   padló-t.*
          Rita-NOM   sweep-PST.DEF.3SG a   broom-INS   the   floor-ACC
          'Rita swept the floor with a broom.'

     (b) **A   seprű-Ø   felsöpör-te   a   padló-t.*
          the   broom-NOM   sweep-PST.DEF.3SG the   floor-ACC
          'The broom swept the floor.'

How can one account for the different behavior of instruments with various verbs? To address this question, in the present paper I attempt to work out an account of the alternation under discussion that has the following advantageous features. First, by means of a pragmatically oriented weaker notion of causation (Koenig et al. 2008) a solid basis is assumed to determine which verbs alternate and which verbs do not. Second, syntactic alternations are not treated as lexical or constructional phenomena (as are in lexical or constructional approaches, respectively). However, they fit **a lexical-constructional approach** which naturally extends to **lexical pragmatics** (Bibok 2010). As demonstrated in my earlier work (Bibok 2010, 2014, 2016b), a lexical pragmatic perspective which favors encyclopedic and contextual information to convert encoded word meanings into full-fledged concepts guarantees an economical way to get constructional meanings appearing in syntactically alternating structures.

The organization of the paper is as follows. With the help of two syntactic alternations other than the real object of the present study, namely, the locative and the manner/direction of motion alternation, Sect. 2 argues for the lexical-constructional conception against a merely lexical or a merely constructional framework. Criticizing earlier proposals (Levin 1993; Dudchuk 2007) for the instrument–subject alternation, Sect. 3 offers its novel analysis. Section 4 also indicates further topics for future research that have not been considered systematically before in connection with the instrument–subject alternation. They include issues whether instrumental adverbial phrases express a semantic argument or adjunct as well as whether constructions with an instrumental subject only denote events. The paper ends with Sect. 4, which summarizes the results.

2 Different Approaches to Syntactic Alternations

To begin with, I want to briefly point out how various syntactic alternations can be explained. In addition, it turns out that the same change in (syntactic) argument structure may be analyzed differently. Let us first consider examples of the locative alternation[2] in (6).

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[2]For an overview of the literature about locative alternation, see Levin 1993: 49–55.

(6) (a) *Az   anya-Ø   zsír-t   ken-Ø   a   kenyér-re.*
          the   mother-NOM fat-ACC   smear-PRS.INDF.3SG the bread-SUB
          'The mother is smearing fat on the bread.'

     (b) *Az   anya-Ø   zsír-ral   ken-i   a   kenyer-et.*
          the   mother-NOM fat-INS   smear-PRS.DEF.3SG the bread-ACC
          'The mother is smearing the bread with fat.'

Both internal (syntactic) arguments of *ken* 'smear' can be associated with two distinct roles: the noun phrase *zsír* 'fat' (with corresponding case inflections) can play both a theme role and a means role in (6a) and (6b), respectively, as well as *a kenyér* 'the bread' (with corresponding case inflections)—both a goal role and a theme role in (6a) and (6b), respectively. If one is not satisfied with a sense enumeration conception of the lexicon applied in traditional lexicography (cf.: *ken* 1. and *ken* 2. in Bárczi and Országh 1959–1962 as well as in Pusztai 2003), one faces with three kinds of theoretical explanations concerning the appearance of *ken* 'smear' in both (6a) and (6b). First, **a lexical rule** can create a new lexical item, operating on the semantic representation of an input lexical item. The following rule can be proposed for verbs of the locative alternation including, e.g., *ken* 'smear' (cf. Pinker 1989: 79).[3]

(7) "If there is a verb with the semantic representation 'X causes Y to move into/onto Z', then it can be converted into a verb with the semantic representation 'X causes Z to change state by means of moving Y into/onto it'" (Bibok 2014: 55).

Second, **a constructional account** goes as follows. In Construction Grammar (Goldberg 1995) a semantic representation of a lexical item consists of a list of participant roles. Citing Goldberg's (1995: 176–177) own example, we can represent the verb *slather* as in (8).

(8) *slather* <slatherer, thick-mass, target>

The verb *slather* appears in both constructions of the locative alternation in (9)

(9) (a) Sam slathered shaving cream onto his face;
     (b) Sam slathered his face with shaving cream

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[3]Three remarks are in order in connection with the formulation of the lexical rule in (7):

(i)The relationship between the two semantic representations, in fact, are two-directional, i.e., the former representation can also be reached from the latter.

(ii)Unlike traditional lexicography, (7) does not present the relationship between two lexical representations but two lexical items.

(iii)Despite the original assumption, *Z* in the 'with' variant is not necessarily affected totally as attested by (6b) while the verb *ken* 'smear' with a preverb *meg-* or *be-* in such a construction denotes an event in that the bread is totally affected. Cf. also the Levin's (1993: 50) remark, according to which "a statement involving the notion "holistic" is not entirely accurate".

because its three participant roles are compatible with the argument roles of both the caused-motion construction and the causative-plus-*with*-adjunct construction. The former has a cause, a theme and a goal. The two role sets can be fused with each other since the slatherer is semantically construable as a cause, thick-mass as a theme—for it undergoes a change of location, and the target as a directional. In the latter construction, the fusion of the slatherer and the cause is the same as above. Nevertheless, the target can be construed not only as a directional, but also as a theme—for the entity on which the substance is slathered is affected. Since there is a third participant role of *slather*, namely, thick-mass, a *with*-phrase appears even if it counts as an adjunct of (9b) in the framework of Construction Grammar.[4]

Third, **a lexical-constructional approach** to the locative alternation does not consider it purely lexical or purely constructional but a complex, i.e., lexical-constructional, phenomenon. To override shortcomings of the rivalling lexical and constructional theories,[5] the third conception assumes that being underspecified and having optional elements relevant to one or another constructional meaning, lexical representations of verbs provide a semantic and pragmatic

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[4]If someone thinks that argument roles assigned to the mass and the target are named somewhat confusingly, she will see below in Sect. 3 how they follow from the internal structure of lexical-semantic representations built in the lexical-constructional framework instead of being labelled in an external way.

[5]Here I only have space to mention difficulties of putting lexemes into narrow semantic classes (for further details, see Bibok 2008 and 2014). Narrow semantic classes are used to make more precise the scope of a lexical rule such as (7) and—since they were also transferred into the machinery of Construction Grammar—the fusion of verbs with constructions. However, defining such classes does not seem to be straightforward. Consider the following examples.

(i)	(a)	*Az*	*apa-Ø*	*kávé-t*	*löttyent-Ø*	*az*	*asztalterítő-re.*
		the	father-NOM	coffee-ACC	spill-PRS.INDF.3SG	the	tablecloth-SUB
		'The father spills coffee on the tablecloth.'					
	(b)	**Az*	*apa-Ø*	*kávé-val*	*löttyent-i*	*az*	*asztalterítő-t.*
		the	father-NOM	coffee-INS	spill-PRS.DEF.3SG	the	tablecloth-ACC
		'The father spills the tablecloth with coffee.'					

As a non-alternating verb, *löttyent* 'spill' should belong to the *dribble*-class meaning 'a mass is enabled to move via the force of gravity'. Nevertheless, *löttyent* 'spill' involves more than motion by gravity because a different force brings about ballistic motion of a mass. Therefore, it could alternate as members of the *splash*-class meaning 'force is imparted to a mass, causing ballistic motion in a specified spatial distribution along a trajectory'. One could raise an objection that motion does not come into existence in a sufficiently specified way. This objection is contradicted by a well-formed example with the verb *löttyent* 'spill' having the preverb *le-* 'down', which does not influence how the mass moves. Cf. (ii):

(ii)	*Az*	*apa-Ø*	*le-löttyent-i*	*kávé-val*	*az*	*asztalterítő-t.*
	the	father-NOM	down-spill-PRS.DEF.3SG	coffee-INS	the	tablecloth-ACC
	lit. 'The father spills down the tablecloth with coffee.'					

basis[6] rich enough to construe both meanings coming about in syntactic alternations (cf. Iwata 2002; Bibok 2010). The *ken* 'smear' has the following underspecified representation underlying both appearances in (6a) and (6b):[7]

(10)   'X causes a mass Y to move onto a surface Z, **and** X causes a surface Z to be covered partially or totally with a mass Y' (Bibok 2014: 65).

The two constructional meanings of *ken* 'smear' in (6) equal one or another profiled part of the description of the complex event in (10). When a mass is focused, the constructional meaning corresponds to the part of (10) which is before *and,* i.e., 'X causes a mass Y to move onto a surface Z', expressed in (6a). However, when a surface is profiled, the constructional meaning expressed in (6b) is 'X causes a surface Z to be covered partially or totally with a mass Y', i.e., the fragment of (10) after the conjunction *and.* If a verb, e.g., *löttyent* 'spill', does not have an underspecified representation similar to (10), then it cannot occur in the locative alternation (cf. (ib) in Footnote 5).

The second alternation illustrating different approaches is the manner of motion versus directional motion alternation[8] in (11).

(11)   (a)   *A   labda-Ø   a   barlang-ban   úsz-ik.*
               the   ball-NOM   the   cave-INE   float-PRS.INDF.3SG
               'The ball is floating in the cave.'

        (b)   *A   labda-Ø   a   barlang-ba   úsz-ik.*
               the   ball-NOM   the   cave-ILL   float-PRS.INDF.3SG
               'The ball is floating into the cave.'

The polysemy of *úszik* 'float' shown in (11) (cf. Ladányi 2007: 214–215) can be treated by **a lexical rule** in (12).

(12)   A verb may take a directional argument if it denotes a manner of motion (Komlósy 1992: 355).

On the basis of Pustejovsky's (1995: 125–126) version of **the constructional approach**, the polysemy 'manner of motion' versus 'directional motion' of *úszik*

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[6]It is important to emphasize that such a basis is not considered a derivational basis. Rather an underspecified lexical meaning and constructional meanings are related in a sense that they are compatible with each other, or, put it differently, they can be joined.

[7]In a more precise formulation, the first argument of the cause is not simply an agent but an event such that *X* acts (cf. Bibok 2010: 273). Nevertheless, for the time being this does not matter while in Sect. 3.3 below we need that fuller form of a lexical-semantic representation.

[8]For the description of the alternation, see Levin 1993: 105–106.

'float' can be explained in the following way. The verb *úszik* 'float' has a single meaning in the lexicon that consists in the manner of motion, expressed in (11a) above. The meaning 'move in some direction in some manner' in (11b) does not belong to *úszik* 'float' itself, but to the phrase including the given verb and the inflected noun. This second, more complex meaning cannot be derived from the constituent parts of the phrase by means of a standard rule of composition. It has to be assumed that the inflected noun also behaves as a functor (or predicate) with respect to *úszik* 'float'. Therefore, the meaning of the phrase *a barlangba úszik* 'is floating into the cave' is constructed by a mechanism that considers several constituents functors in a simple construction. Such a mechanism is called co-composition in Pustejovsky's (1995) Generative Lexicon Theory.

At the same time, in both frameworks based on lexical rules and constructions, a separate treatment is needed for following cases. Only some of those verbs which denote a manner of motion of inanimate objects whose movement can be caused by external effects are suitable for designating a directional motion (Komlósy 2000: 257). Compare, for example, *pattog* 'bounce' and *inog* 'wobble' in (13) and (14), respectively.

(13)	(a)	*A*	*labda-Ø*	*a*	*fal-Ø*	*mellett*	*pattog-Ø.*
		the	ball-NOM	the	wall-NOM	by	bounce-PRS.INDF.3SG
		'The ball is bouncing by the wall.'					

	(b)	*A*	*labda-Ø*	*a*	*fal-Ø*	*mellé*	*pattog-Ø.*
		the	ball-NOM	the	wall-NOM	to	bounce-PRS.INDF.3SG
		'The ball is bouncing to the wall.'					

(14)	(a)	*A*	*szék-Ø*	*a*	*fal-Ø*	*mellett*	*inog-Ø.*
		the	chair-NOM	the	wall-NOM	by	wobble-PRS.INDF.3SG
		'The chair is wobbling by the wall.'					

	(b)	**A*	*szék-Ø*	*a*	*fal-Ø*	*mellé*	*inog-Ø.*
		the	chair-NOM	the	wall-NOM	to	wobble-PRS.INDF.3SG
		'The chair is wobbling to the wall.'					

The third, **lexical-constructional**, analysis departs from an assumption that the directional argument is substituted for the locative one (Bibok 2010: 279–283), unlike the lexical rule and constructional conceptions, according to which the verb *úszik* 'float' in directional use has more arguments than the manner of motion verb (cf. also: Levin 1993: 264–267). As to the underspecified meaning representation embracing both constructional meanings, it is built on the semantic relationship between locative and directional arguments. The place of the floating ball has an 'in' relation (expressed by the inflection *-ban* in (11a)) to the place of the reference entity denoted by the inflected noun *barlangban* 'in cave'. The end point of the floating ball is nothing other than the end of a path of floating, i.e., the place that the ball occupies moving throughout a path of floating and that has an 'in' relation

(expressed by the inflection -*ban*) to the place of the reference entity. In a more fine-grain analysis, directed motion should not be limited to reaching the end of a path. For instance, a path on that an object moves may have its final goal outside the path itself, cf.: *A labda a barlang felé úszik* 'The ball floats toward the cave'. But all such cases of motion involve a path having some direction, whose final part, in turn, is not necessarily profiled (Bibok 2010: 282). As for the meanings of the locative and directional arguments, they share a common part, namely, the relation of the place occupied by the ball to another place. Nevertheless, their difference consists in that the directional argument includes something more, namely, that the place of the ball belongs to a path with a particular direction. Rewording floating as moving in a particular manner and generally symbolizing the relation between places of the ball and the reference entity as α, we can provide an underspecified meaning representation (Bibok 2010: 282, where it is also formulated in a formal semantic metalanguage):

(15)   'X moves in a particular manner such that X's place (that belongs to a path with a particular direction) has relation α to the place of the reference entity'.

The underspecified meaning representation in (15)—through its fragment in round brackets—explains the alternation between locative and directional arguments. The optional fragment is only activated in one of the two constructional meanings, namely, in the directed motion sense, which appears with a directional argument.

If in its representation a verb's meaning does not contain the bracketed fragment of (15), i.e., 'that belongs to a path with a particular direction', then that verb cannot take part in the manner of motion versus directional motion alternation as attested in (14b) above.[9]

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[9]A reviewer of my paper claims that according to his/her informants the status of (14b) can become grammatical from ungrammatical in the context of a fairy story. However, I do not think that it is the case. The verb *inog* 'wobble' can denote no directional motion but only a (manner of) motion of position changed even though a metaphorical extension comes about (see also the corresponding lexical item in Bárczi and Országh 1959–1962 as well as in Pusztai 2003). Nevertheless, *billeg* 'rock' is another case. Consider (i).

(i) | *A* | *szék-Ø* | *billeg-Ø* | *az* | *egyenetlen* | *talaj-on.* |
      | the | chair-NOM | rock-PRS.INDF.3SG | the | uneven | ground-SUP |

'The chair is rocking on uneven ground.'

The verb *billeg* 'rock' can be used with a directional argument if it expresses someone's (or, perhaps, an animal's) walking swinging slightly from side to side as in (ii) (cf. Bárczi and Országh 1959–1962 as well as Pusztai 2003).

3   Towards a Novel Analysis of the Instrument–Subject Alternation

3.1   *Data and Earlier Proposals*

Let us return to the instrument–subject alternation. Following **the constructional analysis** of *ken* 'smear' presented in Sect. 2, it could be proposed that an argument fulfills either an instrument or an agentive role with the verbs in (1)–(3), which—for the sake of convenience—are repeated here as (16)–(18).

(16) (a) *Rita-Ø   betör-te   egy   hajszárító-val az ablak-ot.*
            Rita-NOM   break-PST.DEF.3SG a   hair.dryer-INS the window-ACC
            'Rita broke the window with a hair dryer.'

      (b) *A   hajszárító-Ø   betör-te   az   ablak-ot.*
            the   hair.dryer-NOM   break-PST.DEF.3SG the   window-ACC
            'The hair dryer broke the window.'

(17) (a) *Rita-Ø   megszárít-otta   egy   hajszárító-val az ablak-ot.*
            Rita.NOM   dry-PST.DEF.3SG a   hair.dryer-INS the window-ACC
            'Rita dried the window with a hair dryer.'

      (b) *A   hajszárító-Ø   megszárít-otta   az   ablak-ot.*
            the   hair.dryer-NOM   dry-PST.DEF.3SG the   window-ACC
            'The hair dryer dried the window.'

_____

(ii) *A   terhes   asszony-Ø   a   fal-Ø   mellé   billeg-Ø.*
       the   pregnant   woman-NOM   the   wall-NOM   to   walk-PRS.INDF.3SG
       'The pregnant woman is walking (swinging slightly from side to side) to the wall.'

It is just the sense that may be extended by the metaphorical way of personification, e.g., of a chair, in a fairy tale. Thus, one gets an interpretable utterance even with an inanimate subject. Consider (iii).

(iii) *A   szék-Ø   a   fal-Ø   mellé   billeg-Ø.*
        the   chair-NOM   the   wall-NOM   to   walk-PRS.INDF.3SG
        'The chair is walking (swinging slightly from side to side) to the wall.'

(18)   (a)   *Rita-Ø   megrak-ta   egy   targoncá-val   a   teherautó-t.*
              Rita-NOM   load-PST.DEF.3SG   a   forklift-INS   the   truck-ACC
              'Rita loaded the truck with a forklift.'

       (b)   *A   targonca-Ø   megrak-ta   a   teherautó-t.*
              the   forklift-NOM   load-PST.DEF.3SG   the   truck-ACC
              'The forklift loaded the truck.'

Consequently, a constructionist would state that the hair dryer in (16a) and (17a) as well as the forklift in (18a) count as instruments while the hair dryer in (16b) and (17b) as well as the forklift in (18b) function as agents.[10] However, according to another analysis (Levin 1993: 80–81) the instrument role remains unchanged in both syntactic positions even though the verbs are found with one fewer noun phrase in one variant than in the other. Then the possibility of the instrument–subject alternation depends on **the type of instruments**. In (16a), (17a) and (18a), the instruments are intermediary, hence the alternation at stake emerges as attested by the corresponding b-sentences. If instruments are facilitating, or enabling, then, on the contrary, they cannot appear as subjects. Consider once again (4) and (5), which are repeated here as (19) and (20).

(19)   (a)   *Rita-Ø   felmos-ta   egy   felmosórongy-gyal a   padló-t.*
              Rita-NOM   wash-PST.DEF.3SG   a   floor-cloth-INS   the   floor-ACC
              'Rita washed the floor with a floor-cloth.'

       (b)   **A   felmosórongy-Ø   felmos-ta   a   padló-t.*
              the   floor-cloth-NOM   wash-PST.DEF.3SG the   floor-ACC
              'The floor-cloth washed the floor.'

(20)   (a)   *Rita-Ø   felsöpör-te   egy   söprű-vel   a   padló-t.*
              Rita-NOM   sweep-PST.DEF.3SG a   broom-INS   the   floor-ACC
              'Rita swept the floor with a broom.'

       (b)   **A   seprű-Ø   felsöpör-te   a   padló-t.*
              the   broom-NOM   sweep-PST.DEF.3SG the   floor-ACC
              'The broom swept the floor.'

The floor-cloth in (19a) and the broom in (20a) function as facilitating instruments. Thus, the adverbials expressing them cannot syntactically alternate. Following Levin (1993: 80), one can conclude that instruments turn up as subjects in the case of intermediary instruments but not in the case of facilitating ones.

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[10]For an argumentation in favor of instruments that become agents, see Schlesinger 1989.

Dudchuk (2007) formalizes Levin's (1993) idea about facilitating and intermediary instruments in terms of **verbal classes** which go back to Rappaport Hovav and Levin's (1998) distinction of manner and result verbs. In Dudchuk's view, the former (e.g., Russian *vymyt'* 'wash' and Hungarian *felmos* 'wash') are compatible with facilitating instruments while instruments of result verbs (e.g., Russian *razbit'* 'break' and Hungarian *betör* 'break') are intermediary. Only result verbs allow the instrument–subject alternation, i.e., syntactic constituents with an instrument semantic role appearing as subjects instead of agentive subjects.

However, independently of classifying verbs into manner or result groups, the same verb can have both kinds of instruments but only intermediary instruments occur in the instrument–subject alternation. The case when a result verb takes not only an intermediary but also a facilitating instrument can be illustrated by the examples with *megrak* 'load'. This verb appears with an intermediary instrument, for instance, in (18a) above, which alternates with (18b). At the same time, (21a) contains a facilitating instrument, which does not allow the instrument–subject alternation as (21b) indicates.[11]

(21) (a) *Rita-Ø   megrak-ta   egy   villá-val   a   teherautó-t.*
          Rita-NOM   load-PST.DEF.3SG   a   pitchfork-INS the   truck-ACC
          'Rita loaded the truck with a pitchfork.'

     (b) **A   villa-Ø   megrak-ta   a   teherautó-t.*
          the   pitchfork-NOM   load-PST.DEF.3SG   the   truck-ACC
          'The pitchfork loaded the truck.'

In (19) above a facilitating instrument appearing with the manner verb *felmos* 'wash' does not license the alternation at issue. However, a manner verb can also take an intermediary instrument and the alternation does emerge. Consider (22).

(22) (a) *Rita-Ø   felmos-ta   egy takarítógép-pel   a padló-t.*
          Rita-NOM   wash-PST.DEF.3SG   a   cleaning.machine-INS the floor-ACC
          'Rita washed the floor with a cleaning machine.'

     (b) *A   takarítógép-Ø   felmos-ta   a   padló-t.*
          the   cleaning.machine-NOM   wash-PST.DEF.3SG   the   floor-ACC
          'The cleaning machine washed the floor.'

A complex verb, i.e., a verb with both manner and result components (cf. Rappaport Hovav and Levin 1998: 101, Footnote 3), shows the same pattern as the above manner and result verbs separately. The verb *kiás* 'dig' may occur with both

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[11]In connection with such an example as (21b), Levin (1993: 80) noted that the alternation depends not only on the verb but also on the choice of the instrument.

facilitating and intermediary instruments (see (23a) and (24a), respectively) but only the latter can be used as a subject instead of an agent (cf. (23b) vs. (24b)).

(23) (a) *Rita-Ø*   *kiás-ott*   *egy*   *lapát-tal*   *egy*   *árk-ot.*
           Rita-NOM   dig-PST.DEF.3SG   a   shovel-INS   a   trench-ACC
           'Rita dug a trench with a shovel.'

      (b) **A*   *lapát-Ø*   *kiás-ott*   *egy*   *árk-ot.*
           the   shovel-NOM dig-PST.DEF.3SG   a   trench-ACC
           'The shovel dug a trench.'

(24) (a) *Rita-Ø*   *kiás-ott*   *egy*   *exkavátor-ral* *egy*   *árk-ot.*
           Rita-NOM   dig-PST.DEF.3SG   a   excavator-INS   a   trench-ACC
           'Rita dug a trench with an excavator.'

      (b) *Az*   *exkavátor-Ø*   *kiás-ott*   *egy*   *árk-ot.*
           the   excavator-NOM   dig-PST.DEF.3SG   a   trench-ACC
           'The excavator dug a trench.'

3.2 An Interim Summary and the Solution Needed, or Where We Are and Where to Go Next

Since Dudchuk's (2007) proposal based on manner and result verbs does not seem to be suitable to account for the instrument–subject alternation, we face the issue of distinction concerning facilitating and intermediary instruments once again. But what are these instruments like? Furthermore, as Levin (1993: 80) says, the alternation depends on two factors, namely, on the verb itself and the choice of the instrument. Can they be reduced to a single factor? If we take into consideration that one and the same verb takes both kinds of instruments, a candidate of such a single factor should necessarily be the verb itself, more precisely, the meanings of the verb. In this case the two kinds of instruments only follow from the meanings of the verb, or to formulate it in an even more appropriate way with respect to the evidence of the general discussion of syntactic alternations in Sect. 2: from **an underspecified meaning representation** of the verb.[12]

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[12]It is worth noting that if, in accordance with Schlesinger's (1989) proposal, an argument fulfills either an instrument or an agentive role, the issue is the same as with the two types of instruments. The reason why the latter distinction has to be preferred will be clear when we realize in the course of the lexical-semantic analysis below how closely semantic roles are connected to the meaning structure of verbs.

3.3 Building up the Lexical-Semantic Representation Wanted

A lexical-semantic representation of verbs is partly[13] composed by means of primitive predicates. The common meaning of verbs under discussion can be depicted schematically as in (25).[14]

(25) (a) 'the event "X acts such that X uses Z"
   causes
   the event "Y begins to be in a state"'

   (b) $[[[x \text{ ACT}] : [x \text{ USE } z]] \text{ CAUSE } [\text{BECOME } [y \text{ STATE}]]]$

Although manner verbs are not characterized by a (specific) result state (Rappaport Hovav and Levin 1998), they do have a certain underspecified state indicating that *Y* underwent some change (cf. also Koenig et al. 2008: 190, 208).

Furthermore, it is necessary to assume two kinds of causation. One is a component which is generally having been used in lexical-semantic representations. It also figures in (25b) but with a first argument of the event(uality) type (cf. Footnote 3):

(26) $[e_1 \text{ CAUSE } e_2]$, where the variables e_1 and e_2 stand for event(ualitie)s.

The other is a new variant of causation introduced by Koenig and his colleagues (Koenig et al. 2008). This is a weaker notion, i.e., helping and, what is more, it is **pragmatically** oriented.

(27) causation as helping (Koenig et al. 2008: 214)
   "An eventuality e_1 helps the occurrence of token e_2 of the event category C iff
   (i) there is an ordering of tokens of C along a **pragmatically** defined scale (ease of performance, how good the resulting state is, fewer unwelcome "side effects"); and
   (ii) e_1 caused the token e_2 of C to be higher on that ordering than it would otherwise have been."

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[13]In addition to primitive predicates, there is another kind of meaning elements, namely, encyclopedic descriptions in the form of prototypes and lexical stereotypes, which can be left out of consideration from the present point of view. For such complex lexical-semantic representations, see, e.g., Bibok 2016a.

[14]Despite the fact that in (25a) the verb *begin* figures for the sake of naturalness of wording the meaning description, the formal metalinguistic predicate suitable to designate the coming into existence of a change of state is BECOME. The latter has a single propositional argument, unlike the agentive *begin*. For more details, see Bibok 2016b.

From the point of view of meaning representations of verbs in instrument–subject alternation, the following three variables seem to be relevant as well.

(28) $CAUSE_\alpha$ = {(26), (27)}, i.e., the variable α ranges over the two kinds of causation.

(29) z_β = {intermediary instrument, facilitating instrument}, i.e., the variable β ranges over the two kinds of instruments.

(30) γ = {+, –}, the two possible values of the variable γ are "+" and "–". Then the formula ($_\gamma$[x ACT] : [x USE) expresses that the optional fragment in round brackets is present in a representation if γ = +, and absent from it if γ = – (cf. Bibok 2016b).

With the variables introduced in (28)–(30) in mind, now—instead of (25b)—another version of the common lexical-semantic representation of verbs with an instrument argument can be put forward. Consider (31).

(31)   [($_\gamma$[[x ACT] : [x USE) z_β ($_\gamma$]]) $CAUSE_\alpha$ [BECOME [y STATE]]]

Realize that the formula in (31) is an underspecified representation because of its optional fragment in round brackets and different variables α, β and γ. Such **underspecificity** is of crucial importance in order to account for the instrument–subject alternation. The following conditions attached to (31) explain the occurrence or non-occurrence of the alternation at issue.

(32)   (a)   If $CAUSE_\alpha$ = (26), i.e., [e_1 CAUSE e_2], then z_β = intermediary instrument.

       (b)   If $CAUSE_\alpha$ = (27), i.e., causation as helping, then z_β = facilitating instrument.

       (c)   If z_β = intermediary instrument, then $\gamma \in$ {+, –}.

       (d)   If z_β = facilitating instrument, then γ = +.

Conditions (32a) and (32b) connect the two types of instruments to the two types of causation: intermediary instruments to [e_1 CAUSE e_2] in (26) and facilitating (enabling) instruments to causation as helping in (27). In other words, the two types of instruments depend on the two types of causation (but in the latter respect a verb does not have to be specified, cf. (31)). However, it is important to recall that both types of causation rest upon the same causing event including someone's action and use of something. In terms of (31), the causing event consists of the predicates ACT and USE, whose first argument is considered playing the agentive role while the

second argument of USE bears the instrument role.[15] Condition (32c) states that in the case of an intermediary instrument the optional fragment in round brackets in (31) can be present or absent, hence, an agentive subject can be present or absent. In the latter option an argument with an instrument role may appear as a subject instead of an agentive subject. However, an agentive subject does not disappear entirely, but she is always present in the semantic background, formally speaking: she still figures as an existentially bound variable.[16] Finally, condition (32d) guarantees that in the case of a facilitating instrument the optional fragment that encodes the presence of an agentive subject cannot be omitted.

Consequently, the third condition in (32c) formulates the possibility of the instrument–subject alternation. The verb **whose meaning** fits the given requirement can alternate: **its argument with an instrument role** may be expressed syntactically not only as an adverbial but also as a subject. As to the constraint that prohibits the instrument–subject alternation, it can be found in (32d). Since the optional fragment has to be present, the alternation under discussion cannot emerge.

4   Further Issues of the Instrument–Subject Alternation

It is also important to note that the future investigation of the instrument role needs paying attention to its further aspects. On the one hand, one should take into account that although in the literature the argument structure change, or the valence change, is mentioned, in some examples (see Levin 1993: 80; Dudchuk 2007: 505;

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[15]It is obvious that only such a semantic situation is relevant to the instrument–subject alternation. Therefore, it is not necessary to deal with causing events including natural forces. For other semantic situations that can be expressed as causation, (see Talmy 2000: 471–549). Nevertheless, no types of causation are distinguished along the types of instruments neither along the dichotomy of agents and natural forces.

[16]What is more, the predicates ACT and USE are implicitly present because **on the basis of our world knowledge** we are aware of the fact that it is not an object with an instrument role itself that causes the change of state but an event consisting of somebody's use of an instrument (Bibok 2008: 64). With this proviso in mind, one should judge the acceptability of examples with an instrumental subject. In addition, judgments may vary across speakers from not completely acceptable to probably or fully acceptable, depending on how complex the result state is. Cf. (3b) repeated here as (i), which some speakers including one of the reviewers seem to disfavor, and its modified version in (ii):

(i)	*A*	*targonca-Ø*	*megrak-ta*	*a*	*teherautó-t.*		
	the	forklift-NOM	load-PST.DEF.3SG	the	truck-ACC		
	'The forklift loaded the truck.'						

(ii)	*A*	*targonca-Ø*	*fel-rak-ta*	*a*	*ládá-t*	*a*	*teherautó-ra.*
	the	forklift-NOM	up-load-PST.DEF.3SG	the	case-ACC	the	truck-SUB
	'The forklift loaded the case onto the truck.'						

Koenig et al. 2008: 198, among others) the constituent considered a facilitating instrument **does not count as an argument** but an adjunct because it does not realize a semantic argument syntactically. Let us take (33).

(33) (a) *Rita-Ø   egy   szívószál-lal   isz-sza   a   tej-et.*
         Rita-NOM   a   straw-INS   drink-PRS.DEF.3SG the   milk-ACC
         'Rita is drinking milk with a straw.'

     (b) **A   szívószál-Ø   isz-sza   a   tej-et.*
         the   straw-NOM   drink-PRS.DEF.3SG the   milk-ACC
         'The straw is drinking milk.'

Since—as a result of the absence of the predicate USE—the lexical-semantic representation of the verb *iszik* 'drink' does not contain an argument with an instrument role (Bibok 2008: 61; Koenig et al. 2008: 197–199), the noun with the case inflection *-vAl,* i.e., *szívószállal* 'with straw', certainly becomes a constituent of a sentence as an adjunct.

On the other hand, all examples with instrumental subjects in the present paper denote events. However, there seems to be another kind of the instrument–subject alternation (cf. Bibok 2008: 63–65). Consider (34).

(34) (a) *Rita-Ø   egy   zsebkés-sel   vág-ja   a kartonpapír-t.*
         Rita-NOM   a   penknife-INS cut-PRS.DEF.3SG   the pasteboard-ACC
         'Rita is cutting pasteboard with a penknife.'

     (b) *A   zsebkés-Ø   vág(-ja   a   kartonpapír-t).*
         the   penknife-NOM   cut-PRS.DEF.3SG   the   pasteboard-ACC
         'The penknife cuts (pasteboard).'

The verb *vág* 'cut' in (34b) has a generic modal meaning which can be given in a schematic formulation as in (35):[17]

(35)   'there is a property such that it is possible for an instrument (used by anyone) to V (something)'.

The formula in (35) is closely similar to the paraphrase of a type of middles that is differentiated from event-like middles by Ackema and Schoorlemmer (2006). To my best knowledge, however, the distinction between **instrumental subject sentences denoting events and properties** has not been put forward before in the literature.

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[17]Realize that the fragment of (35), namely, "used by anyone", also indicates such an instrument which is a necessary participant of the situation denoted by the verb, e.g., *vág* 'cut', and which, thus, has to figure as the second argument of the predicate USE.

5 Conclusions

By way of a summary I mention the following advantageous features of my account of the instrument–subject alternation, which thus exceeds the previous ones in several respects. First, with a **pragmatically** oriented weaker notion of causation in mind (Koenig et al. 2008: 214), a more solid basis is assumed to determine which verbs alternate and which verbs do not. It also determines what instruments count as intermediary instruments, including "machines". Recall that "machines" saved the examples above from being ungrammatical. Those verbs could not occur otherwise in the instrument–subject alternation. However, automata or robots do not seem to be "machines". They function as agents in events rather than as instruments. What plays an instrument role is the entity whose name occupies the position of the second argument of USE. On the level of our encyclopedic knowledge, this is true even in the case when the name of an instrument is filled in a subject position (cf. Footnote 16). Thus, if an adverbial with an instrumental case inflection alternates with a subject, it does not become an agent but remains an instrument (contra Schlesinger 1989).

Second, syntactic alternations, including the instrument–subject alternation, are not accounted for as lexical or constructional phenomena. Rather, they fit a lexical-constructional approach which naturally extends to **lexical pragmatics** (cf. Bibok 2010). Both constructional meanings are grasped through a single lexical-semantic representation underspecified in multiple respects. Moreover, in such a case the issue about the relationship between them does not emerge either (contra Dudchuk 2007).

Consequently, the lexical pragmatic account of the instrument–subject alternation offered in the present paper brings about a previously unknown explanation built from systematically interconnected components. After establishing corresponding verbal meaning representations it can also contribute to the understanding of this syntactic alternation presumably in other languages than Hungarian.

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Mansi Loanword Phonology:
A Historical Approach to the Typology of Repair Strategies of Russian Loanwords in Mansi

Marianne Bakró-Nagy

Abstract The aim of this paper is to describe loanword adaptation strategies in Russian loanwords of Mansi dialects with special reference to word-initial complex onsets, and to examine the interdependence between the repair strategies of Mansi and the phonetic properties of complex onsets. It attempts to prove that the primary driving forces behind those repair strategies are not phonotactic constraints but perceptual properties of the clusters. This diachronic approach takes issue with purely structural (syllable structure preserving) or phonological explanations and favours those that claim phonetic conditioning of these processes, leading uniformly to phonotactic adaptations, i.e., it hypothesises cause-and-effect relationships between them. The analysis will focus exclusively on relatively recent data of Mansi dialect groups of the late 19th and early 20th centuries.

1 Introduction

There are two primary aims of this study: 1. To discuss the typology of loanword adaptation strategies in Russian loanwords of Mansi dialects with special reference to word-initial complex onsets. 2. To examine the interdependence between the repair strategies of Mansi and the phonetic properties of complex onsets. The primary research question is how it is possible to prove that what drive the relevant repair strategies are not phonotactic forces but perceptual properties of the clusters. If all repair strategies of Mansi in the adaptation of Russian loanwords targeted the

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M. Bakró-Nagy (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: bakro@nytud.hu; annemari.marianne@gmail.com

elimination of initial consonant clusters, an onset type not existing in native Mansi, how could we explain the fact that quite different strategies are applied to phonologically identical cluster types?

In the growing body of literature on loanword adaptation, models are ranging from phonological (e.g., Prince and Smolensky 2004; LaCharité and Paradis 2005) and purely phonotactic (e.g., Broselow 1987; Itô 1989) approaches to phonetic attempts (Silverman 1992; Peperkamp and Dupoux 2003; Blevins and Garret 2004; Blevins 2017). At the same time, there are approaches ascribing importance to both phonotactic and phonetic factors, though with different weight (e.g., Kenstowicz 2010 within Optimality Theory; Blevins and Garrett 2004). The present diachronic description takes issue with purely structural (syllable structure preserving) or phonological explanations and favours those that claim phonetic conditioning of these processes, leading uniformly to phonotactic adaptations, i.e., it hypothesises cause-and-effect relationships between them.

This is the first study to undertake a typological analysis of loanword adaptation in Mansi. Though the topic was discussed in Finno-Ugristic lexicographic descriptions following traditional approaches (e.g. Kálmán 1961), no attempt was made to analyse it typologically or phonetically. The analysis presented here will focus exclusively on the Russian loanwords of the Mansi dialect groups in the late 19th and early 20th centuries, a period when most of the dialects and sub-dialects were still spoken. The decision to analyse only the word-initial consonant clusters of Russian loans is easily understandable from the fact that no other contact language of Mansi permits complex initial onsets. The paper is organised partly around basic intra-grammatical empirical questions, i.e., the default pattern of vowel epenthesis and the location and quality of the vowel, and partly around their phonotactic and phonetic interpretation in a broader sense. Extra-grammatical (e.g. sociolinguistic) aspects, though important in the analysis of certain data, will not be touched upon here.

In Sects. 1.1–1.3, the basic background information on Mansi dialects, language contacts and phonology, and repair strategies of initial consonant clusters will be analysed and systematised. After a typological characterisation of processes, it will be demonstrated in Sect. 2 how Mansi complies with the cross-linguistic preference for prothesis in sibilant + obstruent/resonant clusters and anaptyxis in obstruent + resonant clusters, and what further adaptation processes are observable. This descriptive part paves the way to the phonetic analysis and the generalisations developed in the second half of the study. Based on the descriptive part, Sect. 3 will address the phonetic, perceptual properties of the cluster constituents. It will be shown why especially obstruent + resonant clusters are subject to both metathesis and anaptyxis. Finally, Sect. 4 discusses the implications of the findings to the priority of perception as the driving force for phonotactic adaptation.

1.1   Background

Mansi is one of the most endangered Uralic languages, spoken in Northwest Siberia along the Ob River and its tributaries by about 900 people, nearly exclusively

Mansi-Russian bilinguals. The only living dialect is the Northern one. Traditionally Mansi was divided into four major dialect groups and several subdialects.[1]

Language contacts of the Mansis have included Uralic and non-Uralic languages. Among the Uralic languages concerned, Mansi borrowed lexemes from Komi, Khanty, and Nenets; the non-Uralic language contacts are reflected by the Siberian Tatar and Russian loanwords. While with the Tatars actually only the South and East has been in contact for at least 500 years, early Russian–Mansi contacts (mostly involving trade) date back to the 15th century on the European side of the Ural Mountains. The earliest Russian loanwords arrived from the West (frequently with Komi mediation), but later, when the Mansis moved to the Northern Trans-Ural regions, and with the expansion of Russian authority, and especially after the foundation of the Russian Empire, the southern and south-western branches of the Mansis were influenced most heavily. The growth of Russian power eventually reached the northern and eastern territories as well, resulting in a growing number of Russian loanwords in the northern and eastern dialects too. The direction and the diverse levels of Russian influence are demonstrated by the number of loans in Mansi dialects. In the corpus used for the present study, nearly half (48%) of the Russian loanwords can be found in the western dialect group and only 11% in the northern dialects (see also Kálmán 1961:113–115). Especially from the early 20th century, Mansi was exposed to an extremely forcible Russian influence resulting in the significant growth of Mansi–Russian bilingualism, and the extinction of Southern, Eastern[2] and Western dialects.

1.2 *Segmental Inventories and Syllable Structure*[3]

There are significant differences in the vowel systems of Mansi dialects. For the purposes of the present paper, phonological information will be sufficient. The vowels of the initial and non-initial syllables are different, with a more modest inventory in non-initial syllables. Vowels are either short or long (with diphthongs occurring in West Mansi). There are labial and non-labial vowels of three heights (high, mid, low), coinciding with a front–back correlation only in North Mansi. Schwa never occurs in stressed syllables. The textual frequency order of North Mansi vowels is [a i ə oː aː oː u e uː iː].

Velar nasals and velar fricatives never occur in word-initial position. With the exception of [r], there is an alveolar–palatal correlation in Mansi, and there is only one dialect group, the eastern one, where velar fricatives [x] and [ɣ] show a

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[1]Northern (*N*): Sosva, Upper Lozva, Sygva, Ob; Western (*W*): Middle and Lower Lozva, North and South Vagilsk, Pelym; Eastern (*E*): Upper, Middle and Lower Konda, Yukonda; Southern (*S*): Tavda Janyčkova and Tavda Čandyri.

[2]Information on the probability of finding at least some speakers of East Mansi is contradictory and uncertain.

[3]For overviews see Honti (1988) and Keresztes (1998).

Table 1 The Mansi consonant system (see also Honti 1999:17–18)[a]

	Labial	Alveolar	Postalveolar	Palatal	Velar
Stop	p	t		c	k k^w
Affricate				t͡s[2]	
Fricative		s	ʃ[1]	s^j	x[4] x$^{w[4]}$ ɣ[3]
Nasal	m	n		ɲ	ŋ ŋ^w
Lateral		l		lʲ	
Trill		r			
Glide	β			j	

[a]For the sake of a general overview Table 1 unites all consonants of the Mansi dialects with the following specifications: [1]absent in E and N dialects, [2]only in S dialect, [3]absent in S dialect, [4]only in Lower Konda and Yukonda (E) dialect

voiceless–voiced opposition. There is only one affricate in Mansi, occurring in the southern dialect. Length is not distinctive for consonants (Table 1).

Stress falls on the first syllable; the final syllable is never stressed. In South Mansi, due to Tatar influence, the main stress was on the second syllable. Vowel harmony was gradually lost, but can be observed in southern data, and in traces in West Mansi.

As in other Uralic languages, the basic syllable type is CV, and the range of possible syllable structures is (C)V(C)(C). Syllables in Mansi are either light or heavy. The nucleus is always a vowel, being either simple or complex (long or a diphthong). The onset is either empty or simple, the coda can be empty, simple or complex (this is true of word-final syllables as well). The syllable boundary either follows the vowel or lies between the elements of a consonant cluster. In a three-element consonant cluster, the boundary follows the second element of the cluster. The most frequent complex codas in stems are fricative + stop, nasal + stop/fricative, liquid + stop/fricative/nasal/liquid.

Most of the Russian loans from the 19th century or earlier reflect the northern dialectal varieties of Russian also detected in the loanwords of Komi and Finnish. These varieties were heavily mixed, however, as the population of Siberia, due to migrations, expatriation and exile, reflected the characteristics not only of other Russian varieties but the influence of non-Russian languages as well (Kálmán 1961:25–28). This being the case we do not have an exhaustive knowledge of the source variety of Mansi loans and even less is known about the precise phonological shape of Russian forms, though the most relevant northern Russian dialectal characteristics (including dialect words) are well known. In this paper, the standard forms of the Russian words are indicated but some northern Russian dialectal characteristics will be referred to when explaining sound substitutions.

1.3 Data

This analysis will focus exclusively on relatively recent data of Mansi dialect groups as represented in the materials of Munkácsi (Munkácsi and Kálmán 1986)

and Kannisto (Kannisto et al. 2013), collected between 1888 and 1906. Data were sorted out with respect to reliability to avoid forms which were used by bilingual consultants to explain certain contexts to the fieldworker, but were not loans.

2   Repair Strategies

2.1   Epenthetic Processes

The role of epenthesis in native and borrowed words in Mansi is to produce syllable structures suited to the phonotactic properties of the language.[4] While in loanwords differences originate from conflicting phonotactic properties of Russian and Mansi, in native words the avoidance of unacceptable suffixed forms is the primary cause. In borrowed forms epenthesis applies to the first syllable of the loanword in most cases, in native words only non-first syllables are involved. A further difference is that in native words the epenthetic vowel is always a schwa (with phonetic variations), a sound that never occurs in first syllables.

Vowel epenthesis is governed by the quality of initial syllable constituents. Initial complex onsets are not allowed in native Mansi words. Given the prevalence of these structures in Russian, many loans entering Mansi from Russian show this property, forcing Mansi to repair them. The initial complex onset is broken off by an epenthetised vowel inserted either before the consonant cluster (prothesis), or in between the components of the cluster (anaptyxis). The location of the epenthetic vowel is determined by the first element of the sequence. A prothetic vowel is inserted before the initial cluster if the first constituent is a sibilant, an anaptyctic vowel appears in between the constituents if they are stop + nasal/liquid, i.e., obstruent + resonant. In both cases, the onset cluster is restructured into separate syllables: in prothesis #CCV- > #VC$CV-, in anaptyxis #CCV- > #CV$CV-.

Epenthetic vowels do not differ phonologically or phonetically from lexical vowels in Mansi. According to a number of proposals, epenthetic vowel quality in loans is determined usually by an adjacent vowel or an adjacent consonant or can be an invariable default vowel (Uffmann 2007:4). In Mansi,[5] the determining factor is the position of the epenthesis. In prothesis (before sibilant + C clusters) a default vowel [i] is inserted, independent of the nucleus in the following syllable (for front vowels, see 1a, for back vowels, 1b) or the type of the sibilant:[6]

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[4]Examples with sound substitution and without cluster simplification imply that cluster simplification began earlier than adaptation without substitution.

[5]As in Samoyedic Nenets, Nganasan and Selkup (Várnai 2012).

[6]In most of the cases Russian [s] is substituted by [s] in all dialects, while [ʃ] by [ʃ] (East/North) or [s] (South/West) respectively. Exceptions are relatively low.

(1a)

Russian	Mansi	
ʂlʲijæ	*S W* iʃlʲej	'harness'
skɐmʲjæ	*S* iskæmje	'bench'
skatʲer	*S* iskætʲər	'cloth'
spʲitɐka	*N* iʃpiʃka	'match'

(1b)

Russian	Mansi	
ʂlʲæpə	*E* iʃlʲa:pe	'cap'
	W iʃlʲa:p	
ʂtof	*E* istop	'fabric'
	W iʃtop	
stɐkan	*N* istakan	'drinking glass'
stɐrʂinə	*W* ista:rsin	'elder'
sʲtʲɐklə	*W N* istʲokla	'glass'

Within the clusters, however, the quality of the anaptyctic vowel is determined by the frontness/backness of the next syllable nucleus. If it is a front vowel [i], [e] or [æ], the anaptyctic vowel is always [i] in all dialects (2a). This is the case, too, when there is a schwa in the second syllable (2b). Anaptyctic [i] is not a default vowel, however, because northern Russian [æ] as in [ʂlʲæpə] was pronounced as [e] or [eː] by the Mansi speakers, substituted in South Mansi with [i] in the first syllable (Kálmán 1961:26, 214). [i] was the substitution of Russian [e] and [i] as well (Kálmán 1961:74–76, 77).

(2a)

Russian	Mansi	
prʲænʲik	*S* pirælnʲix	'gingerbread'
gnʲitko	*S* kinʲe:tkæm	'brown horse'
	W kinʲetoi	
	N kinʲe:tka	
knʲigə	*S* kinʲix	'book'
	W kinʲik	
	N kinʲika	

(2b)

Russian	Mansi	
gnʲitko	*E* kinʲətke	'brown horse'
krʲenʲidʲilʲ	*E* kirəntəlʲ	'cracker'

If in the second syllable a back vowel [o] or [a] follows, the epenthetic vowel is either [o] or [u] (3a–b).

(3a)

Russian	Mansi	
prodnʲɪ	*N* puratnʲik	'boot'
plotnʲɪk	*E* polotnʲix	'carpenter'

(3b)

Russian	Mansi	
kvɐʂnə	*E* kuːpaːsnʲə	'kneading trough'

As the number of examples is extremely low, three altogether, it is impossible to come to any deeper conclusion on the role of labial consonants before or after the epenthetic vowel. (3b) is the only example for a stop + fricative cluster (where [p] substitutes Russian [v]). In anaptyxis the composition of the cluster with this single exception is always stop + nasal or stop + liquid, i.e., obstruent + resonant, a fact which may have significance for the explanation of anaptyxis (see Sect. 3, below).

Due to the low number of examples, the following generalisation is merely probable: in Mansi the quality of anaptyctic vowel is governed by vowel harmony (place harmony).[7]

2.2 Metathesis

Metathesis has a significant role in Mansi, a process mentioned rarely in typological descriptions of loanword phonology. It belongs to the repair strategies of Samoyedic languages, Nenets, Enets, Nganasan and Selkup (Várnai 2012), and some other non-Uralic languages. Similar to examples in (2a–b) and (3a–b), a vowel breaks up initial stop + liquid/nasal clusters. It is not an extra segment, however, but results from the reordering of the vowel of the second syllable (#CCV- > #CVC-). With one exception the second element is always a liquid, [r] or [l]. If the post-cluster vowel is [o] (4a) or [u] (4b) in Russian, [o] and [u] occurs in Mansi.

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[7]It should be remarked that according to Kálmán (1961:95) in the middle of the 20th century when the inserted vowel appears within the cluster, it is a copy of the following vowel, e.g. Mansi [palakat] < Russ. [plɐkat]. It means that in this later period the degree of faithfulness is even lower.

(4a)

Russian	Mansi	
prodnʲɪ	*E* poːrtnʲix	'boot'
plotnʲɪk	*E* polʲtnʲix	'carpenter'
dropʲ	*E* torpxnʲaːl, torpiknʲeːl	'shotgun'
drobɐvʲik	*E* torpovik	'kind of gun'

(4b)

Russian	Mansi	
trʊba	*S* turpɑ *E* turpə *W* turap, turpa	'chimney'

For the interpretation of Mansi [y] and [i] (5a) and (5b), it should be noted that in the older layer of Russian loanwords the Russian close central rounded [ʉ] was substituted by [y]. Similarly, stressed and unstressed Russian [e] was substituted by ancient Mansi *i*, reflected by [i] later in Mansi dialects (Kálmán 1961:74–76).

(5a)

Russian	Mansi	
krʲʉk	*W* kyrx	'a kind of fish'
klʲʉt͡ɕ	*W* kylʲsʲ	'key'

(5b)

Russian	Mansi	
grʲex	*E* kirx *W* kirx	'sin'
krʲɪsʲtʲjænʲɪn	*N* kirsʲsʲɑːnʲin	'peasant'
gnʲɪtko	*E* kinʲtkə *W* kintka	'brown horse'

An alternative explanation for sequence reordering could be that first anaptyxis resulted in the avoidance of initial clusters, followed by the syncopation of the second syllable vowel. If it were so, the same process could be observed in at least some anaptyctic examples, too, but no independent evidence can be provided to support such an assumption.

2.3 Deletion

Mansi employs consonant deletion strategies regardless of cluster types, i.e., no asymmetry is shown in sibilant + C and other obstruent + C clusters as it was witnessed in epenthesis (cf. Fleischhacker 2005). In some cases epenthesis and consonant deletion is combined, e.g. sklʲænətɕkə > W kilʲnʲiʃ 'bottle' (6a). Deletion, however, plays a major role in Mansi. With the exception of one single example (6c) the first element is deleted (6a–b), even in (very rare) three and four component clusters (6d).

(6a) sibilant + C

Russian	Mansi	
skɐrlat	*E* kæːrlt, kærlt *W* kærlət *N* karəlt	'silk'
sklʲænətɕkə	*W* kilʲnʲiʃ	'bottle'
spɐsʲibə	*E* pəsʲsʲip *W* pasʲsʲip	'thanks'
sluʐbə	*W N* lusit	'work'

(6b) obstruent + C

Russian	Mansi	
kvɐʂnə	*W* kaʃʃnʲ	'kneading trough'
fsʲex	*S* isʲex	'all'
vzɐjmɨ	*E W N* sajm	'loan'
pʂɨnʲitɕnɨj	*N* ʃenissa	'wheat-flour'
tvɐrok	*E W N* βarok	'curd'

(6c)

Russian	Mansi	
zdorəvə	*N* saraβa	'good day'

(6d)

Russian	Mansi	
vdruk	*S E* tryx *W* tərx	'suddenly'
fstrʲitɕæjɪt	*S* strʲetsʲaitlat	'receive'

In (6d) deletion is followed by metathesis in W [tərx]. There are examples, though very rare, when in CS clusters, after the deletion of the first element, the form becomes sibilant initial. In S [isʲex] (6b), a prothetic default [i] is epenthesised

before the sibilant but not in S [strʲetsʰaͮitlat] (6d), where the sibilant is the first element of a cluster.

2.4 Typology of Repair Strategies in Mansi

The following data will show the frequency ranking of repair strategies in Mansi.[8] (**S**, **T** and **R** stand for sibilants, stops, nasals/liquids, **V** for a lexical, **v** for an inserted vowel, respectively.)

(7a) prothesis	STV/SRV	→	vSTV/vSRV	34%
(7b) deletion	STV/TTV	→	TV	31%
(7c) metathesis	TRV	→	TVR	23%
(7d) anaptyxis	TRV	→	TvRV	12%

In accordance with cross-linguistic observations, epenthesis plays a major role over deletion and metathesis. If prothesis and anaptyxis are considered as two different categories, the role of the former is more significant.

In her typology of vowel insertion in loanwords, Broselow (2015) set up the possible positions for inserted vowels and their interactions with the quality of the vowels (Broselow 2015:307–310). As metathesis is not discussed in her analysis, the position of anaptyctic and prothetic vowels are considered in STV and TRV patterns. There are four logical possibilities but only three are attested. In "consistent languages" anaptyctic or prothetic vowels occur either in STV or in TRV position, in "non-consistent languages" anaptyctic and prothetic vowels in TvRV and vSTV positions, respectively. As it was discussed in Sect. 2.1 and indicated in (1a) and (1d), sibilant + consonant clusters with ST and SR patterns show higher variability in Mansi than Broselow's type1 does, because not only obstruents but also resonants can follow the sibilant. Consequently, Mansi represents a subcategory of type1: TvRV, vSTV, vSRV. The modified table of Broselow (2015:308) shows the classification of Mansi below (Table 2).

In "mixed type1" there are four possible interactions between the position and the quality of the inserted vowel: either a default vowel or a copy vowel occurs in every position or a copy vowel within the cluster but a default vowel before the cluster (or the other way round). Mansi represents a mixed type in inserted vowel quality, too. As presented in Sect. 2.1, in the vST/RV pattern a default [i] is inserted, while in a TvRV position vowel harmony determines the quality of the vowel. No known language represents "copy quality TaRA, aSTA" and "mixed

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[8]The total number of lexemes is 226. There are 116 unchanged words (without repairing consonant clusters). The number of repaired lexemes is as follows: prothesis 38, deletion 34, metathesis 25, anaptyxis 13.

Table 2 Position for inserted vowels

Position	Anaptyxis	Prothesis	Mixed position, type1		Mixed position, type2 vTRV, SvTV
			TvRV, vSTV	TvRV, vSTV, vSRV	
Japanese	✓				
Iraqui Arabic		✓			
Cairene Arabic			✓		
Mansi				✓	
Unattested					

Table 3 Interaction between position and quality of the vowel

	Default quality	Mixed quality, type1		Copy quality TaRA, aSTA	Mixed quality type2 TiRA, aSTA
		TaRA, iSTA	TvRV, iSTV, iSRV		
Cairene	✓				
Samoyedic etc.		✓			
Mansi			✓		
Unattested					

quality type2 TiRA, aSTA". Beside Samoyedic and other non-Uralic languages Mansi belongs to "mixed quality type1" and again a subcategory for iSTV and iSRV pattern is set up within this type. (Following Broselow's practice, **A** stands for a lexical vowel, **a** for a copy vowel, and **i** for a default vowel; Broselow 2015:309) (Table 3).

At this point the same question arises as in any account attempting to explain why SC clusters block the copying of vowel features across C when it follows a sibilant, and why not if it follows other obstruents. If only ST clusters are concerned, the blocking nature of obstruents could be an explanation due to the robustness of the acoustic cues of obstruents (though there is no consensus on this effect cross-linguistically; cf. Broselow 2015:311). But in Mansi, an SR cluster blocks the copying of a vowel as much as an ST cluster does. If in obstruent + resonant clusters the relative timing of the gestures is less clearly defined, than prothesis would apply to SR clusters too, as it is the case in Sinhalese ([iskul] 'school' but [tirividə] 'triple') or Hindi ([ɪspɛlɪŋ] 'spelling' but [pɪlɪz] 'please') (Fleischhacker 2014:1), hence the explanation above does not seem to be satisfactory.

Contrary to ST, SR vs. TR patterns, strategies within TR patterns are more uniform in Mansi because a TR onset cluster may undergo either anaptyxis or metathesis (see Sects. 2.1 and 2.2 above). The difference between anaptyctic and

metathetic sequences is that in metathesis (with a single exception) the resonant is always a liquid, whereas in anaptyctic sequences nasals and liquids equally occur.

It is attested in Mansi, too, that one and the same onset cluster is resolved in a word either via anaptyxis or metathesis, because these solutions represent not only different sub-dialects but in some case different idiolects (8a). The distribution of TR-repairs between anaptyxis and metathesis is explicit when it occurs in different dialectal varieties of the same loan, e.g. (8b):

(8a)

Russian	Mansi		
	anaptyxis	metathesis	
klʲutɕ͡	*W Middle Losva* kylʲəsʲ	*W Lower Losva* kylʲsʲ	'key'

(8b)

Russian	Mansi		
	anaptyxis	anaptyxis	
gnʲitko	*S* kinʲeːtkæm *W* kinʲetoi *N* kinʲeːtka	*E* kinʲtkə	'brown horse'

Note that Mansi (sub)dialects are not coherent in applying either this or that strategy exclusively, i.e., strategies operate cross-dialectically, intra-dialectically or in idiolects, and this applies not only to adaptation processes but to adoption, too. In order to get a solid empirical basis for our analysis and generalisations, not only the size, but the internal structure of the corpus (see also Uffmann 2007:12–14) should be taken into consideration, using metalinguistic data. This aspect leads to extra-grammatical issues but is very helpful in avoiding spurious generalisations.

3   Phonetic Properties of the Clusters

This section will focus on the analysis of phonetic properties of the clusters in order to propose an explanation on the multiple nature of their adaptation. Due to size limitations, this discussion is unable to encompass the entire phonetic/acoustic analysis of obstruent + obstruent and obstruent + resonant clusters. For this reason, only anaptyxis and metathesis involving liquids will be analysed to demonstrate their phonetic similarities and therefore to prove why these two processes resolve obstruent + liquid clusters exclusively and not others. Before comparing the processes, one remark is in order here. Languages show a puzzling variety of competing strategies in loanword adaptation when a specific strategy is chosen over some further possibilities or multiple processes are employed. The *too-many-*

Table 4 Cluster types and related repair processes

	Anaptyxis	Metathesis	Deletion	Prothesis
TRV	TvRV	TVR		
TTV			TV	
sTV/ sRV			TV	vSTV/ vSRV

solutions problem[9] (Steriade 2001; Kang 2011) is characteristic of Mansi, too. The following discussion aims to highlight only one of the possible reasons.

As the result of systematisation in the previous section, it became apparent which changes are responsible for the resolution of the clusters (Table 4).

If C1 is an obstruent, and C2 a sonorant (liquid or nasal), either anaptyxis or metathesis will apply. If both C1 and C2 are obstruents, or C1 is a sibilant and C2 either an obstruent or a sonorant, deletion will be evidenced, and if C1 is a sibilant and C2 is either an obstruent or a sonorant, prothesis will. It is essential to note that in obstruent + sonorant clusters, the sibilant nature of the C1 blocks anaptyxis or metathesis. Note as well that the quality of the resonant does not influence whether metathesis or anaptyxis is applied, and the quality of the epenthetic vowel does not influence metathesis or anaptyxis either (cf. (2)–(5) above). All these suggest that anaptyxis and metathesis must have common features if they apply to all TR clusters, and not to others. While identical phases in the realisation of CV metathesis and vowel epenthesis was raised earlier already, e.g. by Belvins and Garrett (2004:514, referring to earlier observations), the involvement of epenthesis in the explanation of loanword adaptation has been mentioned briefly by Blevins (2017) only recently.

With respect to metathesis, the causes of frequent representation of liquids, both laterals and rhotics, have been widely investigated in phonetics. It has been established that segments with elongated phonetic cues can affect not only the perceptibility of immediately adjacent segments but that of non-adjacent consonants as well. As a consequence, the properties of the affected segments are weakening, triggering insecurities in their perception, i.e., in the proper identification of successive segments (for examples, see 4a–b, 5a).

Metathesis is well known in Mansi both historically and synchronically. CC metathesis involving liquids is well attested as a diachronic process in Mansi and its common historical background with Khanty, too (Bakró-Nagy 2006), and as was mentioned earlier (Sect. 2.1), suffixed forms display C + schwa metathesis as well. What is equally important is that sequences resulting from metathesis conform to the segment ordering of native Mansi words shaping its phonotactics, advancing or ensuring the proper identification of the adapted form by native speakers.

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[9]One of the reviewers raises the problem of the paucity and inconsistency of the data, impugning the possibility of generalisations. The low numbers are due to a deliberate decision in data collection, excluding philologically doubtful examples that would influence the acceptability of attempted generalisations. Dialectal or idiolectal variation, however, reflects multiple adaptation processes rather than unmotivated variation.

   Anaptyxis, too, is attested in Mansi across liquids, i.e., precisely those sonorants that are represented in metathesis, independent of the quality of the vowels involved. An experiment-based explanation of Fleischhacker (2005) suggests that misinterpretation by listeners is responsible for obstruent + resonant anaptyxis, where the vowel would be an illusionary segment to become an integral (later "etymologised") element of the sequence. Blevins and Garrett (1998:522–525) when discussing epenthesis suggest that perceptual CV metathesis reflects the same sort of phonetic ambiguity as vowel epenthesis does (524; in their analysis within epenthesis anaptyctic forms are involved), i.e., the same perceptual reasons (including the elongated phonetic cue of liquids) are operative behind them. This assumption is well exemplified by Mansi when the same loans display both metathetic and anaptyctic forms from different dialects/idiolects, e.g. (8a) Russian klʲutɕ͡ > Mansi kylʲəsʲ and kylʲsʲ 'key'.

   Both processes described above are heading in the same direction: to resolve initial consonant clusters and adjust the resulting CVC sequences to native phonotactic requirements. The range of segments involved in these processes is rather narrow: resonants and following vowels are reordered. We witnessed, however, that at least two further processes, prothesis and deletion are operative in Mansi adaptations relating to different clusters, and these latter ones and metathesis/anaptyxis mutually exclude each other. This mutual exclusion ensures the predictability of metathesis and anaptyxis on the one hand and provides an argument for the precedence of perception in adaptation on the other. Consequently, it is reasonable to propose that if nothing else but structure preserving forces drove repair processes, irrespective of the phonetic properties of the clusters involved, adaptation strategies would not be predictable.

4 Conclusion

The present investigation of Russian loans in Mansi dialects, representing the period of the late 19th and early 20th centuries, aimed to reveal the typological characteristics of repair strategies of word-initial consonant clusters. Four competing processes, prothesis, metathesis, anaptyxis and deletion were observed. Mansi shows the common anaptyxis–prothesis asymmetries by inserting a vowel *before* sibilant + obstruent/resonant clusters, but *into* obstruent + sonorant clusters. Obstruent + sonorant clusters are simplified not only by anaptyxis but by metathesis as well. The initial part of this description aimed to prove that it is primarily not phonotactic forces but perceptual properties of the clusters that drive repair strategies. Due to space limitations, only obstruent + liquid sequences were analysed, and it was proposed that perceptual factors explain their adaptation, leading to their resolution. The notion of conspiracy in loanword adaptation (cf. Kisseberth 2011) is applied to explain how multiple processes result in well-formed structures in the borrowing language. The facts of metathesis and anaptyxis in Mansi support this assumption.

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The Epistemic/Deontic Suffix *-Hat/Het* in Hungarian: Derivational or Inflectional?

Robert Vago

Abstract In virtually all grammatical accounts of Hungarian, the suffix *hat/het* (e.g. *tanul-hat* 'can learn (from)', *es-het* 'may fall') is categorized as derivational. In an innovative article, Kenesei (1996) reexamines this conventional wisdom, and argues that based on the morpho-syntax of the language *-hat/het* should be considered an inflectional suffix. In this work I claim that morpho-phonological evidence suggests otherwise, and offer a reconciliation between the dual patterning of *-hat/het*: one based on morpho-syntax, the other based on morpho-phonology.

Keywords Derivational morphology and phonology · Exceptionality · Inflectional morphology and phonology · Strata optimality theory · Underspecification · Vowel height alternation

1 Introduction[1]

Virtually all traditional descriptive grammars of Hungarian categorize the suffix *-hat/het* (e.g. *tanul-hat* 'can learn (from)'; *es-het* 'may fall') as derivational.[2] In an innovative article, Kenesei (1996) reexamines the conventional wisdom, and argues that based on morpho-syntactic (and semantic) considerations *-hat/het* should be categorized as an inflectional suffix. In this work I will examine the consequences of

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[1]I am indebted to Marcel den Dikken and two anonymous referees for comments and suggestions.
[2]The vowel alternation in the suffix *-hat/het* exhibits the effects of the well-known and well-studied palatal vowel harmony process of Hungarian. For comprehensive discussion and bibliography, see Törkenczy (2011). Since this topic is not germane to the present contribution, to the extent possible, in analytical discussions I will cite Hungarian words that are back harmonic (following Rebrus and Polgárdi 1997).

R. Vago (✉)
Queens College and the Graduate Center, The City University of New York, Queens, USA
e-mail: robert.vago@qc.cuny.edu

this claim for the morpho-phonology of the language. In Sect. 2 I summarize Kenesei's morpho-syntactically based arguments for inflectional categorization; in Sect. 3 I consider two distinct analyses of morpho-phonological data for which the inflectional status of *-hat/het* is problematical; in Sect. 4 I introduce into the discourse a novel analysis of vowel height alternations, the crux of the morpho-phonological perspective on the categorization of *-hat/het*; and in Sect. 5 I claim that the analyses within the theoretical framework developed in Sect. 4 afford an effortless convergence of the morphological and phonological evidence in favor of the inflectional status of the epistemic/deontic suffix *-hat/het*.

I will cite Hungarian words orthographically. Since it is primarily vowels that come under scrutiny, giving the orthographic and phonetic symbols for the distinctive vowel system, but not that of the consonant system, should suffice. See the chart in Table 1, where the symbols and implicit defining features are, on the whole, uncontroversial (see for example Siptár and Törkenczy 2000).

2   The Morphological Argument

Kenesei presents two main arguments for the inflectional status of *-hat/het*. First, as gleaned from comprehensive works on morphology and word formation (Aronoff 1976; Bauer 1983; Scalise 1984), Kenesei adduces two diagnostic criteria that distinguish between derivation and inflection: productivity and compositionality. Productivity refers to the fact that a given affix, for present purposes, suffix, can combine freely with any morpheme appropriate for its syntactic category and selectional restrictions. On this count, Hungarian inflectional suffixes are fully productive; for example, all verbs are inflected for tense/mood and person/number. On the other hand, in most cases, derivational suffixes are notorious for their lack of productivity. Often, several derivational suffixes exist for the same semantic concept, with each suffix combining with distinct sets of morphemes. Compare *olvas-gat-ok*, **olvas-gál-ok* 'read-FREQ-1SG.INDEF' ('I read from time to time') with *szalad-gál-ok*, **szalad-gat-ok* 'run-FREQ-1SG.INDEF' ('I run around'), for example (Kenesei et al. 1998). Likewise, as is well-known, the second criterion, compositionality (the meaning of a polymorphemic word is made up of the meaning of its constituent morphemes), is wholly characteristic of inflections, but not necessarily of derivations.

The above said, what are the properties of *-hat/het* with respect to productivity and compositionality? The answer is that it can attach to any (finite) verb, and when it does, it always yields fully compositional constructs.[3]

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[3]So while the frequentative derivational suffix *-gat/get* can only attach to transitive verbs (*olvas-gat-ok* but **szalad-gat-ok*; see above), *-hat/het* has no selectional restrictions (*olvas-hat-ok* 'I may read,' *szalad-hat-ok* 'I may run').

Table 1 The distinctive vowels of Hungarian

	SHORT			LONG	
i [i]	ü [y]	u [u]	í [iː]	ű [yː]	ú [uː]
	ö [ø]	o [o]	é [eː]	ő [øː]	ó [oː]
e [ɛ]		a [ɔ]			á [aː]

One might counter that productivity and compositionality are not necessary conditions for inflectional status. Take for instances the case of the deverbal nominal suffix -*ás/és* that derives nominalized forms from verbs, as in *lát* 'see,' *lát-ás* 'seeing.' This is a fully productive and compositional suffix. Yet, one would loath to classify it as inflectional in light of the fact that it changes syntactic categories—the hallmark of derivation.

Kenesei's second argument (more fully flushed out in Kenesei et al. 1998) that -*hat/het* is inflectional rests on the fact that it cannot be followed by a derivational suffix, that is, it cannot be the base for subsequent derivation (with one apparent exception; see Kenesei et al. 1998:366), whereas (most) deverbal affixes can. E.g.:

(1)　　a. olvas 'read'
　　　　b. olvas-hat 'may/can read'
　　　　c. olvas-ás 'a read / reading'
　　　　d. *olvas-hat-ás

In summary, based on morpho-semantic considerations, Kenesei concludes that epistemic/deontic -*hat/het* is an inflectional suffix.

3 The Phonological Argument

3.1 Vowel Height Alternation Based on Stem Proximity

In a set of vowel-initial inflectional suffixes the initial vowel alternates in height: in some contexts it is mid *o/ö/e*, in others it is low *a/e*.[4] On one view (Vago 1980, 2016), the height alternation is predicted based on morphological position with respect to the stem (= bare root or root + derivation). In immediate post-stem

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[4]In the three-way suffix alternation *o/ö/e* vowel harmony determines the backness value of the basic rounded mid vowel (*o* vs. *ö*), augmented by local unrounding, whose effect is to change front rounded mid *ö* to front unrounded low *e* if the immediately preceding front vowel is unrounded. For discussion, see Ringen and Vago (1998), among others.

position the alternating vowel is mid, but in distant post-stem position (following stem + inflection) it is low. E.g.[5]:

(2) a. Verbs

hoz]$_{ST}$ -od 'bring-2SG.DEF' ('you (sg) bring it')[5]

vs.

hoz]$_{ST}$ -t-ad 'bring-PAST-2SG.DEF' ('you (sg) brought it')
hoz]$_{ST}$ -z-ad 'bring-IMP-2SG.DEF' ('bring it!')

b. Nouns

drót]$_{ST}$ -ot 'wire-ACC' ('wire, accusative)

vs.

drót]$_{ST}$ -ok-at 'wire-PL-ACC' ('wires, accusative')
drót]$_{ST}$ -om-at 'wire-1SG POSS-ACC' ('my wire, accusative')

Now consider the prediction for the height of the alternating initial suffix vowel on Kenesei's account of the inflectional categorization of *-hat/het*. Since this inflectional suffix intervenes between the stem and a following inflectional suffix, the expectation is that the height-alternating initial vowel of the following suffix should be low, since it occurs in distant post-stem position. But this prediction is not borne out: e.g., *hoz]$_{ST}$ -hat-od* instead of expected * *hoz]$_{ST}$ -hat-ad* 'you may/ can bring it.'

So does the phonology invalidate Kenesei's claim? It does if the analysis is tied to the notion of *stem* and the relative position of the initial suffix vowel that alternates in height. Under this analysis, the alternating vowel would not be specified for height at the underlying level, but rather it would be subject to two default values. The first default value would be mid, provided the vowel occurs after]$_{ST}$, or alternatively, after a segment that belongs to a stem. Otherwise, the default value is low.

But there is a significant problem with the above analysis: There is no inherent connection or natural dependence between the phonetic value of a vowel and the non-phonetic category *stem*. Specifying the default value of a vowel on the basis of a phonetically ungrounded restriction is not motivated on a universal basis.

Getting the analysis of vowel height alternations is the crux of the phonological argument for or against the claim that *-hat/het* is an inflectional suffix. In Sect. 3.2 I take up the most widely promoted alternative analysis of vowel height alternation in the literature, a viable alternative to the one considered in this section. I argue that

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[5]The present tense is a zero morpheme.

this version is also not satisfactory. In Sect. 4 I propose and promote a novel analysis for of vowel height alternation. I use this analysis in Sect. 5 to consider the ramifications for Kenesei's thesis for the inflectional categorization of the -*hat/het* suffix.[6]

3.2 Vowel Height Alternation in Autosegmental/ Government Phonology

Under the analytical approach dubbed "Lowering" (Stiebels and Wunderlich 1999; Siptár and Törkenczy 2000, *inter al.*), vowels exhibiting height alternations are represented by an "empty" V slot on the timing tier, which is prosodically licensed, but lacks feature melodies.[7] All inflectional suffixes are stipulated as "lowering," analyzed in terms of a morpheme-final floating (not prosodically associated) low feature, indicated as A. A floating A feature associates with a following V slot, thereby making V a low vowel.[8] If V occurs in a context that does not include a floating A, then V is specified as mid (usually indicated as O) by default (= "default vowel"). Conversely, if a floating A has no place to dock (no V slot), it remains uninterpreted phonetically. For Rebrus and Polgárdi (1997), the default vowel is low A; for all others, the default vowel is mid O. Note that all lowering analyses claim that Hungarian has only one default vowel.[9]

By the way of example, consider the derivation of *drót-om-at* (cited in 2b):

(3)   V C   V C   V C   V C
                 | | | | / |
      [[[drót]   m]$_A$ t]$_A$ → [[[drót] o m]$_A$ t]$_A$ = *drót-om-at*

Here we see that: (a) the stem, as is usually the case, is not lowering; hence the empty V slot of the first suffix is filled as mid *o* by default; (b) the floating prespecified A feature and the empty V slot of the second suffix hook up; hence, V is realized as low *a*; finally, the floating A feature of the second suffix has no place to anchor; hence, it is not interpreted.

So far we have countenanced only suffixes that are lowering. On an exceptional basis, a closed set of non-verbal stems (including nearly all adjective forming suffixes and, putatively, one noun forming suffix; see Rebrus and Polgárdi 1997;

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[6]The patterning of the infinitive suffix -*n(i)* is another case whose derivational vs. inflectional status is in part tied to default vowel height. For analysis in terms of allomorphy, see Siptár (2009); for analysis within Optimality Theory, see Vago (2017a).

[7]Suffix-initial V is subject to deletion after V. For discussion and analysis, see Vago (2017a) and references therein.

[8]In Rebrus and Polgárdi's (1997) account, floating A can also associate leftward to a preceding V.

[9]Default vowels account for height features; other features are supplied independently (e.g. vowel harmony).

Siptár and Törkenczy 2000) are also lowering; Siptár and Törkenczy (2000:41–42) list over 50 frequently used such stems. The analysis parallels the treatment of lowering inflectional suffixes:

(4)   V C   V C
              / | / |
        [[ház]$_A$ m]$_A$ → [[ház]$_A$ m]$_A$ = *ház-am* 'my house'

In summary, stems like *ház$_A$* are lexical exceptions—they have to be memorized; marking all inflectional suffixes as lowering treats them in exceptional terms, on a par with *ház$_A$*, etc.; if so, the predictable lowering property of inflectional suffixes and the unpredictable lowering property of stems should be treated by different means. Finally, it should be noted that the suffix *-hat/het*, which has been argued to be inflectional by Kenesei, would have to be treated exceptionally as non-lowering; see the concluding section.

On the whole, lowering is an analytical tool that is tied to the autosegmental/ Government Phonology theoretical framework, which relies heavily on postulating empty V slots.[10] In essence, it amounts to diacritical use of a phonological feature. In the next Sect. 1 turn to a novel approach to vowel height alternations, the heart of the phonological reasoning for the derivational/ inflectional status of the suffix -*hat/het*.

4   Vowel Height Alternation in Stratal Optimality Theory

I will first outline the major architecture and assumptions of the theory which then I will bring to bear on the issue of height-alternating vowels in Hungarian.

4.1   Major Assumptions

Basic familiarity with Optimality Theory (OT) is assumed (cf. Prince and Smolensky 2004 [1993] et seq.). The essential and relevant aspects of Stratal OT adduced here are based on, among others: Kiparsky (2000, 2003, 2011), Anttila (2002), Bermúdez-Otero (2011, forthcoming) and Bermúdez-Otero and McMahon (2006).

Stratal OT postulates two lexical component levels and distinct morphology and phonology modules: 1. (lexical) stem level morphology and phonology; 2. (lexical) word level morphology and phonology. Phrase level syntax and postlexical

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[10]For discussion and further references, see Ritter (1995), Stiebels and Wunderlich (1999), and Siptár and Törkenczy (2000), among others.

Table 2 The Architecture of Stratal optimality theory

ROOT

↓

LEXICAL STEM LEVEL	MORPHOLOGY ⟶	PHONOLOGY
LEXICAN WORD LEVEL	MORPHOLOGY ⟶	PHONOLOGY
PHRASE LEVEL	SYNTAX ⟶	POSTLEXICAL PHONOLOGY
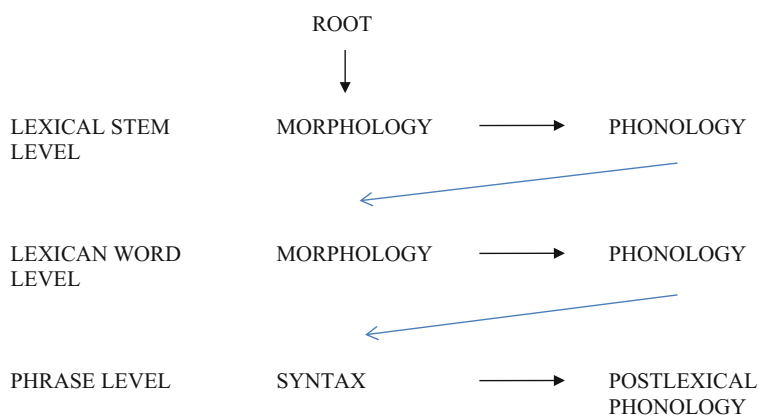
phonology constitute an additional layer that has no impact on the topic at hand. For the interaction of the levels and modules, see the visual layout in Table 2.[11]

The relevant key points for our purposes are listed in (5):

(5) a.   STEM level phonology and WORD level phonology can have different: (a) inputs; (b) constraints; (c) ranking of constraints.

b.   "The levels and categories are assumed to be universal, but the allocation of morphemes to them is not predictable, and not all languages necessarily have all types. For example, inflectional endings are attached to words in English, but to stems in Finnish." (Kiparsky 2003:110)

c.   Derivation is a STEM level operation. Inflection can be either a STEM level or WORD level operation, with three distinct types:
Type 1: All inflections are assigned to the STEM level.
Type 2: All inflections are assigned to the WORD level.
Type 3: Some inflections are assigned to the STEM level, others to the WORD level, and still others are assigned to both levels.

d.   With respect to inflection, Hungarian is a Type 3 language (see next section):
Some suffixes are assigned exclusively to the STEM level;
Some suffixes are assigned exclusively to the WORD level;
Some suffixes are assigned to both the STEM and WORD levels.

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[11]STEM level cyclicity between the morphology and phonology modules has been advocated for non-concatenative inflections (Bermúdez-Otero 2011, forthcoming), among others.

4.2   Application to Hungarian[12]

4.2.1   STEM Level Derivations

If a vowel that is the exponent of a morpheme exhibits height alternations, then it will be represented in the input without any specification for features that define tongue height (V). If no evidence is countenanced for height alternation, then a vowel is fully specified for height. The restriction of nonspecification (or under-specification) exclusively to alternating cases holds for all features. So V is also lacking specification for the feature [back] (equivalently, [front]), at least in the case of suffixes. Judiciously formulated and ranked "vowel harmony" constraints will force an optimal candidate that includes specifications for the front/back dimension of the tounge position. Rounding will have its own story.

   The upshot is that in cases of alternation, the tongue height values for V, the property of vowels we are interested here, will be supplied by low ranking default constraints that do not change feature values that are already specified. This non-feature changing characteristic is forced by the constraint given in (6), which outranks the constraints governing default values (see 7 below):

   (6)   IDENT (V): Input and output feature values for V correspond. (Do not change feature values for V.)

   The basic claim here is that, contrary to previous proposals, Hungarian has two default values for V, namely mid and low. Under regular height alternation, at the STEM level the default value is mid, while at the WORD level it is low; see Sect. 4.2.3. High vowels never participate in height alternation. So among the three markedness constraints that are available universally for vowel height (allowing for variation in default values cross-linguistically), Hungarian phonology rules out high vowels first, and at the STEM level low next and mid last:

(7)   STEM Level Constraint Ranking for Default Vowel Height

         a.   *HIGH (Assign a violation mark for a high vowel.)
         b.   *LOW (Assign a violation mark for a low vowel.)
         c.   *MID (Assign a violation mark for a mid vowel.)

   The tableaux below illustrate how the optimal candidates are chosen for a STEM level derivational affix, given the relative ranking of the constraints as suggested above. In tableau (8a) the suffix is V-initial (unspecified for height); see (9a) below

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[12]In a series of (invited) lectures, this author has presented analyses of a broad range of topics in Hungarian phonology and morphology within the Stratal OT framework (Vago 2007, 2008, 2011a, b, 2012, 2013a, b, c, 2016, 2017a, b).

for justification. In tableau (8b) the initial high vowel of the suffix (cf. *bolond* 'crazy,' *bolond-ul* 'become crazy') is lexically specified since it does not alternate in height; IDENT (V) protects changing the height value.

(8)

a. /szabály-Vs/	IDENT (V)	*HIGH	*LOW	*MID
szabály-as			*!	
☞ szabály-os				*
szabály-us		*!		
b. /bolond-ul/				
bolond-al	*!		*	
bolond-ol	*!			*
☞ bolond-ul		*		

There is evidence that the constraints *LOW and *MID are both active at the STEM level. Since derivation uncontroversially inheres at the STEM level, the fact that V shows up as mid in the regular cases but as low in exceptional cases is proof that both constraints belong to the STEM level inventory. E.g.:

(9)   a. Denominal adjective derivation: -Vs

       szabály 'rule   szabály-os 'regular'
       szárny 'wing'   szárny-as 'winged' *(exceptional lowering stem)*

     b. Diminutive derivation: -Vcska[13]

       doboz 'box'   doboz-ocska 'little box'
       ház 'house'   ház-acska 'little house'   *(exceptional lowering stem)*

See Sect. 4.2.4. for the analysis of exceptional lowering stems.

That at the STEM level the default height value is mid is supported by independent evidence. Some 400 (underived) stems (Siptár and Törkenczy 2000) exhibit the following internal vowel alternation: the rightmost vowel is expressed if the stem is word final or followed by a C-initial suffix, but is missing if the stem is followed by a V-initial suffix. E.g.: *bokor* 'shrub,' *bokor-nak* 'shrub-DAT, versus *bokr-unk* 'shrub-1PL.POSS.'

The vowel/ zero stem-internal alternation is unproductive and unpredictable on a purely phonological basis. The latter point is driven home by the contrastive patterns in Table 3.

The vowel/ zero internal stem alternations have been treated within a variety of points of view: syncope (Kornai 1990); epenthesis (Vago 1980; Jensen and Stong-Jensen 1989; Törkenczy 1994, 1995); "defective" vowel analysis within the Government Phonology framework (Törkenczy 1992; Ritter 1995; Rebrus and Polgárdi 1997; Siptár and Törkenczy 2000); empty V analysis within standard Optimality Theory (Stiebels and Wunderlich 1999). However, the unpredictable

Table 3 The unpredictability of vowel/zero stem alternations

	___ #	___ C -nak/nek 'DAT'	___ V -unk/ünk '1PL.POSS'
Non-alternating CC# stem	szörny 'monster'	szörny-nek	szörny-ünk
Non-alternating CVC stem	szurony 'bayonet'	szurony-nak	szurony-unk
Alternating CVC# stem	torony 'tower'	torony-nak	torny-unk

and unproductive nature of this alternation pattern strongly suggests an analysis along the lines of lexical allomorphy indexed to a "vowel/ zero alternation" class.

What is particularly noteworthy about the vowel/ zero alternation class is the fact that the vowel alternant practically always is mid *o/ö/e*. This generalization falls out automatically under the approach proposed here: The alternating stem vowel is represented in terms of a V slot whose height value is optimally mid at the STEM level; see (8a).[13]

4.2.2 STEM and WORD Level Inflections

The unusual aspect of Hungarian morpho-phonology is that if the first inflectional suffix (attached directly to the root or to the last derivational suffix in the concatenative chain) begins with V (not specified for vowel height), then its default value is mid (unless the lexical base is exceptional; see Sect. 4.2.3), but for subsequent V-initial inflectional suffixes the default value is low; see (2). The architecture of Stratal OT affords a straight-forward analysis for these facts. All inflectional suffixes that begin with a vowel that alternates in height (V) are assigned to the STEM level. However, only one such suffix may be entered into input representations, as per the STEM level morphology. Since at the STEM level the default value is mid (see tableau 8a), it follows that in the winning output candidate of the single inflectional STEM level inflectional suffix V will be a mid vowel. The set of verbal and nominal STEM level inflectional suffixes is listed in (10), as culled from Tompa (1970) and Vago (1980).[14,15]

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[13]There are only seven stems in which the alternating vowel is not mid. These high and low vowels are fully specified lexically. For the list, as well as related facts, see Siptár and Törkenczy (2000:214–218).

[14]Epenthetic vowels that appear in suffix initial position following CC clusters behave differently (see Vago 1980, 2017b).

[15]Some of the suffixes have alternate forms, some predictable, some not; see Siptár and Törkenczy (2000).

(10)   STEM level inflectional suffixes

   a.   Verbs

Suffix   *Example*

-Vk '1SG.INDEF'   hoz-ok 'I bring"
-Vl '2SG.INDEF'   hoz-ol 'you (SG) bring'
-Vm '1SG.DEF'   hoz-om 'I bring it/them'
-Vd '2SG.DEF'   hoz-od 'you (SG) bring it/them'

   b.   Nouns

Suffix   *Example*

-Vm '1SG.POSS'   drót-om 'my wire'
-Vd '2SG.POSS.   drót-od 'your (SG) wire'
-Vtok '2PL.POSS'   drót-otok 'your (PL) wire'
-Vt 'ACC'   drót-ot 'wire (accusative)'
-Vk 'PL'   drót-ok 'wires'
-Vnta / -Vnként 'DISTR'   nap-onta / nap-onként 'daily'
-Vstul 'ASSOC'   család-ostul 'together with the family'
-Vtt 'LOC'   Vác-ott 'in Vác (city)'

Of the nominal suffixes in (10b), the three possessive suffixes, the plural suffix, and the last three infrequently used case suffixes, which attach directly to the lexical root, are assigned exclusively to the STEM level. However, the verbal personal suffixes in (10a) and the accusative suffix in (10b) are also assigned to the WORD level, where they always follow another inflectional suffix. In these cases the default value of the initial V of the accusative and the verbal personal suffixes is low. The following samples are repeated from (2), modified slightly in exposition:

(11)   hoz-t-ad 'bring-PAST-2SG.DEF' ('you (sg) brought it')
       hoz-z-ad 'bring-IMP-2SG.DEF' ('bring it!')
       drót-ok-at 'wire-PL-ACC' ('wires, accusative')
       drót-om-at 'wire-1SG POSS-ACC' ('my wire, accusative')

The facts in (11) are explained as follows. In the case of verbs, the STEM level morphology supplies only the root. At the WORD level, the morphology adds a Tense/Mood suffix followed by a personal suffix; the phonology evaluates the output candidates according to the rank ordered constraints. At the WORD level *MID outranks *LOW; as a consequence, the initial V of a personal suffix is optimally low.

Similar argumentation holds for nouns. At the STEM level, the morphology supplies either the plural suffix or one of the three STEM level possessive suffixes; in all cases the STEM level phonology renders mid as the optimal height value for initial V, since *LOW outranks *MID in the STEM level grammar. At the WORD level, the accusative suffix is added, and its initial V evidences low default value in the output, as a direct consequence of a different rank ordering of the two markedness constraints: *MID » *LOW. Let us summarize via a tableau.

(12)

	/drót-Vk /	IDENT (V)	*HIGH	*LOW	*MID
STEM LEVEL	drót-ak			*!	
	☞ drót-ok				*
	drót-uk		*!		

	/drót-ok-Vt /	IDENT (V)	*HIGH	*MID	*LOW
WORD LEVEL	☞ drót-ok-at				*
	drót-ok-ot			*!	
	drót-ok-ut		*!		

Tableau (12) illustrates that Stratal OT is a bi-level lexical phonology and morphology system. The output of the STEM level grammar serves as the input to the WORD level grammar. Thus, in the WORD level input the initial vowel of the plural suffix is specified for height, having received the mid default value at the STEM level. Further, the two grammars differ in constraint ordering.

In summary, stems, which can be either absolute (bare roots) or relative (augmented by derivational affixation), plus the first V-initial inflectional suffix serve as input to the STEM level co-phonology, where the optimal default height value for V is mid. The output of the STEM level then serves as the input to the WORD level co-phonology, where the optimal default value for V is low.

4.2.3   The Treatment of Exceptional Lowering Stems

We still have one debt to pay off: the formal account of the exceptional lowering stems discussed in Sect. 3.2 and further exemplified in (9). In the OT literature, exceptionality is the property of specific morphemes; exceptional morphemes are tagged with an index and are paired up with indexed constraints which are applicable only to the indexed morphemes. For detailed discussion and references, see in particular Pater (2010), Wolf (2011), and Gouskova (2013).

For indexed markedness constraints, Pater (2010) proposes the following locality condition:

(13) $*X_L$

> Assign a violation mark to any instance of X that contains a phonological exponent of a morpheme specified as L. [L for Lexical]

Let us look at the ramifications of (13) for exceptional lowering in Hungarian. In the STEM level phonology module there will be an indexed constraint that will target only the indexed morphemes. The indexed constraint is a higher ranked clone of a general, unindexed constraint; see the references in the first paragraph of this

section. By the way of example, let us look at how the word *szárny-as*, used in (9a), might be selected as the optimal output candidate:

(14)

/szárny$_L$-Vs/	IDENT (V)	*HIGH	*MID$_L$	*LOW	*MID
szárny-as				*!	
☺ szárny-os					*
szárny-us		*!			

As seen, *szárny-os was selected as the optimal output candidate. The reason is that the indexed constraint *MID$_L$ was relevant only for the indexed input morpheme *szárny$_L$* which, however, does *not* contain a mid vowel. Consequently, no violation mark could be assigned.

The problem is that convention (13) is intended for "local exceptional triggering" (Pater 2010), where the exceptionality is located within the indexed morphemes. But the Hungarian lowering case is different: the exceptionality is triggered by a class of exceptional stems but is realized on the immediately following suffix. As a result, lowering will not take effect.

Toward a possible remedy of the problem, let us assume that in Hungarian morphology derivational structure is layered (stacked, cyclical), as suggested by Rebrus and Polgárdi (1997).[16] With respect to indexing, I propose that the lexical index marking percolates up and down the structural hierarchical domains. So *szárny-as* would have the following structural representation:

(15)

$$\text{Stem}_L$$
$$\overbrace{\qquad\qquad}$$
$$\text{Stem}_L \qquad \text{Suffix}_L$$
$$| \qquad\qquad |$$
$$\text{szárny}_L \qquad \text{Vs}_L$$
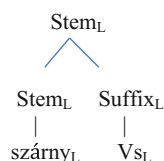
In (15), -Vs is a denominal adjectival suffix. As was noted in the paragraph above (4) in Sect. 3.2, adjectives in general are lowering. So both the lexical stem (root) and the adjectival suffix-Vs bear their own inherent exception indices, whereas the deadjectival adverbial suffix-Vn in (16) acquires its index by means of suffusion through the hierarchical structure:

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[16]Trommer (2011) discusses three types of stem structures. (15) is an instantiation of *morphological* stems, whereby each stem + affix sequence forms a new stem (e.g., [[szárny]$_{ST}$ + [As]$_{SUFF}$]$_{ST}$).

(16)

```
                              Stem_L
                             /      \
                            /        \
                      Stem_L          \
                      /    \           \
                     /      \           \
               Stem_L    Suffix_L     Suffix_L
                  |         |            |
              szárny_L     Vs_L         Vn_L   'in a winged way'
```
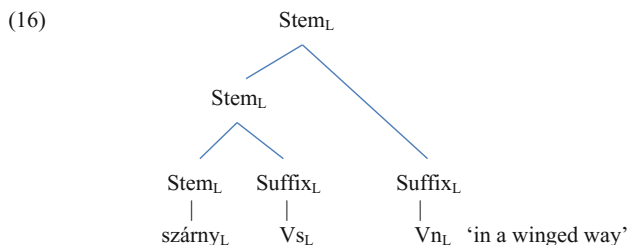
Now both V-initial suffix morphemes are within the scope of their respective index marking and therefore both will be targets for the indexed constraint:[17]

(17)

/szárny$_L$-Vs$_L$-Vn$_L$/	IDENT (V)	*HIGH	*MID$_L$	*LOW	*MID
szárny-as-on			*!	*	*
☞ szárny-as-an				**	
szárny-us-on		*!	*		*
szárny-us-an		*!		*	
szárny-os-on			*!*		**
szárny-os-an			*!	*	*

Inflectional suffixes pattern like derivational suffixes with respect to lowering. If a non-verbal lowering stem (recall that verbal stems are not lowering) is followed by a V-initial inflectional suffix, lowering obtains. This is the case with roots/ absolute stems (cf. *szárny-ak* 'wings' = STEM + INFL) as well as derived/relative stems (cf. *szárny-as-ak* 'winged ones' = STEM + DERIV +INFL). This suggests that inflectional suffixes are incorporated into the stacked hierarchical structure, just like derivational suffixes (see 15 and 16).

In summary, exceptional lowering in the context of the indexation locality condition (13) supports stacked structure for both derivational and inflectional suffixes. In Stratal OT, indexed exceptionality is an exclusively STEM level phenomenon. It is robust in derivations, but restricted in inflections to a few STEM level suffixes, with the understanding that for any given word, the STEM level morphology allows only one inflectional suffix to be part of the STEM level phonology.[18] So in a word like *szárny-as-ak-at* 'winged ones, acc.' = STEM + DERIV + INFL + INFL) low default value for-*as* and-*ak* is assigned at the STEM level on an exceptional basis (due to indexed marking on the stem and-*as*,

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[17]-V*n* is a word-final suffix, so its index is moot. Otherwise, an immediately following (to respect locality) V-initial suffix will be relevant for the indexed constraint; hence, V is expected to be low by default. For the alternation of V in -V*n*, cf. *nagy* 'great,' *nagy-on* 'greatly' (the adjective *nagy* is exceptionally not lowering).

[18]This restriction will be modified for verbs in the next section.

while the low default value for-*at* is entirely expected, since the suffix is assigned to the WORD level, where constraint reranking forces low default value for height.[19]

5   Conclusion

After investigating a number of approaches to vowel height alternation in Hungarian, the phonological evidence is in alignment with Kenesei's morphological argument for the inflectional status of the suffix -*hat/het*. The co-phonology approach of Stratal OT is emerging as a strong contender for resolving a number of issues in the phonology of Hungarian, including, for present purposes, the categorical classification of the epistemic/deontic suffix. Claiming that -*hat/het* is in the inflectional camp is problematical for initial vowel height alternations in two of the three analyses we considered. First, if predicting mid tongue height in the alternating cases is predicated on adjacency to derivational elements (Sect. 3.1), then -*hat/het* cannot be an inflectional suffix, for it would destroy the conditioning context, namely stem adjacency, for mid vowel height. An exception could be made, but it would be stipulative. Second, if all inflectional suffixes are claimed to be lowering (Sect. 3.2), then under the inflectional categorization of -*hat/het* this suffix would again have to be an exception to the purported generalization. And once again, there would be no motivation for this move.

Under the Stratal OT analysis advocated here, -*hat/het*, as a MODAL suffix, together with four V-initial verbal person/number suffixes (listed in 10a) comprise the STEM level verbal inflections. Since the level assignment of inflections varies cross-linguistically (see 5b), the status of -*hat/het* as an inflectional suffix operating at both STEM and WORD levels is not an oddity. Thus, at the STEM level/hoz-hat-Vm/ = *hoz-hat-om* 'I can bring it/them' and /hoz-Vm/ = *hoz-om* 'I bring it/them' both evidence mid tongue height default correctly, while at the WORD level both /hoz-hat-t-Vm/ = *hoz-hat-t-am* 'I could bring it/them' and /hoz-t-Vm/ = *hoz-t-am* 'I brought (it)' both evidence low vowel height default, again correctly.

The upshot of the discussion here is that we may safely conclude that on the basis of both morphological and phonological evidence the epistemic/deontic suffix -*hat/het* is classified into the inflectional category, in line with Kenesei's (1996) original proposal.

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[19]In addition, the lack of WORD level exceptionaliy for height values renders the indexed constraint *MID$_L$ vacuous in the WORD level phonology module.

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Part II
Morphology and Syntax

Possessive Agreement Turned into a Derivational Suffix

Katalin É. Kiss

Abstract This paper introduces a non-canonical type of grammaticalization: it argues that the -*ik* partitive suffix of Hungarian has been grammaticalized from a 3PL possessive agreement morpheme, undergoing semantic bleaching (the loss of person and number features, i.e., the loss of referential identifiability), decategorization, and morphologial simplification. The use of possessive agreement for the encoding of definiteness/specificity is typical of most Uralic languages, however, only the history of Hungarian is documented long enough to allow the tracking of the evolution of the non-possessive function of the agreement suffix. The paper shows that the suffix -*ik*, attached to pronouns, numerals and comparative adjectives in Modern Hungarian, expressing partitivity (e.g., *minden-ik lány* 'every one of the girls' versus *minden lány* 'every girl') was in Early Old Hungarian an allomorph of the 3PL possessive agreement suffix; it cross-referenced a pro-dropped 3PL possessor on a possessum consisting of a determiner or modifier and an ellipted nominal (pro$_i$ *minden-Ø-ik$_i$* 'every one of them'). Owing to its covertness, the pro possessor came to be ignored, and the -*ik*-marked elliptical expression, originally expressing a subset–set relation between the pronominal possessor and the possessum, assumed a general partitive interpretation, with -*ik* reinterpreted as a derivational suffix. The Hungarian 3SG possessive agreement suffix, -*jA*, is going through a similar grammaticalization process.

Keywords Grammaticalization · Possessive agreement · Partitivity Uralic morphosyntax · Hungarian

K. É. Kiss (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: e.kiss.katalin@nytud.mta.hu

1   Introduction

The prototypical case of grammaticalization is a process in the course of which a lexical word loses its descriptive content and becomes a grammatical marker. This paper discusses a more complex type of grammaticalization, in the course of which the phonologically null pro possessor of a possessive construction is lost, whereby the agreement suffix cross-referencing it on the possessum is reanalyzed as a derivational suffix marking partitivity.

The phenomenon in question is known from various Uralic languages, where possessive agreement appears to have assumed a determiner-like function. It has recently been a much discussed question how the possessive and non-possessive uses of the agreement suffixes relate to each other (Nikolaeva 2003); whether Uralic definiteness-marking possessive agreement has been grammaticalized into a definite determiner (Gerland 2014), or it has preserved its original possessive function, merely the possessor–possessum relation is looser in Uralic than in the Indo-Europen languages, encompassing all kinds of associative relations (Fraurud 2001). The hypothesis has also been raised that in the Uralic languages, possessive agreement plays a role in organizing discourse, i.e., in linking participants into a topic chain (Janda 2015).

This paper helps to clarify these issues by reconstructing the grammaticalization of possessive agreement into a partitivity marker in Hungarian, the language with the longest documented history in the Uralic family. Hungarian has two possessive morphemes functioning as a partitivity marker: -*ik*, an obsolete allomorph of the 3rd person plural possessive suffix, and -(*j*)*A*, the productive 3rd person singular possessive suffix.[1] As will be shown, they represent different stages of the pathway of grammaticalization that leads from a possessive morpheme denoting that its nominal base is the possessum of a pronominal possessor to the same morpheme denoting partitivity.

The paper is organized as follows: Sect. 2 is a brief survey of the literature discussing the non-possessive use of possessive agreement in the Uralic languages. Section 3 introduces the suffix -*ik*, a derivational suffix conveying partitivity and definiteness in Modern Hungarian. Section 4 argues that -*ik* functioned as a 3rd person plural possessive ending in Old Hungarian. Section 5 reconstructs the grammaticalization process that has resulted in the loss of its possessive function, while preserving its definite and partitive features. Section 6 shows that -(*j*)*A*, the 3rd person singular possessive agreement marker, is going through a similar grammaticalization process as its plural counterpart. Section 7 is a summary.

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[1]Section 6 will give a more precise characterization of -*jA*. In fact, it is a general possessedness suffix, and the 3SG possessive agreement marker cross-referencing a 3SG pro(nominal) possessor is a morpheme complex consisting of -*jA* and a phonologically null agreement suffix.

2 Previous Approaches

The grammars of many Uralic languages mention the fact that possessive suffixes, whose primary function is to mark the person and number of a (typically covert) pronominal possessor on the possessum, can also have a non-possessive, deter-mining role. Nikolaeva's (2003) survey distinguishes three types of non-possessive meanings: i. Identifying–deictic function, with the 3rd person singular possessive suffix marking that the referent of the possessum is uniquely identifiable, i.e., visible or otherwise salient, in a given situation. E.g.:

(1) a. t'ukona **sira-da**   wǝr-cawey◦. (Nenets, Nikolaeva 2014: 69)
      here   snow-3SG dirt-PROP
      ˊHere the snow is dirty.'

   b. Guždor vylyn   **turyn-ez**   čeber. (Udmurt, Nikolaeva 2003: ex. (6b))
      field   on   grass-3SG beautiful
      ˊThe grass on the field is beautiful.'

ii. Contrastive-partitive function, with the 3rd person plural possessive suffix marking that the referent of the possessum is a subset of a previously introduced set. (2a) also illustrates a collateral function of possessive agreement: it nominalizes the adjective it combines with.

(2) a. Wera-h   te-xt◦ǝta   **ŋarka-doh** sǝwa. (Nenets, Nikolaeva 2014: 69)
      Vera-GEN reindeer-PL.ABL.3SG big-3PL   good
      ˊAmong Vera's reindeer, the big one is good.'

   b. t'uku◦ xasawa ŋǝc'eke-xǝt◦   **ŋob-toh**   sǝwa. (Nenets, Nikolaeva 2014: 70)
      this   male   child-PL(ABL) one-3PL   good
      ˊOne of these boys is good.'

iii. Associative function, expressing that the referent of the possessive morpheme (often the speaker or the addressee, referred to by a 1st or 2nd person singular suffix) is the reference point in the situation, e.g.:

(3) a. **Tam hu:j-e:m**   xal'śa   joxt-əs? (Khanty, Nikolaeva 1999: 83)
       this   man-1SG   where   come-PAST.3SG
       ˈWhere has this man come from?'

   b. Mans-əŋən ka:t a:mp.   Wul a:mp pare:m-əs-li   a:j   **a:mp-əl**.
      walked   two dog   big dog bit   small dog-3SG
      ˈTwo dogs were walking. The big dog bit the small one.' (Khanty, Nikolaeva 1999: 83)

The non-possessive use of possessive agreement is very frequent in the Uralic languages. In the Uralic Udmurt, for example, 30% of subjects and 40% of objects bear possessive agreement (Fraurud 2001). Fraurud sees a close connection between the possessive and the seemingly non-possessive functions of possessive agreement, arguing that possessive agreement in Uralic may also express anchoring to non-focussed or implicit referents, to contextual elements like time and place, to actions and states, and even merely to the linguistic or situational context. Fraurud sees no evidence suggesting that the determiner-like functions of possessive agreement might be the results of a grammaticalization process. According to her, possessive agreement is likely to have always had a wider range of functions in Uralic than in English.

Gerland (2014) formulated a similar view. As she put it, both possessive suffixes expressing agreement with a possessor and those expressing definiteness establish a relation; however, in the case of the non-possessive use, the suffix relates the possessum either to the discourse situation (with pragmatically unique referents) or to cultural knowledge (with semantically unique referents). She regards the non-possessively used possessive suffix as a definite article—despite the fact that its use as a definiteness marker is optional. Her main argument is that it can appear in all contexts that are typical of definite articles.

Janda (2015) claims that both the possessive and the non-possessive uses of possessive agreement are manifestations of the same function, that of establishing a relation between two entities. The entity denoted by the possessive suffix is a uniquely identifiable reference point, usually the primary topic. Janda argues that the role of the possessive suffixes in a story is to link referents into a topic chain; the primary topic cross-referenced by the possessive suffix serves as an anchor for introducing new referents and re-introducing old ones.

3   A 3rd Person Plural Possessive Suffix Turned into a Partitivity Marker in Hungarian

Studies of the definiteness-marking function of the Uralic possessive suffix mention Hungarian as an exception, where the possessive suffix has no definiteness-marking role. In fact, the associative function of 1st and 2nd person agreement identified by Nikolaeva (2003) is attested in Hungarian, too. For instance, the expression *ember-*

ünk man-1PL 'our man' is often used in the sense 'the aforementioned man'. Here is a contemporary example from the Hungarian Historical Corpus[2]:

(4)   Amikor valakit   mindenáron   úgy   kezelünk,   mint egy idegbeteget,…
      when   somebody-ACC   by.all.means so   treat-1PL   as   a   neuropath-ACC
      lényegében elérjük   az eredményt, s   **emberünk**   valóban idegessé válik.*
      in.fact   achieve-1PL   the result-ACC and man-1PL   really   nervous becomes
      'If we treat someone as a neuropath,…in fact, we achieve the result and our man [the
      person in question] really becomes nervous.'

      (*Csepeli, György: A hétköznapi élet anatómiája (1986: 87).
       http://clara.nytud.hu/mtsz/run.cgi/first_form.)

More importantly, Hungarian also has two definiteness-marking possessive agreement suffixes, *-ik* and *-jA*. The suffix *-ik* appears (optionally) on universal, interrogative and existential pronouns, among them *minden-ik/mindegyik* 'each', *mely-ik* 'which', *valamely-ik* 'some', *némely-ik* 'some', *bármely-ik* 'any', *akármely-ik* 'any',[3] *egy-ik* 'one', *más-ik* 'other'. Whereas the *-ik*-less versions of these pronouns are indefinite, the *-ik* variants are definite, which is indicated by the fact that, when used as objects, the *-ik*-less pronouns elicit the indefinite conjugation, and the *-ik* versions elicit the definite conjugation. (A verb in the definite conjugation is supplied with the sequence or the fusion of an object agreement suffix and a subject agreement suffix. Object agreement is only elicited by a definite object—see Bartos (1997)). Compare[4]:

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[2]Csepeli, György: *A hétköznapi élet anatómiája* (1986: 87). http://clara.nytud.hu/mtsz/run.cgi/first_form.

[3]Pronouns involving the morphemes *bár* and *akár* are free choice items—see Halm (2016).

[4]Since *minden-ik* shares the stem of *minden* 'every', I gloss it as 'every-IK'. At the same time, the partitivity of the *-ik*-phrase is similar to that of an *each* phrase, therefore, I use *each* in the translation.

(5) a. Ismer-ek   *minden* vendég-et.
         know-1SG   every   guest-ACC
         ʻI know every guest.'

     b. Ismer-**em**   *minden-**ik**/mindegy-**ik***   vendég-et.
         know-OBJ.1SG   every-IK   guest-ACC
         ʻI know each guest.'

(6) a. a   kép,   *amely-et*   lát-sz
         the picture which-ACC   see-2SG
         ʻthe picture, which you see,'

     b. az   a   kép,   *amely-**ik**-et*   lát-**od**
         that the picture which-IK-ACC   see-OBJ.1SG
         ʻthe picture that you see'

(7) a. Gyakorlásként   kimond   *valamely* angol   szó-t.
         practice.for   utter.3SG   some   English word-ACC
         ʻAs a practice, he utters some English word.'

     b. Gyakorlásként   kimond-**ja**   *valamely-**ik*** angol   szót.
         practice.for   utter-OBJ.1SG   some-IK   English word-ACC
         ʻAs a practice, he utters some English word.'

In these cases, *-ik* appears to fulfil a definiteness-marking role similar to that of
the non-possessively used possessive suffixes of the sister languages. More pre-
cisely, the *-ik* suffix adds the features [+partitive] and [+definite] to the universal or
existential quantifier it merges with; it expresses that the individual denoted by the
quantified expression represents a proper subset of a familiar set. Observe two pairs
of examples from the Hungarian Historical Corpus. Whereas a bare *mely* is a
wh-pronoun mostly introducing an appositive relative clause or an exclamative (8),
melyik is a partitive interrogative or relative pronoun, meaning ʻwhich one of those
under discussion' (9).[5,6]

(8) a. S   **mely** remek   osztály, **mely-et**   itt   most én képvisel-ek
         and what excellent class   which-ACC   here now I   represent-1SG
         ʻAnd what an excellent class this is, which I now represent here'

     b. Tudja,   hogy mikor, **mely-ik**   halfajtá-t   a legjobb fogyasztani.
         knows   that when   which-IK   fish-kind-ACC   the best   consume.INF
         ʻHe knows which fish is the best to consume when.'

Since an *-ik*-marked universal pronoun always denotes the members of a set
present in the domain of discourse (9a), it is not suitable for generic statements (9b):

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[5]Fodor, András: *Szigetek* (1980: 155). http://clara.nytud.hu/mtsz/run.cgi/first_form.

[6]Zsarnay, Sándor: Étkezés Japánban (1980: 56). http://clara.nytud.hu/mtsz/run.cgi/first_form.

(9) a. A tanszékünkön   **minden-ik** férfi szakállas.
         the department.1PL.at every-IK   man bearded
         'Each man is bearded at our department.'

     b. **Minden/??minden-ik** ember   halandó.
         every /every-IK   man   mortal
         'Every/??each man is mortal.'

A further function of the suffix *-ik* is to derive ordinals from fractionals (*másod-ik* 'second', *harmad-ik* 'third', *negyed-ik* 'fourth').

The suffix *-ik* can also appear on comparative and superlative adjectives. The *-ik*-marked adjective can function as a nominal, i.e., the AP projection can also be assigned a nominal shell, the empty head of which is the equivalent of the English *one*. The suffix *-ik* supplies the expression with the features [+partitive] and [+definite]. As a definite nominal, the *-ik*-marked adjective takes a definite article:

(10) A   *szebb-**ik**-et*   megtart-om,   a *csúnyább-**ik**-at* visszaad-om.
      the nicer-IK-ACC keep-OBJ.1SG the uglier-IK-ACC   return-OBJ.1SG
      'The nicer one, I keep, the uglier one, I return.'

The *-ik* suffix in (10) has the same function that is identified by Nikolaeva (2003) as the contrastive-partitive function of possessive agreement.

4   *-ik* in Old Hungarian

In Hungarian possessive constructions, it is the possessum that must be marked; in the presence of a pronominal possessor it bears a suffix agreeing with the possessor in person and number. A pronominal possessor is silent (unless it is contrasted); it can be reconstructed from the agreement suffix of the possessum, i.e.[7]:

(11) pro_i $ház-am_i$ pro_i $ház-unk_i$
              house-1.SG 'my house'   house-1PL 'our house'
      pro_i $ház-ad_i$ pro_i $ház-atok_i$
              house-2.SG 'your house'   house-2PL 'your house'
      pro_i $ház-a_i$ pro_i $ház-uk_i$
              house-3.SG 'his/her house'   house-3PL 'their house'

In present-day Hungarian, the productive 3PL possessive suffix is *-Uk* (i.e., *-uk/ük*), and the assumption that *-ik* was also a 3PL possessive allomorph, first

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[7]The suffixes have back- and front-vowel variants. The 3SG *-a/-e* suffixes also have *-ja/-je* allomorphs. On their distribution, see den Dikken (this volume).

raised by Simonyi (1895: 716), is not generally accepted (Korompay 1992: 353).[8] We have the following reason to assume that the *-ik* suffix appearing on Old Hungarian pronouns and numerals is a 3PL plural suffix:

A comprehensive search of the Old Hungarian database (http://omagyarkorpusz. nytud.hu/) shows that in Old Hungarian documents, only the *-ik*-less versions of existential and universal pronouns occur as determiners or modifiers of lexical nouns; all *-ik*-marked pronouns behave like nominalizations. They represent the possessum in possessive constructions, where the possessor is a 3rd person plural pro coreferent with a plural lexical antecedent in a preceding sentence (marked by underlining in the examples below). In the underlying syntactic structure, the *-ik*-marked existential or universal pronoun is the modifier of an elliptic nominal (the equivalent of the English *one*), and it functions as the phonological host of the suffix *-ik* assigned to the possessum:

(12) …DP$_i$… [pro$_i$ minden Ø-ik$_i$]
             their every   one -3PL 'each one of them'

Compare some examples from the Old Hungarian Corpus (http:// oldhungariancorpus.nytud.hu/) illustrating the syntactic contexts in which the *-ik*-less and *ik*-marked versions of universal, interrogative and existential pronouns occur:[9],[10]

(13) a. *minden* (determiner):
    mert   **minden** orzagok, tartomańok, varasok, videkek, varak nem elegek teneked
    because every   countries provinces cities   lands   castles not enough you.DAT
    'because **all** countries, provinces, cities, castles are not enough for you'
                                           (Bod Codex (1500-1525) 4v)

  b. *minden-ik* (possessum):
    Valanac kedig   ot   vèttetuen hat kǫ   vedrec … **mēdèn-ic** foglaluā kèt kǫblǫt
    were   however there thrown   six stone buckets every-3PL taking   two vats.ACC
    'Six stone buckets were thrown there … **each of them** taking two vats'
                                         (München Codex (1416/1466) 86ra)

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[8]Whereas Korompay (1992) gives a list of arguments against analyzing *-ik* as an allomorph of possessive agreement, Korompay (2011) is somewhat more permissive in this respect.

[9]*v* stands for verso, *r* stands for recto, *a* and *b* mark two columns on the same page.

[10]The first date marks the time of the creation of the text; the second date marks the creation of the given copy.

(14) a. *mely* (modifier):

mely paranczolatokott   frater lleo ewrewmest   meg tart-a
which commandments.ACC Frater Leo happily   PRT keep-PAST.3SG
'**which** commandments Frater Leo kept happily'

(Jókai Codex (1370/1448) 41)

  b. *melyik* (possessum):

Eg nèminèmọ   vsoras-nac valanac **kèt adosi** …   m̄ghaga   monna-ic-nac
a some.kind.of usurer-DAT were two debtors-3SG say.PAST.3SG both-3PL-DAT
mel'l'-ic   zereti ọtet inkab
which-3PL loves him more
'Some usurer had two debtors… he asked both of them **which of them** loved him more'

(München Codex (1416/1466) 62vb)

(15) a. *valamely* (modifier):

menden,   valaki kerest   kerènd harminc napiglan **valamel** istèn-tọl
everyone who   request.ACC asks   thirty   day.for some   god-from
'everyone who makes a request of **some** god for thirty days'

(Bécsi [Vienna] Codex (1416/1450) 145)

  b. *valamelyik* (possessum):

Es ezekett   mend <u>az fraterok</u> ezkeppen tartyakuala   zerelembelewl hogy ha
and these.ACC all   the fraters this.way   were.keeping love.from   that if
valamel-yk valamÿkoron mas-yk-nak   mondotta uolna bozzosagnac   bezedett
some-3PL sometime   other-3PL-DAT said   had   annoyance.DAT word.ACC
'And all the fraters keep these for love that if **some of them** had told the other words of
annoyance, …   (Jókai Codex (1370/1448) 94)

In Old Hungarian, ordinal numerals are still non-distinct from fractionals.
Ordinals occurring in modifier position are *-ik*-less; the *-ik*-marked variants are
understood to be nominalizations representing the possessum in possessive con-
structions; more precisely, they are understood as modifiers of an ellipted nominal.
That is, the *-ik*-marked and *-ik*-less variants of ordinals show the same distribution
as the *-ik*-less and *-ik*-marked variants of pronouns:

(16) a. *-ik*-less ordinal (modifier):

valanac az èlọ zèkèrbèn vèrès louac   a **mas**   zèkèrbèn fèkètè louac
were   the first cart.in   red horses   the second cart.in   black horses
a **harmad** zèkèrbèn fèier louac a **negèd** zèkèrbèn kùlọmb zinọ   louac
the third   cart.in   white horses the fourth cart.in   different colored horses
'There were red horses in the **first** cart, black horses in the **second** cart, white horses in
the **third** cart, horses of different colours in the **fourth** cart'

(Vienna Codex (1416/1450) 301)

  b. ordinal with *-ik* (possessum):

Valanac kedig   mu nalonc <u>hètèn at'afiac</u> & az èlọ fèlesegèt veuen   meghala
were   however we at   seven brothers & the first wife.ACC having.taken died
… haga ọ fèleseget ọ at't'afianac Azon keppèn a **mas-ic**   a **harmad-ic**…
   left his wife.ACC his brother.DAT that way   the second-3PL the third-3PL
'There were in our midst seven brethren, and having taken a wife the first died and left
his wife to his relative. So did **the second one of them**, **the third one of them** …'

(München Codex (1416/1466) 28ra)

The assumption that -*ik* was an allomorph of the 3rd person plural possessive suffix in Old Hungarian has been questioned because the common Old Hungarian 3rd person plural possessive allomorphs appearing on lexical nouns were -*ok* and -*ek* (see Korompay 1991, Hegedűs 2014). Actually, the very first documented occurrence of the 3rd person plural possessive agreement suffix from 1192 is -*ik*:

(17) mend   w szentíí   es   unuttei   **cuz-ic-un**
      all   he saints.3SG and   ancestors.3SG space-3PL-SUPERESS
      'on the sides of all his saints and ancestors'   (Funeral Sermon and Prayer (1192))

The example below suggests that *menden-**ik*** and *menden-**ek*** were free variants, both meaning 'each of them':

(18) De   mert   meglen <u>keuessen valanak az barátok</u> **menden-yk-yt** kewlewn
      but   because still   few   were   the brethren   every-3PL-ACC   separately
      boczattyauala Castellomokba…Mykoron meg tertenekuolna az alamyznaual
      was.sending   towns.to   when   back returned   the alms.with
      Menden-ek mutattyauala bodog   ferencznek
      every-3PL   was.showing blessed Francis.DAT
      'But because still there were few brothers, he was sending **each of them** separately to
      towns… When they had returned with the alms, **each of them** was showing it to
      Blessed Francis'   (Jókai Codex (1370/1448) 83)

Whereas the facts surveyed above show that in Old Hungarian possessive constructions, the overwhelming majority of pronominal heads bear an -*ik* suffix, it is also a fact that the great majority of lexical heads bear -*ok/ek*. What this apparent contradiction indicates is that a fission took place among these allomorphs before or around the beginning of the documented phase of the Old Hungarian period. The -*ok/ek* versions (which have developed into the present -*uk/ük*) came to be restricted to the context of overt nominal stems, whereas the -*ik* version was used elsewhere.

5 The Possessive Agreement → Derivational Suffix Reanalysis

Whereas in the Old Hungarian period, -*ik* is undoubtedly an allomorph of 3rd person plural possessive agreement, in the Middle Hungarian period we have more and more evidence of its being reanalyzed as a suffix marking partitivity. As will be argued below, the reanalysis involved a category type shift; the original inflectional morpheme became a derivational suffix, and this category change displays properties of grammaticalization.

A symptom of the reanalysis of -*ik* as a partitivity suffix is the appearance of -*ik*-marked elements in modifier and determiner positions, where they cannot be interpreted as heads of possessive constructions any more.

The reanalysis must first have taken place in the case of numerals and comparative adjectives. The first documented occurrences of *-ik* marked ordinals and *-ik*-marked comparative adjectives in modifier position are from around 1500:

(19) **harmad-yk psalmus**
　　 third-IK　　psalmus ʽthird psalmusʼ (Festetics Codex (1494): 299)

(20) harmad-ic　vala Jacob patriarchanac az **kisseb-ic** 　　 **fia** Joseph
　　 third-IK　　was Jacob patriarch.DAT　the smaller-IK　son Joseph
　　 ʽthe third one was Joseph, Jacob patriarch's **younger son**ʼ (Guary Codex (1495): 32)

We attest the first *-ik*-marked pronouns (*mindenik* ʽeachʼ, *melyik* ʽwhichʼ, *némelyik* ʽsomeʼ, *valamelyik* ʽsomeʼ etc.) in determiner position in 17th–18th century texts (Középmagyar magánéleti korpusz [Middle Hungarian vernacular corpus] http://tmk.nytud.hu/):

(21) a. **minden-ik tehenek** 　 az ü feiere 　　　 tette a　kezeit
　　　 every-IK　 cow.DAT　the it head.3SG.on　put　the hands.3SG.ACC
　　　 ʽhe put his hands on the head of **each cow**ʼ 　　　 (Witch trial 163 (1631))

　　 b. micsoda állatot 　　 latott a　Tanú　az Gelei pinczébenn; és　**melly-ik**
　　　 what 　 animal-ACC　saw　the witness the Gelei cellar.in 　 and　what-IK
　　　 esztendőbenn
　　　 year.in
　　　 ʽwhat animal the witness saw in Gelei's cellar, and in which yearʼ
　　　　　　　　　　　　　　　　　　　　　　　　　　　　 (Witch trial 59. (1712))

A further symptom of the reanalysis of *-ik* as a partitive suffix is the appearance of *-ik*-marked pronouns bearing an additional productive possessive suffix. Again, we attest the first sporadic occurrences in 17th -18th century texts. These involve a (singular or plural) lexical possessor, in which case the possessum bears an *-a/e* possessive suffix[11]:

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[11]Molnár, János: Pásztor-ember (1775: 183). http://clara.nytud.hu/mtsz/run.cgi/first_form.

(22) a. *kondor ferench hozta*   **bor-nak   eg-yk-e**
           Kondor Ferenc brought.3SG wine-DAT one-IK-3SG
           ˈ**one of the wines** brought by Ferenc Kondor'
                                                                  (1616, cited by Korompay (1992: 353))
      b. Vagyon a' poknak   egy pár kezetskején   kívül   nyóltz lába,
           is   the spider.DAT   a pair hand.3SG.SUBL besides eight foot.3SG
           melly-nek   minden-ik-e hasonló a' rák-lábhoz
           which-DAT   each-IK-3SG similar the crab-foot.ALLAT
           ˈThe spider has, in addition to a pair of hands, eight feet, **each of which** is similar to
           the crab's foot.'

In the historical databases, the first documented occurrence of *mindenikük/ mindegyikük* with the productive 3rd person plural possessive agreement suffix following its obsolete allomorph is from 1840[12]:

(23) … magok   a' leghiresebb és   legnagyobb mesterek gyakorlattukkal
          themselves the most.famous and   greatest   masters   practice.3PL.with
      bebizonyították, midőn **mindegy-ik-ük** … tulajdon styljét   teremté
      proved   when   every-IK-3PL   his.own style-ACC created
      ˈthe most famous and greatest masters themselves proved it with their practice when
      each of them created his own style'

The reanalysis of *-ik* as a partitivity marking suffix must have proceeded through the following stages:

(24) *The evolution of the partitivity-marking* -ik *suffix*
(i)   Proto-H: *-ok/ek/ik* are allomorphs of 3PL possessive agreement

(ii)   Late Proto-H/Early Old H:
         Fission of *-ok/ek/ik*:   overt noun+*ok/ek*:   pro$_i$ *ház-ok$_i$* ˈ(the) house of them'
                                                     pronoun/numeral/adjective+Ø+*ik*: pro$_i$ *minden-ik$_i$* ˈevery one of them'

(iii)   Reanalysis of *-ik* as a derivational suffix marking partitivity, loss of the pro possessor
         Consequences: determiner/attributive use: *minden-ik lány* ˈeach girl'
                              taking possessive agreement anew: pro$_i$ *minden-ik-ük$_i$* ˈeach of them'

The claim that the reanalysis of *-ik* represents the recategorization of an inflectional morpheme as a derivational suffix is based on the following considerations.[13]

(i)   If the partitivity-marking *-ik* were an inflectional morpheme, the relation between the stem and the stem+*ik* complex ought to be transparent and

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[12]Budapesti Szemle. 1840(2): 216. http://clara.nytud.hu/mtsz/run.cgi/first_form.

[13]I am thankful to Péter Rebrus for the discussion of these issues.

predictable both morphologically and semantically. However, the transparent *minden-ik* 'every-ik' has become a dialectal version used in Transylvania, and has been replaced by the morphologically non-transparent *mind-egy-ik* 'all-one-ik' in Standard Hungarian. *Mely* 'what', the *-ik*-less variant of *mely-ik*, is also becoming outdated; the common alternative wh-pronoun is *milyen*, and the common alternative relative pronoun is *ami.*

(ii) Hungarian inflectional morphemes tend to participate in vowel harmony. Almost all of the non-harmonizing suffixes are derivational. (The relation is not bidirectional though; whereas almost all inflectional suffixes are harmonizing, derivational suffixes include both harmonizing and non-harmonizing suffixes.) The fact that *-ik* was a non-harmonizing allomorph may have facilitated its fall from the possessive agreement paradigm.

(iii) The *-ik* deriving ordinals from fractions turns nouns into adjectives, i.e., it changes the grammatical category of the relative stem, which only derivational suffixes are capable of. E.g., *öt-öd* 'fifth', a fraction, is a noun, whereas *öt-öd-ik* 'fifth', an ordinal, is an adjective. Ordinals can be subject to further derivation, e.g.: *öt-öd-ik-es* 'fifth-grader'.

(iv) The suffix *-ik* follows the comparative suffix of adjectives, so its derivational suffix status can only be maintained if the comparative suffix is also derivational. Evidence of its derivational status is provided by the fact that comparative adjectives are input to further derivation, e.g.: *jo-bb-ít* good-COMP-V 'improve', *kis-ebb-edik* small-COMP-REFL 'lessen', *ritká-bb-an* rare-COMP-ADV 'more rarely'.

The question also arises whether the inflectional suffix → derivational suffix reanalysis can be regarded as a grammaticalization process, the prototypical cases of which involve the reanalysis of lexical items as function words. The change from possessive agreement to partitivity marking displays defining features of grammaticalization: morphological decategorization, simplification (paradigm loss), and semantic bleaching (the loss of person and number features). The loss of pro is reminiscent of the loss of movement traces attested in prototypical cases of grammaticalization.

6 The 3rd Person Singular Possessive Suffix Turned into a Partitivity Marker

The 3rd person singular *-ja/-je* suffix of the possessive paradigm cited under (11), too, can function as a marker of partitivity; it combines with adjectives, and turns them into partitive nominalizations. The resulting noun phrase always involves a definite article:

(26) a. **A zöld-jé-t**   befőzöm,   **az érett-jé-ből**   lekvárt   csinál-ok.
　　　　the green-JE-ACC   preserve-OBJ.1SG the ripe-JE-from   jam.ACC   make-1SG
　　　　'**The green ones**, I preserve, **from the ripe ones**, I make   jam.'

　　b. **A nagy-ja** még hátra   van.　　　　c. **A kövér-jé-t**   nem szeretem.
　　　　the big-JA   yet behind is　　　　　　 the fat-JE-ACC   not like-OBJ.1SG
　　　　'**The major part** is yet to be done.'　　'**The fat part**, I don't like.'

　　　These possessive-marked adjectives represent the possessum of possessive constructions containing an implicit possessor. The possessor can be reconstructed from the situation or from the context. (26a–c) are likely to be assigned interpretations similar to those in (27a–c):

(27) [A [gyümölcsök] zöld-jé-t]   befőz-öm,
　　　the fruits   green-JE-ACC   preserve-OBJ.1SG
　　　[a [gyümölcsök] érett-jé-ből] lekvárt   csinálok.
　　　the fruits   ripe-JE-from jam.ACC   make.1SG
　　　'The green ones of the fruits, I preserve, from the ripe ones of the fruits, I make jam.'

　　b. [A [munka]   nagy-ja] még hátra   van.
　　　　the work   big-JA still behind is
　　　　'The major part of the work is yet to be done.'

　　c. [A [hús] kövér-jé-t]   nem szeret-em.
　　　　the meat fat-JE-ACC not   like-OBJ.1SG
　　　　'The fat (part) of the meat, I don't like.'

　　　In the case of (27a), the possessor is likely to be physically present in the situation; in the case of (27b), it is just vaguely identifiable, whereas in the case of (27c), the implicit possessor belonging to the -*je*-marked adjective is conventionally fixed; it is practically part of its lexical meaning. *Fehér-je* 'white-JE', i.e., 'egg-white', and *sárgá-ja* 'yellow-JA', i.e., egg-yolk' are also nominalized adjectives of this type.[14]
　　　The nominalizing role of the suffix is a consequence—or, after its reanalysis as a derivational suffix, a relic—of its original possessive agreement function. A possessive agreement suffix can only merge with a N head, hence its presence on an adjectival stem presupposes a nominal projection above the adjective.
　　　Naturally, the question arises whether the implicit possessor of -*jA*-marked adjectives is present in syntax. If the -*jA*-marked nominalized adjectives in (28a, b)

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[14]I do not discuss 3SG possessive endings lexicalized as part of their nominal stem. In many cases, e.g., *ves-e* 'kidney', *ep-e* 'bile', *zúz-a* 'gizzard', *or-ja* 'spare-rib', *tar-ja* 'spare-rib, *mar-ja* 'withers', the original possessive suffix role of the last vowel is only clear for linguists. In some N + *jA* and Adverb +*jA* combinations, e.g., *ele-je* 'beginning', *szín-e* 'right side', *vég-e* 'end', *fonák-ja* 'wrong side', *hátul-ja* 'back', *al-ja* 'bottom', *visszá-ja* 'reverse side', *utol-ja* 'last part', the possessive origin of the suffix may be clear for the native intuition, nevertheless, it is a practically obligatory concomitant of the stem.

contained a pro possessor, we would expect a singular agreement suffix on the
adjective in (28a), and a plural agreement suffix in (28b); however, the possessive
ending appearing on the adjective in this construction is always singular:

(28) a. Túl nagy adag,   meghagy-om   **a jav-á-t.**
          too big   portion, leave-OBJ.1SG the good-3SG-ACC
          'It is too big a portion, I spare **the better part of it**.'

      b. A dolgozatok   jól   sikerültek. **A jav-á-t   /*jav-uk-at**
          the term-papers   well succeeded the good-3SG-ACC/good-3PL-ACC
          bead-juk   egy konferenciára.
          submit-OBJ.1PL   a   conference.to
          'The term papers succeeded well. We submit the better part of them to a conference.'

According to the standard generative view (Bartos 2000: 684; Rebrus 2000:
773), the Hungarian possessive agreement suffixes are, in fact, morpheme com-
plexes involving a general possessedness suffix and an agreement suffix. This is
clearest in the case of a plural possessum, where the plural suffix intervenes
between the general possessedness suffix and the agreement morpheme:

(29) kalap -ja   -i   -m   kalap -ja   -i   -nk
      hat   -POSS -PL -1SG 'my hats'   hat -POSS -PL -1PL 'our hats'
      kalap-ja   -i   -d   kalap-ja   -i   -tok
      hat   -POSS-PL -2SG 'your hats'   hat -POSS-PL -2PL 'your hats'
      kalap-ja   -i   -Ø   kalap-ja   -i   -k
      hat   -POSS-PL -1SG 'his/her hats'   hat -POSS-PL -3PL 'their hats'

An agreement morpheme is only elicited by pronominal possessors; lexical
possessors, whether singular or plural, only elicit the general -*jA* possessedness
suffix on their possessum. Since the 3SG agreement suffix is zero, the -*jA* + Ø
morpheme complex elicited by a 3SG pronominal possessor is indistinguishable
from the -*jA* possessedness suffix elicited by a singular or plural lexical possessor.
Consequently, the phonologically null possessor of a -*jA*-marked adjective could, in
principle, be either a 3SG pro or a singular or plural ellipted lexical noun phrase.
However, ellipted objects are only licensed by an antecedent in a parallel con-
struction; the referent of an ellipted nominal cannot be identified situationally. For
example, in a situation where the speaker is pointing at three boys approaching, and
is wondering if his partner can recognize them, he cannot ask (30a); the plural
pronoun must be spelled out as in (30b).

(30) a.*Megismer-ed   pro_obj?   b. Megismer-ed   őket?
          recognize-OBJ.2SG   recognize-OBJ.2SG   them
          'Do you recognize them?'   'Do you recognize them?'

Hence the phonologically null possessor of *-jA*-marked adjectives cannot be an elliptical lexical noun phrase (except for parallel coordinate or question–answer constructions). A possibility is to identify it as a pro possessor, eliciting an invariant (default 3SG) agreement suffix on the possessum.

Default agreement also appeared elsewhere in Hungarian grammar. Early Old Hungarian abounded in non-finite subordinate constructions, which tended to have subjects of their own eliciting agreement on the non-finite verb—see (31a). These constructions have evolved either into finite subordination, or into canonical non-finite subordination involving a non-finite verb with a PRO subject and no agreement (31c). As shown by Dékány (2012), an intermediate stage in this process was the appearance of default, i.e., 3rd person singular, agreement on the non-finite verb with no regard to the person and number of its subject (31b).

(31) a. ne   akariatoc   fel-**n-etec**
          not   want.IMP.2PL   fear-INF-2PL
          'don't want to be afraid'   (München Codex (1416/1466) 42ra)

      b. Ne   akaryatok   **feel-ny-e**
          not   want.IMP.2PL   fear-INF-3SG
          'do not want to be afraid'   (Jordánszky Codex (1516) 55)

      c. Ne   akaryatok   ty   **ffel-ny**
          not   want.IMP.2PL   you   fear-INF
          'do not want to be afraid'   (Jordánszky Codex (1516) 450)
                                                     (cited from Bacskai-Atkari & Dékány (2014: 175-176).

Another possible analysis of the *-jA* appearing on adjectives is to assume that it has fully grammaticalized into a derivational suffix; it has developed into a nominalizer conveying partitivity, evoking the presence of a superset only on the notional level. These two possibilities may very well represent two subsequent stages of a grammaticalization path, which some adjectives, e.g. *kövérje* 'fat-of-meat', *fehérje* 'egg-white', *sárgája* 'egg-yolk', have passed all along, whereas others are in the process of completing. This grammaticalization path includes the following stages:

(32) *The grammaticalization path* of -jA
(i)   3SG agreement: a   pro$_i$ nagy-Ø-ja$_i$
                                   the   big-N-POSS.3SG 'its major part'
(ii)   Default agreement: a   pro$_i$ nagy-Ø-ja$_i$
                                   the   big-N-POSS   'its/their major part'
(iii) [+partitive] nominalizer: a nagy-ja
                                   the big-N.PART 'the major part'

   By the end of the grammaticalization path, the nominalized adjective loses its grammatically represented pro possessor with a specific number and person feature, but maintains the partitivity and—owing to the definite article, also the definiteness —of the original possessive construction. At stage (iii), the *-jA* morpheme behaves as a derivational suffix. The [+partitive] feature of *-jA* marks the presence of a notionally given superset, which is enough to block the addition of a syntactic possessor denoted by (another) possessive agreement suffix[15]:

 (33) *A   vendég **kövér-jé-jét** odaad-om   a   kutyának.
       the   guest   fat-JA-3SG   give-OBJ.1SG   the dog.DAT
       'I give the fat part of the guest's meat to the dog.'

   In some cases, the output of the grammaticalization process in (32) has also undergone idiomatization. Thus 'in groups of two/three …' is expressed by a construction involving a numeral supplied with an adjectivalizing suffix, a nominalizing *-jA*, and instrumental case:

(34) Hárm-as-á-val   mentünk   be.
      three-ADJ-JA-with   went.1PL   in
      'We went in in threes.'
   An *-ik*-less ordinal supplied with *-jA* and sublative case means 'for the 2nd, 3rd, etc. time':

(35) Harm-ad-já-ra mentünk be.
      three-ORD-JA-SUBL went.1PL in
      'We went in for the third time.'

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[15]The addition of a new possessive morpheme is only possible if the possessive suffix has become part of the stem, and the native intuition does not recognize it as a derivational suffix any more. This is what happened in the case of the Hungarian word for *protein*, which is also *fehérje*. Cf.
(i) A keratin a   szaruanyagok   fehérjé-je.
    the keratin the horn.materials   protein-3SG.
    'Keratin is the protein of horn.'

7   Conclusion

This paper has described a non-canonical type of grammaticalization path: it has argued that the Hungarian -*ik* partitive suffix has grammaticalized from a 3PL possessive agreement morpheme, undergoing semantic bleaching (the loss of person and number features, i.e., the loss of referential identifiability), decategorization, and morphologial simplification.

The use of possessive agreement for the encoding of definiteness/specificity is typical of most Uralic languages, however, only the history of Hungarian is documented long enough to allow the tracking of the evolution of the non-possessive function of the agreement suffix. It has been demonstrated that the suffix -*ik*, attached to pronouns, numerals and comparative adjectives in Modern Hungarian, expressing partitivity (e.g., *minden-ik lány* 'every one of the girls' versus *minden lány* 'every girl') was in Early Old Hungarian an allomorph of the 3PL possessive agreement suffix; it cross-referenced a pro-dropped 3PL possessor on a possessum consisting of a determiner or modifier and an ellipted nominal (pro$_i$ *minden-Ø-ik*$_i$ 'every one of them'). Owing to its covertness, the pro possessor came to be ignored, and the -*ik*-marked expression, originally encoding a subset–set relation between the pronominal possessor and the possessum, assumed a general partitive interpretation, with -*ik* reinterpreted as a derivational suffix. The Hungarian 3SG possessive agreement suffix, -*jA*, is going through a similar grammaticalization process. -*jA*-marked adjectives, preceded by a definite article, can still be analyzed in most cases as possessive constructions with an ellipted nominal head; merely their pro possessor elicits default agreement. However, the possessor can also be absent altogether, in which case -*jA* behaves as a derivational suffix assigning the category 'noun' and the feature [+partitive] to the adjective. The -*jA*-marked element cannot take a further possessive suffix even in the latter case, which suggests that the suffix still evokes a possessor on the notional level, which blocks the appearance of a further possessor in syntax.

It has been debated whether the non-possessive use of possessive agreement in the Uralic languages is a relic of an atypical possessive relation with a wide range of functions in Proto-Uralic, or it is the result of an evolution from marking possession and whole-part relation to marking associability, and contextual identifiability, i.e., specificity. The Hungarian data analyzed above support the latter view: the reanalysis of possessive agreement as a marker of partitivity/specificity is the result of a grammaticalization process triggered by the possibility of a silent, hence ignorable, pro possessor. It is the silent pro that opens up the way to reanalyzing possessive agreement as a derivational suffix which conveys partitivity without denoting a possessor in syntax, expressing merely that the referent is a proper subset of a situationally or contextually given set. The different Uralic languages may differ in how "strictly" they interpret this subset relation; whether they require

a contextually or deictically identifiable superset, or they can also assume a subset relation between a referent and the larger situation that it is part of.

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The Rise of the Modifier
Suffix -*i* with PPs

Veronika Hegedűs

Abstract The paper aims to give a diachronic overview of the changes that resulted in the currently wide distribution of the -*i* suffix found on prenominal PP modifiers, which has often been described as a derivational suffix but is rather a licensing head for modifiers of certain types. Data from Old Hungarian, Middle Hungarian and Early Modern Hungarian will outline the syntactic change in the use of *való* '*orig.* being' and -*i*, along with the rise of a new participial copular form. The changes have led to -*i* becoming the general modifier head for prenominal PPs. The paper will further argue that the lack of -*i* with goal and directional PPs in present day Hungarian is due to syntactic reasons in some cases and to semantic ones in others.

Keywords Modifier · Participle · Suffix · Grammaticalization
Directional

1 Introduction

Hungarian has had prenominal PP modifiers throughout its written history, while the proportion of post-nominal PPs and adverbs (which also called postposed adverbial modifiers in descriptive grammars) has only slightly increased in the past few hundred years (Honti and Varga 2012). While adjectives can be used as prenominal modifiers without further ado, PPs and, to some extent, DPs are more restricted as modifiers—they need to be licensed, or as the descriptive literature calls it, "adjectivalized" to be suitable pre-head modifiers, (1).

(1) a   magas fák / az   út   mellett-i   fák
     the tall   trees the road beside-MOD trees
     'the tall trees / the trees beside the road'

V. Hegedűs (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: hegedus.veronika@nytud.mta.hu

The suffix *-i* is generally characterized as a derivational suffix that derives adjectives out of nouns productively and out of postpositions less productively. Another possibility is the use of *való* '*orig*. being', the old participial form of the copula *van* 'be', which has been treated as a function word in its use as a licensor of prenominal PPs (Laczkó 1995).

Arguing against the traditional descriptive view, Kenesei (2014, 2015) claims that *-i* is not a derivational suffix but a modifier functional head, attached to a full phrase (which is the modifier). He cites various arguments supporting the claim that the resulting modifiers are not adjectives, that is, we are not dealing with a morphological derivation; for example, they cannot be modified by degree adverbs or intensifiers, and they are not gradable. Kenesei briefly discusses the status of pre-nominal PPs as modifiers, and argues that *-i* is productively used with them as well (that is to say, with non-suffixal postpositions), except that it cannot be attached to PPs expressing goal and direction, a puzzling fact.

The synchronic properties of *-i* and *való*, their distribution with derived nouns, especially, have been discussed in the generative literature (e.g. Szabolcsi and Laczkó 1992; Laczkó 1995 and later). It has been shown that there is an overlap in their current distribution and that *való* is used with dynamic events, while *-i* is semantically less restricted—can be used with stative and dynamic events as well; however, it is morphologically more restricted as it cannot be attached to case suffixes.

The aim of this paper is twofold. On the one hand, it aims to give a diachronic overview of the changes that resulted in the current distribution of *-i* (and, parallel to this, of *való* to some extent) with prenominal PP modifiers.[1,2] In Sect. 2, data from Old, Middle and Early Modern Hungarian will be taken into account, and Sect. 3 will outline the syntactic and semantic changes that lead to the current properties of *-i* with PPs. On the other hand, I will argue that the lack of *-i* with goal and directional PPs is syntactic in some cases and semantic in others. Section 4 will discuss the synchronic properties related to goal and directional complements and adjuncts of nouns. Section 5 will briefly conclude the paper.

2 Diachronic Changes in the Distribution of *-i*

While the suffix *-i* is used productively with PPs and seems to be the most general licensor of prenominal PP modifiers now, historical data show that this has not always been the case. Diachronically, the distribution of *-i* and *való* '*orig*. being'

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[2]For the purposes of this paper, I will set aside the participial elements *történő* 'happening' or *szóló* 'sounding' that are also used with prenominal modifiers. Arguably, these are still verbal participles so while their distribution is of interest in the general structure of modification, they are not grammaticalized elements like *való*, making their syntactic properties more transparently verbal.

show an interesting change. In the oldest sources, *való* is the most common (and very frequent) element that we find with prenominal PPs and adverbs, (2). The use of -*i* seems limited to the "adjectivalization" of nominal modifiers of nouns, (3a), and to some adverbs, (3b).[3]

(2) a. az vt mellet-ual-o nemÿ fakra
   the road beside-be-PTCP some tree.PL.SUB
   'onto some trees next to the road'   (Jókai Codex 138, 1372/1448)
  b. tauol-ual-o   helyekben
   far- be-PTCP place.PL.INE
   'in far away places'   (Jókai Codex 114)

(3) a. kiral-i   koronat
   king-MOD crown.ACC
   'royal crown'   (Vienna Codex 62, mid. 15th c.)
  b. a' holnap-i   nap
   the tomorrow-MOD day
   'tomorrow('s day)'   (Munich Codex 13ra, 1416/1466)

 This section can only aim to provide a brief overview of the changes in distribution of various licensor heads in prenominal modification, nevertheless, the growing number of contexts in which -*i* is used should become clear. The changing distribution will lead to the claims about syntactic and semantic change in the next section. Data from Old Hungarian (896–1526), Middle Hungarian (1526–1772) and early Modern Hungarian (from 1772, the beginning of the period, up to the beginning of the 20th century) will be considered here in this order.[4]

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[3]The abbreviations used in the glosses are the following: ABL—ablative, ACC –accusative, ALL—allative, DAT—dative, DEL—delative, ELA—elative, ILL—illative, INE—inessive, INS—instrumental, MOD—modifier, PL—plural, POSS—possessive, PTCP—participle, SUB—sublative, SUP—superessive.

[4]I am relying on corpus data from databases developed (and under development) at the Research Institute for Linguistics in Budapest: the Old Hungarian Corpus (Simon and Sass 2012), the Historical Corpus of Private texts for Middle Hungarian (Dömötör 2013), and the Hungarian Historical Corpus for Modern Hungarian. Only some of the texts are normalized for modern Hungarian spellings, so wherever it was not possible to simply search for the regular modern forms, I also searched for various spelling options in the digitized version with the original spelling. This makes it possible that I have not found all the relevant data or could not find some data due to its unpredictable spelling, which explains the lack of numerical evidence for the tendencies I am describing here and the fact that I treat them as tendencies and changes of relative frequency rather than categorical, abrupt changes in most cases. With the development of these databases, especially of the Old Hungarian one, one will be able to make more precise estimations with respect to the time of certain changes and the appearance or disappearance of certain constructions.

2.1   Old Hungarian

Licensing of prenominal adpositional and adverbial modifiers shows a very uniform and rather clear-cut picture in Old Hungarian from the early texts to the end of the period: *-i* is restricted to prenominal nouns and some adverbs, while we find *való* with all PP modifiers and with most adverbs as well. That is, *való* is the most general functional head that appears with all kinds of prenominal PPs in this period, be they predicates, complements or adjuncts, and it functions as the participial form of the copula as well—which is its original function.

2.1.1   NP + NP: -i

Originally, the suffix *-i* is claimed to have expressed 'belonging to something', and it was productive with nominal modifiers, which it made into a proper adjectivalized modifier, although it could also appear on suffixed nouns to some extent (Szegfű 1991, 1992). We find the suffix with nominals modifying other nominals in the old texts, (4), making it possible to use nouns as proper modifiers.

(4) a. munh-i   uruzag-bele
       heaven-MOD   land-into
       'into heaven's land'   (Funeral Sermon, c. 1195)
    b. ewangelium-ÿ   zegenseget
       evangelium-MOD poverty.ACC
       'evengelical poverty'   (Jókai Codex 8)
    c. test-ÿ   es   lelk-ÿ   erewsseget
       body-MOD   and   soul-MOD   strength.ACC
       'strength in body and soul'   (Jókai Codex 121)

   The distribution of *-i* seems to be limited to such examples and to some more nominal adverbs, like *holnap* 'tomorrow' etc. With other prenominal modifiers we mostly find *való*, originally a participle.

2.1.2   *The Use of* Való

The adjectival participial form of the copula is *való* in Old Hungarian, made up of the copular root *val-* and the *-ó* participial ending. Prenominal predicative PPs appear with *való*, which we can easily be attributed to them being predicates in participial clauses, (5).

(5)   a. mend paradisum-ben   uol-ov   gimilcìctul
          all   Paradise-INE   be-PTCP fruit.PL.ABL
          'from all fruits in Paradise'   (Funeral Sermon)
       b. fǫld alat val-o   vèrmekbèn
          earth under be-PTCP ditch.PL.INE
          'in holes in the ground'   (Vienna Codex 232)

The same could also be said of many of the adjunct PPs with *való*, (6); although it is not always easy to see how these PPs would be regular predicates.

(6) a. Mosdatlan kèz-zèl   ual-o   kener etel
       unwashed   hand-INS   be-PTCP bread eating
       'eating bread with unwashed hand(s)'   (Munich Codex 22ra)
    b. Az   zeretet-bǫl val-o   harag
       the   love-ELA   be-PTCP anger
       'anger out of love'   (Székelyudvarhely Codex 98v, 1526-28)
    c. titk-on   val-o   taneythwanya
       secret-SUP be-PTCP disciple.POSS.3SG
       'his secret disciple'   (Winkler Codex 114r, 1506)

Already at this stage, PP complements of deverbal nouns also appear with *való*, (7), and these would be even more difficult to construe as regular predicates in copular clauses.

(7) a. az-on   val-o   feeltemben
       that-SUP be-PTCP fear.POSS.1SG.INE
       'in my fear of that'   (Jordánszky Codex 25, 1516–1519)
    b. ez   vÿlag-tol val-o   el   zakadas
       this   world-ABL be-PTCP away tearing
       'separation from this world'   (Booklet 13r, 1521)
    c. az   mv   Ellensegvnk-ǫn   val-o   bwzzw allasra
       the   our   enemy.POSS.1PL-SUP be-PTCP revenge standing.SUB
       'on taking revenge on our enemy'   (Székelyudvarhely Codex 27v)

I take these data to suggest that *való* is no longer simply a participle at this point in its history, but a general functional head that licenses pre-nominal modifiers even when they are not participial clauses. I will return to the structure of such modifiers in Sect. 3.

It is important to note that directional complements often appear without *való* as modifiers of deverbal nouns, as in (8), and there is a variation even with nouns like

falling or *going*, (9)—which often do not have *való* (or any other licensor) in Modern Hungarian in their event reading. In Modern Hungarian, sometimes we do find *való* with such deverbal nouns and I will briefly return to those data and their relation to the relative frequency of the same construction in Old Hungarian in Sect. 4.

(8) a. viadal-ba mėnès=nèlkùl
    fight-ILL going=without
    'without going into a fight'   (Vienna Codex 24, 1416/1450)

(9) a. ketseg-ben val-o   esesnek
    despair-INE be-PTCP falling.DAT
    'for falling into despair'   (Bod Codex 5r, early 16th c.)
   b. fÿam-hoz   ual-o   menesǫmet
    son.POSS.1SG-ALL   be-PTCP going.POSS.1SG.ACC
    'my going to my son'   (Kazinczy Codex 6v, 1526-41)

In sum, we can say that there is a categorial distinction between nominal and PP modifiers, where only the former appear with *-i*, and all the PPs appear with *való*. This is the original state of Old Hungarian that begins to change by the end of the period.

2.2 Middle Hungarian

Nouns are still used with *-i* as modifiers in Middle Hungarian, however, the general use of *való* is starting to change from the beginning of the period, slowly giving way to a diversification in licensor heads.

There is a change that takes place at the end of the Old Hungarian period and continues to completion in Middle Hungarian, and it is the replacement of *való* with another copular root as the adjectival participle. Another copular root appears in the paradigm in the form *levő* (*lévő*), which is morphologically formed with the copular root *le(v)*– and the *–ő* participial ending (the high vowel counterpart of the *–ó* found in *való*). The appearance of *levő* reduces the number of contexts *való* appears in, as it is replaced in its original participial function.

Predicative PPs are overwhelmingly used with *levő* starting in Middle Hungarian, (10), although there is some variation throughout the period, (11). Whether the variation is dialectal or can be found within one dialect as well needs further investigation.

(10) a. Az   Gondolatok   kerol   leu-o   uetkek
         the   thought.PL   around   be-PTCP sin.PL
         'the sins (being) around thoughts'   (Thewrewk Codex, 1531)
     b. az   ablakom-on   lév-ő   kis   lyukon
         the   window.POSS.1SG-SUP   be-PTCP small hole.SUP
         'on the small hole (being) on my window'   (Witch trial 82, 1732)

(11) az   keze-ben   valo   ket   edenybül
      the   hand.POSS.3SG-INE   be-PTCP   two   pot.ELA
      'from the two pots in her hand   (Witch trial 58, 1709)

   Complement and adjunct PPs are generally used with *való*, as illustrated in
(12) and (13), respectively. This is true for PPs that involve suffixes and those that
have the morphologically freer postpositions as well.

(12) a. Az   hírek-rül   való   tudósítását
         the   news-DEL   be.PTCP   reporting.POSS.3SG.ACC
         'his reporting about the news'   (Barkóczy letter 3., 1698)
     b. Boszorkanyok-kal   való   cimbiralasokatt
         witch.PL-INS   be.PTCP   chumming.POSS.3SG.ACC
         'their chumming up with witches'   (Witch trial 28., 1715)

(13) a. kedwek   zerintt   walo   walazzok
         liking   according.to   be.PTCP   answer.POSS.3PL
         '(their) answer to their liking'   (Telegdy letter 101., 1590)
     b. ez-előtt   valo   üdőkben
         this-before be.PTCP time.PL.INE
         'at times before this'   (Witch trial 44., 1732)

   It is with postpositions that can refer to time, like *előtt* 'in front of, before' that
-i begins to slowly spread during this period and later, (14). We still find a lot of
time denoting PPs with *való* (and some with *levő* as well), (15), but the first
systematic uses of *-i* with postpositions belong to this group.

(14) Az-előtt-i   leveleidre
      that-before-MOD letter.POSSPL.SUB
      'to your previous letters'   (Károlyi letter 24, 1704)

(15) Az   el-mult   Pünkösd   előtt   való   héten
      the   away-passed Whitsun before.at be.PTCP   week.SUP
      'on the week before last Whitsun'   (Witch trial 13, 1724)

This is probably not an accident but an expansion of the use if –*i* with various time denoting nouns and adverbs, like *tegnap-i* 'yesterday's', *tavaly-i* 'last year's', *mostan-i* 'present', etc. The first few examples in the corpus are with simple PPs, as (14) shows. Spatial postpositions, or rather postpositions in their spatial use, are not yet used with -*i* in Middle Hungarian (at least corpus searches do not result in any hits), that replacement is a change that takes place in early Modern Hungarian.

2.3   Early Modern Hungarian and Later

In Early Modern Hungarian, predicative PPs often appear with the adjectival participle *levő/lévő*, (16)—that is, they are often clausal. A novelty is the use of the suffix -*i* with postpositional PPs as modifiers, as in (17). In this construction, -*i* spreads to spatial PPs so that its use widens again.

(16) az   keze alatt   lév-ő   gyűjtővel
      that   hand under   be-PTCP collector.INS
      'with the collector under his watch'   (Hungarian Historical Corpus: Registry, 1783)

(17) a'   halhatatlanok fold   alatt-i   palotái
      the   immortal.PL   ground   under-MOD castle.POSS.PL
      'the immortals' castles under the ground'   (HHC: Bolyai 1817)

Complement PPs are productively used with *való*, (18), but -*i* begins to appear in this context as well, (19).[5]

(18) a. az   emberek-től   való   félelem
         the   people-ABL   be.PTCP fear
         'fear from people'   (HHC: Kovács 1775)
      b. ez   az   Isten ellen   való   zúgolódás
         this   the   God against be.PTCP grumbling
         'this grumbling against God'   (HHC: Őri Fülep, 1788)

(19) sors ellen-i   zúgolódás
      fate   against-MOD   grumbling
      'grumbling against / discontent with fate'   (HHC: Huszti 1923)

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[5]According to Klemm (1928) and others, grammar writers even advocated for using –*i* with oblique suffixes in order to reduce the extensive use of *való*, which still had a wider distribution in the early 19th century. This resulted in lexicalized forms, like *nagy-ban-i* [big-INE-MOD] 'wholesale', a word that is still used today.

At this time, -*i* is also used with adjunct PPs that refer to space or time, (20), the earliest examples from the corpus are from the beginning of the 19th century.

(20) a. a'   szekér   mellett-i   gyalogolás
          the   wagon   beside-MOD   walking
          'walking beside the wagon'   (HHC: Dugonics 1820)}
      b. az   éjfél   előtt-i   álom
          the   midnight   before-MOD   dream
          'the dream before midnight'   (HHC: Horváth [1809]1967)

It is during the Modern Hungarian period that we arrive to the present overlapping distribution between (i) -*i* and *levő* with predicative PPs and (ii) -*i* and *való* with adjunct and complement PPs. The old distinction between PPs vs NPs as modifiers is no longer a clear-cut distinction between different modifier categories, and -*i* seems to have taken over as the most generalized licensor.

3 The Rise of -*i*, the Decline of *Való*: Diversification in Licensing

The changes that have taken place in the distribution of prenominal modifier PPs are both syntactic and semantic, and they have resulted in a diverse system, where the licensor head is determined by syntactic, morphological and semantic factors.

First of all, predicative PPs may appear in Modern Hungarian as predicates in a prenominal participial clause with *levő* as the copular head in it. Diachronically, *levő* became used as a suppletive form in the paradigm after the grammaticalization of *való* into a generally used functional head that appeared with almost all PP and adverbial modifiers of nouns. I assume that particular grammaticalization to have taken place by the Old Hungarian period since non-predicative complements PPs were used with *való* at that time already as was shown in Sect. 2.1.2. However, throughout the Old Hungarian period *való* was still used with predicative PPs as well, *levő* only began to take over in Middle Hungarian (Hegedűs 2016). Later, with the spread of -*i* to various temporal and spatial uses of PPs as modifiers, the option to have -*i* license prenominal predicative PPs also appeared, but that seems to have only happened by the beginning of the 19th century.

As far as the syntactic change is concerned, the grammaticalization and reanalysis of *való* into a general modifier head meant that there were two options to fill the head of the functional projection hosting pre-head modifiers of the relevant types, (21), (see Kenesei 2014 as well for this structure of –*i*).

(21)   [DP [ModP PP [Mod' [Mod –*i/való*   ] [NP N]]]]

I assume that the distribution of the two morphemes was first based on the syntactic category of the modifier: *való* was used with PPs and adverbs since it

grammaticalized in a context where it used to only appear as the copula with those predicates. In the Old Hungarian period -*i* was only used with nominal modifiers; this is the context from which it expanded, while *való* became more restricted.

The changes in their distribution later are mostly semantic in nature, although first the categorial divide had to disappear. The functional head -*i* began to spread to temporal modifiers, irrespective of their category. Adverbs and postpositions with temporal meaning started to have uses with -*i* as well, starting out mostly with those temporal adverbs that were nominal in nature, like *holnap* 'tomorrow'. Once the suffix spread onto temporal PPs, it could also appear with predicative (stative) locative PPs and then later it came to be generalized to most contexts. At the same time *való* became the more restricted option with postpositions, although it is still widely used with suffixal PPs, a morphological environment that -*i* is banned from. With postpositions that are not case suffixes, *való* is only used with complements or adjuncts of dynamic event nominalizations.

Of course, this is just the basic outline of the morphosyntactic and semantic changes relevant to modification and to the structure of PP-modifiers. With the development of new digitized and parsed corpora, a step-by-step analysis (supported with numerical data) will be possible in the near future. The changes outlined here, however, give a general overview on the kind of grammaticalization processes that could overwrite a seemingly well-established and stable pattern that was observable in the Old Hungarian data.

These changes meant a basic change in the licensing of prenominal modifiers in the language.[6] It also meant that pre-head modifiers are licensed in most contexts with an overt morpheme, depending on their category and their relation to the head noun. In some contexts, however, no such morpheme is required, which is the second puzzle to consider concerning PPs as modifiers.

4   A Synchronic Puzzle: The Lack of -*i* with Directional and Goal PPs

As Kenesei (2014, 2015) shows, -*i* suffixation is productive with PPs, there is, however, a seemingly curios absence of -*i* with PPs expressing goal or direction. Locative PPs and those expressing Source can easily be affixed.

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[6]At the same time, post-head complements and adjuncts are claimed to have become slightly more frequent throughout the written period (Simonyi 1914; Honti and Varga 2012), although there is no exact numerical data to fully support that claim. This tendency is in accordance with the general change from a head-final language toward a more head-initial one, allowing for post-head complements and adjuncts in the NP as well.

(22) a. *a   Pál   elé-i   futás
          the   Paul before.to-MOD   running
          'running (to) before Paul'
      b. *a   réten át-i   futás
          the   field across-MOD   running
          'running across the field'
      c. a   Pál   mögül-i   futás
          the   Paul behind.from-MOD   running
          'running from behind Paul'   (cited from Kenesei 2014: 228; glosses mine)

I would like to argue that the lack of suffixation with these PPs may be due to two distinct reasons. On the one hand, directional/goal complements of deverbal nouns expressing complex events do not need an overt functional head (either -i or *való*) to be licensed prenominally for a syntactic reason. Although the presence of *való* has been a possibility throughout the written period of the language, it is not an obligatory solution. On the other hand, the fact that -i cannot be used with adjunct goal/direction PPs, may be due to their semantics since -i has for a long time been used with modifiers that are stative.

The lack of -i (or another licensor) with directional complements of deverbal nouns can be explained if we assume that (at least some of) these complements already precede the head before it undergoes nominalization. The intuition is old (Klemm 1928 already posits this for some historical data) and so is the possibility for this order without *való* from Old Hungarian, such as the one repeated from earlier in (23). The structure of such nominals involves movement of the directional PP to a preverbal position, which I take to be the same as the one hosting verb modifiers in Modern Hungarian (and in earlier stages too, to some extent; Hegedűs 2015; see É. Kiss 2006 on PredP), and then nominalizing the whole phrase. The deverbal noun in these cases is the nominalization of a complex event, one that has an endpoint.

(23) viadal-ba   mėnès
      fight-ILL   going
      'going into a fight'   (Vienna Codex 24)

(24)
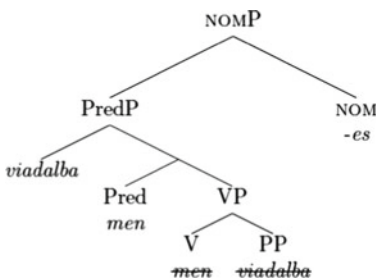
Since directional complements of motion verbs are generally preverbal in neutral cases, we can derive the lack of -i (or *való*) from this movement. Since the PP is not

modifying a noun structurally, it does not need to be licensed as it would have to be in the nominal extended structure. It is also an option, however, to first nominalize the verb and then add the goal PP later in the derivation. In this latter case, *való* is hypothesized to be present, since the PP modifies a nominal category, but the structural difference corresponds to a semantic one with respect to the obligatoriness of the goal/directional PP and therefore the goal-orientedness of the nominalization.

Interestingly, Old Hungarian seems to have had quite some variation when it came to the presence of *való* with directional/goal complements of nouns derived from motion verbs, e.g. (8)–(9). This, however, correlates nicely with the fact that the position of the verb modifier was less generalized, and only particles seem to have been consistently preverbal in neutral sentences in Old Hungarian (Hegedűs 2015). With the generalization of this movement of goal/directional complements, the lack of a licensor in the nominal counterparts is also expected.

The explanation above applies to complement PPs of motion verbs, but with adjuncts, the situation is different since there is no syntactic reason to have the PP preverbally before nominalization takes place, as adjuncts are not often verb modifiers in the language. Source Ps are generally adjuncts, therefore we expect the presence of a licensing head, and *-i* and *való* are both options with postpositions, (22c) and (25), while only *való* is possible with suffixal PPs, (26).

(25)   a   ház   mögül   való   futás
       the   house   behind.from   be.PTCP   running
       'running from behind the house'

(26)   a. *a   ház-ból-i   futás
            the   house-ELA-MOD   running
       b. a   ház-ból   való   futás
            the   house-ELA   be.PTCP   running
            'running out of the house'

Directional or goal adjuncts are not better than directional complements with respect to the possibility of *-i* suffixation; the examples in (27) are still ungrammatical. Unless we want to argue for all directional PPs to move to PredP, regardless of whether they are adjuncts or complements, we cannot attribute this ungrammaticality to the same syntactic reasons we used with complements. The same proposal would not work completely, as (27b) does not have an alternative without any licensor head, (28b). In fact the only option to save that example is to have the directional PP postnominally, (28c).

(27) a. *a   tenger   fölé-i   repülés
        the   sea   above.to-MOD flying
        'flying (to) above the sea'
     b. *a   folyó alá-i   alagút
         the   river under.to-MOD tunnel
         'tunnel (to) under the river'

(28) a. a   tenger   fölé   repülés
        the   sea   above.to   flying
        'flying (to) above the sea'
     b. *a   folyó alá   alagút
        the   river under.to tunnel
     c. alagút   a   folyó alá
        tunnel   the river under.to
        'tunnel under the river'

   Since it would be strange to claim that the ungrammaticality of these forms follows from some morphological constraint, I believe it is rather due to a semantic mismatch between goal or direction PPs and *-i*. This also leaves us with an unexplained case at first sight, however: the case of *keresztül* 'across, through, via'. This is a directional postposition but it can be suffixed with *-i*, (29).[7]

(29) a. a   rét-en   keresztül-i   gyaloglás
        the   field-SUP   across-MOD   walking
        'walking across the field'   (cited from Kenesei 2015: 78)
     b. a   garázskapu-n   keresztül-i   betörés
        the   garage.gate-SUP across-MOD   in.breaking
        'breaking in through the garage gate/door'

   One might find a morphological reason for this: the original morphological composition of *keresztül* is of *kereszt* 'cross' and *–l*, which is a manner adverbial suffix and not a spatial one, the spatial meaning coming from the meaning of the noun.[8] But the complex adverbial element has grammaticalized into a pospositional head, thus, we would expect it to behave like other postpositions syntactically, irrespective of its origin. Interestingly, this is a postposition that can denote a route (or duration when it refers to time), and route denoting postpositions can be different from goal denoting ones as they do not express the result of an event, they refer to the process (they are not verb modifiers, either). *Keresztül* does have a goal denoting particle use, and in that use, the particle precedes the nominalization without a licensor, since particles do not need one, as in (30). In (30) we are dealing

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[7]I would like to thank an anonymous reviewer of this paper for providing the example in (29b) and for pointing out that *keresztül* 'across, through' may need an explanation different from the other goal PPs.

[8]I thank the editors of the volume for this comment and for raising the possible parallel with English *across*.

with a goal-oriented event, where the person ended up on the other side of the field, reaching an end-point. This end-point is not implied in the examples in (29), the PPs denote routes, and this semantic difference is relevant in the distinction whether -*i* is allowed with a PP or not.

(30) keresztül-gyaloglás a   rét-en
      across-walking   the   field-SUP
      'walking across the field/crossing the field'

This suggests that the compatibility of *keresztül* 'across' with the suffix -*i* in examples like (29) might actually also be due to semantic reasons, which may, in turn, correspond to structural differences in modification. How exactly this difference is represented syntactically and what are the semantic restrictions on the use of each of the possible licensing heads remains to be explored in detail.

5   Conclusions

This paper set out to cover two issues regarding the distribution of the suffix -*i* with prenominal PP modifiers. One issue was the change in its distribution throughout the written period of Hungarian, whereby it has become the most general licensor head for PPs and adverbs used prenominally. I showed that Old Hungarian had very limited use for -*i*—only its original and still primary (Kenesei 2014) use as a modifier functional head for NP + NP (N + N) constructions, in all other contexts we initially found *való*, the adjectival participle of the copula. Data from Old, Middle and Early Modern Hungarian were considered in outlining the syntactic and semantic changes that lead to the current properties of -*i* with PPs. I proposed that the reanalysis of *való* into a functional head was slowly followed by changes in its originally wide distribution, with a new copular form used as the head of participial clauses with predicative PPs and -*i* used in a growing number of contexts, starting with temporal PPs and expanding on to almost all types of postpositional modifiers.

After the discussion of the diachronic changes, I also considered the lack of -*i* with goal and directional modifier PPs in Modern Hungarian and argued that the lack of -*i* with goal and direction PPs is syntactic in some cases and semantic in others. The syntactic restriction is related to a generalized movement of goal and directional complements into the verb modifier position, which can take place before nominalization happens, resulting in the lack of -*i* in such cases.

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Hybrid Categories and the CIT

Henk van Riemsdijk

Abstract One of the principles believed to be a basic cornerstone of the theory of the structure of phrases is the Categorial Identity Thesis (CIT), see in particular Grimshaw (1991, 2005) and Van Riemsdijk (1990, 1998). The CIT states that the categorial status of functional heads in extended projections must be identical. In other words, functional heads in nominal projections all the way up to the highest DP shell must be nominal in nature. And correspondingly functional heads in verbal projection all the way up to the clausal shells must be verbal in nature. There is a class of constructions, well-known, that seems to counterexemplify the CIT. The most obvious example of this kind, perhaps, is the existence, in English, of nominal and verbal gerunds. The present article suggests that a natural solution to this problem can be found if the theory of syntactic representations is rethought radically. The central idea is that syntactic representations should be thought of in terms of monovalued syntactic features and a multi-tiered arrangement of these features in ways that are close in spirit to Element Theory as developed for phonology in the 1980 s.

Keywords Categorial identity thesis (CIT) · Element theory · Extended projection · Gerunds · Obligatory contour principle (OCP) · Tiers

1 Preliminaries[1]

The Categorial Identity Thesis (CIT), developed in Grimshaw (1991, 2005) and Van Riemsdijk (1990, 1998), states that the categorial status of functional heads in extended projections must be identical. In other words, functional heads in nominal

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[1]This short note is dedicated to my friend István Kenesei, enlightened linguist and invaluable fighter for the success of generative grammar in Hungary and well beyond. Thanks are due to an anonymous reviewer for a number of constructive comments. Errors of any kind remain, as usual, my own.

H. van Riemsdijk (✉)
Arezzo, Italy
e-mail: villasalmi@gmail.com

projections all the way up to the highest DP shell must be nominal in nature. And correspondingly functional heads in verbal projection all the way up to the clausal shells must be verbal in nature.

There is a class of constructions, well-known, that seems to counterexemplify the CIT. The most obvious example of this kind, perhaps, is the existence, in English, of nominal and verbal gerunds. Gerunds are all built on a verbal stem with the suffix –*ing*. But not all –*ing* forms are gerunds. Take the following examples:[2]

(1) a.   John is walking.   progressive form
    b.   the train now standing at platform 5   reduced relative
    c.   John destroying the book annoyed everybody.   verbal gerund
    d.   John's destroying of the book annoyed everybody.   nominal gerund

In the present discussion we will leave the progressive and the reduced relative aside.

Verbal gerunds take accusative objects, allow for adverbial modification, do not take articles nor adjectival modification:

(2) a.   John quickly/*quick destroying the book…..
    b.   *The quickly destroying the book….
    c.   *John quickly destroying of the book….

Nominal gerunds, on the other hand, cannot take an accusative object, they disallow adverbial modification, but they do take articles and allow adjectival modification.

(3) a.   John's quick/*quickly destroying of the book
    b.   The quick destroying of the book

In other words, verbal gerunds are V-projection-like in the lower reaches of the projection and exhibit typical nominal properties in the higher functional shells. But nominal gerunds are nominal in the lower reaches and also show nominal properties in the higher shells.

There is, however, a third type of gerund, call it a hybrid gerund, which is like a verbal gerund in the lower domains of the projection but like a nominal gerund in the higher zones:

(4)   John's quickly destroying the book

On the assumption that the hybrid gerund form as such is verbal, this means that the higher functional shells switch from verbal to nominal. This implies that hybrid

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[2]The examples are borrowed from Alexiadou (2013: p2 exx (1-4)).

gerunds constitute a problem for the CIT. For discussion see i.a. Grimshaw (2005), Alexiadou (2013) and Pires and Milsark (2017).

In my contribution I will discuss this puzzle and suggest a way of approaching this puzzle that, while not explaining the problem of hybrid categories entirely, may point the way to a possible and plausible solution. This approach is based on a rather fundamental rethinking of the nature of syntactic representations. The standard view, originally proposed in Chomsky (1970), was based on two binary categorial features: [±N] and [±V]. Together, these features define the four major categories N, V, A, and P in the following way:

(5)

	+N	–N
+V	A	V
–V	N	P

As I have argued in Van Riemsdijk (1988) the categorial features should be replaced by a set of mono-valued, privative features. Working out more details of a representational system along these lines turns out to permit a rather straightforward account of hybrid gerunds.

This note starts with a discussion of what I call syntactic Element Theory. What I mean by that is an alternative approach to the representation of syntactic categories that is based on monovalued categorial features. This will be the topic of Sect. 2. Section 3 will describe how syntactic Element Theory can be used to deal with hybrid categories, in particular with the problem of hybrid gerunds. In Sect. 4, a brief conclusion will be presented.

2   Syntactic Element Theory and the CIT

Categorial identity is the observation that the spine of extended projections consists of nodes that carry the same categorial features: functional heads (and their projections) of nouns are nominal, functional heads of verbs are verbal etc., see Grimshaw (1991, 2005), Van Riemsdijk (1990, 1998). Extended projections are what counts for endocentricity and maximality, intermediate maximal projections (to preserve the one-to-one relation of (functional) heads and their phrases) are unimportant (Grimshaw) or abolished (Van Riemsdijk). Categorial identity can be seen as the major principle that guarantees the internal cohesion of phrases.

Assuming NEG to be a functional head in the verbal projection, the CIT implies that NEG must carry the verbal categorial feature(s). But unlike, say, auxiliaries, which are clearly verbal, there is no straightforward way to identify NEG as either verbal or nominal or, indeed, to assign it any categorial status at all other than NEG. But assigning it the category ́NEG´ is obviously a lazyman's solution, at best. The CIT, however, forces the issue. And indeed, just to stick to this example, there are languages in which identification of the categorial status of NEG is transparently

possible. As a matter of fact, it shows up as a verbal element. Take Finnish (and several other Finno-Ugric languages.[3] The negative verb is conjugated in moods and personal forms in Finnish. In the present tense, the form of the main verb is just the stem of the present form without a personal ending, e.g. lähden—en lähde ("I leave"—"I do not leave"), menisit—et menisi ("you would go"—"you would not go"), syönee—ei syöne ("he/she may eat"—"he/she may not eat"), ottakaamme—älkäämme ottako ("let's take"—"let's not take"). In the imperfect tense, the form of the main verb is the past participle, e.g. otin—en ottanut ("I took"—"I did not take"), otimme—emme ottaneet ("we took"—"we did not take"). Obviously, the NEG-element inflects for person and number like auxiliaries do.

As in physics, the force that ensures the cohesion of extended phrases has a counterpart, the force of repulsion. Repulsion is active at the places where an extended phrase is embedded in a broader syntactic context. An extended nominal projection, call it DP, will be the object of a verb in a verbal projection, for example. Put differently, N does not take N-projections as complements, V does not take (bare) V-projection complements (modulo restructuring (fusion) or movement (separation)).[4] This type of effect is statable as *XX, and it is natural to see this as a manifestation of a large family of phenomena often referred to as haplology.[5] There are many problems in this domain, in particular sorting out when haplological effects are active and when they are not. Historically, haplology is mostly detected in morphological or morpho-syntactic phenomena. But it is plausible to consider other sets of phenomena in these terms as well, though if means interpreting haplology in a more abstract way. I think it is plausible, for example, to consider the Doubly Filled Comp effect as an instance of haplology, for example. The reason is that in languages that have the DFC effect, wh-phrases in Spec, CP will yield the effect when C is instantiated by a complementizer, generally a morpheme of nominal origin. But when Verb Second style processes put a verbal element into C the DFC effect disappears. See Van Riemsdijk (2008) for more discussion.

The categories suggesting this interplay of cohesion and repulsion are N and V. When we turn to the two other major categories, AP and PP, a somewhat different picture seems to emerge. Ps and PPs act like jokers: they cooccur with every other category, in other words, P/PP is the most versatile category. P can take DP, PP and VP/CP as its complement and PP can be a complement to V, N, A and P. Inversely,

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[3]The examples given here are from: https://en.wikipedia.org/wiki/Negative_verb. The paradigm of the negative auxiliary is as follows:

Indicative:	1SG: en	2SG: et	3SG: ei
	1PL: emme	2PL: ette	3PL: eivät
Imperative :	1SG: ꬸ	2SG: älä	3SG: älköön
	1PL: älkäämme	2PL: älkää	3PL: älkööt

[4]A metaphor that comes to mind when we think about the interplay of cohesion and repulsion is magnetism, cf. Van Riemsdijk (1998).

[5]See also Neeleman and Van de Koot (2017).

A/AP are "outside" the head-complement system in that they essentially only occur in predicative relations. They cannot be complements to any kind of head, and if they take a complement, then that complement has to be a PP (or an obliquely case-marked DP, which I take to be essentially like a PP) or CP, where CP = PP, cf. Emonds (1985).

This means that there is a clear asymmetry among the major categories: P/PP is the most versatile category, suffering least from *XX-effects, A/AP is the least versatile category, suffering most from *XX effects. This was the reason I argued for replacing Hoekstra's Unlike Category Constraint (UCC)[6] by the Unlike Feature Constraint (UFC), see Van Riemsdijk (1988). The idea was quite simple: instead of taking the four major categories as atomic units, we should look at the categorial features [±N, ±V]. The observed asymmetry can then be accounted for by limiting the *XX effect to the positive values of the categorial features. This idea in turn points unequivocally in the direction of monovalued, privative features. While I had realized this in my (1988) article, I inexplicably set the idea aside in my (1998) article. I am currently trying to make up for that mistake.

The primitive system developed in Van Riemsdijk (1988) was based on the assumption that the monovalued features [N] and [V] could be represented like autosegments in phonology and that the *XX effects were due to the ***Obligatory Contour Principle*** (OCP). This way of handling things was directly inspired by Vergnaud's work on vowel harmony (1976, 1980). For a first translation of a Vergnaud-style system, see Figs. 1 and 2.

One aspect implicitly present in the overall picture is not directly reflected in representations of the type shown in Fig. 1, namely the idea that the OCP forces a kind of template on syntactic structures. Indeed, one might say that the core of phonological representations, sequences of syllables, are, essentially, of the type CVCVCVCV. In very much the same way, we could say that, again simplifying to the extreme, the core of syntactic representations is a template of the type NVNVNVNV.[7]

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[6]Hoekstra's idea was to generalize from N and V to all four major categories, assuming that P/PP and A/AP have essentially the same properties as N/DP and V/IP, see Hoekstra (1984).

[7]In a GLOW/talk Kayne (1982) presented a similar idea, though more from the perspective of semantics and the lexicon than with phonology in mind. The reviewer points out, correctly, that the templates which I am suggesting here constitute the basic skeleton for both syntactic and phonological structures, are misleading in the sense that CVCVCVCVCV is generally taken to be purely linear. NVNVNVNVNV on the other hand might be taken to be non-linear in the strict sense in that the V is generally assumed to govern the N (or its phrase NP/DP) but not vice versa. And in the case of the template HMHMHMHM we have a purely hierarchical situation in which each lexical head H is contained in a (maximal) phrase M, which in turn is governed by another lexical head H. But the linearity of the CVCVCV tier is far from uncontested. Indeed, assuming syllables, as they often are, to be built up by a nucleus which together with a coda constitutes a rhyme, and furthermore assuming the rhyme to be 'merged' with an onset to form the complete syllable, makes the structure of the syllable hierarchical. And in turn that suggests that syllables are not linearly aligned, as mostly thought, but indeed constitute a hierarchical structure, see in particular Vergnaud (2003) for illuminating discussion. Vergnaud even goes so far as to suggest that a sequence of syllables is just as recursive as syntactic structures are generally thought to be.

Fig. 1 Translating the binary features into privative features
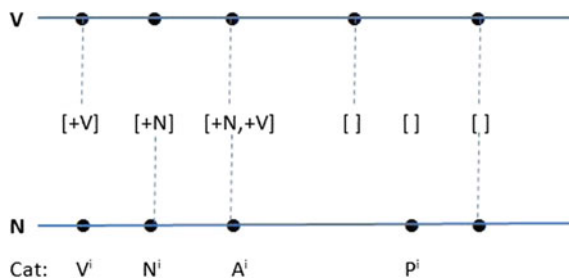
Fig. 2 An 'autosegmental' account of OCP effects
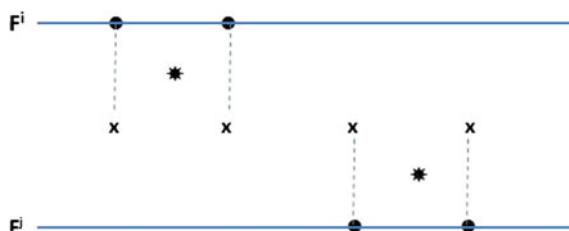
This way of thinking about syntactic structure is also attractive in another sense. In Muysken (1983) the idea was presented that the two ´poles´ of a complex (extended) phrase are best characterized in terms of two features which he called [±Projection] and [±Maximal].[8] Thinking about these two features in terms of a monovalued system, we could replace them by [H] for 'head' and [M] for 'maximal projection'. And that would then yield a second basic template for syntactic structures: HMHMHMHM.

With this idea as the broad background, we may think of syntactic representations in terms of an array of tiers, where each tier is a template. In particular, I will assume that terminals derive their syntactic status by being (or not) linked to some element on those tiers, I will call the one the categorial tier (CT: NVNVNV), and the other the level tier (LT: HMHMHM). The core syntactic units that are thereby characterized I will refer to as complete syntactic units (CSUs). In the example below I will illustrate this for the structure of the maximal projections of N and V.[9] I have added a 'tier' for heads, lexical, semi-lexical and functional, as well as a tier as a tier called the merge tier. This is principally for convenience to show how the tier representation relates to canonical syntactic trees, but maintaining a Merge Tier (MT) and a Head Tier (HT) is probably redundant and can ultimately be dispensed with entirely. This is illustrated in Fig. 3.

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[8]In some form or other this idea was incorporated both in Grimshaw's and my work on extended projections (Grimshaw 1991; Van Riemsdijk 1990). For more discussion of Muysken's proposal, see also Muysken and Van Riemsdijk (1986).

[9]Purely for convenience these are shown in the same figure.
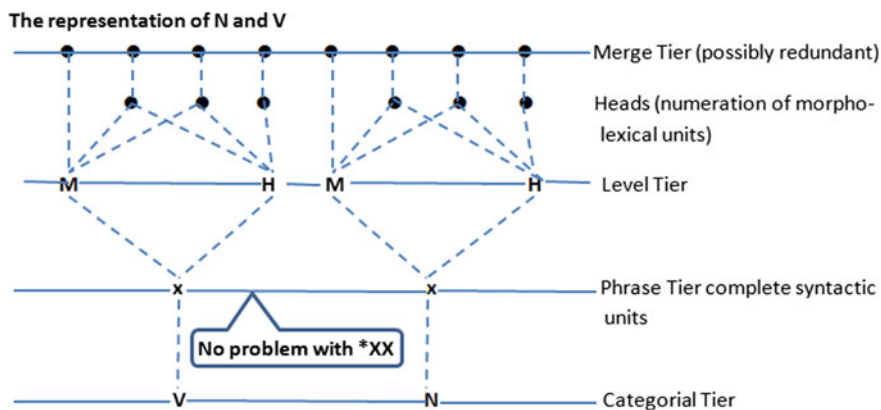
Fig. 3 The tiers of syntactic structure

If, in Fig. 3 we look at the two 'segment slots', we see that no OCP violations arise as on the Categorial Tier the N and the V are adjacent, that is, neither *NN nor *VV applies.[10] The points on the head tier can be multiple. There is one that is uniquely linked to the lexical head, and there is one uniquely linked to the maximal projection position on the merge tier. Any intermediate heads are either functional or semi/lexical, where the degree of functionality or semi/lexicality is determined by their relative proximity to either the lexical head or the maximal projection node.[11]

Figure 4 shows the general structure of AP. This is so because its CSU-slot is both N and V, hence OCP will rule the structure out regardless of whether the next slot is and N or a V. This accounts for the minimal syntactic versatility of AP. See Fig. 4.

Due to limitations of space, I will omit a discussion of the representation of PP.[12]

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[10]It is not clear that the OCP does any useful work on the Level Tier. I leave that open here.

[11]For the notion of semi/lexical head, see Van Riemsdijk (1998) as well as the various articles in Corver and Van Riemsdijk eds. (2001) and many references cited there. What remains unresolved here is the question as to how the difference in degree between the lexical heads, the functional heads and all the head-types in between escape the OCP-effect. For the time being I will simply assume that the difference in degree is sufficiently large to defeat the OCP-effect. What is intended, however, is the idea that the relative proximity of an intermediate head node to either M(ax) or (lexical) H determines the relative degree of functionality/lexicality. Clearly, a more precisely formalized representational system should be devised for these notions.

[12]The issue is complicated by the fact that P is sometimes a pure lexical head, as in temporal adverbials, for example, but sometimes it is a high functional head as in prepositional objects. See Van Riemsdijk (2015) for discussion. More generally, the primitive system alluded to in the text is essentially about heads and complements. Not only are Ps an interesting 'hybrid' category that does not fit straightforwardly into the system, as discussed in my article mentioned above, but much more generally, the complete system of modification is outside this system. My own intuition is that this is precisely the right way of looking at it. The idea is old. See Jacobson (1964) and Keyser (1968).
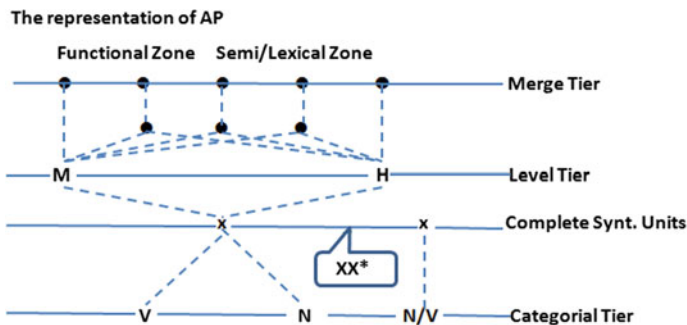
Fig. 4 How A-projections cannot escape the OCP

3   The Element Theory Approach to Hybrid Categories

Let us now turn to the issue of hybrid (or mixed) categories. Take the case of hybrid gerunds. I will assume without further discussion that hybrid gerunds constitute one single extended projection.[13] The problem, of course is, that the inside of the extended projection looks very much like a verbal projection in many ways, but externally it behaves like a DP. For extensive discussion, see. Grimshaw (2005), Alexiadou (2013) and Pires and Milsark (2017). At first sight this sounds like a serious infraction against the CIT as the spine of this single extended projection seems to start off as a verb and somewhere halfway up changes to a noun. However, if we use the autosegmental, tier-based way of representing syntactic phrases, we see that there is no problem, as shown in Fig. 5.[14]

Reading Fig. 5, what the notion of hybrid category boils down to, if we compare it with the way a non-hybrid N-projection or V-projection is represented (cf. Fig. 3), a hybrid phrase has two slots on the Complete Syntactic Unit (CSU) but

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[13]This assumption is, of course, not a trivial one. For general considerations on this type of questions, see Van Riemsdijk (1998). But suruprisingly little has been said about possible criteria to decide the matter in the case of gerunds. One possible source of information, one might think, is extractability of the object of the gerundive verb/noun. My impression is that extraction is possible in either case: (i) Which book did you witness John's destroying (of) ___? As far as I am aware, both variants are possible. In case the verbal gerund were monoprojectional but the hybrid gerund biprojectional, one might have expected a differential grammaticality judgment. But a recent overview publication, Pires and Milsark (2017), discusses only the extractability of the subject of the gerund and notes that genitive subjects of gerunds are not extractable, which is not a surprise in view of the Left Branch Condition.

[14]The tiers are exactly the same as those in Fig. 4 above. From top to bottom: Merge Tier, Level Tier, Phrasal Tier (or Complete Syntactic Units Tier), and Categorial Tier. Note incidentally that the implied ordering of the tiers is largely an artefact caused by the two-dimensional way of graphically expressing structures that consist of multiple autosegmental tiers.

Fig. 5 Representing hybrid categories in syntactic element theory

The structure of hybrid categories

External structure: N-like   Internal structure: V-like
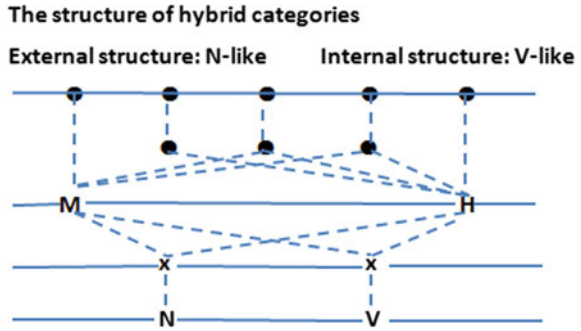
packed into a single H-M pair. A non-hybrid phrase, for example a maximal extended N-projection, has a single CSU which is connected to a single N on the Categorial Tier. We may say that hybrid gerunds retain their status of counterexample to the CIT, but it is a counterexample that is perfectly predicted to exist due to the choice of syntactic Element Theory as the best way of representing categorial structure in syntax.

4   Conclusion

I conclude that the Element Theory approach to the representation of syntactic phrases, which is restricted in important ways by the OCP, offers a quite straightforward and insightful way of representing certain hybrid phrases including nominal gerunds.

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Local Operations Deriving Long-Distance Relations: Object Agreement in Hungarian and the Genitive of Negation in Polish

Marta Ruda

Abstract Focusing on data from Hungarian and Polish, this paper discusses two seemingly long-distance relations involving a verbal head in the matrix clause and a nominal object of an embedded infinitive. In particular, in certain configurations in Hungarian a matrix ((semi-)auxiliary) verb agrees with the object of an infinitive in its complement clause. In Polish negation originating in the matrix clause affects the case value of the object of the infinitive, which surfaces as genitive rather than accusative. I argue here that these effects do not result from a long-distance operation linking the matrix verb/negation and the nominal object, but rather they are both a reflex of operations linking transitive verbs with their nominal objects and further successive linking of verbal heads in the clausal spine.

Keywords Ellipsis · Extended verbal projection · Genitive of Negation · Inherent case · Object agreement · Phases

1 Hungarian OAgr and Polish GNeg

In his (unpublished) review of my doctoral dissertation (revised and published as Ruda 2017), Professor István Kenesei notes that a number of peculiarities related to the Hungarian conjugational system still await their explanation. Among them is the issue of long-distance object agreement observed with infinitival complements, which Professor Kenesei illustrates with the example reproduced here in (1a), where the morphology of the auxiliary *fog-ja* 'will-3SG.DEF' reflects the presence and

M. Ruda
Institute of English Studies, Jagiellonian University, Kraków, Poland
e-mail: marta.ruda@uj.edu.pl

features of the embedded object *ő-t* 'she/he-ACC'. When the embedded object is indefinite rather than definite, the auxiliary lacks the marker *-ja*, as (1b) illustrates.[1]

(1)   a.   Péter nem fog-ja   akar-ni   próbál-ni meghív-ni ő-t.
               Péter not   will-3SG.DEF want-INF try-INF   invite-INF she/he-ACC
               'Péter will not want to try to invite her/him.'
       b.   Péter nem fog   akar-ni   próbál-ni meghív-ni egy nő-t.
               Péter not   will-3SG.INDEF want-INF try-INF   invite-INF a   woman-ACC
               'Péter will not want to try to invite a woman.'

Interestingly, Polish exhibits a similar type of (apparently) long-distance relations between a head in the extended verbal projection (negation) and the object of an embedded infinitive, but with the reverse pattern of morphological marking: the morphology of the object rather than of the element realising the relevant verbal head testifies to the existence of the relation. For example, in the negative sentence in (2a) from Przepiórkowski (2000:5) the embedded object *algebry* 'algebra-GEN' is genitive, unlike the accusative object in the positive polarity equivalent in (2b).

(2)   a.   Nie musisz   zamierza-ć przesta-ć studiowa-ć algebr-y.
               not   must-2SG intend-INF stop-INF study-INF   algebra-GEN
               'You don't have to intend to stop studying algebra.'
       b.   Musisz   zamierza-ć przesta-ć studiowa-ć algebr-ę.
               must-2SG intend-INF stop-INF study-INF   algebra-ACC
               'You have to intend to stop studying algebra.'

These data extend the basic set of object agreement (OAgr) and the Genitive of Negation (GNeg) contexts in Hungarian and Polish, with (3) from Bartos (1999:97) and (4) illustrating the respective patterns in simple clauses.

(3)   a.   Várok/   *várom   egy buszt.
               wait-1SG.INDEF wait-1SG.DEF a   bus-ACC
               'I'm waiting for a bus.'
       b.   Várom/   *várok   a   buszt.
               wait-1SG.DEF wait-1SG.INDEF the bus-ACC
               'I'm waiting for the bus.'

(4)   a.   Studiuję algebrę/   *algebry.
               study-1SG algebra-ACC algebra-GEN
               'I study algebra.'
       b.   Nie studiuję   algebry/   *algebrę.
               not   study-1SG algebra-GEN   algebra-ACC
               'I don't study algebra.'

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[1]The conjugational system of Hungarian is sensitive not only to the features of the subject, but also to the features of the object. Prototypically, the so-called indefinite (or subjective) conjugation is used with intransitive verbs and with verbs with indefinite objects. The definite (or objective) conjugation is used with definite objects (see, e.g., (3) in the main text). The exact feature(s) of the object which trigger the use of the definite conjugation (e.g. definiteness, specificity, person agreement) are a subject of heated debates (see, among others, Dalmi 1998; Bartos 1999; É. Kiss 2005, 2013; Coppock and Wechsler 2012; Coppock 2013; Rocquet 2013; Bárány 2015). As this aspect of the phenomenon is not of direct relevance to the present discussion, in what follows I mark the relevant feature (bundle) as [DEF/φ] and do not commit the analysis to one of the options.

Even though the data in (1) and (2) might suggest that the local relations in (3) and (4) can operate long distance, crossing CP boundaries in control structures and potentially being problematic to the phase theory, in what follows I propose that the structures involve only local applications of Agree linking lexical verbs with their nominal objects and linking successive verbal heads in the clausal spine.

In the following section I first present the basic outline of the proposal. In Sects. 2.1 and 2.2 I then show that the proposal receives some support from contexts where the chain of the successive applications of Agree along the clausal spine is broken. The former section offers a discussion of such a context in Hungarian (intervening infinitival clauses built around verbs such as *fél* 'fear'). The latter section is concerned with such a context in Polish (a type of elliptical structures). In the concluding section I touch upon some theoretical consequences of the proposal, especially in relation to the influence of inherent case on the availability of the relevant operations (Sect. 3.1) and the discussion about the nature of phases (Sect. 3.2).

2 Long-Distance OAgr and GNeg as Local Agree

Adopting the feature-sharing approach to valuation (Frampton and Gutman 2000), I suggest that the derivation of long-distance OAgr in Hungarian and GNeg in Polish involves the linking of the lowest lexical verb with its NP object by Agree and successive linking of verbal heads in the clausal spine. Employing (1) and (2) as examples, the derivation proceeds as follows: upon the merge of the lowest lexical verb and its object, Agree links the two. In the spirit of Pesetsky and Torrego (2004), by this application of Agree, value [v] is added to the [Case] feature of the object. Morphology interprets the feature [Case:v] as accusative. In Hungarian this application of Agree also values the [DEF/φ] set on V by the equivalent set on the nominal object.[2] In Polish the verb bears the [Polarity] feature, valued later on in the derivation. The diagrams in (5) and (6), where V stands for the verbal root and the v*/v/Voice heads, depending on one's approach, illustrate this stage of the derivation.

(5)   *Hungarian*   (6)   *Polish*

VP   VP

V_{meghívni}-{[DEF/φ]}   NP_{őt}-{[DEF/φ],[Case:v]}   V_{studiować}-{[Pol:_]}   NP_{algebry}-{[Case:v]}

Agree   Agree

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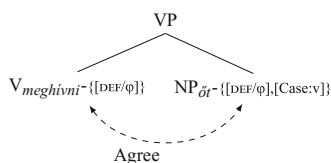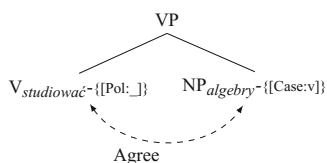
[2]In simple clauses with finite lexical verbs this is reflected in the morphology of the lexical verb, as shown in (3) in the main text above.

The remaining parts of the structures merge successively and are linked by successive applications of Agree. The feature sets relevant for the present discussion are {[DEF/φ]} in Hungarian and {[Pol:_]} in Polish.[3]

In Hungarian the successive linking of the verbs *fogja* 'will', *akarni* 'want-INF', *próbálni* 'try-INF', and *meghívni* 'invite-INF' via the intervening C and T heads results in the [DEF/φ] set on the auxiliary bearing the values originally introduced into the derivation on the embedded nominal object of the lowest lexical verb (see (7)).[4]

(7)   *Hungarian*
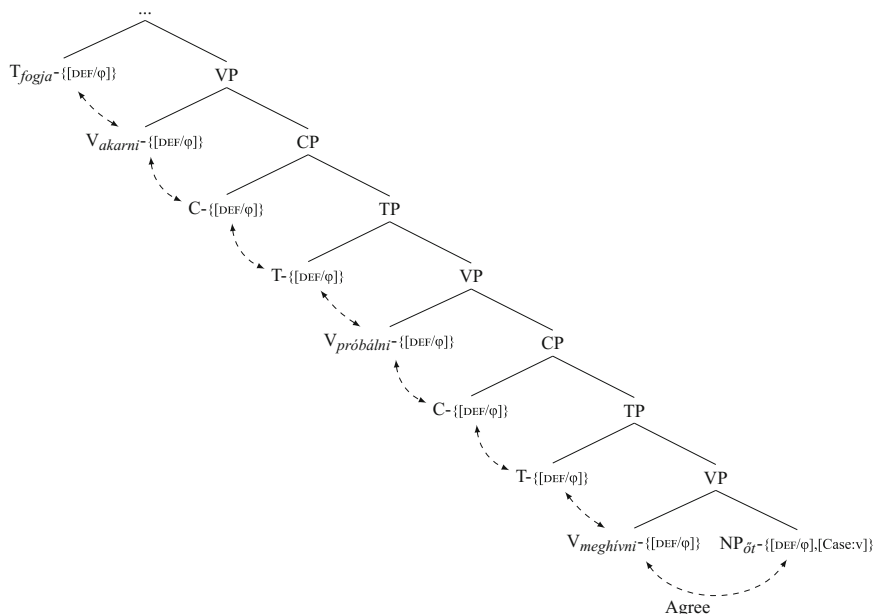
This analysis removes the issue of the violation of locality constraints on linguistic computations noted in É. Kiss (2002). In particular, showing that infinitival complements on their own trigger indefinite marking on the verb (see (8)), É. Kiss (2002:204) points out that agreement between the object of the infinitive and the matrix verb, which bypasses the intervening infinitival phrase, constitutes a violation of the A-over-A principle.[5]

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[3]The linking of these features on successive heads might be parasitic on Agree relations linking these heads for the purpose of valuation of other features (e.g. selectional features, if selection is viewed in terms of Agree).

[4] For the sake of clarity, I omit irrelevant parts of the structures.

[5]This problem arises on the assumption that the indefinite marking on the matrix verb in cases such as (8) results from valuation by the features of the infinitival complement, rather than from default valuation in the absence of an appropriate valuator.

É. Kiss (2002) suggests percolation of the [DEF] feature to the infinitival phrase as a possible solution.

(8)   Megpróbálok énekel-ni.
       try-1SG.INDEF sing-INF
       'I try to sing.'

As on the current proposal there is no direct relation between the matrix verb and the NP object, the A-over-A principle is not an issue.

In Polish all occurrences of the [Polarity] feature are valued by the [Pol:NEG] feature introduced on the Σ head (see Laka 1990). I take the value [NEG] to also be assigned to the [Case] feature of the object NP due to the NP having been linked by Agree with the verb (see (9)). The NP thus bears the [Case:v,NEG] feature, interpreted in morphology as genitive.[6]

(9)   *Polish*
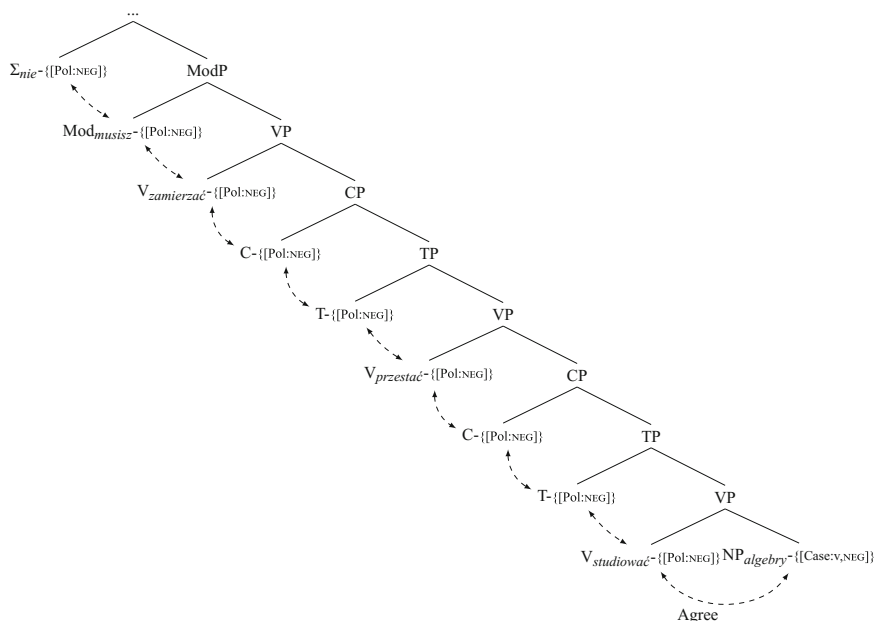
An analysis of this type provides a straightforward way of approaching the issue of multiple GNeg valuation, illustrated in (10) from Przepiórkowski (2000:9). The object control verb *uczyć* 'teach' takes accusative NP objects and infinitival

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[6]The inclusion of the [Polarity] feature in the feature matrix of C helps to avoid violations of the Phase Impenetrability Condition (see also Sect. 3.2). The presence of this feature in T on the one hand makes the derivation of the Polish data parallel to the derivation of Hungarian and on the other opens up the possibility that heads in the clausal spine in general share all of their formal features, a suggestion which requires much more detailed research. However, if future theoretical developments render postulating the [Polarity] feature on C and T superfluous, the core of the present proposal (esp. the assignment of GNeg to the object only via V) should remain unaffected.

As a reviewer notes, some other approaches suggested in the literature (taking infinitival CPs not to constitute phases or taking Agree to be able to cross phase boundaries, either in general or under certain conditions) could be employed to tackle the PIC problem.

complements. When the verb is negated, both its NP object and the NP object of the infinitive surface as genitive.

(10) a. Janek uczył Marię   lepić garnki.
          Janek taught Maria-ACC mold pots-ACC
          'Janek taught Maria how to make pottery.'
      b. Janek nie uczył Marii   lepić garnków.
          Janek not taught Maria-GEN mold pots-GEN
          'Janek didn't teach Maria how to make pottery.'

On the current proposal the applications of Agree ultimately leading to assigning the value [NEG] to the [Case] features of the object NPs relate successive verbal heads introducing the NP *Marii* and the infinitival complement. This is why accounting for multiple GNeg assignment does not require, for example, assuming that Σ enters into Multiple Agree directly with the separate NPs (see Witkoś 2008).

Przepiórkowski (2000:10) notes that the data can be more complex with some speakers in that when a positive polarity sentence with more than one accusative NP is negated, the highest NP has to be genitive (see (11)), but some other options are available to the other NPs. In particular, he reports that native speakers accept the pattern in which the first of the NPs in (11) is genitive and the other two accusative (i.e. *ochoty* 'liking-GEN' + *Marię* 'Maria-ACC' + *garnki* 'pots-ACC'), as well as the pattern in which the first and second NPs are genitive and the last one is accusative (i.e. *ochoty* 'liking-GEN' + *Marii* 'Maria-GEN' + *garnki* 'pots-ACC'). Most speakers find the variant in which the first NP is genitive, the second accusative, and the third genitive again unacceptable (*ochoty* 'liking-GEN' + *Marię* 'Maria-ACC' + *garnków* 'pots-GEN'), even though some are reported to accept it.

(11) *Nie mam ochotę   uczyć Marię/   Marii   lepić garnki/ garnków.
        not have liking-ACC teach Maria-ACC Maria-GEN mold pots-ACC pots-GEN
        'I don't feel like teaching Maria how to make pottery.'

The unacceptability of (11) is expected on the current proposal, the object NP and negation being contained in the matrix clause. The first two mixed patterns can be derived on the assumption that the speakers who accept them make it possible for another Σ to be merged either in the higher or the lower infinitival clause. This Σ introduces [Pol] valued as positive and, as a result, all instances of the [Pol] feature below it are valued as [POS] and it is the [POS] rather than the [NEG] value that is added to the [Case] feature of the lower NP(s) (see also footnote 8). Speakers who accept the mixed GEN + ACC + GEN pattern seem to admit a derivation where [Pol:NEG] introduced in the matrix clause, rather than [Pol:POS] introduced in the higher infinitival clause and responsible for the accusative marking of the middle NP, can value [Pol] on the verbal heads in the lowest infinitival clause. An interesting direction for future research would be to see whether the different options follow from some other structural and derivational variants available to different speakers.[7]

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[7]As a reviewer suggests, it might be possible to employ negative polarity items to test whether [Pol:POS] is indeed present in the infinitival clauses. Unfortunately, so far I have not been able to consult speakers who would be willing to accept any of the mixed patterns.

Additional support for the hypothesis that the matrix auxiliary in Hungarian OAgr structures such as (1) and negation in Polish GNeg structures such as (2) are not linked with the NP objects of the embedded infinitives directly comes from contexts where morphological marking does not reflect the expected relation, despite the apparent presence of all relevant elements.[8] In Hungarian such a context arises in the presence of certain lexical verbs separating the nominal object and the auxiliary. The Polish data involve a type of elliptical structures. I discuss these configurations in the two subsections which follow.

2.1 Breaking the Agree Chain: OAgr

As Professor István Kenesei notes in his review of my dissertation, some verbs in Hungarian (e.g. *fél* 'fear') take infinitival complements, but lack the definite paradigm (see (12b)). As (13) illustrates, definite marking on the matrix verb is unacceptable when one of the infinitives separating it from the nominal object belongs to this set.

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[8] A finite clause boundary also blocks these relations. In Hungarian finite CP complements trigger definite agreement on the matrix verb regardless of the presence and the features of the embedded object (though see, e.g., den Dikken 2009 for a discussion of the patterns observed with extraction from the embedded clause). In Polish the object inside such a CP complement is insensitive to the presence of negation in the matrix clause and remains accusative (see (i) from Przepiórkowski 2000:5).

(i) Nie mówiłem, że pisałem listy/   *listów.
     not said   that wrote letters-ACC letters-GEN
     'I wasn't saying that I was writing letters.'

The Hungarian data follow on the assumption that C in finite clauses comes with a valued [DEF/φ] feature set. The Polish pattern follows if finite clauses obligatorily include Σ, with the [Pol] feature valued either as positive or negative, making all instances of this feature valuable within the embedded CP. On the other hand, infinitival clauses include Σ only in the marked, negative case (see (iia)), so that the [Pol] feature is valued internally to the embedded clause when this clause contains negation, but not when it does not. In the latter case the [Pol] feature is valued when Σ is merged in the matrix clause (see (iib)).

(ii) a. Anna chce nie pisać listów/   *listy.
          Anna wants not write letters-GEN letters-ACC
          'Anna wants not to write letters.'
      b. Anna nie chce pisać listów/   *listy.
          Anna not wants write letters-GEN letters-ACC
          'Anna doesn't want to write letters.'

Przepiórkowski (2000) and Witkoś (2008) provide some examples for which some speakers accept, or even prefer, accusative rather than (extra) long-distance GNeg objects (see also the discussion in the main text above). In these cases idiomaticity and the number of intervening infinitives seem to play a role. One possible way to capture these data within the current proposal is to assume that for these speakers merging a positive Σ is also possible in non-finite clauses. Alternatively, the value [NEG] need not be passed on to the NPs in these contexts.

(12) a. Péter megérkezett, bár   nem akar-t-ad   meghív-ni ő-t.
          Péter arrived   though not want-PAST-2SG.DEF invite-INF she/he-ACC
          'Péter has arrived, though you didn't want to invite him.'
      b. Péter megérkezett, bár   fél-t-él/   *fél-t-ed   meghív-ni
          Péter arrived   though fear-PAST-2SG.INDEF fear-PAST-2SG.DEF invite-INF
          ő-t.
          she/he-ACC
          'Péter has arrived, though you were afraid to invite him.'

(13) Péter nem fog/   *fog-ja   fél-ni próbál-ni meghív-ni ő-t.
      Péter not will-3SG.INDEF will-3SG.DEF fear-INF try-INF   invite-INF she/he-ACC
      'Péter will not be afraid to try to invite her/him.'

The impact which verbs such as *fél* 'fear' have on the availability of the definite marking on the matrix auxiliary would be hard to capture on the assumption that the auxiliary agrees with the NP object directly.[9] On the other hand, on the assumption that the relation between the auxiliary and the object is indirect and mediated by the intervening infinitives, this effect can be attributed to a property of lexemes such as *fél* 'fear' which makes the upward transmission of the value of the [DEF/φ] feature set from the nominal object past these lexemes impossible.[10] The most straightforward way of modelling this intuition seems to be to take lexemes such as *fél* 'fear' to lack the [DEF/φ] set. If this is so, no application of Agree triggered by features on a higher head can value this head's [DEF/φ] set: the equivalent set which could potentially be a matching goal is on the next lower CP, which, however, is separated from the probe by the VP phase boundary and hence is no longer accessible at this point (see (14), where the brackets in bold mark phase boundaries in accordance with the standard assumptions).

(14) Péter nem fog   [VP fél-ni   [CP C próbál-ni meghív-ni ő-t]].
      Péter not will-3SG.INDEF   fear-INF   try-INF   invite-INF she/he-ACC
      'Péter will not be afraid to try to invite her/him.'

The lack of the [DEF/φ] set in the feature matrix of the verb *fél* 'fear' may not be accidental. As a reviewer points out, *fél* is associated with an oblique case-marked complement (*attól félek, hogy. . .* 'this-ABLATIVE fear-1SG that'). In Hungarian only verbs which value the case feature of their complement as accusative manifest object agreement. The remaining verbs can thus be taken to lack the [DEF/φ] set, which I suggest to be in complementary distribution with a feature specifying an inherent case value assigned to the complement (see Sect. 3.1). On this approach the indefinite marking on the auxiliary can be taken to arise by default, similarly to what is observed in clauses with intransitive infinitives, as illustrated in (15).

(15) Péter nem fog   énekel-ni.
      Péter not will-3SG.INDEF sing-INF
      'Péter will not sing.'

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[9]This assumption is also problematic in the light of the Phase Impenetrability Condition (Chomsky 2001). See also Sect. 3.2.

[10]In the process of writing this paper I discovered that a similar line of reasoning has been suggested independently by Szécsényi and Szécsényi (2016).

2.2   Breaking the Agree Chain: GNeg

Even though GNeg is usually obligatory in simple negative clauses in Polish, a type of elliptical structures stand out as exceptions. For example, in (16a) the object in the second clause, where the verb has been elided, has to be accusative rather than genitive, despite the presence of negation. This is unacceptable in the non-elliptical counterpart in (16b).

(16) a.   Anna często kupuje truskawki,   ale nigdy nie jagody/
           Anna often buys   strawberries-ACC but never not blueberries-ACC
           *jagód.
            blueberries-GEN
           'Anna often buys strawberries, but never blueberries.'
      b.   Anna często kupuje truskawki,   ale nigdy nie kupuje jagód/
           Anna often buys   strawberries-ACC but never not buys   blueberries-GEN
           *jagody.
            blueberries-ACC
           'Anna often buys strawberries, but she never buys blueberries.'

The availability of the adverb *nigdy* 'never' in sentences of this type shows that the marker *nie* 'not' realises sentential negation, as opposed to, for example, constituent negation of the object NP. This follows because *nigdy* 'never' is a negative polarity item, licensed only by sentential negation (see, e.g., Willim 1990). Hence, as the structure in (16a) contains Σ with the [Pol] feature valued as [NEG], the accusative marking of *jagody* 'blueberries-ACC' is unexpected and shows that the presence of [Pol:NEG] in a clause is not sufficient for GNeg to arise. This would be hard to explain if GNeg involved a direct relation between Σ and the object NP.

What makes the structure in (16a) different is clearly the absence of the verb. This suggests a crucial role of the verb in the assignment of GNeg in Polish, which is in line with the analysis described above, on which the value [NEG] is added to the [Case] feature of the object NP due to its linking with the verb by Agree.

In (16a) the object is accusative. In parallel structures involving verbs assigning inherent case, the object is marked for the inherent case, as (17) shows.

(17)   Anna kierowała w przeszłości małymi firmami,   ale nigdy nie tak dużym
       Anna managed in past   small   firms-INSTR but never not so large
       przedsiębiorstwem.
       company-INSTR
       'Anna has managed small firms in the past, but she has never managed such a large com-
       pany.'

The case marking of the object of the elided verb shows that the verb is merged in the structure and undergoes Agree with the object. By this application of Agree, value [v] is assigned to the [Case] feature of the object in (16a) and in (17) value [INSTR] is assigned to [Case] in addition. This results in the objects being realised as accusative and instrumental at the level of morphology.

The morphological form of the object in the clause involving ellipsis in (16a) shows that in this context the value [NEG] cannot be added to the [Case] feature of

the object following the merge of Σ in the structure. The deletion of the verb seems to be responsible for breaking the chain of Agree relations necessary for [NEG] to be passed on to the object. Formally, this can be accounted for straightforwardly on the approach which takes ellipsis to be deletion of formal features in the syntax (Baltin's 2012). If the verb is deleted before $\Sigma_{[NEG]}$ is merged, the [Pol] feature on the verb is no longer available for participating in Agree. In such a case the value of the [Case] feature of the NP cannot be affected, as there is never any direct relation between $\Sigma_{[NEG]}$ and the object NP.

To be precise, the structure involves VP ellipsis following the movement of the remnant outside the VP, as evidenced by clauses involving deletion of larger portions of the VP, not only the verb (e.g. the double object construction, in which one of the objects is contained within the ellipsis site).[11] On Baltin's (2012) proposal deletion applies as soon as the constituent to be elided is merged with the next head. This means that in cases such as (16) and (17) the VP is deleted when merged with Asp(ect), as in (18).

(18)   [AspP [NP jagody]   Asp [VP V̶-̶k̶u̶p̶u̶j̶e̶ [NP j̶a̶g̶o̶d̶y̶]]]
               blueberries-ACC   buys   blueberries-ACC
         '(buys) blueberries'

By the time $\Sigma_{[NEG]}$ is merged (see (19)), the formal features of the VP are no longer present in the structure, explaining why sentential negation does not have an effect on the [Case] feature of the object in this context.[12]

(19)   ...ale [ΣP nigdy Σ-nie [AspP [NP jagody]   Asp [VP V̶-̶k̶u̶p̶u̶j̶e̶ [NP j̶a̶g̶o̶d̶y̶]]]]
               but   never not   blueberries-ACC   buys   blueberries-ACC
         '...but (she) never (buys) blueberries.'

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[11]A reviewer wonders whether the movement of the remnant in its own right cannot be held responsible for the lack of GNeg assignment. This seems unlikely, as no effect of movement of the object outside of VP on GNeg can be observed anywhere else (see, for example, (i)).

(i)   a.   Anna nigdy jagód/   *jagody   nie kupuje.
                    Anna never blueberries-GEN   blueberries-ACC not buys
                    'Anna never buys blueberries.'
        b.   Jagód/   *jagody   Anna nigdy nie kupuje.
                    blueberries-GEN   blueberries-ACC Anna never not buys
                    'Blueberries, Anna never buys.'
        c.   Jakich jagód/   *jakie jagody   Anna nigdy nie kupuje?
                    what   blueberries-GEN   what blueberries-ACC Anna never not buys
                    'What blueberries does Anna never buy?'
        d.   Anna nigdy nie kupuje w supermarkecie jagód/   *jagody.
                    Anna never not buys   in supermarket   blueberries-GEN   blueberries-ACC
                    'Anna never buys blueberries in a supermarket.'

[12]As a reviewer points out, this kind of an approach to the ellipsis data can be employed also on the long-distance account of GNeg, but only if accusative is taken to be assigned by V alone, but genitive is assigned jointly by V and Neg (a variant of the approach advocated above). In particular, if the assignment of GNeg by Agree requires the NP goal to be simultaneously c-commanded by both Neg and V, the deletion of VP prevents GNeg assignment (the NP in Spec,Asp is c-commanded by Neg, but none of its copies is c-commanded by V, whose formal features are no longer present in the structure).

Recapitulating, for both the OAgr and GNeg contexts in Hungarian and Polish there are cases where the relation between a verbal element in the matrix clause and the NP object of an embedded infinitive is expected, but is not found. Both types of contexts can be explained if the relevant relations are mediated by successive verbal heads in the clausal spine, but not if they involve a direct linking of the matrix heads and the NP objects.

3   OAgr and GNeg: Further Theoretical Considerations

Having presented the core proposal, I would like to turn to a brief discussion of two additional questions, namely the effect of inherent case on OAgr and GNeg (Sect. 3.1) and the relevance of the present discussion to phase theory (Sect. 3.2).

3.1   Inherent Case

As Kenesei et al. (1998:326) note, when the object NP bears an inherent case, the indefinite conjugation is used regardless of the definiteness of the object (see (20), where the object is inessive).

(20)   Erika nem bíz-ik   János-ban.
        Erika not   trust-3SG.INDEF János-INESS
        'Erika doesn't trust János.'

Similarly, NPs marked for inherent case do not switch to genitive under negation in Polish (see (21), where the verb *kierować* 'manage' assigns instrumental to its object NP).

(21)   a.   Anna kierowała dużym przedsiębiorstwem.
              Anna managed large   company-INSTR
              'Anna has managed a large company.'
        b.   Anna nie kierowała dużym przedsiębiorstwem.
              Anna not managed large   company-INSTR
              'Anna hasn't managed a large company.'

Sentences with infinitival complements retain these patterns. Definite agreement is not possible on the matrix verb with embedded nominal objects marked for inherent case in Hungarian; the case value does not change for an NP object marked for an inherent case under negation in Polish. OAgr and GNeg are thus in complementary distribution with inherent case of the object NPs.

On the approach suggested above this means that the relation linking the [DEF/φ] and [Pol] features on verbal heads and on object NPs is sensitive to the values included in the [Case] feature on the object. When [Case] includes an inherent case value (e.g. [Case:v,INESS], [Case:v,INSTR]), there is no morphological reflex of the relation.

The Polish data can be accounted for in two ways. Firstly, the relation can be taken to obtain as usual, assigning value [NEG] to the case feature of the NP and resulting in the [Case:V,INSTR,NEG] set. Secondly, the relation can be taken not to obtain, whereby the [Case] feature of the NP remains valued as [V,INSTR]. On the assumption that inherent case values are treated in morphology as most specific, they are given precedence for morphological realisation in both scenarios, resulting in the NP being marked as instrumental. However, the Hungarian facts seem to be in line only with the latter suggestion, that is the absence of the relation. Otherwise it is unclear why the [DEF/φ] feature set of the object NP should be unable to value this feature set on the probing verbal heads. I thus submit that verbal lexical entries contain either information on the value of inherent case assigned to the object or an unvalued [DEF/φ] or, in Polish, [Pol] feature set. As verbal heads in the extended verbal projection can be linked with the object NPs only indirectly, via lexical verbs, the lack of [DEF/φ] on the verb in Hungarian results in the lack of valuation of this set on heads in the clausal spine. I take the indefinite paradigm to result from default valuation in this case (similarly to what is the case with intransitive infinitival complements and configurations with verbs such as *fél* 'fear'). The lack of the [Pol] feature on the lexical verb in Polish results in the [NEG] feature not being added to the [Case] feature on the object NP. Thus, taking [DEF/φ]/[Pol] and inherent case value to be pieces of information in complementary distribution within the verbal feature matrix accounts for the lack of OAgr and GNeg in structures with inherent case-marked objects.

3.2   Phases

At first sight, the apparently long-distance relations between the matrix auxiliary or negation and an embedded NP object might seem problematic to phase theory, as the relations, if direct, would need to be able to cross phase boundaries.[13] On the current approach, all relevant applications of Agree are local, linking subsequent verbal heads rather than the matrix heads and the NP objects, which is in agreement with the Phase Impenetrability Condition (Chomsky 2001). The derivation of the Hungarian data, where the (semi-)auxiliary agrees with the relevant head immediately below, but does not agree with the NP object directly, is thus unproblematic. However, in Polish the effect of the linking of subsequent verbal heads is reflected on the NP object embedded inside the lowest phase, rather than on the matrix element. This suggests that the Spell-Out of the subsequent phasal domains has to be postponed until Σ is merged in the structure and the [NEG] value is added to the [Case] feature of the object. The blocking of the Spell-Out of the phases as they are constructed can be attributed to the presence of the unvalued [Pol] feature on the verbal heads. In particular, the phases can undergo Spell-Out only after this feature has been valued by the feature introduced on Σ.

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[13]See, for example, the discussions of GNeg in Błaszczak (2008) and Witkoś (2008), neither of which can, however, capture the ellipsis-related data discussed in Sect. 2.2 above.

The suggestion that the presence of an unvalued feature delays the Spell-Out of phasal domains has been made in the literature to capture a variety of data from different languages (see, e.g., Felser 2004; Svenonius 2004; Grano and Lasnik 2014; Ruda 2016). Hence, if the analysis put forward here is on the right track, it provides an additional context supporting the convergence approach to phasehood, that is the view that phases are determined by the absence of unvalued features within the relevant constituents.

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An Integrated Perspective on Hungarian Nominal and Verbal Inflection

Marcel den Dikken

Abstract There are systematic parallels between the nominal and verbal domains of Hungarian in their inflectional paradigms. Seeking a descriptively and explanatorily adequate syntactic analysis of these morphological parallels, this paper presents an integrated approach to Hungarian possessive and definiteness marking, with clitics as the key players. The marker *-JA* (the 'possessive morpheme' in the noun phrase and the 'definiteness agreement marker' in present tense clauses) is traced back to an object clitic in Proto-Uralic, and analysed in the same terms in present-day Hungarian. The distribution of *-JA* across the nominal and present-tense verbal paradigms is derived from specific structural representations of person and the alienable/inalienable possession distinction; the absence of *-JA* from the past tense verbal paradigm is made to fall out from an analysis of Hungarian past tense forms as inalienably possessed inflected participles.

Keywords Nominal/verbal inflection · (In)Alienable possession Clitic · Person · Past tense · Hungarian · Proto-Uralic

1 Introduction

The nominal and verbal inflectional paradigms in Hungarian show systematic parallels. For the first and second person singular, the morphological parallelism is perfect. In the third person singular, with nouns like *anyag* 'fabric' and *keret* 'frame', which can have alienable as well as inalienable possessors, we find two inflectional possibilities: a form matching or containing the inflection also found in the present tense definite verbal paradigm; or a form lacking the *-j* (vocalised to *-i* with front-vowel verbal stems), corresponding to the inflection found in the past tense verbal paradigm.

M. den Dikken (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: marcel.den.dikken@nytud.mta.hu; dmarcel@nytud.hu

(1a)	1SG	anyag-*om*	'my fabric'	(1b)	1SG	lát-*om*	'I see it'
	2SG	anyag-*od*	'your_{SG} fabric'		2SG	lát-*od*	'you_{SG} see it'
	3SG	anyag-*ja*	'his/her fabric (al.)'		3SG	lát-*ja*	'(s)he sees it'
		anyag-*a*	'its fabric (inal.)'			lát-t-*a*	'(s)he saw it'
(2a)	1SG	keret-*em*	'my frame'	(2b)	1SG	szeret-*em*	'I love it'
	2SG	keret-*ed*	'your_{SG} frame'		2SG	szeret-*ed*	'you_{SG} love it'
	3SG	keret-*je*	'his/her frame (al.)'		3SG	szeret-*i*	'(s)he loves it'
		keret-*e*	'its frame (inal.)'			szeret-t-*e*	'(s)he loved it'

In the nominal system, for nouns that in principle accept either form (such as *anyag* 'fabric' and *keret* 'frame'), the -*j*-less form signals inalienable possession: the fabric that something is made out of; the frame that inalienably belongs to a person (i.e., his/her body) or to a picture (i.e., a picture frame). By contrast, the form with -*j*, in (1a) and (2a), marks an alienable possession relation between the fabric or frame and its possessor—the piece of fabric that is in the possession of a seamstress or tailor; or a pictureless frame that is among someone's earthly belongings.

A descriptively and explanatorily adequate analysis ought to be able to capture the morphological parallels seen in (1)–(2) in an optimally simple way that informs the general theoretical outlook on the status and function of what is usually called 'agreement marking' in the grammar. I will start out in this paper by looking in detail at the marker -*JA*, which will lead us to an account.

2 The Marker -*JA* in the Verbal System

The morphological marker -*JA*[1] occurs in two apparently unrelated contexts, doing apparently unrelated things. In possessed noun phrases, it marks alienable (*vs.* inalienable) possession. In the present-tense verbal inflection paradigm, it is the marker of the definiteness of the object.

The distribution of -*JA* in both contexts reveals a sensitivity to person: -*JA* does not co-occur with the markers -*m* (1SG) and -*d* (2SG): see (3) and (4). We can trace this back to the proto-language from which Hungarian developed.

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[1]Throughout this paper, I will represent the marker involved as -*JA*, with the capital 'A' being a cover for the harmonic value of the vowel (-*a* after back-vowel stems, -*e* after front vowel stems), and the capital 'J' as a cover for the glide -*j* and the vowel -*i*. The fact that, with front-vowel stems, -*JA* is pronounced -*je* in the nominal system and as -*i* in the verbal system has to do with the fact that, in possessives, there is always a vowel spelling out the RELATOR head that mediates the predication relation between the possessor and the possessum—see Den Dikken (2015) for discussion.

(3a) 1SG anyag-om/*-ja-m 'my fabric'   (3b) 1SG lát-om/*-ja-m 'I see it'
      2SG anyag-od/*-ja-d 'your_{SG} fabric'   2SG lát-od/*-ja-d 'you_{SG} see it'

(4a) 1SG keret-(*j-)em   'my frame'   (4b) 1SG szeret-em/*-i-m   'I love it'
      2SG keret-(*j-)ed   'you_{SG} frame'   2SG szeret-ed/*-i-d 'you_{SG} love it'

2.1 Diachrony

Two historical facts are relevant to the synchronic picture emerging from (1)–(4).

(5a)   the Uralic [PERSON] suffixes go back to 'agglutinated forms of personal pronouns (much the same as the possessive suffixes)' (Hajdú 1972:43)

(5b)   'the verb had two forms of Sg3 as early as the proto-Uralic period' — a bare form used when there is no object or the object is indefinite, and a suffixed form used when the object is definite (Hajdú 1972:44)

In Proto-Uralic (the common ancestor of all Finno-Ugric languages, including Hungarian), the existence of two verb forms covarying with the definiteness of the object was exclusive to the third person. The reconstructed singular paradigms of the verbal inflectional suffixes and personal pronouns of Proto-Uralic in (6) illustrate this (see Hajdú 1972:44; the possessive markers have the same ancestry).

(6)   *Proto-Uralic verbal inflectional suffixes*
      1   *-m*   cf. PRONOUNS *me*
      2   *-t*   *te*
      3DEF   *-se*   *se*
      3INDEF ∅

Hajdú (1972:44) states explicitly that the reconstructed Proto-Uralic marker *se*, the ancestor of the DEF marker *-JA*, 'was originally a pronoun with the value of the Accusative'. I take this to mean that Proto-Uralic *se* was an object clitic. This object clitic freely combined with the marker of the third person subject, which was itself silent (see '3INDEF' in (6)), to deliver 'definite agreement': the combination of a third person DEF object clitic and a third person subject marker is *se* + ∅.

(7)   Proto-Uralic   Hungarian
      szeret-∅   >   szeret-∅   '(s)he loves (someone/something)' (INDEF)
      szeret-*se*-∅ >   szeret-*i*-∅ '(s)he loves him/her/it'   (DEF)

But already in the proto-language, *se* did not combine with the first and second person subject markers:

(8)   Proto-Uralic 1/2 person subject markers cannot co-occur with a 3 person object clitic

As Hajdú (1972:43) noted, and as is illustrated in (6), these first and second person subject markers have a perfectly transparent relationship with the first and second person singular pronouns of Proto-Uralic. In line with Preminger's (2014) perspective on clitics, I take this to indicate that the Proto-Uralic markers for first person (-*m*) and second person (-*t*) are subject clitics. When we now combine this with the conclusion that *se* is an object clitic, the generalisation in (8) can be recast as a clitic co-occurrence restriction similar to the kind found in many languages in the realm of ditransitive constructions—the Person Case Constraint (PCC; Bonet 1991).

In a typical PCC case like (9), from French (see Perlmutter 1971), if the structure contains two object clitics, and one of them is third person and the other is not, then the third person clitic has to be the direct object: when it is the indirect object, as in (9b), the output is ungrammatical.

(9a)   ils me le montrent   (9b)   *ils me lui montrent
          they me$_{IO}$ him$_{DO}$ show   they me$_{DO}$ him$_{IO}$ show
          'they are showing him to me'   'they are showing me to him'

Anagnostopoulou (2003) argues that the direct-object clitic is launched from a position structurally lower than the indirect-object clitic. Bearing this in mind, the descriptive generalisation presented by (9) can be stated in the following terms: if the structurally lower argument is a first or second person clitic and the structurally higher argument (the indirect object in (9)) is a clitic that is not marked for person ('third person is non-person'; Benveniste 1971), there is no grammatical output.

We can understand this if clitics marked for first or second person (i.e., PARTICIPANT clitics) need to associate with a functional head in the structure outside the VP that is dedicated specifically to person. Let us call this functional head 'π'. If in the structure in (10) (on the 'RELATOR', see den Dikken 2006) the first or second person clitic is the indirect object, a perfectly local association between the PARTICIPANT clitic and π can be established, without any interference from the direct object, which is structurally lower. But now imagine that the PARTICIPANT clitic is the *direct* object, and that the occupant of the indirect object position is likewise a clitic but one that is not marked for person (i.e., 'third person'). We then get a situation in which π has a clitic in its local environment (viz., the indirect object clitic) but one that, because of its lack of a person feature, cannot serve as a goal for π—it is a *possible* goal for π but, due to its featural defectiveness, not an actual one.

(10) $[\pi [_{VP} V [_{RP} IO [RELATOR DO]]]]$

Rezac (2008) and Preminger (2014) argue that when the indirect object is a third person clitic and the direct object is a PARTICIPANT clitic, the structure in

(10) presents an intervention effect: the third person indirect-object clitic prevents π from associating with the direct-object clitic.

How can this help us understand the Proto-Uralic generalisation in (8)? We have already determined that the first and second person markers *-m* and *-t* are subject clitics. We have also argued that Proto-Uralic *se* is an object clitic. We know from (6) that the object clitic *se* specifically represents *definite* objects. The one thing we now need to add into this mix to get a complete account is that *se*, because of its specificity, obligatorily shifts to a position outside VP that is structurally higher than the base position of the subject, as depicted in (11).

(11) $[_{\pi P}\ \pi\ [_{vP}\ \text{DO}\ [_{vP}\ \text{SU}\ v\ [_{VP}\ \text{V}\ \cancel{\text{DO}}]]]]$

We now derive the fact that whenever the subject is a first or second person clitic (which wants association with π), the direct object cannot be the third person clitic *se*: its presence in (11) would obstruct the necessary relation between π and the subject clitic, as an intervention effect. A grammatical result cannot emerge, in the presence of a first or second person subject clitic, if the object is the clitic *se*. For third person definite objects, this means that, when a first or second person subject clitic occurs, they cannot be doubled by an object clitic: when no object clitic is used, no intervention effect manifests itself because, even if the object does shift to the edge of *v*P, it still will not be a possible goal for π, which in Proto-Uralic (as in Romance) is specialised for clitics: there is no person agreement for non-clitic objects in Proto-Uralic.

Thus, if we follow an approach to Person Case Constraint effects such as (9b) along the lines of Rezac (2008) and Preminger (2014), we can make (8) follow from the clitic status of both *se* and the first and second person subject markers, in conjunction with the hypothesis that the object clitic *se*, whenever present, is launched from the object shift position, closer to the person probe π than the subject's base position. The result of this clitic co-occurrence restriction is that there can be no DEF/INDEF distinction in the presence of a first or second person subject in Proto-Uralic: DEF-marking (i.e., the occurrence of the object clitic *se*) is consistently impossible in this context.

2.2 Synchrony

In present-day Hungarian, *-JA* (the successor of *se*) still does not mix with the first and second person subject markers *-m* and *-d* (the transparent heirs to Proto-Uralic *-m* and *-t*): (12). What this suggests is that present-day Hungarian *-JA*, the so-called 'definiteness marker' in the verbal paradigm, is still an object clitic, and that *-m* and *-d* continue to behave as subject clitics. If so, the fact that 1SG *-m* and 2SG *-d* do not combine with *-JA* follows from (11), carried over to Modern Hungarian.

| (12a) | 1SG | lát-om | *lát-ja-m | 'I see it' |
| | 2SG | lát-od | *lát-ja-d | 'you_SG see it' |

| (12b) | 1SG | szeret-em | *szeret-i-m | 'I love it' |
| | 2SG | szeret-ed | *szeret-i-d | 'you_SG love it' |

Regarding the status of -JA in Modern Hungarian, Coppock and Wechsler (2012) state that 'there is a consensus… that the -ja found in the third person singular of the objective conjugation can be traced back to a third person object pronoun, which Hajdú (1972) reconstructs as *se'.[2] For -m and -d, my hypothesis that, synchronically as well as historically, they are subject clitics makes me side with Trommer (2003) in taking -m/-d to only encode the subject's φ-features, *not* definiteness as well. Definiteness agreement is not morphologically encoded in the first and second person singular in Modern Hungarian any more than it was in Proto-Uralic. The fact that there is no definite/indefinite distinction in the first person singular in the past tense (see (13a)) thus represents the expected pattern for Modern Hungarian.

(13a)	1SG	lát-t-am	valakit	=	lát-t-am	őt
		see-PST-1SG	someone.ACC		see-PST-1SG	(s)he.ACC
		'I saw someone'			'I saw him/her'	

(13b)	2SG	lát-t-ál	valakit	≠	lát-t-ad	őt
		see-PST-2SG	someone.ACC		see-PST-2SG	(s)he.ACC
		'you saw someone'			'you saw him/her'	

In the second person, the past tense does feature two discrete verbal forms for definite and indefinite agreement, as shown in (13b). And in the present tense, for both first and second person singular, there is a morphological distinction between definite and indefinite inflection as well: (14). Modern Hungarian has innovated *non-clitic* inflectional markers for first and second person singular in the INDEF agreement paradigm (-k and -sz/-l, resp.) to mark the definite/indefinite distinction (see Coppock and Wechsler 2012, and references cited there). I do not have space here to say anything about these inflectional markers. The only thing that matters for my purposes here is that they are resorted to precisely in contexts in which the clitic co-occurrence restriction in (8), dating back to Proto-Uralic, prevents the subject clitics -m and -d and the object clitic -JA from being used together. Proto-Uralic was satisfied to simply not mark the definiteness of the object on the inflected verb at all in such contexts. In an effort to systematise the marking of the (in)definiteness of the object on the verb, Hungarian created inflections for first and

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[2]The fact that the past-tense forms show no high vowel or glide entails that the hypothesised object clitic -JA of present-day Hungarian is not tense-invariant. For Nevins (2011), tense invariance is a defining property of clitics. For Hungarian, however, the absence of tense invariance in the distribution of the clitic -JA is not an accidental gap: see Sect. 4 for an account of the Hungarian past tense that allows us to understand the absence of the -J from its paradigms.

second person singular subjects alongside the clitics -*m* and -*d*. The latter continued to be used but became specialised for the definite paradigm.[3]

(14a)	1SG	lát-ok	valakit	≠	lát-om	őt
		see-1SG	someone.ACC		see-1SG	(s)he.ACC
		'I see someone'			'I see him/her'	

(14b)	2SG	lát-sz	valakit	≠	lát-od	őt
		see-2SG	someone.ACC		see-2SG	(s)he.ACC
		'you see someone'			'you see him/her'	

3 The Marker -*JA* in the Nominal System

The marker -*JA* occurs not only as a marker of definiteness agreement in the verbal system (analysed in Sect. 2 as an object clitic) but also as a marker of mostly alienable possession in the nominal system.[4] In both contexts, its distribution is

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[3]The constraint in (8) has carried over to Modern Hungarian only for the first and second person SINGULAR subject markers: the present tense PLURAL forms -*juk/jük* in (ia) and -*játok/itek* in (ib) overtly contain the glide or high front vowel that represents the object clitic -*JA*, as do the forms -*ják* and -*ik* in (ic), for third person plural definite inflection.

(ia)	1PL	lát-j-uk	szeret-j-ük
		see-*JA*-1PL	love-*JA*-1PL
		'we see him/her/it'	'we love him/her/it'
(ib)	2PL	lát-já-tok	szeret-i-tek
		see-*JA*-2PL	love-*JA*-2PL
		'you_PL see him/her/it'	'you_PL love him/her/it'
(ic)	3PL	lát-já-k	szeret-i-k
		see-*JA*-PL	love-*JA*-PL
		'they see him/her/it'	'they love him/her/it'

This can be understood if the first and second person PLURAL markers are not clitics. There is morphological support for this (along the lines of Preminger 2014). While first and second person singular -*m* and -*d* historically go back to the corresponding pronouns and still are transparently related to the first and second person singular pronouns, their plural counterparts in present-day Hungarian (first person -*uk/ük* and second person -*tok/tek*) show no synchronic surface relation to the corresponding nominative pronouns, *mi* and *ti*. (The second person plural forms do share a *t*— but the pronoun *ti* has the possessed plural marker -*i*, whereas the suffix -*tok/tek* has the default plural -*k*.) If they are not clitics but subject inflection markers, -*uk/ük* and -*tok/tek* do not seek to move from an argument position to the person head π (recall (11)). So no intervention effect arising from the presence of the object clitic -*JA* is expected in the first and second person plural. Only when the subject marker is a clitic (i.e., in the first and second person singular) is the marker -*JA* prevented from occurring, by the clitic co-occurrence restriction in (8), dating back to Proto-Uralic.

[4]The surface distribution -*JA* in possessive noun phrases is not just sensitive to the alienable/inalienable distinction. To a significant extent, the distribution of this marker is regulated by phonological considerations. The phonology can even cause -*JA* to occur in contexts in which the morphosyntax does not deliver it: inalienable possession constructions do include -*JA* whenever a phonotactic constraint forces it to occur. Following den Dikken (2015), the line that I take on this

restricted: in neither does the marker co-occur with the first and second person singular markers, -*m* and -*d*. The data in (1) and (2), repeated here, will serve as a reminder.

(1a)	1SG	anyag-*om*	'my fabric'	(1b)	1SG	lát-*om*	'I see it'
	2SG	anyag-*od*	'your_SG fabric'		2SG	lát-*od*	'you_SG see it'
	3SG	anyag-*ja*	'his/her fabric (al.)'		3SG	lát-*ja*	'(s)he sees it'
		anyag-*a*	'its fabric (inal.)'			lát-t-*a*	'(s)he saw it'
(2a)	1SG	keret-*em*	'my frame'	(2b)	1SG	szeret-*em*	'I love it'
	2SG	keret-*ed*	'your_SG frame'		2SG	szeret-*ed*	'you_SG love it'
	3SG	keret-*je*	'his/her frame (al.)'		3SG	szeret-*i*	'(s)he loves it'
		keret-*e*	'its frame (inal.)'			szeret-t-*e*	'(s)he loved it'

Making the analysis of the verbal inflection paradigm developed in Sect. 2 carry over to the possessive paradigm requires two things: *(a)* a treatment of -*m* and -*d* as clitics and *(b)* an assimilation of -*JA* qua marker of alienable possession to -*JA* qua marker of the object's definiteness—i.e., a treatment of possessive -*JA* as a clitic. As a first step towards achieving this goal, we need to investigate the syntax underlying possessive relations, which is the topic of Sect. 3.1.

3.1 A Structural Difference Between Alienable and Inalienable Possession Relations

In den Dikken (2015), I argue—based on the facts of a variety of typologically unrelated languages—that Universal Grammar makes a structural distinction between alienable and inalienable possession relations that exploits a key ingredient of den Dikken's (2006) theory of predication: the idea that predication relations, while universally asymmetrical, are not inherently directional:

(15a)	[_RP SUBJECT [RELATOR [PREDICATE]]]	(canonical predication)
(15b)	[_RP PREDICATE [RELATOR [SUBJECT]]]	(reverse predication)

The predicate and its subject must always be related to one another with the aid of a mediator (called the RELATOR); but as long as the relation between them is asymmetrical, the relative positions in the RP that are taken by the predicate and its subject are not predetermined: (15a, b) are both possible.

In den Dikken (2015), I extend the coverage of the hypothesis in (15) into the realm of possession. The proposal is that canonical predication is involved in

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here is that the phonology co-opts an element that is available in the system, by analogical extension.

alienable possession relations, while inalienable possession has a reverse predication structure as its underlier. This delivers (16):

(16a)   [$_{RP}$ [$_{Subject}$ POSSESSUM] [RELATOR [$_{Predicate}$ POSSESSOR]]]   (alienable possession)
(16b)   [$_{RP}$ [$_{Predicate}$ POSSESSOR] [RELATOR [$_{Subject}$ POSSESSUM]]]   (inalienable possession)

3.2 The Marker *-JA* as a Clitic in the Possessed Noun Phrase

There are cogent reasons to want to pursue an analysis of the marker *-JA* that assimilates its verbal and nominal uses: not only are they homophonous, they also have identical distributions *vis-à-vis* the person of the subject or possessor—in both the definite agreement system and the possessed noun phrase, the marker systematically fails to co-occur with the first and second person singular markers, *-m* and *-d*. For the incompatibility of this marker with *-m* and *-d* in the verbal system, an account was put in place in Sect. 2 that can be traced back all the way to a clitic co-occurrence restriction in effect already in Proto-Uralic: (8). To get a purchase on the incompatibility of *-JA* with *-m* and *-d* in the possessed noun phrase, we would ideally link up to this account very directly.[5]

To accomplish this, I will present a perspective on the morphological status and syntactic behaviour of the marker *-JA* in the Hungarian possessed noun phrase that assimilates it to the marker *-JA* in the definite verbal agreement system, and treats it as a clitic. The central claim of the analysis is that the possessum can include the clitic *-JA*, and that when it does, this clitic prevents a grammatical output from emerging when the possessor is first or second person, and in inalienable possession cases even when the possessor is third person.

Let us start with ALIENABLE possession constructions. In the syntax underlying alienable possession, given in (16a), the possessum is structurally higher than the possessor. When *-JA* appears in the possessum, and the possessor is the first or

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[5]The particular way in which den Dikken (2015) mobilises the structures in (16) to derive the distribution of the marker *-JA* in the Hungarian possessed noun phrase is unsuccessful in relating the marker *-JA* found in possessed noun phrases to the marker found in the definite agreement paradigm. It treats the *-A* of *-JA* as a RELATOR, and the *-J* characteristic of alienable possession constructions as the exponent of the LINKER—a functional head outside the small clause (RP) in (16a) into whose specifier position the possessor raises in the course of the derivation, as shown in (i). With *-A* obligatorily raising to *-J*, and with the amalgamated marker *-JA* docking on to the possessum in the phonological component, the desired output for *anyag-ja* 'his/her fabric (al.)' and *keret-je* 'his/her frame (al.)' emerges.

(i)   [$_{FP}$ [$_{Predicate}$ POSSESSOR]$_i$ [LINKER=-*J* [$_{RP}$ [$_{Subject}$ POSSESSUM] [RELATOR=-*A* t$_i$]]]]]

second person clitic *-m/-d*, *-JA* prevents the latter's cliticisation to the immediately small-clause external person head π:

(17)   *[$_{πP}$ π [$_{RP}$ [$_{Poss'um}$ *-JA*] [RELATOR [$_{Poss'or}$ *-m/-d*]]]]   (alienable; 1/2 possessor)

As in the verbal system, the presence of the clitic *-JA* in a structural position between π and the first or second person clitic *-m/-d* prevents π from forging the necessary link between itself and the person-marked clitic. The intervention effect that ensues is responsible for the ungrammaticality of the starred forms in (3a) and (4a) (repeated below), analogously to that of the starred forms in the b–examples, from the verbal system.

(3a)	1SG	anyag-om/*-ja-m	'my fabric'	(3b)	1SG	lát-om/*-ja-m 'I see it'
	2SG	anyag-od/*-ja-d	'your$_{SG}$ fabric'		2SG	lát-od/*-ja-d 'you$_{SG}$ see it'
(4a)	1SG	keret-(*j-)em	'my frame'	(4b)	1SG	szeret-em/*-i-m 'I love it'
	2SG	keret-(*j-)ed	'you$_{SG}$ frame'		2SG	szeret-ed/*-i-d 'you$_{SG}$ love it'

When the alienable possessor is the clitic *-m* or *-d*, therefore, *-JA* is prevented from occurring: its presence would result in (17), which the grammar rejects.

The clitic *-JA* does co-occur with the person markers *-m* and *-d*, however, in alienably possessed noun phrases whose the possessum is *plural* (marked by the possessive plural marker *-i*, bolded in (18) for easy spotting):

(18)   1SG   anyag-ja-**i**-m   'my materials'
       2SG   anyag-ja-**i**-d   'your materials'

To understand this, we first need to get a grip on the plural marker *-i*, which occurs in two environments in present-day Hungarian: *(a)* possessed noun phrases whose possessum is plural (just illustrated), and *(b)* the first and second person plural pronouns, *mi* 'we' and *ti* 'you$_{PL}$'. What I would like to propose as a way to unite these two apparently unrelated uses of *-i* is the following. Assume (with Bartos 1999: Sect. 2.3, Dékány 2001:248, and references there) that the first and second person plural pronouns of present-day Hungarian are associative plurals: 'me/you$_{SG}$ and associate(s)'.[6] These associative plurals can be structurally represented such that *-i* takes as its complement a coordinative RELATOR phrase containing the first/second person singular pronoun (*m/t*) and the projection of a silent noun ('ASSOCIATE'): (19a). For the possessive plural examples in (18), too, the plural marker *-i* is structurally represented immediately outside a RELATOR phrase—this

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[6]The fact that Hungarian says things like 'we went to the movies with my wife' in situations in which the speaker and his wife went to the movies together as a couple is compatible with this.

time, the RELATOR phrase in (17), within which the alienable possession relation is established. This is shown in (19b).[7]

(19a) $[-i \; [_{RP} \; [m/t] \; [\text{RELATOR} \; [\text{ASSOCIATE}]]]]$
(19b) $[-i \; [_{RP} \; [_{\text{Poss'um}} \; -JA] \; [\text{RELATOR} \; [_{\text{Poss'or}} \; -m/-d]]]]$

Unlike in (17), embedding the structure in (19b) under the person probe π to yield (17′) does not lead to an intervention effect. This is because -JA, the clitic head of the possessum, cliticises to -i prior to the introduction of π: by the time π is merged, -JA has already found its host and has consequently been deactivated. So in (17′), π can probe straight past -JA and reach its intended goal (the person clitic in the complement of the RELATOR head) unobstructed.

(17′) $[_{\pi P} \; \pi \; [-i \; [_{RP} \; [_{\text{Poss'um}} \; -JA] \; [\text{RELATOR} \; [_{\text{Poss'or}} \; -m/-d]]]]]$

When the possessor is not a person-marked clitic, the presence of -JA in the possessum presents no trouble: there is no person-marked element that seeks to associate with π; the presence of π is redundant, and therefore most likely not called upon at all. Since nothing prevents -JA from occurring, the output of an alienable possession construction with a possessor that is not the clitic -m or -d can safely include this marker.

Now let us turn to INALIENABLE possession, whose syntax is based on (16b). Here, -JA cannot occur at all—regardless of the person specification of the possessor. The subject of a reverse predication structure originates in the complement position of the RELATOR, below its predicate. For reasons that are still not very well understood, there is a broad generalisation that whenever the predicate is structurally higher than its subject, the latter cannot engage in any movement dependencies across its predicate. We see this, for instance, in (20b), a failed attempt to move the subject of the reverse predications in the a–example.

(20a)   the man who prescribed me the wrong medicine is $[_{RP} \; [_{\text{Pred}} \; \text{an idiot}] \; [\text{of} \; [_{\text{Subj}} \; \text{a doctor}]]]$
(20b)   *what is the man who prescribed me the wrong medication an idiot of?

Given that movement of the subject is generally impossible when its predicate c-commands it, the possessum in (16b) (the subject of a reverse predication structure) is prevented from containing the clitic -JA, which, if present, would be

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[7]Note that (19) allows for a simple descriptive generalisation regarding the distribution of the 'special' plural marker -i (as distinct from the 'regular' plural marker -k): -i occurs when the plural morpheme takes a RELATOR phrase as its complement (i.e., in the associative plurals mi and ti, and in possessive plurals); -k occurs elsewhere. For the associative plural construction exemplified by János-ék 'János and his entourage', Dékány (2011:241–2) argues cogently that -ék is not the plural of the possessive anaphor -é 'x's one' (which is -éi instead). A possible approach to -ék treats it as the concatenation of an unpossessed pronoun e and a local plural -k, with a silent RELATOR linking the ék thus formed to János in an asyndetic coordination structure, analogous to the Afrikaans associative plural pa hulle 'dad them'.

prevented from cliticising. In inalienable possession, therefore, -*JA* cannot occur: its presence in the structure would make the derivation crash inevitably. In inalienably possessed noun phrases with a third person possessor, the only possessive marking that we get is the exponent of the RELATOR—i.e., the vowel -*a* or -*e* (see den Dikken 2015 for discussion of the RELATOR status of the possession marker), as in (21) (repeated from (1a) and (2a)).

(21a) 3SG   anyag-*a*
             fabric-POSS=RELATOR
             'his/her/its fabric (inal.)'

(21b) 3SG   keret-*e*
             frame-POSS=RELATOR
             'his/her/its frame (inal.)'

We now have an account of the alienable/inalienable contrast regarding the distribution of the marker -*JA* (also recall fn. 4).[8]

4   The Past Tense

In connection with the distribution of the marker -*JA* in the verbal definiteness agreement system, something needs to be said about the past tense paradigm, in which -*JA* systematically fails to occur, even in the definite conjugation:

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[8]In the verbal system of Modern Hungarian, the clitic co-occurrence restriction in (8) affects only the first and second person *singular* markers -*m* and -*d*: their plural counterparts co-occur with -*JA*, thanks to the fact that they are not clitics (recall fn. 3). But in the alienably possessed noun phrase, first and second person plural possessors resist -*JA*:

(ia) 1PL   keret-(*j-)ünk   'our frame'
     2PL   keret-(*j-)etek   'your_PL frame'

(ib) 1PL   szeret-j-ük   'I love it'
     2PL   szeret-i-tek   'you_PL love it'

I pointed out in fn. 3 that the first and second person plural agreement markers in the definite verbal paradigm bear no morphological relationship with the corresponding personal pronouns. It was on this basis that I supported the conclusion that the first person plural marker in the definite verbal agreement paradigm of Modern Hungarian is not a clitic. It is probably significant in this connection that the marker for a first person plural possessor in Modern Hungarian (the -*ünk* of *keretünk*) does have a morphological connection with the pronoun: the nasal of the marker -*ünk* is historically identical with the nasal of the pronoun *mi* 'we'. If we are to conclude on this basis (along the lines of Preminger 2014) that the marker -*ünk* is a plural-marked first person clitic, then the fact that it is incompatible with the clitic -*JA* will fall out along the lines of (17). Extending this line of thinking to the second person plural is not a straightforward matter, however: the -*tek* of *keretetek* 'your_PL frame' and the -*tek* of *szeretitek* 'you_PL love it' look exactly the same; arguing for the clitic status of the former and the non-clitic status of the latter will therefore lack any transparent phonological support, and runs the risk of being a self-fulfilling prophecy.

(22)   1SG   láttam   'I saw it'   szerettem   'I loved it'
        2SG   láttad   'you_SG saw it'   szeretted   'you_SG loved it'
        3SG   látta   '(s)he saw it'   szerette   '(s)he loved it'
        1PL   láttuk   'we saw it'   szerettük   'we loved it'
        2PL   láttátok   'you_PL saw it'   szerettétek 'you_PL loved it'
        3PL   látták   'they saw it'   szerették   'they loved it'

The way in which I presented this fact in the paradigms in (1) and (2), in the introduction, may already have revealed to the reader how I would like to approach it. The relevant portions of the paradigms in (1) and (2), for the third person singular, are repeated in (23):

(23a)   3SG   anyag-*ja*   'his/her fabric (al.)'   keret-*je*   'his/her frame (al.)'
               anyag-*a*   'its fabric (inal.)'   keret-*e*   'its frame (inal.)'
(23b)   3SG   lát-*ja*   '(s)he sees it'   szeret-*i*   '(s)he loves it'
               lát-t-*a*   '(s)he saw it'   szeret-t-*e* '(s)he loved it'

These paradigms draw an implicit connection between the absence of *-JA* in the inalienably possessed noun phrase and the absence of *-JA* in the past tense forms of the definite agreement paradigm. I want to make this connection explicit now, by arguing that the *-a* and *-e* that follow the past tense marker *-t*, in *látta* and *szerette*, are the exponents of the possessedness marker of possessed noun phrases, i.e., exponents of a RELATOR head mediating a possession relation between a subject and a predicate.

The idea is that the Hungarian past tense forms are all built on a *non-verbal* base —they are inflected *participles* rather than *verbs*. The event denoted by the participial predicate is in the subject's possession. Since the subject cannot possibly avoid possessing it (after all, whatever you may have done in the past will stick to you for the rest of your life), it is the subject's *inalienable* possession—which explains the systematic absence of *-JA* from the past tense definite agreement paradigm, on a par with the fact that *-JA* does not occur in the paradigm of inalienably possessed noun phrases.

The hypothesis that the past tense forms have a non-verbal base in Hungarian is supported by the fact that this base is identical with the past participial (PPTC) form, which clearly has a non-verbal distribution: past participles can occur as prenominal attributive modifiers:

(24)   a tegnap történ-t baleset
            the yesterday happen-PPTC accident

The case for the non-verbality of the past tense base is strengthened by the fact that in the Hungarian counterfactual conditional construction the person/ number-inflected past tense occurs in the complement of a form of the verb *van*

'be', as seen in (25). Here *volna* is invariant, showing no agreement with the notional subject of the sentence, which instead controls agreement on the form in *volna*'s complement. A sensible way to analyse this pattern is to say that *volna* does actually show agreement with its subject, but that its subject is not the notional subject of the conditional but instead the participial constituent formed by that subject and the past tense form of the verb—an inalienably possessed partipial phrase: what we have in (25) is best paraphrased as 'if [my/your/his/her having seen it] were (the case)'.

(25)   1SG   ha láttam *volna*, ...
        2SG   ha láttad *volna*, ...
        3SG   ha látta *volna*, ...
               if see.PST.PERS were
               'if I/you~SG~/(s)he had seen it, ...'

To flesh out the structure of the core of the Hungarian 'past tense' construction, we need to first bring back from memory the syntax underlying inalienable possession constructions, given in (16b) and repeated here as (26a), with some morphological information put in. In the structure of the Hungarian past tense, the possessum is the inalienably possessed participial form of the verb; its possessor is the notional subject of the sentence, as in (26b).

(26a)   [~RP~ [~Possessor~ ... N ...] [RELATOR=-*a/e* [~Possessum~ ... N ...]]]   (inalienable possession)
(26b)   [~RP~ [~Possessor~ ... N ...] [RELATOR=-*a/e* [~Possessum~ ... V+PTCPL ...]]]   (past tense)

The possessum in (26) cannot harbour the clitic -*JA*: the complement of the RELATOR in a reverse predication structure is generally frozen, as discussed in Sect. 3; and the structure of the possessum is not large enough to provide a host for the clitic either. What we get inside the RP in (26b) is the suffix -*a/e* as the spell-out the RELATOR that mediates the relationship of inalienable possession between the participial predicate and the subject, which does indeed show up throughout the past tense paradigm for both the indefinite and the definite conjugation.[9]

But while the absence of -*JA* in the past tense paradigm matches the absence of -*JA* in inalienably possessed noun phrases, the person morphology of the past tense paradigm is not identical with that of the possessive DP, as a comparison of the paradigm of *lát-t* in the left-hand column of (27) and the paradigm of inalienably possessed *anyag* in the right-hand column shows.

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[9]Except in the third person singular indefinite. Here exponence of the RELATOR is probably suppressed in order to avoid syncretism between the definite and indefinite forms.

(27) 1SG lát-t-am   1SG anyag-om
      2SG lát-t-ad   2SG anyag-od
      3SG lát-t-a   3SG anyag-a
      1PL lát-t-uk   1PL anyag-unk
      2PL lát-t-átok   2PL anyag-a-tok
      3PL lát-t-ák   3PL anyag-uk

Moreover, there is an important morphosyntactic difference between the past tense inflectional paradigm and that of possessed noun phrases, having to do with 'anti-agreement'. In the possessed noun phrase, a caseless/nominative third person plural possessor never co-occurs with plural inflection on the possessum: (28a). In the past tense, on the other hand, plural agreement is obligatory, both in the indefinite and in the definite conjugation, as shown in (28b).

(28a)   az ingek anyaga   *a ingek anyaguk   'the shirts' fabric'
          the shirts fabric.POSS   the shirts fabric.POSS.3PL
(28b)   *a nők látta   a nők látták   'the women saw it'
          the women see.PST.DEF   the women see.PST.DEF.PL

So the physical subject of the past tense construction is not, in the final analysis, the possessor of an inalienably possessed participial form of the verb. That the plural forms in the past tense definite paradigm for back-vowel stems in (22) (*-uk*, *-átok* and *-ák*) are identical with the corresponding forms in the present tense definite paradigm for back-vowel stems points in the same direction.

The subject of the past tense is not just the inalienable possessor of the participial phrase: it must also be represented outside the possessive structure in (26b), in a position where it can control agreement with a present tense finite verbal element. The way to do this, I suggest, is to introduce a verbalising light verb *v* outside the structure in (26b), as in (29).

(29) $[_{TP}$ T $[_{vP}$ SUBJECT$_i$ $[v$ $[_{RP}$ $[_{Possessor}$ PRO$_i$] [RELATOR=*-a/e* $[_{Possessum}$ V+PTCPL OBJECT]]]]]]]

The physical subject is base-generated in the matrix clause, introduced there by the light verb *v*, and controls a PRO inside the small clause. The *v* outside the small clause does not just verbalise the structure; it also allows the object of the possessed participle to check case—a technical possibility on the assumption that no barrier intervenes between *v* and the object. But recall that the object cannot be the clitic *-JA* because extraction from the possessum in an inalienable possession structure is impossible. So what we get is what we want: accusative case for the object; person inflection for the subject; and still no clitic *-JA*.

5 Conclusion

The pervasive parallels between the nominal and the verbal systems that we find in Hungarian informed this paper from the outset, with the syntax of clitics playing the central explanatory role in the analysis. It is my hope that this analysis, and the new light that it sheds on so-called definiteness agreement and the morphosyntax of clitics, will give rise to novel insight into the nominal and verbal systems and the connection between the two, well beyond the boundaries of Hungarian.

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Evidence for Generalized Verbal Periphrasis in English

Christina Tortora

Abstract It is commonly assumed that the two simple tenses of English (*We love/loved the wine*) do not involve verbal periphrasis. Instead, I consider evidence which supports an analysis of the English simple present and past tenses as compound tenses. For non-vernacular Englishes, the auxiliary is covert; however, there are numerous cases of variably overt auxiliaries in different vernacular English constructions yielding simple present and simple past interpretations which support the proposal. The conclusion that all English tenses (present, past, perfect) are compound entails two concomitant hypotheses: (i) English verb forms traditionally characterized as present and past tense verbs are non-finite (reviving an idea put forward by Solà 1996), and (ii) meaning differences between simple past and the perfect tenses does not derive from the absence vs. presence of an auxiliary. Thus, the difference in interpretation between *we loved that wine* (past) and *we've always loved that wine* (present perfect) cannot find its source in the absence versus presence of *have*, which itself does not contribute to the meaning difference. Rather, à la Iatridou et al. (2001), I develop the idea that interpretive differences must be found in the different functional/adverbial projections of the matrix and embedded clauses.

Keywords Auxiliary verbs · *do*-support · Light bi-clausality
Finiteness · Non-finiteness · Past participle · Simple past · Present perfect
Verbal periphrasis · V-to-T movement

1 Introduction

Lack of V-to-T movement of the main verb in English (e.g., as in (1)) has long been attributed to some "defective" property of Infl/T/Agr.

C. Tortora (✉)
Linguistics Program, The Graduate Center, CUNY, New York, USA
e-mail: CTortora@gc.cuny.edu

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(1) a.   We never **walked** to school.
    b.   *We **walked** never to school.

Under this view (e.g. Pollock 1989), in contrast with what happens in the Romance languages, the defective nature of the higher inflectional field in English fails to overtly attract the main verb, which is assumed to be finite, like its Romance finite counterparts. This difference between overt V-to-T movement versus lack thereof is understood to be an overarching grammatical distinction between the Romance language family on the one hand, and English (or, the English language family) on the other.[1]

Despite the currency that the Pollockian approach (and its descendants) has held over the decades, this paper revives, supports, and extends an alternative hypothesis, originally put forth by Solà (1996), where the English main verb in (1) is taken not to be finite, but rather, to be a past participle. The idea that main verbs such as *walked* in (1) are past participles accounts for the lack of V-to-T movement (overt or covert) in all Englishes, without any reference to the features of Infl (see footnote 2 below for comments on the "simple present" form). That is, under Solà's account, the verb *walked* in (1) fails to move to the higher inflectional field for the same reason that the past participle in Romance fails to do so.

To expand on Solà's idea, we can consider two (not mutually exclusive) ways to conceptualize the failure of past participles to raise to T: (a) as non-finite forms, they lack any inflectional features that would require them to move to the higher inflectional field, and/or (b) they are too low in the structure to be involved in any relationship with the higher clause. In other words, the past participle occupies a different domain (or phase) than the root inflectional field, projected by the root verb. For the Romance compound tenses which contain past participles, we can furthermore follow the tradition of e.g. Kayne (1993) and Rizzi (2000), which holds that the past participle projects its own clause, such that the auxiliary + past participle structure is what we can term "lightly bi-clausal" (Tortora 2014a, b), as in the Italian example in (2):

(2)   [$_{\text{root clause}}$ *noi* INFL$_{[+\text{fin}]}$ *abbiamo*$_{\text{aux}}$ [$_{\text{participial clause}}$ *camminato*$_{\text{main-v}}$ ...]]
           we   have   walked

In (2), a Romance past participle such as Italian *camminato* 'walked' is in a domain (i.e., the embedded clause) too distant from the root clause to have any relevance to its higher inflectional field.

If V-to-T movement is absent in English for the same reason it fails to occur with past participles in Romance, then we can further assume that the hypothesized past participle *walked* in (1) is also in an embedded participial clause. The difference

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[1]From here forward, I will use the term *English* to refer to the entire family of languages that are sometimes referred to in the literature as "Englishes" or "English varieties" or "English dialects" (terms which I will also use), much as we use the term *Romance* to refer to an entire language family.

between (1) and (2) would thus reside in the nature of the matrix auxiliary, which for English (or, for some Englishes in some structures, as we will see), we must assume is silent. I provide a sketch of this idea in (1'):

(1') [root clause *We* INFL$_{[+fin]}$ AUX$_{silent}$ [participial clause *walked* ...]]

The sentence in (1) is thus lightly bi-clausal, contrary to appearances. This hypothesis entails that there are no so-called "simple tenses" in English: both the simple past and the simple present (as in (3), which also exhibits lack of V-to-T movement) are covert compound tenses.[2]

(3) [root clause *We* INFL$_{[+fin]}$ AUX$_{silent}$ [non-finite clause *walk* ...]]

If this analysis is on the right track, then it follows that all Englishes are what we can call *generalized verbal periphrasis* languages.

The purpose of this paper is simple: it brings together several apparently unrelated cross-dialectal facts from English with an eye towards providing supporting evidence for the silent AUX seen in (1') and (3), which supports Solà's hypothesis that the main verb in (1) is a past participle. As I will show, the hypothesis that all Englishes exhibit generalized verbal periphrasis arguably has greater potential for further progress in our understanding of the wide range of possible tense-aspect interpretations associated with the comparatively limited set of morphological forms and syntactic structures for simple and compound tenses across Englishes.

To this end, in Sect. 2, I discuss a (non-comprehensive) range of structures across English varieties, together as a coherent whole, and argue that the variety of structures suggest that all English finite tenses involve at least an auxiliary and a main verb, making the so-called simple tenses look structurally less different from the compound tenses. In all of the cases discussed, this auxiliary is variably overt/ silent, which makes the idea of a silent AUX in (1) seem less exotic (especially given the facts covered in Sect. 2.5). In Sect. 3 I briefly discuss independent evidence from English which expands on and supports Solà's claim (made prior to

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[2]One of the differences between the simple present (3) and the simple past (1') would be the nature of the non-finite verb form: in (1') it is a past participle, whereas in (3) it is the (uninflected) verb root. I put aside the question of verbal -*s*, the presence of which varies across Englishes. If present (which is not always the case; *she run every morning*), it is found in the third person, either singular (*she runs*), or singular & plural (*the girls runs*). See e.g. Green (2002), Kayne (1989), Henry (1995), Tortora and den Dikken (2010), Zanuttini and Bernstein (2011), and references cited therein, for discussion of this morpheme and the question of whether it should be analyzed as a marker of number or person (as opposed to a marker of tense); if not a marker of tense, then the idea that verbs in -*s* are finite becomes less convincing. The fact that this suffix is not present on the main verb in *do*-support environments in those varieties that do exhibit -*s* (*she runs*; *she doesn't run*) is not trivial, but a discussion of these facts (and how to account for them) is outside of the scope of this paper.

Solà by e.g. Wolfram and Fasold 1974) that the English simple past and past participle have levelled into a single category. In Sect. 4 I conclude with a discussion of a few avenues for future research. As the reader will see, this work is exploratory, aiming only to provide a basic outline for a specific research agenda.

2 Silent Auxiliaries: A View from Less-Studied Structures

Let us examine a by no means exhaustive variety of complex predicate structures in English which, taken together, show (a) that the non-modal auxiliaries *have/be* and *do* play a far wider range of roles in verbal constructions than is typically characterized for English in the syntax literature, and (b) that these auxiliaries are spelled out overtly far more variably than what we observe for the less vernacular Englishes.

Regarding the range of roles these auxiliaries play, we will see for example that auxiliary *have* is not reserved for the so-called "perfect" construction and that auxiliary *do* is not always a "dummy." We will also see that there is evidence from the use of *ain't* across varieties that *have*, *be*, and *do* are underlyingly the same auxiliary, extending the Freeze (1992)/Kayne (1993) hypothesis that *have* and *be* are the one and the same verb; this in turn suggests the hypothesis that underlyingly, *have/be/do* are surface variants of a single underlying form. This single underlying form furthermore may be silent or spelled out.

The cross-dialectal facts show that the category AUX in English can give rise to interpretations otherwise associated with the simple tenses. The vernacular uses of auxiliaries for different tense-aspect meanings which the standard language expresses with simple tenses thus suggests that despite appearances, all Englishes exhibit auxiliary verbs in the simple tenses. I remind the reader here of footnote 1: it is important to recall that I am treating all Englishes as a language family, not as a "single language." In this regard, it is no less coherent to claim that all languages in a particular family share the property of exhibiting generalized verbal periphrasis, than it is to claim that all languages in a particular family share the property of lack of V-to-T movement.

2.1 Have got

Consider use of the form *got* in its present possessive interpretation in the examples in (4)[3]:

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[3]As a separate issue, note that *got* is ambiguous between past and present tense interpretations (*I got the flu* > 'I acquired the flu' versus 'I have the flu'), which itself needs to be explained. In Tortora (2006), following Shim's (2006) analysis of a similar present possessive construction in Korean, I argue that in contrast with "past tense" *got*, present possessive *got* incorporates the silent

(4) I / You / We / They got the flu.   (= I / You / We / They have the flu.)

For many speakers, the examples in (4) have a semantically equivalent variant, with what seems to be the auxiliary verb *have*, as in (5):

(5) I've got the flu / You've got the flu / We've got the flu / They've got the flu.

Given the semantic equivalency of the variants in (4) and (5) (no *have* vs. overt *have*), one possible conclusion we can draw is that (5) is indicative of a silent AUX in (4).[4]

2.2 Have-*support with AAE* BIN

In the previous section, we observed an instance of auxiliary *have* which does not contribute any perfective meaning. In other words, the overt morpheme *have* in (5) is not "perfective *have*." One possible conclusion we can draw based on this data is that generally speaking, auxiliary *have* is itself semantically vacuous, and may simply be the reflex of a more complex structure, inside of which we can find the structure's true meaning components. In other words, contrary to appearances, *have* is a dummy verb, like "dummy *do*," even in the case of the perfect. Note that

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morphemes PAST and INCH (=inchoative), which combine with the morpheme *have* to give rise to the surface form *got*. Furthermore, in "*do*-support contexts," where the PAST morphology is removed (which I argue entails the removal of INCH), the main verb form surfaces as *have*. Thus, for American speakers such as myself, though (4) is an acceptable declarative form, the interrogative version of (4) is *Do they have the flu?* (and similarly: *They('ve) got the flu, **don't** they?*). The string **Have they got the flu?* (and likewise *They've got the flu, *haven't they?*) does not seem natural to me; instead, it seems distinctly like another English variety, and not part of my own grammar.

Note that for many speakers (such as myself), present possessive *got* is not possible in the third person singular without *have*; thus, (ib) is the only possibility.

    (i)   a.   %She got a problem.
           b.   She's got a problem.

[4]It is also worth noting that this structure reveals that auxiliary *have* does not always yield a "perfect" interpretation in English. If *have* is not responsible for perfect aspect, then for those structures where *have* does have a perfect interpretation, we have to look elsewhere for the source of this interpretation. One could attempt to provide a counter-argument to this conclusion by stating that the lack of perfect aspect in (5) derives from the fact that *got* is not a past participial form (cf. *They've gotten the flu three times this year already*). This counter-argument does not hold, however, because *got* is the past participial form for many English speakers. For this reason, in fact, for these speakers the examples in (5) are ambiguous between present possessive and present perfect (cf. *They've got the flu three times this year already = They've gotten the flu three times this year already*).

African American English (AAE) structures with the aspectual marker *BIN* provide further evidence for this claim.

What is AAE *BIN*? As Green (1998) explains, *BIN* is "a [n uninflected aspectual] marker that situates an eventuality, or some part thereof, expressed by the following predicate, in the remote past." Consider in this regard the example in (6), from Green (1998):

(6) He BIN quit school.
    'He quit school a long time ago'

Although *BIN* is not a main verb (as Green argues, it is an aspectual marker, like aspectual *be*), like main verbs, it does not invert in interrogatives, or appear to the left of the negative marker, or become prosodically prominent in emphatic contexts. Rather, in these classic *do*-support-type environments (negation, questions, emphasis), the auxiliary verb *have* appears, as can be seen in (7) (examples adapted from Green):

(7) a.   He **ain't/haven't** BIN quit school.   negative
    b.   **Have** he BIN quit school?   interrogative
    c.   He **have**$_{\text{EMPH}}$ BIN quit school!   emphatic

In other words, we find in this case what can only be described as *have*-support, on analogy with *do*-support. And like we claim is the case for "dummy *do*," the presence or absence of *have* does not affect the meaning.

As in Sect. 2.1, a logically possible hypothesis is that just as in the examples in (7), the structure in (6) contains auxiliary *have*, the only difference being that it is the silent version, as in (8):

(8) He HAVE$_{\text{silent}}$ BIN quit school   (cf. (6))

Note though that this does not entail that *have* itself (silent or overt) contributes any meaning. This becomes particularly clear when we compare the case of the aspectual marker *BIN* with "aspectual *be*" in AAE (also studied by Green), which gives rise to a habitual interpretation:

(9) He be late all the time.

Like *BIN*, aspectual *be* is not a main verb, but like a main verb, it does not invert in interrogatives, or appear to the left of the negative marker, or become prosodically prominent in emphatic contexts. In contrast with *BIN*, however (which exhibits *have*-support), in these *do*-support-type environments we get classic *do*-support (cf. (7)); examples adapted from Green:

(10) a.   He **don't** be late.   negative
    b.   **Do** he be late?   interrogative
    c.   He **do**$_{\text{emph}}$ be late!   emphatic

There is thus an exact parallelism between remote-past *BIN* and aspectual *be*, where the only difference in *do*-support environments is that in the former case, *have* appears, while in the latter case, *do* appears. This fact makes it difficult to sustain the view that *have* and *do* are really different from one another. Either both of them contribute meaning to the structure (either in their overt or silent forms), or neither of them do.

2.3 *Periphrastic* **did** *(Non-habitual and Habitual)*

In the previous two sub-sections, I have been building a case regarding the auxiliary verb *have*. In the structures examined thus far, we see (a) that the appearance of this auxiliary is variable, and (b) that the auxiliary itself is not as obviously responsible for the semantic content of the compound tense constructions it participates in, as we might have otherwise been led to believe by the literature on the perfect (and the claims regarding the role of "perfective *have*"). The data suggest a greater semantic vacuity of auxiliary *have*, and also the existence of a silent version of this auxiliary. Indeed, it seems that auxiliary *have* may not carry any more meaning than auxiliary *do* carries. If the claim that auxiliary *have*, like auxiliary *do*, contributes little (if any) meaning to the structure might seem controversial, it might seem equally controversial to claim that auxiliary *do* contributes more of a meaning component to the structure than we are otherwise led to believe by the literature on Standard English *do*-support. In what follows, I consider two cases of auxiliary *do* which are not instances of classic *do*-support. I consider these cases as further evidence that the auxiliaries *have* and *do* are less different from one another than is commonly assumed.

As has been extensively illustrated and discussed by various authors (Tagliamonte 2012; Jones and Tagliamonte 2004; Rickford 1986; Harris 1984; a.o.), there are many varieties of English which exhibit the variable presence of an auxiliary verb *do* in non-*do*-support environments. I review only a few cases here. Consider the following example from Guyanese (taken from Tagliamonte 2012):

Guyanese:

(11) When I **did** make the application, I stated "an intelligent person."
　　(= When I made the application, I stated...)

Tagliamonte (2012) reports that the interpretation of (11) is equivalent to a simple past (i.e., an E,R_S interpretation in Reichenbachian terms). There is no evidence of any prosodic prominence on the form *did*, and no evidence of an emphatic interpretation. We find a similar such example from southwest Middle English (also taken from Tagliamonte):

(12) His sclauyn he **dude** dun   legge.
    his cloak   he **did** down lay
    'He laid down his cloak.'

This use of auxiliary *do* in a standard-issue declarative environment contrasts with what we find in Standard English.[5] The presence of this auxiliary in these structures makes these sentences with a simple past interpretation look a lot more like a compound tense, along the lines of the "perfect" tenses.

The question arises as to what its function is, in such structures. One can hypothesize (on analogy with the widely accepted notion of a "perfective *have*") that auxiliary *do* in (11) and (12) has interpretive content, encoding e.g. the notion of "past" or "past punctual" or "past completive." Alternatively, one can hypothesize that in and of itself, it does not contribute any meaning. Rather, its presence simply indicates a more articulated clausal architecture than meets the eye (i.e., a light bi-clausality).

Note that the use of *do* in Guyanese and southwest Middle English contrasts with another, found in Somerset English and Samaná English, where periphrastic *did* seems to disambiguate the non-habitual from the habitual reading of the "past" (see also Harris 1984 for Hiberno-English). Thus, ambiguous examples like *we walked to school* are disambiguated, where the habitual would contain the form *did* (13a), while the punctual would not (13b):

(13) a.   We did walk to school all the time when I was a kid.   habitual
     b.   We walked to school this morning at 10am.   punctual

The following non-hypothetical examples from Jones and Tagliamonte (2004) illustrate:

Somerset English (Southwest England):

(14) a. And mi husband always used to tell me I **did** always speak before I **did** think.
     b. 'Cos the nineteen-twenties and thirties was, well like 'tis now, farming **did** hardly pay.

Samaná English

(15) c. They had a little road way out there what they **did** go over.
      d. I **did** like to eat the sugar. (= I used to like to eat the sugar.)

Consider also the following example from Harris (1984), for Belfast English:
Belfast English

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[5]See Tamminga (2014) and Ecay (2015) and references cited therein for a discussion of the various contextual influences on the use of auxiliary *do* in the history of English.

(16) Well when you put them on the barrow you **do** have them in heaps and then you **do** spread them and turn them over and all.

There seems, then, to be cross-dialectal variation in the function of *do* in non-*do*-support environments, with evidence for less (as in Guyanese) or more (as in Somerset or Samaná) of a discernable contribution to tense/aspect interpretations. The literature on the matter speaks to the fact that more experimental work on these structures in these dialects would prove useful to gaining a better understanding of these distinct uses of *do*.

That said, we still have a main finding which remains: in Sects. 2.1 and 2.2 we saw evidence of auxiliary *have* exhibiting less of a semantic contribution than we are otherwise led to believe from the literature on the "perfect," and in this section we see auxiliary *do* exhibiting more of a semantic contribution than we are otherwise led to believe from the literature on dummy *do*. Furthermore, in all of these cases there is intra-speaker variability in the overt realization of these auxiliary forms. Thus, in Sect. 2.1 we saw the variable use of contracted *have* in the possessive *got* construction. Similarly, regarding the use of *do* examined in this section, it is important to note that its appearance is variable. This variability suggests the hypothesis that there is a silent version of these auxiliaries. In Sects. 2.4 and 2.5, I briefly review two more telling cases.

2.4 *Semi-overt* **had** *with* **liketa**

Consider the case of *liketa*, which I will call here an aspectual marker; examples taken from Johnson (2013)[6]:

(18) a. And I knew what I'd done and boy it **liketa** scared me to death.
  b. That thing looked exactly like a real mouse and I **liketa** went through the roof.
  c. When we got there, we **liketa** never got waited on.
  d. I **liketa** never went to sleep that night.
  b. That just **liketa** 've killed him.

For space reasons I put aside a discussion of the cross-linguistic variation in the use of *liketa*, and restrict myself to the variety described in Johnson (2013). I also put aside the semantic interpretation of this form, referring the reader to Johnson (2014). Here I have the simple goal of pointing out that speakers of Johnson's

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[6]I believe there is evidence to support the hypothesis that *liketa* is an "aspectual marker" in the sense of Green's (1998, 2002) analysis of the AAE aspectual markers *BIN* and *be*, discussed in Sect. 2.2.

See Johnson (2014) for analysis and for the meaning of *liketa* (which he argues, contrary to previous literature, does not have the same semantics as *almost*).

variety (Eastern Kentucky) variably allow for the presence of the overt auxiliary verb *had*; consider the following example (from G. Johnson, p.c.):

(19) She **had liketa** killed me.   (= She liketa killed me.)

All of the examples in (18) likewise occur variably with the auxiliary *had*, where the presence or absence of *had* does not change the semantic interpretation. Depending on the angle we wish to take, we can think of this auxiliary as "dummy *had*" (if we wish to liken it to the *do* of *do*-support), or, we can liken it to the Guyanese form *did* discussed in Sect. 2.3 (and hypothesize that it contributes some tense-aspectual information), or somewhere in between. However we slice it, we have to account for its variable appearance, and the fact that whether it is overt or not, the meaning of the sentence does not change. Again, here, we have evidence to support the hypothesis that in the cases in (18), we are dealing with a silent auxiliary.

2.5   The "Compound Simple Past"

Various authors, including Rickford and Rafal (1996), Green (2002; 2013), and Ross et al. (2004) discuss use of a structure that has been referred to either as the "pre-verbal *had*" (e.g. Green) or as "preterite *had*" (e.g. Rickford and Rafal). I refer to the structure as the "compound simple past," not to create a proliferation of terms for one and the same phenomenon, but to underscore its formal similarity to the compound tenses, such as the past perfect.

Consider the following examples from Ross et al. (2004), where we see a narrative laying out a sequence of events, where sometimes the compound simple past is used (bold), and sometimes the simple past is used (italics):

(20) a. My mama, she *was* about to go to Bible study,
     b. and on the way back there, her car **had stopped** .
     c. And then she **had called** the house because somebody *let* her use the phone.
     d. And then she **had called** the house,
     e. and then I *said*, "Hello. Who's this?"
     f. And then my mama *said*, "It's your mama. Let me talk to your daddy."
     g. And then she **had told** my daddy to come with us and bring a big rope so they could ...

Note that the form in (20g) (for example) does not indicate an event in the past, relative to the time of the event reported in (20f). The above-cited researchers have all noted that the semantic interpretation is that of a simple past, not of a past perfect.[7] An individual speaker's use of this compound simple past is variable,

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[7]It is important for the reader to heed the warning of Harris (1984) here, and to resist the temptation of interpreting the numerous examples throughout the literature on the topic from the perspective of our own grammars, if our own grammars do not exhibit the compound simple past.

and in my experience, seems to be far more widespread than the literature lets on: it is exhibited in all kinds of regional vernaculars (e.g., Staten Island, Appalachia), and is not just particular to African American English.

I do not wish to oversimplify the complex nature of this construction. There is no question that much qualitative and quantitative research still needs to be done to gain a fine-grained understanding of the compound simple past. There may be regional variation in its use, and it is not clear whether the auxiliary *had* is licit in all syntactic contexts. For example, it is unclear whether *Had he called you?* is a possible variant of *Did he call you?* Additionally, it is difficult to find examples in the literature with an intervening adverb (negation or other), or with a tag question. It is also not clear if the compound simple past can be used with a habitual interpretation like the simple past form can, or like the compound form with *did* can.

Nevertheless, there are several clear facts here, with respect to the compound simple past. Two of them are as follows: (a) the interpretation is equivalent to E,R_S (in Reichenbachian terms), i.e., a simple past interpretation, and (b) speakers use it variably with the non-compound simple past form (i.e., *he had called < > he called*). That is, the presence or absence of auxiliary *had* does not change the tense-aspect semantics; the sentences are thus syntactic variants. This variable use of *had* can be framed, quite simply, in terms of use of an overt (21a) versus silent (21b) auxiliary *had*:

Compound simple past:

(21) a. [*He* INFL$_{[+fin]}$ *had*   [$_{\text{participial clause}}$ *called* ...]]
    b. [*He* INFL$_{[+fin]}$ HAD$_{\text{silent}}$ [$_{\text{participial clause}}$ *called* ...]]

Thus, in sentences like *he called you* (as in (21b), with silent HAD), we have a compound tense, despite appearances to the contrary.

Anecdotally, I can report that English speakers who are not familiar with the form (such as English literature and writing professors, who display a fierce commitment to prescriptivism) mistake it for the past perfect, and incorrectly maintain that those speakers who use *had* + participle "do not know how to use the past perfect." I have also heard numerous times, including from one reviewer, the claim that this is simply a "polite" form, a claim which illustrates the problem discussed by Harris (1984), whereby speakers of closely related dialects are misled into believing they understand what a particular form means for the speakers who use it, by virtue of allowing personal intuition to come into play. But as Harris argues, personal intuition regarding meaning should not be appealed to, if the form is not part of one's grammar.

On a different note: as observed for example by Green (2013), the compound simple past exists independently of the fact that speakers vary in their use of simple past/past participial forms. (In Sect. 4, I assert in fact that the simple past and the past participle are one and the same category.) Thus, we find examples like *had went*, *had gone*, *had told me*, *had tell me*, etc. (see footnote 4). As such, for the present purposes it makes little sense to try to determine if the form which follows auxiliary *had* is a simple past or past participial form.

2.6   Section Summary

In this section I reviewed a number of structures in English where the variable presence of the auxiliaries *have* and *do* does not seem to affect the semantics of the structure in question. This suggested one of three things: Either (a) these auxiliaries are pleonastic elements, or (b) if they can be shown to be associated with certain meanings, then the fact that these meanings persist in the auxiliaries' "absence" must be explained, or (c) regardless of whether we can show (at the moment) if the auxiliaries carry any meaning themselves, their variable presence still points to the existence of a silent AUX. In other words, despite appearances, wherever an auxiliary seems to be absent, we have a silent counterpart to the overt auxiliary. Let us pursue this idea.

Though a theory of the silent auxiliary needs to be developed, I put that aside in this work (leaving it for future research), and will simply assume silent AUX.[8] Instead, I now move to an issue which could be characterized as the other side of the same coin.

3   Variation in Use of Non-present Verb Forms

In the previous section, I argued that English exhibits generalized verbal periphrasis, even when appearances indicate the contrary. Thus, the simple past (as in (21b)) involves a silent auxiliary embedding a participial clause, headed by a past participle. To support the idea that simple pasts are crypto-participles, Solà (1996) observes that "…Modern English speakers tend to blur the contrast between the 'past participle' and the 'past' form," an observation which has been made repeatedly in the sociolinguistics literature at least since the 1960s (see e.g. Labov et al. 1968; Wolfram and Fasold 1974). The two most obvious facts pointing to this conclusion are (a) the identity of past/participle forms within the class of regular verbs (which represent the majority of verbs in English; e.g. *we walked* and *we have walked*), and (b) the identity of form within a paradigm (i.e., the lack of distinct forms across persons/numbers; e.g. *he walked; they walked*). However, as noted by Solà, the irregular verbs (as few in number as they are) seem to present a counter-example to this claim (e.g., *ate* vs. *eaten*). In this section, I briefly discuss evidence that—despite this appearance of a distinction between the two categories in the class of irregular verbs—there is evidence that vernacular speakers do not specialize distinct "non-present forms" (as Tortora et al. 2015 term them) for simple versus compound tenses. In fact, Tortora et al. (2015) show that it is a myth that

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[8]The theory of silent AUX is corroborated on completely independent grounds by Kayne (2005), who proposes a silent AUX in the present tense, in order to explain the non-standard English agreement pattern in (i) (where the indexing expresses subject-verb agreement):

  (i)   people who$_k$ John$_i$ Aux$_i$ like$_k$

Table 1 Distribution of morphological variants by context

Variant type	Simple past	Compound	Total
Majority variant	1150 (94%)	65 (77%)	1215 (93%)
Minority variants	76 (6%)	19 (23%)	95 (7%)
Total	1226 (100%)	84 (100%)	1310 (100%)

distinct non-present forms in English come in pairs. Data from the *Audio-Aligned and Parsed Corpus of Appalachian English* (Tortora et al. 2017) show that vernacular speakers may exhibit upwards of five non-present forms for a single verb (e.g. *saw*, *seen*, *see*, *seed*, *seened*). Note that this is not what we would expect if distinct non-present forms were simply indicative of a simple past versus past participle split. This evidence for the lack of specialization of non-present forms (for simple vs. compound tense) in turn further calls into question the hypothesis that speakers distinguish between simple past and past participle.

Here I briefly review the data for ~110,000 words from 5 speakers from the Dante Oral History Project (a sub-corpus of the AAPCAppE). In this sub-corpus Tortora et al. (2015) find (a) that all speakers have variant types; (b) that variants occur more in past than in compound tense contexts, reflecting the fact that the corpus data contains more past than compound tenses overall; and (c) that all speakers display variant forms that occur in both past and compound tense contexts.

To answer the question of whether the relative frequency of a given variant (e.g. *saw*) within a set (e.g. *seen/saw/seed/seened*) is similar in past and compound tense contexts, Tortora et al. tally up the number of tokens of each variant in a set in each non-present environment, with the results in Table 1.

Table 1 shows the distribution of morphological variants by syntactic context (simple past vs. compound tense). Note that for each verb root (e.g., *see* or *run*), there is a set of two or more variants (e.g., *seen*, *saw*, *seed*, *seened*, or *run*, *runned*), whereby one type in this "variant set" occurs more frequently. The term "majority variant" refers to this more frequent form, while "minority variants" refers to the variant or variants which are less frequent. The table shows that simple past contexts favor majority variants relative to compound tense contexts (94 vs. 77%). In this dialect, then, context (simple past vs. compound) does have an effect on variant selection, but, note that the effect is much weaker than would be expected on standard accounts. In compound tense contexts, like in past tense contexts, majority forms are strongly favored relative to minority variants (77 vs. 23%), indicating much greater tendency toward a levelled tense paradigm.

Based on these findings, Tortora et al. (2015) conclude that the variation may reflect the otherwise commonly accepted idea that some speakers allow for equivalent variants in both contexts—i.e., "morphological doublets." Consider in this regard the more normative variation found with *They dreamed ∼ They dreamt* and *They've dreamed ∼ They've dreamt*: we have two forms, *dreamed* and *dreamt*,

where for a single speaker, neither form specializes for simple past versus past participle. That is, both forms are used for both contexts. The findings in Tortora et al. (2015) indicate that vernacular speakers exhibit a similar variable use of irregular non-present forms with the entire range of verbs, and again, with sets of non-present forms larger than pairs.

To conclude this section: emerging studies of vernacular speech indicate variable uses of sets of lexically related non-present forms which belie the claim (a) that non-present forms of a verb come in pairs, and (b) that non-present forms of a verb are specialized for simple past versus compound tense. This in turn suggests that speakers do not conceptualize the simple past and past participle as distinct categories, a conclusion which is consistent with Solà's claim that the simple past is none other than a past participle.

4 Closing Thoughts

Let us take stock of the interplay between the related proposals I put forth in this work. The (by no means exhaustive) examples from numerous English varieties in Sect. 2 supports the idea of a silent auxiliary. I thus view Englishes as *generalized verbal periphrasis* languages, even when appearances (i.e., those of the simple tenses) suggest the contrary.

This in turn leads to the idea that all tensed verb constructions are "bigger" than what meets the eye, regardless of whether the auxiliary is overt or silent. Indeed, given the view that compound tenses are bi-clausal (argued for in Tortora 2014a, b), even a sentence as simple as *We walked* should be analyzed as bi-clausal (cf. (21b)):

(22) $[_{TP1}$ *We* INFL$_{[+fin]}$ AUX$_{silent}$ $[_{TP2}$ *walked* $]$ $]$

The structure in (22) now gives rise to some wiggle room for exploring the functional fields of the different clausal domains (TP1 and TP2) as the true loci underlying the range of tense-aspect interpretations available in the different Englishes, which far exceeds the range of overt forms available. Consider for example the ambiguity exhibited by (22), which can be interpreted either as a habitual or a punctual event. One possible account is that the ambiguity is structural, where there are at least two possible hypotheses for distinct underlying structures: (a) the different interpretations could be the result of distinct functional heads, or (b) the different interpretations might arise as a result of the presence of distinct silent adverbials. This latter possibility arises in light of another case of ambiguity discussed by Iatridou et al. (2001), seen in (23):

(23) Sue has been sick.

As Iatridou et al. note, the perfect construction in (23) gives rise to two possible interpretations, which can be termed the *universal* versus the *experiential* readings. Under the universal reading, Sue's state of illness has been continuous for some

period of time, and holds at the time of utterance. Under the experiential reading, Sue has been episodically ill one or more times in the past (but is not ill at the time of utterance). The two different readings are made salient with the addition of adverbial phrases that have particular semantic properties, such as those in (23'):

(23')a.   Sue has been sick [continuously/ever since last December]   universal reading
     b.   Sue has been sick [before]; [twice since last December]   experiential reading

   Given that (23) is disambiguated with the addition of adverbials with specific semantic properties, a question arises as to the source of the two meanings in (23) (without the adverbials). One possibility is that the string in (23) is sufficiently vague as to allow for both senses, and therefore, to allow for its compatibility with the two types of adverbial (*ever since* [universal] vs. *before* or *twice since* [experiential]). Another possibility is that the string in (23) is structurally ambiguous; that is, contrary to appearances, there are two different possible underlying structures.

   Iatridou et al. argue that (23) is structurally ambiguous; that is, the different readings are asserted, and not implied. Simplifying tremendously, they provide evidence that under the universal reading, a sentence like (23) contains a covert adverbial (with particular syntactic properties) which provides the relevant semantic content. Similarly, the experiential reading results from the presence of a different kind of covert adverbial. The two possible meanings associated with (23) thus do not derive solely from the combination of the form *have* and the form *been* (and the stative nature of the adjective *sick*). Instead, there is a component of meaning that can only be attributable to a silent adverb in the structure. Iatridou et al.'s evidence for such covert adverbials opens the door for investigating the entire range of tense and aspectual interpretations associated with verbs, in these terms, including examples like that in (22), or strings like that in (21a), which is ambiguous between a compound simple past and a pluperfect:

(24) a.   [He INFL$_{[+fin]}$ *had* [$_{participial\ clause}$ *called* ...]]   compound simple past
           (= e.g. he called two minutes ago; E,R_S)

     b.   [He INFL$_{[+fin]}$ *had* [$_{participial\ clause}$ *called* ...]]   past perfect
           (= e.g. he had already called by the time you came home; E_R_S)

   The hypothesis that the two different meanings are associated with two different structures should be falsifiable. This is a matter for future work, but briefly, I note that one possibility for the source of the structural ambiguity is the existence of distinct (sets of) functional heads, where one (or one set) encodes the E,R_S interpretation, and a different one (or a different set) encodes the E_R_S interpretation. This type of explanation would look to e.g. Giorgi and Pianesi's (1997) system, which provides a basis in which to discover where the encoding of the

relationships among E and R and S reside in these two different (but surface-string-identical) tenses.

But another possibility is to follow the lines of Iatridou et al. (2001). However, if the source of the difference between (24a) and (24b) were to find itself in a system of silent adverbials, we would first have to establish which are those overt adverbials that are only licit with simple past interpretations, versus which are those overt adverbials that are only licit with past perfect interpretations. As already noted, in terms of temporal-aspectual interpretation, there is at least one difference between the two: in the former, E and R are simultaneous (i.e., the event is at the same time as the reference point, which is in the past), whereas in the latter, E is prior to R (i.e., the event is prior to the reference point, which in the past). The question of whether this difference can be captured in terms of time adverbials is less obvious. Both E,R_S and E_R_S can correspond to punctual events, and neither is incompatible with non-punctual interpretations, for example.

Perhaps related to the issue of structural ambiguity is the proposal alluded to earlier that the distinct surface forms of the auxiliary derive from a single underlying form. Evidence from the different Englishes reveals that the auxiliaries *have* and *do* are more like one another than any restricted focus on the *present perfect* and *do*-support in Standard English lets on. The facts reveal that concepts like "perfective *have*" versus "progressive *be*" versus "dummy *do*" are misleading reifications of epiphenomena. Indeed, as Kayne (1993) provided ample cross-linguistic evidence for, the auxiliaries *have* and *be* are arguably spell-outs of the same underlying verb (notated *BE* by Kayne). Furthermore, as argued by Tortora (1994), this theory of auxiliary selection is readily applicable to English, allowing us to frame the use of *have* versus *be* in e.g. the *present perfect* versus the progressive (*John is eating*) as equally epiphenomenal, making English also an "auxiliary selection" language.[9]

To add *do* to the mix: a fine-grained analysis of *ain't* in different Englishes reveals the following fact: While some speakers allow *ain't* only as a spell out for the verb *be* (25a), others allow it as a spell out for *have* and *be* but not *do* (25a, b), while others still allow it as a spell-out for *have*, *be*, and *do* (25a, b, c):

(25) a.   John ain't hungry.   (= John isn't hungry)
     b.   John ain't eaten anything since Monday.   (= John hasn't eaten anything since...)
     c.   John ain't eat breakfast this morning.   (= John didn't eat breakfast this morning)

Furthermore, I believe that future experimental work will confirm a casual observation I have made, working informally with speakers on Staten Island: those speakers who allow (25c) also allow (25b) and (25a); those speakers who don't allow (25c) but who allow (25b), also allow (25a). And finally, those speakers who

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[9]Tortora (1994) was developed under the direction of István Kenesei, during his visit to the University of Delaware. Our syntax class with István that year was one of my most memorable and happy experiences as a graduate student.

allow (25a) do not necessarily allow (25b) or (25c). In other words, there is a one-way entailment, whereby use of *ain't* for *do* entails its use as *have* and *be* (and use of *ain't* as *have* entails its use as *be*), but not the other way around. While the mechanisms underlying this variation have yet to be explored, I maintain that Kayne's theory of auxiliary selection (as elaborated in Tortora 1994 for English), extended to *do* and incorporating the proposals put forth in this work, promise a fruitful avenue for providing a systematic explanation the *ain't* variation. In turn, an explanation of the underlying structural relationship between the auxiliaries *have*, *be*, and *do* will arguably lend clues to the nature of the clausal architecture giving rise to the (im)possible silent adverbials, and in turn, this will yield a more complete understanding of how to explain the range of possible tense-aspect interpretations we find with such a limited set of morphological forms and overt structures for simple and compound tenses across Englishes.

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Part III
Morphosyntax and Meaning

Marking Finiteness and Low Peripheries

Julia Bacskai-Atkari

Abstract The article takes up on the observations made by Kenesei (1994) regarding the position of the Hungarian interrogative marker *-e* in the clause and its distribution across clause types. Specifically, there are three crucial points: (i) the marker *-e* is related to the CP-domain, where clause typing is encoded; (ii) *-e* is obligatory in embedded clauses and optional in main clauses; (iii) *-e* is licensed in finite clauses only. I argue that certain clause-typing properties are reflected in the Hungarian clause in a lower functional domain, FP. In particular, finiteness and the interrogative nature of the clause are encoded here, as also indicated by focussing in non-interrogative clauses and by constituent questions, respectively. The marker *-e* is base-generated in the F head, as opposed to a designated FocP or TP/IP, allowing it to fulfil its clause-typing functions. Base-generation is crucial (as opposed to lowering from C) since it is able to capture the relatedness between *-e* and finiteness: *-e* is specified as [fin] and while the FP may be generated to host focussed constituents (including *wh*-elements) in non-finite clauses, a lexically [fin] head cannot be inserted.

Keywords Clause typing · Finiteness · Focus · Functional left peripheries
Interrogatives · Polar questions

1 Introduction

In this article, I take up on some of the observations made by Kenesei (1994: 339–343) regarding the position of the Hungarian polar interrogative marker *-e* in the clause and its distribution across clause types. In particular, there are three crucial points I would like to highlight here.

J. Bacskai-Atkari (✉)
Department Linguistik, Universität Potsdam, Potsdam, Germany
e-mail: julia.bacskai-atkari@uni-potsdam.de

First, Kenesei (1994: 339–341) argues that -*e* is related to the CP, though it appears lower in the clause than complementisers. The interrogative nature[1] of the clause is defined by C, yet the overt markers of the interrogative clause type are located lower: in constituent questions, *wh*-phrases appear in the preverbal, "focus" position (see Horvath 1986, É. Kiss 2002), while in polar questions, the element -*e* is typically an enclitic to the verb. Observe:

(1)   a.   Nem tudom,   Emma megérkezik*(**-e**).
           not   know.1sg Emma PRT.arrives-Q
           'I don't know whether Emma will arrive.' (Kenesei 1994: 340, ex. 163a)

     b.   Nem tudom,   Emma **mikor** érkezik meg.
           not   know.1sg Emma when   arrives   PRT
           'I don't know when Emma will come.' (Kenesei 1994: 340, ex. 163b)

     c.   *Nem tudom,   Emma **mikor** érkezik-**e** meg.
           not   know.1sg Emma when   arrives-Q PRT
           'I don't know when Emma will come.' (Kenesei 1994: 340, ex. 163c)

As demonstrated by (1c), a *wh*-element and the Q element are not compatible with each other.

Second, -*e* is optional in main clauses and obligatory in embedded clauses:

(2)   a.   Megérkezett**(-e)**   Emma?
           PRT.arrived.3sg-Q Emma?
           'Has Emma arrived?' (Kenesei 1994: 340, ex. 164a)

     b.   Nem tudom,   Emma megérkezik*(**-e**).
           not   know.1sg Emma PRT.arrives-Q
           'I don't know whether Emma will arrive.' (Kenesei 1994: 340, ex. 164a)

There are slight pragmatic differences between interrogatives with and without -*e* (Gyuris to appear), but none in terms of clause typing, and hence I will not address this issue here.

Third, contrary to *wh*-elements, -*e* is licensed in finite clauses only, as demonstrated by (3):

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[1]For the sake of simplicity, I will refer to the relevant feature as [wh] both in constituent questions and in polar questions; for a possible differentiation between [wh] and [Q], see Bacskai-Atkari (2015).

(3) a. A **milyen** virágot   szerető embereket szeretnéd   látni?
         the how   flower.ACC liking people.ACC like.COND.2SG see.INF
         'People who like what flowers would you like to see?' (Kenesei 1994: 340, ex.
         165a)

     b. *A virágot   szerető-**e** emberekkel akarsz   találkozni?
         the flower.ACC-Q liking   people.INS want.2SG meet.INF
         '*Do you want to meet the people whether they like flowers?' (Kenesei 1994: 340,
         ex. 165b)

     c. Ervin nem tud   **hová**   menni.
         Ervin not   knows where.to go.INF
         'Ervin cannot go anywhere.' (Kenesei 1994: 340, ex. 166a)

     d. *Ervin nem tud   menni-**e** (vagy nem   menni).
         Ervin not   knows go.INF-Q or   not   go.INF
         'Ervin doesn't know whether to go or not.' (Kenesei 1994: 340, ex. 166b)

Polar interrogative markers are not universally prohibited in non-finite clauses;
consider:

(4) a. I don't know **what** to do.
     b. I don't know **whether** to call Ralph.
     c. *I don't know **if** to call Ralph.

As shown, *whether* patterns with *what* and not with *if*, indicating that interrogative
operators are available in infinitival clauses: this does not apply to *if*, which is a
finite complementiser located in C, and as such it is not compatible with a non-finite
clause. The fact that Hungarian *-e* patterns with *if* and not with *whether* (and not with
ordinary *wh*-operators in either English or Hungarian) suggests that it has a head
status and that it is specified for finiteness, as Kenesei (1994: 340–343) assumes,
too.[2]

The question is what the exact position of *-e* is, what the role of that projection is
otherwise in the Hungarian clause, and how these issues are related to finiteness and
the CP. I claim that *-e* is the head of a functional projection (FP), which otherwise
hosts *wh*-elements and foci. The FP is not part of the CP-periphery but the features
[wh] and [fin] are reflected here. If the FP is generated and the head contains a [fin]
feature, it has to be lexicalised. This can be carried out by verb movement but if
the head contains *-e*, verb movement can be obviated, which happens in elliptical

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[2]It has to be stressed that the parallelism between *-e* and *if* is indicative of both properties, that is,
a head status and finiteness. Contrary to English *if* and French *si* 'if', Italian *se* 'if' can appear not
only in finite but also in infinitival questions, as observed already by Kayne (1991). The difference
is ultimately due to the elements occupying different positions. English *if* is a C head located high
in the left periphery. By contrast, Italian *se* is located in a lower projection, identified as an IntP by
Rizzi (1997), and the higher C containing the silent question operator in the specifier may or may
not encode finiteness, as argued by Manzini (2012). The point is that Italian *se* is lexically specified
as [wh] but not as [fin], unlike the C head *if* and the lower functional head *-e*.

clauses: otherwise, the verb moves up to support the enclitic *-e*. The element *-e* is specified as [fin], hence it is able to lexicalise the [fin] feature on its own, and it follows that it cannot appear in non-finite clauses. The proposed analysis is thus similar to the claim made by Kenesei (1994), who considers *-e* to be related to C and to the verbal inflection, yet it does not postulate downward movement or a direct connection between *-e* and the verb. Finally, the present analysis has some important implications concerning the marking of finiteness in the Hungarian clause in general, not just in the particular construction under scrutiny.

2   The Lowering Analysis

Kenesei (1994: 341) proposes the following analysis for the subclause in (2b):

(5)   [CP [C **t**i [IP Emma [I' megérkezikj-ei [VP …**t**i …]]]]
        'whether Emma arrives' (Kenesei 1994: 341, ex. 168)

Kenesei (1994: 341) assumes that the clause is typed as [wh] in C, and as *-e* is an overt marker of [wh], he assumes that it is generated in C and lowers to adjoin the verb in I. The complex of the inflected verb and the clitic is supposed to move back up to C at LF to take scope over the clause. The analysis relies on three assumptions: (i) that affix lowering is possible in syntax; (ii) that *-e* is generated in C; and (iii) that *-e* is directly related to the notion of verbal inflection. Regarding (i), the assumption of lowering raises theoretical problems: according to current Minimalist assumptions, movement should proceed upwards. One cannot treat lowering a matter of morphology either, assuming that the order of *-e* and the verb can be swapped by some morphological process: the two elements are clearly not adjacent in the structure if *-e* is in C, as can be seen in (5), where the subject DP *Emma* intervenes between the C head and the verb.

Regarding (ii), Kenesei (1994: 341) acknowledges that the arguments here are mostly indirect. First, the behaviour of *-e* strongly suggests that it occupies a head position, which, according to Kenesei (1994: 342), would be incompatible with *-e* being generated in I or T. Second, historical data from earlier periods indicate that the polar interrogative marker was located in a C head, either clause-initial or clause-final (Kenesei 1994: 341–342). Consider[3]:

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[3]The examples in (6) are from the Old Hungarian Concordance corpus, and I retained the original spelling, while the examples in Kenesei (1994) use a normalised spelling. Kenesei (1994: 341, ex. 169) provides different examples for clause-initial *ha* 'if' and of the two examples in Kenesei (1994: 342, ex. 171) for clause-final *-e* in main clause interrogatives, the first one is identical to (6b), though my glosses and translation differ.

(6) a. mėghiɾdètèc   Amānac   kėuāńauala   megtudni   **ha**
         PRT.announced.3PL Haman.DAT wishing.be.PST PRT.know.INF if
         mėgmaɾadna   ètoɾuènbèn
         PRT.stay.COND.3SG this.law.INE
         'they told Haman, to see whether his matters would stand'
         (Vienna Codex 55, middle of the 15th century)

     b. Nemdè harō ferfiakat megbekozottakat èrèztēc   a   tûz koȥèpibè   **è**?
         Q   three men.ACC chained.PL.ACC drove.1PL the fire middle.POSS.ILL Q
         'Did not we cast three men bound into the midst of the fire?'
         (Vienna Codex 139, middle of the 15th century)

While there is evidence for *ha* to be an interrogative complementiser, just like English *if*, and for clause-final *-e* to be a head of a head-final CP (É. Kiss 2014, Bacskai-Atkari and Dékány 2014), treating clause-internal *-e* as a C head is problematic. Kenesei (1994: 341–342) assumes that as the language changed from underlying SOV to the present-day word order (identified by É. Kiss 2013 as "Top Foc V X"), the C head *-e* changed from a clause-final to a clause-initial position, essentially where Old Hungarian *ha* was located. However, it remains unexplained why *-e* had to undergo lowering: while it is an enclitic and needs to attach to another element, it does not follow automatically that it must be in the I node. Moreover, clause-internal *-e* could co-occur with the clause-initial complementiser *ha* and with the clause-final C *-e*, as shown by (7)[4]:

(7) a. el hozvan a vajat   Macskával probáltatta **ha** meg eszi   **é** de a
         off bringing the butter.ACC cat.COM   tried.3SG if   PRT eat.INF Q but the cat
         Macska nem is   nyúlt hozzá
         not   too touched.3SG it.ALL
         'Taking the butter, (s)he tried it on a cat to see whether the cat would eat it but the cat did not even touch it.'
         (Witch Trial 1a; from 1732)

     b. Mínemde elfelethethí**-e**   az ańa   v kis   germoket**-e**
         Q   off.forget.POSSIB.3SG-Q the mother she small child.POSS.ACC-Q
         'Can the mother forget her small child?'
         (Nádor Codex 26r; from 1508; example from É. Kiss 2014: 16, ex. 17)

The data in (7) suggest that the clause-internal, verb-adjacent *-e* is not moved from C to I/T but it is base-generated there and can hence lead to doubling patterns in which the interrogative nature of the clause is morphosyntactically marked in two distinct positions. While doubling in (7b) may in principle be interpreted as an instance of multiple spell-out (and hence of head movement), the pattern in (7a) clearly shows that this cannot be the case. Without venturing an analysis for the historical data here, we can conclude that while they certainly indicate that the [wh] property is tied to the CP-layer, the existence of the doubling patterns shows that the position of clause-internal *-e* is not tied to the existence of downward head movement.

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[4]Example (7a) is from the Historical Corpus of Private Correspondence ("Történeti Magánéleti Korpusz").

Indeed, the C can (and sometimes must) be filled by an overt complementiser *hogy* 'that' in Modern Hungarian, too. Taking the examples in (1a) and (1b), this is illustrated in (8)[5]:

(8)   a.   Nem tudom,   **hogy** Emma megérkezik-**e**.
             not   know.1SG that   Emma PRT.arrives-Q
             'I don't know whether Emma will arrive.'

       b.   Nem tudom,   **hogy** Emma **mikor** érkezik meg.
             not   know.1SG that   Emma when   arrives PRT
             'I don't know when Emma will come.'

As shown, *hogy* is available in embedded constituent questions, thus its appearance in embedded polar questions is not exceptional. Its availability signals that the complementiser in C is non-interrogative, and while a multiple CP is not excluded in itself, there is no evidence for it either: *-e* is not even located in C in the phonological output. For these reasons, while Kenesei (1994) was certainly right in claiming that *-e* is related to the CP, its status as a C head is problematic.

Regarding (iii), Kenesei (1994: 341) relates the question particle to IP/TP because it usually appears as an enclitic to the verb. However, as described by Kenesei (1994: 342), in non-standard dialects the clitic can appear in a higher position, too, as in the following examples:

(9)   a.   … Emma el-**e**   ment
             Emma off-Q went.3SG
             'whether Emma went away.' (Kenesei 1994: 342, ex. 172a)

       b.   … Emma nem-**e** ment   el
             Emma not-Q went.3SG off
             'whether Emma didn't go away' (Kenesei 1994: 342, ex. 172b)

       c.   … nem-**e** Emma ment   el
             not-Q Emma went.3SG off
             'whether it wasn't Emma that went away' (Kenesei 1994: 342, ex. 172c)

As shown, *-e* can be adjacent to the preverbal element or to the negative element *nem*, and in all these cases it appears higher than the verb. Kenesei (1994: 342) argues that if *-e* were base-generated in I/T, there would be no reason for it to move higher; by contrast, if it is generated in C, it can attach to the highest functional head

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[5]Similarly to the representation in (5), the verbal particle in (8a) does not stay in the VP but it moves up to a higher position, resulting in a "verbal particle + verb" order, which is surface-identical to the neutral word order found in sentences without an interrogative property or focussing (note that some movement to PredP/TP is still involved, see É. Kiss 2008, though not as high as to where the question particle is located). In (8b), the order is reversed, which clearly indicates that the verb has moved up; in this case, the verbal particle cannot move up because the *wh*-element occupies the relevant position. In Sect. 3, I will identify this projection as FP. The point is that the order of the verb and the verbal particle is indicative of verb movement only to the extent that the "reverse" order can be achieved only by the verb moving higher up, but the surface-neutral word order in itself does not say anything about the exact position of the verb.

by lowering. However, this option is not available in the standard dialect, where the question arises why the functional head containing the negative element is skipped. The standard pattern with preverbal elements is shown in (1a), while the one with the negative element is shown in (10):

(10) a.   … Emma nem ment-**e**   el
            Emma not   went.3SG-Q off
            'whether Emma didn't go away'

      b.   … nem Emma ment-**e**   el
            not   Emma went.3SG-Q off
            'whether it wasn't Emma that went away'

At the same time, multiple spell-out of the particle is possible (in non-standard dialects):

(11) a.   Megkérdeztem mindenkit,   nem-**e** jött-**e**   le   papucsban valamiért.
            PRT.asked.1SG everyone.ACC not-Q came.3SG-Q down slipper.INE for.something
            'I asked everyone if they had come downstairs in slippers for something.'

      b.   Megkérdeztem, hogy ki-**e** jött-**e**   az új   lemez.
            PRT.asked.1SG   that   out-Q came.3SG-Q the new disc.
            'I asked whether the new disc had already come out.'

The multiple presence of *-e*, with both instances below the CP, presents a problem for the lowering analysis: it is improbable that *-e* would lower twice. Still, Kenesei (1994) rightly points out that if *-e* were base-generated in I/T, it is not clear why it would move up to a higher functional head. Based on these considerations, I suggest that the patterns in (11) indicate that the position of *-e* is neither C nor I/T but a functional head (F) between the two, which is iterable in a similar fashion to CP-iteration.[6] In what follows I am going to describe my analysis involving an FP.

3   The FP-Analysis

Regarding the position of *-e*, then, there are three major possibilities. First, *-e* may be base-generated in I/T. As shown convincingly by Kenesei (1994), this is not a viable option and *-e* should be related primarily to clause typing and finiteness. Second, *-e* may be a C head, which is what Kenesei (1994) argued for; the relatedness of *-e* to clause typing and finiteness follows naturally. However, as I indicated in the previous section, the lowering of *-e* that must necessarily be postulated to derive

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[6]Naturally, this does not mean that the CP or the FP is freely iterable; I assume that the number of projections is as minimal as possible and iteration occurs when the inserted elements are lexically underspecified in terms of the features to be encoded, see Bacskai-Atkari (2018) for German. Further, the notion of iteration serves to indicate a differentiation from cartographic approaches, which also allow multiple CPs, see Rizzi (1997): the analysis proposed here does not assign pre-defined, designated functions to the individual CPs (or FPs).

the right word order is problematic both from a theoretical and from an empirical perspective. Third, -*e* may occupy a position above the TP but below the CP, and in this case it can be base-generated in a position which is able to host the finite verb in its head. If this projection is tied to the overt marking of [wh], its specifier should be able to host *wh*-elements in constituent questions. The analysis given by van Craenenbroeck and Lipták ([2008](#)) provides a close approximate to this goal, in that they assume -*e* to be the head of a Focus phrase, the specifier of which regularly hosts *wh*-elements, among other focussed XPs.

While a designated FocP is adequate in terms of the relative position of -*e* in the clause, there are three major problems that arise if one ties the availability of -*e* to the notion of structural focus. First, there are instances of polar interrogatives where there is evidently no focussed XP undergoing leftward movement, see (1a), (2), (8) and (10a). Second, the iterability of -*e* presents a further problem, see (11): designated focus phrases do not seem to be iterable otherwise. Third, if -*e* is tied to focussing primarily, the analysis fails to incorporate the important finding of Kenesei ([1994](#)) regarding the close relatedness of -*e* with clause typing.

To overcome this, I suggest that the projection hosting -*e* (and *wh*-elements and foci) is not a designated FocP but a more general functional projection, FP, which is primarily related to clause typing and finiteness.[7] The features [wh] and [fin] are copied from C to F, and hence the [wh] feature is checked off by an overt element (a *wh*-element or -*e*) in the FP, while the clause type is still ultimately defined by CP.[8]

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[7]In this sense, the FP is an underspecified functional projection and it is not a designated projection either for finiteness or focus: the present approach does not seek to conflate a Rizzian FinP and a FocP but it is rather suggested that the projection is less specified than either of these two notions. In this respect the FP is similar to the CP as opposed to a specified ForceP for clause typing and FinP for finiteness; moreover, the CP can also host non-operator material as in focus fronting or German "formal movement" to the first position, see Fanselow ([2004](#)) and Frey ([2005](#)).

[8]Unlike the CP, the FP does not constitute a fully-fledged left periphery: whenever a [wh] feature is present, the FP is generated, and once the FP is generated in a finite clause, [fin] appears there, too; however, other clause-typing features are not associated with this domain (in other words, the FP is not automatically generated in all finite clauses). This presumably has historical reasons. As shown by É. Kiss ([2014](#)), the FP emerged to host the focussed element. Since *wh*-elements are inherently focussed, cf. É. Kiss ([2002](#)), they evidently landed in the same position in constituent questions: the FP is an optimal position for them because they can fulfill their role in terms of clause-type marking and they appear in a position where they can receive main stress. This pattern was reinterpreted as the FP being responsible for overtly marking [wh] and was hence extended to polar questions, see Bacskai-Atkari ([2015](#)). The same did not occur to other clause-typing features since they are not immediately related to the notion of focus. While the feature is present on both C and F, overt marking is restricted to the FP, due to reasons of economy. The [wh] on F is thus necessary for overt marking, while the [wh] on C is necessary because this makes relevant information to be available for matrix predicates selecting for an interrogative complement. Since the FP only inherits certain features from the CP, it does not have any specific features of its own but regarding [wh], this is the only projection in Modern Hungarian where the feature can actually be checked off. Naturally, the FP differs from the TP crucially in that the FP is related to clause typing and finiteness, whereby finiteness only specifies that the clause is tensed and thus a TP is generated, but the actual tense (present vs. past in Hungarian) is encoded by the TP. Further, the FP can appear in non-finite clauses, too, if it has no [fin] feature, see Sect. [4](#).

Just like the CP, the FP may be iterated under certain conditions.[9] The representation in (12) shows the schematic structure of the Hungarian clause:

(12)   CP* topics FP* TP PredP VP

I follow É. Kiss (2008) in assuming that the constituent in [Spec,FP] (her FocP) moves from VP, via moving to [Spec,PredP] and [Spec,TP], whereby the verb moves along into the respective heads. Verb movement occurs generally in finite clauses, not just interrogatives (see also Brody 1990, 1995); I will return to this in the next section. The iterable FP constitutes the lower functional periphery immediately above the TP. The iterable CP constitutes the higher periphery; while the FP is not necessarily generated, the CP is, since the type of the clause is defined here. Optional topics may occur in between the CP and the FP. Note that while the notion of lower peripheries is known in the literature (see Jayaseelan 2001; Belletti 2001, 2004; Poletto 2006), the FP assumed here is located above the TP and not in the functional vP-domain proper.

One might wonder why assuming a lower CP instead of FP is not an option, involving a structure reminiscent of the split CP of Rizzi (1997), where topics may appear between the highest and the lowest CPs. This would be problematic for several reasons. While Rizzi (1997) provides examples for topics following a high complementiser and topics preceding a low infinitival marker, there is no evidence for topics appearing between two distinct complementisers, apart from cases of reduplication, see Roberts (2005: 122) and especially quotative reduplication, see González i Planas (2014). The co-occurrence of *hogy* 'that' and *-e* in Modern Hungarian can hardly be considered reduplication. The historical pattern where the interrogative C *ha* 'if' co-occurred with a clause-internal *-e* is also problematic for a single periphery, since [wh] should be checked off only once in the CP, and there would be no reason to generate a second projection with the same feature. However, if the relevant feature is copied from C to F, the problem does not arise as the CP is not an extension of the FP. Finally, as shown by Lipták and Zimmermann (2007), a Hungarian clause may host a *wh*-element clause-internally and a relative operator in the CP, and the *wh*-operator can be extracted without triggering an island violation effect, indicating that the CP is not a landing site for the *wh*-element. Taking all this into account, it is reasonable to assume that the FP is not part of the CP but it constitutes a lower functional periphery.

Consider now the following sentences containing embedded interrogatives:

(13)   a.   Azt   kérdeztem, (hogy) (tegnap) **ki** hívta   fel Marit.
             that.ACC asked.1SG   that   yesterday who called.3SG up Mary.ACC
             'I asked who called Mary yesterday'

        b.   Azt   kérdeztem, (hogy) (tegnap) Péter hívta-**e**   fel Marit.
             that.ACC asked.1SG   that   yesterday Peter called.3SG-Q up Mary.ACC
             'I asked if it was Peter who called Mary yesterday.'

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[9]Note that this is compatible with the present proposal that the FP is essentially underspecified: if the FP were tied to a focus interpretation, iteration would not be expected. Empirical data like (11) above, however, strongly suggest that the iteration of the projection should be allowed.

Based on what has been said so far, the structure of the subclauses in (13) is shown in (14):

(14)   a.

```
                CP
                |
                C'
               / \
        C[wh],[fin]  …
            |        |
      (hogy)[fin]    FP
                    / \
               ki_j[wh]  F'
                        / \
                F[wh],[fin]  TP
                     |      /\
                  hívta_i  t_i t_j fel Marit
```

b.

```
                CP
                |
                C'
               / \
        C[wh],[fin]  …
            |        |
      (hogy)[fin]    FP
                    / \
               Péter_j  F'
                        / \
                F[wh],[fin]  TP
                     |      /\
              hívta_i-e[wh]  t_i t_j fel Marit
```
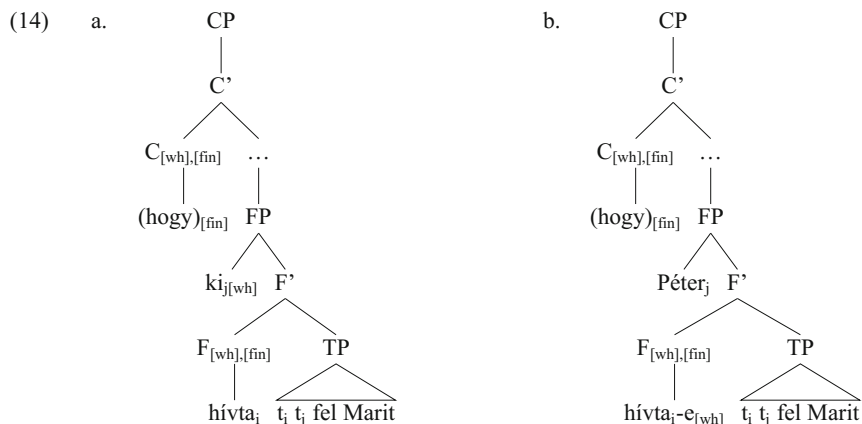
The complementiser *hogy* is in C in both cases and, if inserted, it lexicalises [fin] but it does not check off [wh], which is copied onto F; the presence of the overt complementiser is not obligatory in (13) (it depends on the matrix predicate), indicating that [fin] on C does not have to be lexicalised.[10] In both cases, the finite verb is in F: the [wh] feature is checked off by the *wh*-element in (14a) and by -*e* in (14b); the specifier in (14b) contains the focussed DP.[11] The fact that the preverbal element (*fel* 'up') follows the verb is a clear indicator of verb movement, as the neutral underlying word order would be "preverb + verb" (see Sect. 2).

The structures are in line with the original idea of Kenesei (1994), according to which -*e* is related to C: however, instead of postulating the downward movement of -*e*, I assume that the features of C are copied onto F and can be checked off by -*e* (or a *wh*-element) locally, that is, -*e* can be inserted directly into F. The analysis maintains the idea that -*e* is primarily related to clause typing, and its relation to focussing is merely secondary (the focussed XP moves to [Spec,FP] due to independent reasons, in non-interrogative clauses as well, see É. Kiss 2008). Finally, its adjacency to the finite verb follows from independent reasons, that is, the regular movement of the verb to F, and it does not have to be supposed that -*e* is located in I/T in any way.

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[10]The [fin] feature is essentially interpretable on the C head in Hungarian and does not always have to be lexicalised (lexicalisation is due to selectional restrictions imposed by the matrix predicate and/or the relative position of the subclause with respect to the matrix clause, but lexicalisation is not equivalent to feature checking). Further, the C head imposes selectional restrictions on the F head, if an FP is generated, and copying the [fin] feature ensures that no subclause contains a finite CP and a non-finite FP. However, the [fin] feature has to be checked off on the F head because it is uninterpretable on F. Note that I adopt a non-cartographic approach and hence there are no designated projections for every single feature, yet the multiple presence of a single feature on several heads does not imply multiple feature checking.

[11]I cannot discuss the mechanisms underlying focus movement here but I essentially adopt the view of Szendrői (2001) in that this movement operation is ultimately driven by stress, and hence there is no need to postulate a [focus] feature in syntax.

Consider now the non-standard examples in (15), with optional reduplication of the particle:

(15)   a.   Azt   kérdeztem, hogy nem**-e** Péter hívta(**-e**)   fel Marit.
              that.ACC asked.1SG that not-Q Peter called.3SG-Q up Mary.ACC
              'I asked whether it wasn't Peter who called Mary.'

        b.   Azt   kérdeztem, hogy fel**-e** hívta(**-e**)   Marit.
              that.ACC asked.1SG that up-Q called.3SG-Q Mary.ACC
              'I asked whether (s)he had called Mary.'

The relevant structures are given in (16) below:

(16)   a.
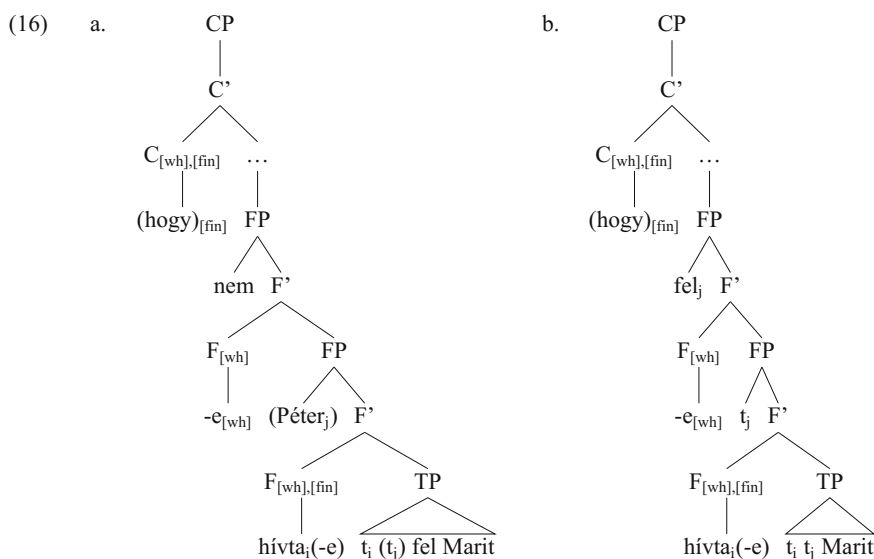
The FP is iterated and the higher FP hosts an overt polarity marker[12]; *-e* is spelled out in the higher head and optionally in the lower head. The FP is iterable since it is neither tied to the notion of structural focus nor is it assumed that *-e* is in I/T, which could not be iterated either. This sort of doubling is reminiscent of complementiser reduplication in the CP-domain (see Roberts 2005), which does not involve the spellout of lower copies of a movement chain either. Note that there is no reason to believe that *-e* moves from a lower position to F: it is clearly not a predicate or a tense head either, the latter possibility refuted already by Kenesei (1994).

Hence, though *-e* is related to the CP, this happens indirectly, through the FP. While the position of *-e* is the same in embedded and main clauses, its presence is

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[12]The FP is iterated in this case to host the polarity markers (*nem* or the preverbal element); this is possible since by way of inserting *-e* into the lower F head, there is no active interrogative feature on that F head any more. As shown by Bacskai-Atkari (2015), the element *nem* was reanalysed from a Neg head into an F head in non-standard varieties, which analogically extended this possibility to preverbal elements that can function as polarity markers, too.

obligatory only in embedded ones: it lexicalises the [wh] property of the clause, which can be obviated in main clause interrogatives by a distinctive intonation, whereby morphosyntactic marking is not necessary.[13]

4 Finiteness

The remaining question is how the position of *-e* is related to the fact that it can appear in finite clauses only. As was pointed out in Sect. 1 already, the behaviour of *-e* is parallel with that of English *if* in this respect, as opposed to *whether*: that is, *-e* should be considered a head element (and not an operator, which does not impose restrictions on finiteness). This is borne out correctly by the present analysis, in line with the assumption of Kenesei (1994), who treated the question particle as a functional element, too. That is, the question particle is specified as [fin], just like English *if*, and can only be inserted into an F head that is specified as [fin]. I assume that this lexical specification is necessary in the case of interrogative heads inasmuch as this feature ensures that they are inserted into the functional head (C or F) and not into the specifier, unlike polar operators (such as *whether*) that are inserted into the specifier (and hence do not undergo movement, unlike ordinary *wh*-operators; see Bianchi and Cruschina 2016).

As *-e* is a bound morpheme, the verb moves to F and adjoins it.[14] Exceptions to this can be seen in non-standard varieties in that the verb moves up to the lowest F

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[13]The role of prosodic information cannot be examined here; see Prieto and Rigau (2007) for a similar view and an analysis for Catalan interrogatives.

[14]Note that while lexical verbs are always overt in non-elliptical clauses, the 3rd person present tense copula (either singular or plural) is zero in Hungarian, see Hegedűs (2013: 53–55). Observe:

(i)   Mari magas ∅.
       Mary tall
       'Mary is tall.'

(ii)   Mari magas volt.
       Mary tall   was.3SG
       'Mary was tall.'

It is reasonable to assume that adjectives, unlike verbs, do not take the subject argument on their own but they need a copula (see É. Kiss 2002: 71–74); Kádár 2011; Hegedűs 2013: 50–53). It follows that there is a zero copula in (i) fulfilling the same role as the overt past tense copula in (ii). In embedded polar interrogatives, *-e* attaches to the copula moving to F:

(iii) Nem tudom,   hogy Mari magas ∅-**e**.
       not know.1SG that Mary tall   -Q
       'I don't know if Mary is tall.'

(iv)   Nem tudom,   hogy Mari magas volt-**e**.
       not know.1SG that Mary tall   was.3SG
       'I don't know if Mary was tall.'

As can be seen in (iv), the copula immediately precedes *-e*, just like lexical verbs do. In (iii), the copula is zero and while *-e* syntactically adjoins the zero copula, it phonologically cliticises on the preceding adjective in PF, just like in elliptical constructions.

head but not higher, thus *-e* cliticises onto the element in the specifier of the higher FP. Further, if the TP is elided under the FP, the verb can be elided as well, suggesting that the verb does not move up if the F head contains an ellipsis feature alongside *-e* (see van Craenenbroeck and Lipták 2008 on sluicing in Hungarian, following the theory of Merchant 2001).

Yet the question arises why the verb moves up otherwise, that is, when the F head contains no question particle. The movement of the element in the specifier is straightforward: it is either driven by a [wh] feature or the element is focussed and undergoes leftward movement (the reasons for which cannot be discussed here; see É. Kiss 2002, 2008 and Szendrői 2001). Consider the following examples for finite clauses containing focussed elements with *csak* 'only':

(17) a. *Csak MARIT   fel**hívtam**.
          only Mary.ACC up.called.1SG
          'I called up ONLY MARY.'

      b. Csak MARIT   **hívtam**   fel.
          only Mary.ACC called.1SG up
          'I called up ONLY MARY.'

The verb has to move up to a focus-adjacent position, that is, to F, as in (17b), otherwise the construction is ungrammatical, see (17a). This certainly applies to finite clauses; however, as pointed out by É. Kiss (2008: 448), it does not hold for non-finite clauses. Consider:

(18) a. Szeretném   csak MARIT   fel**hívni**.
          like.COND.1SG only Mary.ACC up.call.INF
          'I would like to call up ONLY MARY.' (É. Kiss 2008: 448, ex. 20a)

      b. Szeretném   csak MARIT   **hívni**   fel.
          like.COND.1SG only Mary.ACC call.INF up
          'I would like to call up ONLY MARY.' (É. Kiss 2008: 448, ex. 20b)

Since the focussed constituent is available in infinitival clauses as well, the FP is evidently present, and its head can also host the verb, as in (18a). Still, verb movement is not obligatory, as indicated by the grammaticality of (18b), and this is presumably so because there is no [fin] feature on the F head that should be lexicalised. Unlike in the case of the CP, where a zero finite complementiser can be inserted, there is no zero finiteness marker for the F head: once the F head is generated with a [fin] feature (that is, the feature is copied from the C head), the F head must be filled, which is regularly carried out by verb movement. In other words, the movement of the verb is triggered by [fin], which is uninterpretable on F; note that if no FP is generated (as in "neutral" declarative clauses), the verb stays in T. This is essentially similar to what can be observed with [fin] C heads in German: in main clauses,

this feature triggers the movement of the verb to C, rendering surface V2, while in subclaues the C had is regularly filled by some complementiser and the verb is not fronted, rendering surface verb-final clauses.

Naturally, these issues should be examined in more detail in further research, as a full analysis would go well beyond the scope of the present paper. The importance of the data presented in this section for our discussion is that the particular position where *-e* is regularly inserted is related to finiteness not merely by virtue of the question particle being specified as [fin] but by the regular presence of this feature in the particular projection once the FP is generated under a finite CP. While this projection is not CP itself, as assumed by Kenesei (1994), its role regarding clause-typing is likewise crucial and since it can be detected in clause types other than polar interrogatives, it is not an idiosyncratic property of the particular construction either.

5 Conclusion

This article examined the position of the Hungarian question particle *-e* and critically reviewed the observations made by Kenesei (1994) regarding its status. In line with Kenesei (1994), I assume that the question particle is a functional head in the left periphery, yet I argued that it is inserted directly into a functional projection, FP, above the TP and does not undergo lowering to adjoin the finite verb. Importantly, Kenesei (1994) showed that the question particle is primarily related to clause typing, and to the marking of [wh] and finiteness in particular, and the present study confirmed that the question particle should occupy a functional projection accordingly, instead of relating it either directly to the I/T or to a designated Focus projection.

The FP is present in other clause types, too, hosting *wh*-elements and foci, and while it is available in non-finite clauses, the [fin] feature is present obviously in finite clauses only. I argued that verb movement to F lexicalises [fin] regularly, and that *-e* is lexically specified as [fin], similarly to interrogative complementisers in other languages. Hence, while *wh*-elements and foci undergoing leftward movement are available in non-finite clauses, as they do not affect the [fin] specification of the F head, the question particle *-e* is restricted to finite clauses, since its insertion into a non-finite clause would involve a clash in the relevant features.

In sum, my analysis proposes some changes to the original account of Kenesei (1994), with the aim of preserving its insights while removing the step of lowering *-e* from C.

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Ugye in Hungarian: Towards a Unified Analysis

Beáta Gyuris

Abstract The paper attempts to develop a unified approach to the conventional discourse effects of the Hungarian particle *ugye* as it occurs in assertions and question acts and presents a formal, dynamic semantic analysis of its contribution. It offers a sketch of a possible historical development from a tag-type use to a sentence internal use, through separation of the contribution of intonation from the contribution of the lexical meaning of *ugye*. The uniform contribution of *ugye* to assertions and questions in the synchronic stage is taken to be a contextual presupposition. It is proposed that *ugye* requires a prior commitment to the semantic content φ of the sentence containing the particle on the part of the counterpart of the default perspective center of the speech act. In the case of an assertion it is the addressee who is argued to have a commitment to φ, which results in the "as you know" interpretation of *ugye*. In the case of questions it is the speaker who is presupposed to be committed to φ, which provides the biased question interpretation of sentences containing *ugye* pronounced with rise-fall intonation.

Keywords Assertion act · Question act · Tag · Bias · Presupposition

1 The Distribution and Interpretation of *Ugye*: Basic Facts and Assumptions

The current paper[1] takes a look at a puzzle concerning the particle *ugye* in Hungarian from a new perspective. As described in Gyuris (2009), this particle can make two different kinds of contributions to the meanings of sentences: it can

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B. Gyuris (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: gyuris.beata@nytud.mta.hu

appear in structures that are used to make question acts, as well as in those used to make assertions. The first use is illustrated in (1) below[2,3]:

(1)   Egy szép,   kerek történetben reménykedik, ugye?
       one beautiful round story.in   hope.3SG   UGYE
       'You are hoping for a beautiful, round story, aren't you?'   (HNC)

Sentence (1) minus *ugye* is an ordinary declarative, which can be used to assert that φ (where φ = 'x hopes for a nice, round story', and *x* denotes a contextually given individual, most probably the addressee). As far as the etymology of *ugye* is concerned, it came about by composing the demonstrative adverb *úgy* 'so' with the interrogative particle *-e*. As a default, sentence-final *ugye* in (1) bears a rise-fall pitch analogous to that of root polar interrogatives solely marked prosodically[4] and is preceded by an intonational break.[5] Thus, it can be taken to denote a polar question of the form? ψ, where ψ is anaphoric to the most salient proposition in the context, i.e., φ.

In (1), the function of *ugye* seems to be analogous to that of tags in other languages: it attaches to an ordinary declarative, to form a structure that can be used to make question acts. As is well-known from the literature (Ladd 1981; Asher and Reese 2007; Reese 2007; Malamud and Stephenson 2015; Krifka 2017; Farkas and Roelofsen 2017), tag questions encode *biased* polar questions, which indicate that the speaker prefers one of the possible answers over the other. Claims to the same effect have been made for *ugye*-questions in Hungarian by Fónagy and Magdics (1967: 49), Károly (1962: 38), Kenesei et al. (1998: 3), and Varga (2002: 28), among others.

As the following examples show, in structures intended to encode questions, *ugye* does not necessarily have to appear sentence finally:

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[2]In Hungarian, the third person singular form of the verb is used instead of the second person singular form if the subject refers to the addressee and the speaker wishes to address this person formally (i.e., using of the 'V-form').

[3]Hungarian National Corpus (http://corpus.nytud.hu/mnsz/index_eng.html, Oravecz et al. 2014).

[4]Ladd (1996) and Grice et al. (2000: 150) analyse the rise-fall pitch in terms of a L*HL% contour. Cf. Kornai and Kálmán (1988), Mády and Szalontai (2014) and Varga (2002) for further discussion.

[5]Alternatively, sentence-final *ugye*, preceded by an intonational break, can also be pronounced with a falling tone (H*L-L%). The function of the latter is to ask for confirmation rather than for agreement, and thus seems to have a function analogous to that of 'falling tag interrogative' in English (cf. Farkas and Roelofsen 2017). This falling questioning *ugye,* which cannot be integrated into the structure of the sentence, will not be discussed further in this paper.

(2) Abban reménykedik, ugye, hogy mindent   szépen elmesélek?
     that.in hope.3SG   UGYE that everything.ACC nicely   VM. tell.1SG
     'You are hoping that I will tell you everything, aren't you?' (HNC)

(3) Befejezed ugye az egyetemet?
     finish.2SG UGYE the university.ACC
     'You are going to finish university, aren't you?' (HNC)

(4) Ugye ezt   most   nem gondoltad   komolyan?
     UGYE this.ACC now   not   thought.2SG seriously
     'You aren't serious, are you?'   (HNC)

The use versus lack of commas around *ugye* reflects the intended degree of prosodic integration of the particle. As Gyuris's (2009) recordings indicate, non-final occurrences of *ugye* in sentences that are used to make question acts are also pronounced with a rise-fall pitch, although of a smaller amplitude than the sentence-final variants, and sentences intended as questions with non-final *ugye* do not have a final rise-fall pitch. For these reasons, uses of the particle contributing to forms encoding question acts will be referred to as *ugye*∕. Gyuris (2009) argues against considering forms with sentence-internal *ugye*∕ as representatives of the interrogative sentence type, as suggested by some authors in the Hungarian literature (H. Molnár 1968; Keszler 2000; Kugler 1998) on the basis of their incompatibility with negative polarity items, and the impossibility of embedding them under verbs that normally embed interrogatives. Since *ugye*∕ is also incompatible with the interrogative particle *-e* and the final rise-fall pitch, formal indicators of the interrogative sentence type, we will in what follows avoid referring to forms containing *ugye*∕ as interrogatives. They are more adequately described as declaratives containing internalized 'tags', which can be used to make question acts.

As mentioned above, *ugye* can also appear in sentences that are used to make assertions. Relevant examples include *wh*-interrogatives with a rhetorical question interpretation, as in (5), and ordinary matrix declaratives, as in (6):

(5) A veréseget meg   ugye ki   szereti?
     the defeat however UGYE who like.3SG
     'After all, who likes defeat?' (HNC)

(6) És függöny nélkül   ugye nem lehet.
     and curtain without UGYE not possible
     'It is not possible without a curtain, as we know.' (HNC)

Moreover, as (7) illustrates, *ugye* can also appear in embedded declaratives, which indicates that it is not restricted to forms available for making assertions, but is compatible with all declarative forms, independently of whether they are embedded or unembedded:

(7)   Csodák   meg   csak a   mesében   vannak, amiben   ugye mi már
      miracles however   only the fairy.tales.in be.3PI   that.in   UGYE we already
      nem hiszünk.
      not   believe.1PI
      'Miracles only exist in fairy tales, in which, as we know, we do not believe any more.'
      (HNC)

In (5)–(7), *ugye* is integrated into the prosody of ordinary declaratives, and does not bear any additional marking. For this reason, the occurrences of the particle in declaratives and other forms expressing assertions will be referred to as *ugye~* (prosodically integrated *ugye*). Gyuris (2009) argues that the interpretation of *ugye~* shows close similarities to that of particles that are claimed to mark that the proposition denoted by the rest of the sentence is part of the Common Ground (CG) according to the speaker, such as German *ja* (Zimmermann 2011).[6] Based on a detailed comparison of the behaviour of *ja* and *ugye~*, Gyuris (2009) suggests that the contribution of the latter to the interpretation of Hungarian declarative sentences is to mark that, according to the speaker, the propositional content of the sentence follows, due to default reasoning, from the CG.

Regarding *ugye~*, Molnár (2016) provides new data[7] illustrating that it can not only appear in rhetorical questions, but also in information questions encoded by *wh*-interrogatives, as in (8):

(8)   És ez a   kicsi itt   mi   ugye, ez micsoda?
      and this the small here what UGYE this what
      'And this small one here, what is this again?'   (Molnár 2016: 151, ex. (3))

Regarding the interpretation of *wh*-interrogatives with *ugye~*, used as information questions, Molnár (2016) argues that the contribution of the particle can be modelled by extending the proposal Gyuris (2009) makes for declaratives. Thus, in addition to marking that a proposition corresponding to one of the possible answers to the *wh*-question is in the CG, *ugye~* in a *wh*-interrogative *I* can also indicate that the question encoded by *I*, or a different one whose answer entails the answer to *I* has already been asked in the conversation. In what follows, we will focus on more prototypical occurrences, and thus restrict our investigations to *ugye~* appearing in declaratives.

The occurrence of *ugye~* in declaratives is quite pervasive in contemporary Hungarian, in spite of heavy attack by normative linguists. As argued in Benkő (1995), the first appearance of the latter use was attested in 1923. This suggests that an integrated theory of *ugye* should be able to explain the process in the course of

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[6]It was Péteri (2002) who first noted the similarities between *ugye~* and *ja* referred to above.

[7]The source of Molnár's (2016) data is the BUSZI-2 database (http://buszi.nytud.hu).

which the interpretation associated with *ugye*~ came about from the interpretation of the particle in constructions that are used to encode questions, which has a considerably longer history, going back to the 16th century. Gyuris (2009) provided independent accounts of the interpretations of *ugye*⌐ and *ugye*~, but did not succeed in offering an explanation for how the two interpretations are related, and how the chronologically second, context-marking use of the particle came about. This paper is an attempt at providing a formal theory of the two interpretations of the particle and modeling the meaning change that resulted in the current interpretation of *ugye*~.[8]

2 Towards Unifying the Two Meanings of *Ugye:* Informal Analysis

The rest of the paper will show that the contemporary interpretation of *ugye* can be formalized in such a way that, on the one hand, it reflects the historical developments, and, on the other hand, it considers the contributions of the two prosodic variants as similar as possible.

We propose that *ugye*~ came about as a result of a five-stage development. First, *ugye* started out as a final tag, with a transparent morphology, attached to a declarative. In the course of describing its contribution, we will most closely follow the suggestions by Krifka (2017: 388) regarding the interpretation of tag questions in English. He assumes that these constructions express, on the one hand, the speaker's commitment to the propositional content φ of the declarative, and, on the other hand, that there are two possible continuations of the discourse after the tag question has been uttered. In one of them, φ becomes part of the CG, and in the other one, the addressee commits himself to $\neg\varphi$. Note that the contribution of the declarative clause component, described above, differs from the contribution of root declaratives that are used to make ordinary assertions, which express two commitments. The first is the commitment by the speaker to stand behind the proposition φ, encoded by the declarative clause syntax, and the second is the commitment that the asserted proposition φ should become part of the common ground, encoded by the prosody (the nuclear stress H*) (p. 371).[9] Based on these ideas, we will assume that questions with *ugye* express that the speaker is committed to φ, and ask the addressee whether he is committed to φ or $\neg\varphi$.

In the second stage of its development, *ugye* lost its morphological transparency, and the fact that it was used to encode a question was marked by the fall-rise

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[8]Recent empirical and theoretical studies of *ugye* include Abuczki (2015), Schirm (2011) and Kleiber and Alberti (2014). None of them offers a comprehensive account of the various uses of *ugye* in questions and assertions, however.

[9]Cf. also Gunlogson (2003) and Farkas and Bruce (2010) for assumptions on commitments associated with assertions and questions.

melody. Note that postulating this change is necessary in order to explain the current distribution of *ugye* in forms that are used to make question acts, following the assumptions made in Gyuris (2017) on interpretational differences between polar interrogatives marked by the *-e* particle and those marked by the final rise-fall melody in Hungarian. According to these, the particle *-e* is only compatible with contexts where the truth of neither of the possible answers follows on the basis of evidence that recently became available to the interlocutors, whereas the forms with the rise-fall melody are also acceptable if the available evidence indicates the truth of the positive answer (i.e. the answer with the same propositional content as the interrogative). The fact that question acts made with a sentence containing *ugye*/\ are compatible with situations where the evidence alone forces the positive answer to be true supports this claim. The syntactic configuration characteristic of stage two is the same as the one illustrated in the contemporary example (1) above, repeated in (9), [10]:

(9)   Egy szép,   kerek történetben reménykedik, ugye?
       one beautiful round story.in   hope.3SG   UGYE
       'You are hoping for a beautiful, round story, aren't you?' (HNC)

In the third stage, *ugye*/\ became an internalized (i.e. non-final) tag, illustrated in (3)–(4), the former of which is repeated in (10):

(10)   Befejezed ugye az egyetemet?
       finish.2SG UGYE the university.ACC
       'You are going to finish university, aren't you?'

The interpretation of (10) is analogous to tag questions with final *ugye,* discussed above. This means that in (10), *ugye*/\ still encodes the speaker's commitment to the proposition φ, expressed by the rest of the sentence. This commitment is not part of *at-issue content* (Tonhauser et al. 2013) but a condition on input contexts, referred to as a *contextual presupposition* (Davis 2009) or as a *use-condition* (Gutzmann 2015). This accounts for the fact that if the addressee gives a negative answer to (10), it simply means that (s)he does not intend to finish university, but it leaves intact the speaker's public commitment to the opposite. Since a negative answer by the addressee means that he does not share the public commitment of the speaker to φ, the latter proposition will not become part of CG, as expected.[11] The following constructed example (that corresponds to a famous example by Gunlogson 2003, 2008) illustrates that questions with *ugye* are infelicitous when speaker bias is not wished for:

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[10]Hungarian National Corpus (http://corpus.nytud.hu/mnsz/index_eng.html, Oravecz et al. 2014).
[11]According to Gunlogson (2003) and Farkas and Bruce (2010), if interlocutors share a public commitment to a proposition φ, this becomes part of the CG.

(11)   [Context: A is conducting a committee hearing. A turns to B.]
        A: #Maga ugye kommunista?
              you   ugye communist
           #'You are a communist, aren't you?'

Recent work on the interpretation of tag questions suggests that it might be too strong to require that the speaker be fully committed to the propositional content φ of an *ugye*∧-question. Malamud and Stephenson (2015) argue, for example, that the contribution of reverse polarity tags in English can be modelled by saying that they introduce a projected (delayed) commitment, which only becomes an actual commitment if the hearer agrees.[12] The reason why I do not think that this would be an optimal solution for *ugye*∧-questions is that after asserting a question like (10), the speaker can rightfully be criticized for assuming the propositional content φ, even if the addressee provides a negative answer. Farkas and Roelofsen (2017) propose a different approach, according to which rising and falling tag interrogatives indicate that the speaker has access to some evidence for the truth of φ. Due to space limitations, I cannot offer a proper discussion of the above framework with respect to the Hungarian data. It seems to me, however, that the use of *ugye*∧ in questions does not require that the speaker have evidence for the truth of the propositional content, her commitment can be based on her expectations or wishes as well.[13]

Continuing with the hypothetical historical development of *ugye*, we come to the fourth stage, which has not been discussed before in the literature. This makes it the central part of the proposal. I want to suggest that in this stage *ugye*∧ underwent semantic reanalysis. This means that the components of the interpretation of sentences containing *ugye*∧ were redistributed among the structural units, namely, the declarative clause, the particle *ugye* and the rise-fall intonation of *ugye,* in a way that in the fifth stage, *ugye* could make a contribution to the meaning of declaratives by itself, independently of its intonation.[14] Intuitively, the division of labour looks as follows: the sentence minus *ugye*∧ is responsible for encoding the propositional content, the rise-fall intonation on *ugye* enables the sentence to be used in making question acts, and the lexical meaning of *ugye* itself contributes the rest. In order to

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[12]In Malamud and Stephenson's (2015: 291) words, "when using an RP-tag, a speaker is not directly committing to p, but is indicating that if p is confirmed, she will share responsibility for it".

[13]In case we were to adopt Farkas and Roelofsen's (2017) approach for the analysis of *ugye*∧, the question would arise whether we should consider it similar to rising tags and attribute to it a 'credence' level between moderate to high, or similar to falling tags, and attribute to it a high 'credence' level, given that the Hungarian construction is available both for asking for confirmation and for asking for acknowledgement.

[14]For a discussion of the process of semantic reanalysis, cf. Eckardt (2006).

see how exactly this *rest* should be described, let us consider what happens in the fifth stage of the development.

In the final stage five, *ugye* loses its prosodic marking. As a result, the speech act type encoded by the sentence will be one associated with a declarative as a default, namely, an assertion. What *ugye* contributes to these assertions, following Gyuris (2009), is the introduction of the contextual presupposition or use-condition that the speaker considers the propositional content φ of the rest of the sentence to be part of the CG, in other words, a joint commitment of the speaker and the addressee. This proposal accounts for the fact that the propositional content of a declarative with *ugye* is identical to the propositional content of the same declarative without the particle. In the case of (6), repeated in (12), the proposal would work as follows:

(12)   És függöny nélkül   ugye nem lehet.
       and curtain   without UGYE not   possible
       'It is not possible without a curtain, as we know.'

The speaker of (12) expresses a commitment to the truth of the proposition $\varphi =$ 'it is not possible without a curtain', presupposing that the latter is a joint commitment of herself and the addressee. The following, constructed example shows that whenever the context is incompatible with such a joint commitment, *ugye* is infelicitous in an assertion:

(13)   [Context: A, an elderly woman, has just hung up the phone, and turns to her husband:]
        A: Megszületett (# ugye) az   unokánk.
           VM.be.born   UGYE   the grandchild.our
           'Our grandchild has been born, (#as we know).'

It might appear that the presupposition attributed to *ugye* above is too strong, since it can also be used in conversations where the addressee had not made any utterance that publicly committed him to the propositional content φ of the declarative. I believe that in such cases the utterance of an *ugye*-declarative amounts to accommodating the presupposition described above. This is supported by the fact that whenever the addressee does not want his commitment to φ be recorded, he explicitly has to protest against it.[15]

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[15]I thank one of the anonymous reviewers of the paper for asking for clarification in this matter. I believe, however that the solution proposed by the reviewer herself/himself, according to which the use of *ugye* "requires the Speaker to have some evidence (private or public) that the Addressee will go along with her commitment" is too weak, since it would predict that Addressee's agreement depends on how successfully Speaker can convince him that she has evidence (not shared by Addressee) for the truth of φ. For example, although in the situation illustrated in (13), the husband seems to have every reason to go along with the speaker's commitment (assuming that she has just spoke to a person who has first-hand information about the birth of the child), the use of *ugye* is still infelicitous.

Let us consider what would happen if we assumed that *ugye* makes the same contribution to questions like (10) that it makes to assertions like (12), described above. In this case, we would have to assume that (10) is used to make question acts asking whether $\varphi =$ 'addressee finishes university' is true, which are felicitous in contexts where the speaker considers φ a joint commitment of the speaker and the addressee. This characterization, however, is on the wrong track, since (10) is perfectly fine in contexts where the speaker does not assume that the addressee is committed to φ, although it is infelicitous when the speaker is not committed to it.

It was proposed above that (12) and its kin presuppose that both speaker and addressee are committed to the propositional content φ. Since, however, the sentence is used to assert the very same proposition, which is only possible if the speaker is committed to it, the felicity conditions of assertions with *ugye* are also correctly expressed by saying that the addressee is committed to the propositional content.

These observations boil down to the following. If the meaning of *ugye* is considered independently of its intonation, it seems to introduce two different kinds of presuppositions in questions and assertions. In the former case, the contextual presupposition appears to be that the speaker is committed to the propositional content of the question, and in assertions it appears to be that the addressee is committed to the latter.

The above results indicate a similarity of *ugye* to discourse particles whose semantic effect depends on the sentence type they appear in or the speech act type they encode. One of the best-known of these is German *wohl,* which expresses uncertainty of the speaker in assertions and uncertainty of the addressee in questions. The effect is attributed in the literature to the fact that the two types of speech acts differ as to which participant serves as the *epistemic reference point,* also referred to as *epistemic judge* (Lasersohn 2005; Stephenson 2007), or *perspective center* (Bylinina et al. 2014), that is, the person "relative to whose knowledge base the whole sentence is evaluated" (Zimmermann 2011). The phenomenon is often referred to informally as the "interrogative flip".

What is interesting about the behaviour of *ugye,* as compared to the other expressions whose interpretation relies on the perspective center is that it does not attribute a belief to the participant identical to the perspective center but to the interlocutor of that participant. Thus, in questions it encodes the attribution of a commitment to the speaker, and in assertions the attribution of a belief to the addressee, by the speaker.

3 Formalization

In the course of formalizing the proposal outlined in the previous section we will follow the assumptions of dynamic semantics, according to which the utterance of sentences changes certain parameters of the context. Therefore, we will assign the sentences under consideration a *context-change potential* (CCP), which reflects the

properties of the default speech acts made with the help of the sentence. This means that the relevant sentences will be taken to denote a set of input-output context pairs $\langle c, c' \rangle$, where certain requirements concerning the public commitments of and the questions publicly asked by particular discourse agents are satisfied. The contextual presuppositions introduced by the relevant forms are captured in this system by introducing conditions on the input context c. For formalizing the CCPs of Hungarian sentences containing *ugye*, we will rely on a system that takes its inspiration from Davis (2011). The parameters of the context that will be referred to in the discussion include the following:

- the concept of the *Common Ground* (Stalnaker 1978), abbreviated as CG, which refers to the set of propositions that the participants are jointly committed to,
- for each participant *x,* the set of *Public Commitments of x* in context c, referred to as PC_x^c, which is the set of propositions that *x* is publicly committed to in the context, but which are not (yet) joint commitments, following Gunlogson (2003) and Farkas and Bruce (2010),
- for each participant *x,* the set of *Public Questions asked by x* in context c, referred to as PQ_x^c, which consists of question denotations (represented by sets of propositions, cf. Hamblin 1973), following Davis (2011),
- the semantic value of the sentence that was used to make the last question act by *x* in context c, $PQ_x^c [0]$,
- a set of discourse agents $\mathbb{A}$, among which the perspective center in context c will be referred to as P^c, and the counterpart of the perspective center as $\mathbb{A} \backslash \{P\}^C$.

We will assume that assertions made by *x* with the help of the declarative sentence *S* change the context by adding the proposition φ, equivalent to the propositional content of *S,* to PC_x^c. φ will become part of the CG if the interlocutor of *x* also commits to it, either explicitly, or implicitly, by not objecting to it. (Cf. Farkas and Bruce 2010, for further discussion.)

Establishing PQ_x^c for each participant results in a partition of the set of the *Questions Under Discussion* (QUD), which is the ordered set of the questions asked (by any participant) in the course of the discourse, which have not yet been answered (Roberts 2012). The reason why we consider it important to record who asked a particular question in the discourse, as opposed to Roberts (2012) and Farkas and Bruce (2010), is that this makes it possible to follow which participant bears the burden of having to provide an answer.[16] Asking a question by participant *x* thus results in the addition of a question denotation to PQ_x^c.

The fact that the identity of the participant whose input commitments *ugye* makes reference to changes across the sentence forms is accounted for by marking a participant *P* in the set $\mathbb{A}$ as the *perspective center* (cf. Sect. 2 above). As discussed in the literature (McCready 2007; Stephenson 2005), the perspective center is the speaker as a default, but it is obligatorily shifted to the hearer in questions. In a particular case, the perspective center is identical to the participant whose PC or PQ

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[16]Cf. Krifka (2001) on the properties of 'paired acts' consisting of initiating and responding acts.

is updated in context c': it is the speaker if PC is updated, and the hearer if PQ is updated.

(14)–(15) below illustrate how the interpretation of a declarative form *S-ugye~*, where the particle does not bear intonational marking, and a form *S-ugye∧*, which consists of a declarative *S* and an internal or final *ugye* bearing a rise-fall tone and is used to make a question act, are given in terms of CCPs in the framework outlined above. φ stands for the propositional content of *S*.

(14) $\quad \llbracket S\text{-}ugye{\sim} \rrbracket^{\mathbb{A}} = \{\langle C, C' \rangle \mid \varphi \in \mathrm{PC}_P^{C'c} \wedge \varphi \in \mathrm{PC}_{\mathbb{A}\setminus\{P\}}^{C}\}$

(15) $\quad \llbracket S\text{-}ugye{\wedge} \rrbracket^{\mathbb{A}} = \{\langle C, C' \rangle \mid \mathrm{PC}_{\mathbb{A}\setminus\{P\}}^{C'c}[0] = \{\varphi, \neg\varphi\} \wedge \varphi \in \mathrm{PC}_{\mathbb{A}\setminus\{P\}}^{C}\}$

In plain English, (14) expresses that given a set of discourse agents $\mathbb{A}$, the interpretation of an *S-ugye~* declarative sentence is taken to be the set of input-output context pairs such that in the output context the public commitments of the perspective center (the speaker) are updated with the proposition φ, and that in the input context her counterpart (i.e. the complement of the set {P} with respect to $\mathbb{A}$), the hearer, is committed to φ. (15) says that the interpretation of an *S-ugye∧* sentence containing an internalized tag is taken to be the set of input-output context pairs such that the output context involves an update of the public questions by the counterpart of the perspective center, the speaker (which amounts to the addition of the set $\{\varphi, \neg\varphi\}$ to it) and that in the input context the same participant is committed to φ. Note, importantly, that the last conjuncts in (14) and (15), which refer to a condition on input contexts, are identical, and state that φ is an element of the set of propositions constituting the public commitments of the counterpart of the perspective center, which is the speaker in the case of assertions and the addressee in the case of questions. The above requirement on input contexts is thus the uniform contribution of *ugye,* without its intonation, which was argued for informally in the previous section.

4 Conclusions and Open Issues

The present paper investigated the interpretation of the Hungarian particle *ugye,* which can, modulo its prosodic realization, appear both as an internalized tag, contributing a biased question interpretation, and as a discourse particle contributing an "as we know" reading to declaratives. We provided an outline of a possible historical development from a tag-type use to a sentence internal use, in the course of which the contribution of intonation was separated from the contribution of *ugye* and the form itself lost its compositional interpretation. We then proposed a uniform formal account of its two synchronic uses in a dynamic semantic framework. *Ugye* was argued to contribute in all its uses a condition on input contexts, according to which the discourse agent who is the interlocutor of the default

perspective center of the speech act at hand is committed to the propositional content of the sentence.

The assumption that *ugye* targets the "complement" of the perspective center $\mathbb{A}\backslash\{P\}^{\mathrm{C}}$ seems to successfully account for native speakers' intuitions about the contribution of the particle across different utterance types. There is one problem that the proposal raises, however. Since sensitivity to the complement of the perspective center has not been attributed to any expression in any language before, the question arises whether there is further evidence that this is a parameter of the context that operators can be sensitive to, or, assuming that perspective centers are parameters of Kaplanian contexts (Kaplan 1989), are we proposing "monster" operators in the Kaplanian sense?[17] The discussion of these implications will have to be left for a future occassion.

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[17]I thank one of the anonymous reviewers of the paper for raising these important concerns.

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Neo-Lockean Semantics

László Kálmán

Abstract Locke's view of ideas radically differs from Aristotle's: they are more similar to what Frege calls "images", or what contemporary psychology calls "memory traces" (in various modalities). For Locke, the primary function of linguistic signs is that they evoke such ideas. Thus, a semantic theory adopting the Lockean stance is radically different from the mainstream approach. In particular, it does not take reference to be the main explicandum of semantics, and it considers the relationship of utterances to logical assertions a rather indirect one. This type of approach, I argue, is a promising alternative of Frege and Carnap's theory of model theoretic semantics and Montague's compositional machinery. In particular, it is capable of explaining the role of association (a non-logical concept) in human communication, people's diverging judgments concerning logical relations between utterances, and the non-bottom-up character of human interpretation.

Keywords Philosophy of language · Usage-based semantics

1 Introduction

Contrary to what the title suggests, John Locke's work will not play an important role in this paper. However, I would call the reader's attention to the fact that his views, and, in particular, *An Essay Concerning Human Understanding* (Locke 1690) has been mostly ignored by linguists and semanticists. His approach to the nature of senses and knowledge has been considered an episode of the history of philosophy, the only relevant point of which was the rebuttal of innatism. As opposed to this, I believe that Locke's ideas on how concepts are acquired (if they are not innate) are very relevant independently of innatism.

I think Locke's approach can be considered the most important precursor of many present-day trends in cognitive psychology and linguistics, which emphasise

L. Kálmán (✉)

Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest, Hungary
e-mail: kalman@nytud.hu

the relevance of individual memory traces and associations in concept formation as opposed to abstract and symbolic thinking. For example, Barsalou (2005) represents that trend (and quotes a legion of empirical studies supporting it); in linguistics proper, several families of theories have arisen since the late 1980s that advocate similar models (e.g., Skousen 1989; Eddington 2006 or Blevins and Blevins 2009), all relying on the assumption that the main component of the knowledge of language is a rich memory, in which particular memory traces (so-called exemplars) must be stored. For that matter, I consider all these theories "neo-Lockean".

As opposed to the neo-Lockean stance, the mainstream approaches of both grammatical theory and semantics (that is, the generativist view of grammar, first made explicit by Chomsky (1957), and the model theoretic approach to semantics, first developed by Montague (1974)) rest on a certain interpretation of the economy of models, in which abstraction has to be maximized. For example, all grammatical categories should be explained in terms a couple of features, all entities in the model of the world must be reduced to a couple of basic types, and so on. On the other hand, nobody has ever proved that such reductionist models are more concise than, say, a Lockean model if the domain of phenomena described is kept constant.

In particular, mainstream (Montagovian) semantics adopts certain assumptions which, as appealing as they might seem from a philosophical perspective, raise serious problems when applied to the explanation of how natural languages work. These assumptions go back at least to Frege (1892) and Carnap (1947), although they had been present in informal versions since antiquity. These assumptions constitute a complex agglomerate of intertwined ideas and beliefs that is hard to summarize in a simple slogan, but if I had to single out the most characteristic elements, I would stress the following ones:

(1) **Main ideas of mainstream semantics**

  1. The main explicandum of semantics is *reference*, i.e., a relationship between linguistic signs and real-world entities that the speaker has in mind, and the audience can identify if the communicative act is successful (to what extent a "real-world entity" actually exists in whatever one means by the "real world" is immaterial at this point, and, from the linguistic point of view, it is also irrelevant what we mean by a speaker's "having in mind" such an entity).

  2. What enables natural-language expressions to serve the purpose of reference is an abstract property that they possess, and that competent speakers of the language are aware of: their *sense* (or *meaning*).

The true importance of the fact that reference and sense constitute the primary concepts in which mainstream semantics is interested lies in the consequence that they consider other concepts secondary or outright irrelevant. In particular, by taking it for granted that the communication process starts from a linguistic sign and results in a unique successful act of identifying its referent, they discard the idea that the process of *understanding* (or *interpretation*) may be a non-deterministic one, which may vary from one situation to the other, and it may be the case that such

processes do not have a unique, well-identifiable end-point, not even in a theoretical sense. That is, it does not follow from anything that senses or meanings should be conceived as functions mapping speech situations (including utterances) to acts of identifying referents. Another important point is that considering sense or meaning a genuinely linguistic attribute of a sign would make it necessary to separate the linguistic knowledge of an expression from other types of knowledge associated with it. Earlier attempts to perform a sharp delineation of the border between so-called lexical and encyclopedic knowledge (e.g., by Gruber 1985) are far from either precise or convincing.

In the first part of the paper, in Sect. 2, I will briefly examine the Frege-Carnap approach to meaning (sense). I will argue that interpretation is a much more complex process than the traditional approach assumes, therefore modelling sense as a function that assigns referents to speech situations is not satisfactory. Instead, in accordance with Locke's teachings, I will propose in Sect. 3 that senses are best seen as conglomerates or constellations of memory traces associated with (evoked by) natural-language expressions, which help conveying a message because the same expressions give rise to similar associations in the addressees' minds. Obviously, in accordance with Locke (1690), the networks of associations in our minds arise through experience (although, *pace* Locke, innate mechanisms may play an important role in the way they are built).

Then, in Sect. 4, I will mention some linguistic consequences of adopting the neo-Lockean theory proposed. I will show that several principles of mainstream semantic theory must be abandoned if we make that step. In particular, the existence of *proper names* makes it necessary for the model (in our case, the memory model) to have a meta-linguistic character, in which concepts of linguistic entities play the same role as other concepts (Sect. 4.1).

Also, under the neo-Lockean view, the relationship of linguistic utterances to logical propositions is much less direct than it is assumed in model theoretic semantics (see Sect. 4.2). Accordingly, interpretation does not presuppose a step of *translating* sentences into a logical language, and words that traditionally have been seen as direct counterparts of logical connectives are more similar to "regular" lexical entries.

A related consequence is that the principle of *compositionality* must be revised in such a way that it should not entail the *bottom-up* character of interpretation (cf. Sect. 4.3). That is, although the senses of complex expressions are compositional (they depend only the senses of their constituent expressions and the way in which they are combined), the interpretation of a sub-expression need not precede (in neither a logical or a temporal sense) that of the larger expression of which it is a constituent. This makes it possible not to consider so-called intensional contexts special in any respect, because these correspond to artificially delaying interpretation in the traditional paradigm, whereas no such artificial machinery is required under the approach proposed here.

2   The Traditional Concept of Sense

The starting-point of my discussion is the concept of *sense* (or, equivalently, *meaning*). There is a consensus among linguists and philosophers about the essence of the senses of natural-language expressions:

(2)   **Sense**
      Sense is that property of an expression the knowledge of which enables the
      competent language users to use the expression successfully.

This concept immediately raises certain issues, some of which will be relevant for the discussion that follows.

(3)   **Problem areas related to sense**
      a. To what extent can we consider the sense of an expression a property
          that exists indepentently of the competent language users' knowledge of
          it, i.e., something of which speakers may or may not be aware? Would
          not it be more appropriate to conceive of sense as the *knowledge* that
          language users possess about (the uses of) a given expression?
      b. As a matter of course, it would be unrealistic to claim that each language
          user has the same knowledge about the uses of every expression (or its
          sense). So when speaking of the use of expressions in communicative
          situations, much of the mutual understanding process may be determined
          by the *overlap* of the participants' knowledge of senses.
      c. The overlap between language users' knowledge about an expression (or
          its sense) is inherently *gradual* rather than categorical. Therefore, the
          "successful use" of the expression as well as the mutual understanding
          of the communicating parties are necessarily also gradual. In particular,
          we must also allow for the identification of *referents* to be partial and
          gradual (The referent of an expression is some constellation in "reality",
          which the addressees are supposed to evoke or identify in terms of the
          speaker's communicative goal).

I believe the issues mentioned in (3) above are important pitfalls that the mainstream approaches tend not to recognize. This is true at least for the standard (and, to my knowledge, the only) *model* that has been proposed for capturing the concept of sense in (2), that of Frege (1892), formally rendered later by Carnap (1947). Space limitations do not allow me to go into an in-depth criticism of their model, but already the problems listed in (3a) should be indicative, at least in an informal sense, of where it goes wrong in my view. There is nothing in the Frege/Carnap approach that should aim at taking into account the mental character of senses, the problem of the speakers' partially overlapping knowledge, and the inherent graduality that stems from it.

As for the more formal problems, consider the central concept of the Frege/Carnap paradigm of approaching senses. To put it in a shamefully simplified way, the formal

device for capturing the concept of senses is the *intension* function, i.e., the function that yields a referent given an expression and a *possible world* (state of affairs). That function alone is supposed to explain the contentful aspect of expressions, whereas the *extension* function (i.e., the one that assigns a referent to an expression in a particular possible world or state of affairs) does not illuminate their content, it merely enumerates what they refer to, for whatever reason, in a particular speech situation. That is, extension expresses *what* an expression refers to in a particular situation, wereas intension is supposed to express *why* that is possible (as a matter of fact, necessary).

In the Frege/Carnap model, the extensions of predicates are sets of n-tuples of individuals (where $n = 1$ for properties, and $n = k$ for k-ary predicates). That is, the extension of a property sign consists of those individuals that possess that property, and the extension of a relation sign consists of those n-tuples of individuals that stand in the given relation.

Thus the Frege/Carnap style extension of a predicate looks exactly as if the predicate was *the proper name of a set*. That is, nothing can be read off the model as to *why* just those individuals (or n-tuples of individuals) belong to the extension. And this is how it should be, since the only purpose of extensions is to specify *what* the referents are, not *why* they are the referents.

But, in actual fact, intensions are not very helpful in this issue. Take first a proper name like *Bill*: its intension is a set of pairs of possible worlds and individuals. In what sense does this set express *why* one can refer to those individuals by the name *Bill*? Intuitively, the sense of *Bill* should encode the actual circumstances when this name can be successfully used for identifying an individual. (So it should encode that property of actual circumstances which makes it possible to say that the individual in question *bears that name* in those circumstances. For example, the fact that it was given that name, and the relevant people are aware of that, as explained in detail by Kripke 1980a). But the intension function does not do that for us.

In the case of a predicate, what intension gives you is simply one set of n-tuples per possible world. There might be regularities applying to those sets across possible worlds,[1] but it is impossible to reconstruct those regularities from those sets. If you want to say that predicates are *not* just labels of arbitrary sets, but they correspond to something meaningful, intension is not the concept that will help you express that.

Within linguistics proper, many authors have pointed out similar problems in the mainstream model theoretic approach, in particular, as it appears in Montague's (1974) theory. For example, Partee (1979) points out the lack of mutual substitutability of propositional arguments even when they are logically equivalent (i.e., have identical intensions). The reason why I will not summarize the various objections here is that none of those critiques have a direct bearing on the problems presented

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[1]Carnap (1952) proposes to capture such regularities using *meaning postulates*, i.e., constraints on possible language/model pairs that force certain set theoretic relations to hold between predicate extensions in each possible world. It is only natural that the need for such a device arose. On the other hand, meaning postulates were not designed as a systematic and comprehensive account of senses, and they were never thought of as taking over the task of intensions altogether.

in (3) above, and therefore they do not offer alternative views of them. With respect to the problems I have raised here, all mainstream semantic theories are of a Montagovian spirit, or they do not tackle those problems at all.

3   The Neo-Lockean View of Sense

For Locke, the basis for using language as a means of communication is that linguistic signs are associated with every speaker's own ideas, and that speakers assume that they evoke similar ideas in other people's minds. This kind of association is very similar to what de Saussure (1931) calls *sign*, whereas what Locke calls *ideas* (and which I will also call *concepts*) are similar to Frege's (1996, 188) *images*:

(4)   **Image**
      "Both the nominatum and the sense of a sign must be distinguished form the associated image. If the nominatum of a sign is an object of sense perception, my image of the latter is an inner picture arisen from memories of sense impressions and activities of mine, internal or external."

Crucially, this approach to sense diverges from the basic ideas of mainstream semantics in those respects that I emphasised in (1) in the Introduction. In particular, Locke's view does not imply in any sense that the identification of referents by the audience has any distinguished status in the process of understanding an utterance, on the one hand, and it also does not imply that senses are linguistic properties of expressions, which speakers know by virtue of their being competent in a language. In fact, there is nothing in Locke's theory that should make it desirable or possible to distinguish the linguistic knowledge that one might have of a sign from all other types of information that one associates with it.

In accordance with this basic stance, one of the main ingredients of a neo-Lockean view of semantics must be a different approach to *models*. In the Frege/Carnap tradition, models are designed to capture the external world (or wherever referents reside), while linguistic entities constitute a different domain, and semantics mediates between the two domains. This makes sense from the point of view of a certain interpretation of theoretical cleanness: The model theoretic paradigm has been very careful about separating the target language from the facts about the world containing referents. Neo-Lockean models, on the other hand, must represent *minds*, containing associations of ideas (in the traditional sense made popular by Locke, developed in more detail by Hume (1738), and influential ever since, with contemporary developments such as connectionism, cf. Smolensky 1988), including concepts of linguistic entities. Neo-Lockean semantics is not about the relationship between two different domains, but a characterization of associations within a single domain (which does not exclude that concepts of linguistic entities be somehow distinguished in that domain).

It may not be clear at first sight why a neo-Lockean turn should have any relevance in linguistic semantics, but I believe it solves many problems, some of which I have

touched upon above. For example, it answers the questions posed in (3): in terms of the neo-Lockean view, senses are *not* independently existing entities, but belong to the speakers' knowledge. Therefore, mutual understanding is limited by the overlap of the senses in the participants' minds (even if they are not fully aware of this). Finally, the identification of referents is not the natural (and necessary) end-point of the understanding process, it is inherently partial and gradual, which explains why there can be such a wide range of mental processes that people qualify as "understanding".

Another family of issues in which a neo-Lockean turn can be successful is the very content, and hence, expressive power of what we mean by sense. Consider the example of the proper name *Bill* in the previous section. There is no way we can capture the conditions on its uses unless the model contains information on people calling each other by names, individuals bearing the name *Bill* in particular, people who are aware of those individuals called that way, and so on. This can only be done if the model has a meta-linguistic flavour, i.e., if its content also involves the use and the users of language, in this case, the conditions of using of a proper name.

As it is clear from the above, the rendering of the sense of *Bill* does not involve specifying who exactly is called Bill in the model, let alone in all possible worlds. What it must involve is a description of types of state of affairs in which an individual can be successfully referred to as *Bill*. That is what a competent speaker must know if he/she is familiar with the name *Bill*.

As a matter of course, it is impossible to tell whether familiarity with this particular name is a necessary condition of being a competent speaker. Moreover, one may or may not know that *Bill* is a given name or that it is a name given to male beings as a rule. People's intuition will disagree on whether the sense of *Bill* contains all this information, i.e., whether a speaker can only be considered competent if he/she is aware of all of it.

The case of proper names like *Bill* can easily be generalized to other types of linguistic signs (which I prepare to do in separate papers). In general, there is a great deal of variability in exactly how much competent speakers know about the possible uses of an expression, and what they agree upon concerning those uses. I do not believe that it is either practically or theoretically feasible to take an alleged maximum of their respective knowledge about those uses as corresponding to the sense of the expression. It is not even theoretically necessary that such a unique maximum should exist. As a matter of course, there are very frequent and basic elements of every human language: in their case, the language users' understanding of how they can be used is probably very close if not identical to each other. But there are much more expressions that are less frequent, or even belonging to specialized vocabularies, where this is far from true.

As a consequence of this, one should also be skeptical as to the independent existence of a single sense of each expression in natural language, with different speakers knowing different portions of that independently existing entity. One could take that stance, but even in that case one should take into account the variability of the speakers' knowledge of senses, owing to the variable experiences, and that is what matters for explaining their behaviour in language use. This is why it seems more

straightforward to adopt the view in (3a) in Sect. 2, i.e., to assume that *sense is a mental disposition*, which may vary from one language user to the other, although its essential features are shared by language communities.

If this was a detailed study on a working neo-Lockean system, then a thorough description should follow on how minds and concepts (Fregean images, cf. (4)) could be modelled. As a matter of fact, such models actually abound ever since the first serious attempts to model associative memory, e.g. Anderson (1983), to connectionist models and more elaborate models like Barsalou (2005). Less attention has been paid to what the consequences of applying such models would be for the central concepts of the study of natural-language semantics. Clearly all these approaches share the consequence that real-world referents are not directly available in them, since a mental model can have access to the external world only through a complex sensory-motor system, whose relationship to the symbolic concepts used in linguistics is very indirect, mediated by the sub-symbolic layer of the association network.

Another common feature of such association-based cognitive approaches is that, in sharp contrast with the mainstream linguistic disciplines that I described in the Introduction, all of their ingredients are stochastic rather than deterministic, and gradual rather than categorical. Both memory traces and their associations (i.e., links from one memory trace to another that can serve activation or inhibition) have strengths, which is a function of the *frequency* of their use, some kind of *importance* attached to them and/or their *recency* (a spontaneous decay of strength is usually assumed in all models of associative memory).

There is ample evidence in the literature about such effects in grammar that justifies their incorporation in any serious model (for a nice summary of that line of research, see Diessel and Hilpert 2016). Semantics, on the other hand, remains largely unaffected by such developments, except the attempts to model lexical semantics using vector spaces (cf. Turney and Pantel 2010), but for the time being those are capable of modelling very elementary semantic relations only. Yet a neo-Lockean (usage-based etc.) turn in the theory of language must have repercussions in the theory of semantics proper, with important consequences beyond lexical semantics, in domains such as the relationship of meaning to logic or the interface of syntax and semantics. The present paper can only hint at some of the consequences of this type; this is what I will attempt to do in the next section.

4 Some Consequences of a Neo-Lockean Stance

As a matter of fact, the neo-Lockean view of linguistic knowledge has more or less immediate bearings on linguistics proper. I have already touched upon some of the consequences, especially concerning the various graduality effects on grammar in the end of the previous section. As for semantics, I mentioned a very general consequence, which could be termed philosophical in nature, about the status of reference. Under a neo-Lockean view, the relationship of linguistic expressions and referents is very indirect, mediated by a mental apparatus that carries out the processing of

linguistic input, and which leads to various possible stages of awareness about the speaker's intentions. Everyday language as well as traditional approaches call this process *understanding*, but in fact it is impossible to determine under what conditions one can rightly claim that it has taken place. In other words, it is not possible to define just what types of consequence an audience is supposed to draw so that we could say they understood an utterance.

4.1 The Example of Proper Names

One particular example that I have also mentioned in connection with this is the classical problem of proper names. Any speaker may have all sorts of pieces of information about a bearer of a name, but it is not possible in general to determine exactly which of those must be required in order to say that somebody *understands* a name.

What I have proposed concerning names, which I believe is perfectly compatible with Kripke's (1980b) view, is that 'name' as a concept is prominently associated with strings that function as proper names for a speaker. The concept 'name', in turn, is associated with concepts like 'label', 'giving as a name' or even 'baptise', which are associated with histories (in the sense of Hayes 1979) or scripts (in the sense of Schank and Abelson 1977) of assigning a more or less arbitrary string to an entity, a collection of entities, a type of entities etc., with the purpose of using it as their name. The existence of these associations is the only feature that distinguishes proper names from other lexemes in an associative memory model at the semantic level.

This does not exclude names that have some amount of descriptive content (as is often the case with names of institutions, geographical names etc.). By "descriptive content" I mean associations that the string in question is also associated with a non-individual concept that is not itself associated with the peculiar "baptism" concept explained above. For example, if a place is called *X Valley*, then its name is probably associated with the concept of being a valley, in particular, if that place is in fact a valley.

This approach even allows the concept of 'having been named' to be associated with strings that are common nouns rather than proper names in the linguistic sense. For example, the term *mouse* 'peripheral device' is said to be coined by Bill English, and this piece of information is present in many people's minds. This is not an anomaly, because the information about the typical syntactic distribution of a word and its semantic properties need not stand in a one-to-one relation. Many proper names, e.g., brand names, are often used syntactically and semantically as common nouns.

4.2 How Logical is Language?

As a matter of course, people draw consequences from what others say, and in this sense it is usual to speak of natural-language utterances as having *logical properties*. Logicians often use natural-language expressions to elucidate the content of expressions in logical languages, and of course in those cases they try to use unequivocal paraphrases. But the truth of the matter is that, as I have already pointed out, the relationship of natural-language sentences to referents, which may be modelled with logical formulae in the case of propositions, is rather indirect under the view of sense adopted here. Therefore, in contrast with the model theoretic approach, I think that rendering the sense of a sentence by translating it into a formally interpretable logical formula is not feasible. Our standard inventory of logical tools is not suitable for rendering the inherently gradual and non-deterministic character of human understanding; moreover, as I have argued, the term understanding itself is ill-defined.

It follows from this theoretical stance that a neo-Lockean cannot aim at (and cannot achieve) a direct rendering of traditional relations and connectives. I believe this consequence is a fortunate one, not only because it conforms to the theoretical basis explained throughout this paper, but also because all empirical evidence points to this direction. Not only is it well-known that people are not particularly good at drawing complex inferences (for many early experimental results see Evans 1982), it is also clear that the ways in which people interpret natural-language sentences is often variable. This has been studied, for example, in the special case of so-called "donkey anaphora" (cf., e.g., Geurts 2002; Foppolo 2009). People's judgments greatly disagree on the question what farmers who own numerous donkeys do if we know that *If a farmer has a donkey, he beats it*.

As for logical connectives, considerable efforts have been made at least since Kamp (1973) to explain the variations in the interpretation of the equivalents of English *or* and (or?) *and*. The mysterious "distribution over disjunction" phenomenon discussed in Kamp (1973) is only one of many puzzles of this sort (one is ready to conclude, upon hearing *You can eat soup or meat*, both that one can eat soup *and* that one can eat meat). It turns out that, cross-linguistically, in many other types of context, 'or' is often interpreted as 'and' (and the other way round); moreover, speakers of different languages may have different preferences. When looking at data such as those found in Szabolcsi and Haddican (2004) and (or?) Davidson (2013), one has the impression that natural-language connectives often called in the same way do not have much to do with logical disjunction or (and?) conjunction. It is impossible to review all the contexts in which these phenomena have been examined, but it is safe to state that the natural language "equivalents" of the basic logical connectives do not obey De Morgan's laws, and, moreover, they do not behave consequently across contexts or languages.

This is not what one would expect under the standard approach to semantics. Typical attempts to explaining this "deviance" involve mechanisms relying on various combinations of semantic, pragmatic and real-world knowledge (e.g., in Zimmermann 2000 or Szabolcsi and Haddican 2004), but they all fail to account for the wide range and types of variation.

The neo-Lockean stance dictates that words like *not, and* and *or* must be associated with (i.e., evoke) concepts, i.e., conglomerates of memory traces of past sensory-motor experiences, verbal and non-verbal, external and internal, rather than (logical) operations. That is, their senses are not that different from those of "regular" lexical entries. For example, *no(t)* corresponds to a concept that mostly overlaps with those associated with *reject, refuse* etc. From our (everyday and linguistic) experience on how people use *and* and *or*, it looks like both of them are associated with some concept of collections (or lists) with members that are somehow alike (by the way, this latter condition typically remains unexplained by logical approaches). In addition, *and* hints at some kind of simultaneity or joint-ness, whereas *or* hints at some kind of free or arbitrary choice, but exactly what role such hints play in the understanding of a co-ordinated structure varies from one context to another. For example, simultaneity and joint-ness (suggested by the use of *and*) does not exclude alternativity, and the other way round, the free choice between elements (as suggested by *or*) does not exclude that a property holds true for all of them; as a matter of fact, free choice often indicates universality: *no matter* which member of the co-ordination you choose, the proposition in question will be true.

The illusion that these words are in a one-to-one relation with logical conjunction and disjunction originates from the fact that, by virtue of these associated concepts, one can use them, if one really has to, to emphasise simultaneous and alternative truth, respectively. This happens, for example, when we formulate, for didactic purposes, logical formulae in a human language, and this is why the result often sounds very clumsy. By the same token, *no(t)* can be used for expressing logical negation (or complement formation) as a side effect of the concept of rejection.

4.3 Translation and Compositionality

The mainstream approach to reconstructing the interpretation of natural-language utterances consists in *translating* their most elementary sub-expressions into expressions of some logical language (which has a precise semantics), then combining *the semantic values* of those logical expressions, which yields the interpretation of larger sub-expressions, and so on, until the entire utterance has been interpreted. This *bottom-up* view of interpretation is perfectly in line with the idea that natural languages work in the same way as formal languages (first announced programmatically by, but pre-dating Chomsky 1957). However, no empirical evidence whatsoever has been ever produced that should support this claim. True, individual, isolated words are capable of evoking concepts, but that does not entail that interpretation must proceed in a bottom-up fashion.

Note that, among other consequences, it is the bottom-up view of interpretation that gives rise to the problem of so-called *intensional contexts*. Consider, for example, the following sentence, from Frege (1892):

(5)   *Copernicus believed that the planetary orbits are circles.*

The "problem" lies in the fact that the subordinate clause expresses a proposition; bottom-up interpretation would require us to interpret that clause first, then plug the result of that interpretation into the interpretation of the main clause. But interpreting the subordinate clause as if it was a sentence on its own (in its "direct use" or "customary sense", using Frege's terms), would amount to assessing whether it is true. And that cannot be right because, for interpreting the entire sentence in (5), it has no relevance whatsoever whether the planetary orbits are indeed circles. (That is only relevant for judging whether Copernicus' beliefs were correct, but that has nothing to do with the content of (5)).

So, according to Frege, the subordinated clause in (5) is used in its "indirect sense", i.e., its referent is *the proposition* that the planetary orbits are circles. That proposition is the *intension* of the main clause *The planetary orbits are circles*, and there is no need to evaluate it in the actual world (i.e., interpreting it, finding its referent). This mechanism effectively means *suspending* (or at least delaying) the bottom-up interpretation process when needed.

Bottom-up interpretation is often presented as a consequence of the *principle of compositionality*, which states that the sense (meaning) of a complex expression must be a function of the senses (meanings) of its constituting parts and the syntactic operation by which they have been combined.[2] Crucially, the term *sense* (*meaning*) in the definition of compositionality is to be understood as it is in a model theoretic framework.

In my opinion, however, bottom-up interpretation neither is equivalent to nor follows from the principle of compositionality. Compositionality refers to the *sense* (*meaning*), in the model theoretic sense, of the constituents of a linguistic expression rather than their *interpretation*. So compositionality does not force us to *interpret* the embedded expressions of a larger expression prior to the *interpretation* of the larger one.

One consequence of this is that the mainstream approach to the semantics of expressions in intensional contexts, like the semantics of the subordinate clause of (5), has no counterpart in a neo-Lockean theory like the one proposed here, because if the claim that interpretation proceeds in a bottom-up fashion is dispensed with, then no extra mechanism is needed for delaying interpretation. Under the neo-Lockean view, interpretation is always "delayed" in the sense that the relationship of what was said and what holds true in the world is very indirect. Identifying referents is always partial and gradual, and not a crucial and distinguished goal of understanding. That is, understanding is more about what mental image is formed in one's head than about what the world would be like if the sentence was true. Therefore, what corresponds to a clause (whether in an intensional context or not) is neither an extension nor an intension, but a Fregean image (as defined in (4), as I explained in Sect. 3).

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[2]This principle has been attributed to many thinkers, including Plato, Boole and Frege, but the most widespread definition originates from Montague (1973), in terms of which there must exist a homomorphism between the algebra of linguistic representations and that of semantic representations.

In the case of the example in (5), the subordinate clause corresponds to a concept (arising from a combination of associations) in which the planetary orbits are circles, irrespective of whether this has anything to do with the orbits of actual planets, and the main clause corresponds to a constellation in which somebody known as Copernicus believed that (independently of what else, if anything at all, one knows about Copernicus). Assessing the truth of the sentence itself or, for that matter, reaching any deeper understanding of what it says, is contingent on what the actual addressee knows about what planets are, who Copernicus was, and so on.

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Strict and Non-strict Negative Concord in Hungarian: A Unified Analysis

Anna Szabolcsi

Abstract Surányi (2006) observed that Hungarian has a hybrid (strict + non-strict) negative concord system. This paper proposes a unified analysis of that system within the general framework of Zeijlstra (2004, 2008) and, especially, Chierchia (2013), with the following new ingredients. Sentential negation *nem* is the same full negation in the presence of both strict and non-strict concord items. Preverbal *senki* 'n-one' type negative concord items occupy the specifier position of either *nem* 'not' or *sem* 'nor'. The latter, *sem*, spells out *is* 'too, even' in the immediate scope of negation; *is/sem* are focus-associating heads on the clausal spine. *Sem* can be seen as an overt counterpart of the phonetically null head that Chierchia dubs NEG; it is capable of invoking an abstract (disembodied) negation at the edge of its projection.

Keywords Negative concord · Clausal head · Abstract negation
Focus · Scope

1 The Basic Hybrid Data

Russian is a classical strict negative concord (NC) language: the sentential negation marker *ne* is always obligatory in the presence of n-words. Italian is a classical non-strict NC language: the sentential negation marker *non* is in complementary distribution with preverbal n-words (unless the intended meaning is double negation). See Giannakidou (1997).

Hungarian is known as a strict NC language. But, alongside *nikto* and *nichto* (*nichego*) style *senki* 'n-one' and *semmi* 'n-thing', it also has *senki sem* 'n-one nor' and *semmi sem* 'n-thing nor'. Surányi (2006) made the fundamental observation

A. Szabolcsi (✉)
Department of Linguistics, New York University, New York, NY 10003, USA
e-mail: anna.szabolcsi@nyu.edu

that the distribution of the latter items is largely the same as that of *nessuno* and *niente*. He concluded that Hungarian has hybrid NC.

(1) a.	Nikto	ne	videl	nichego.	* w/o *ne*	'No one saw anything'
(2) a.	Nessuno		ha visto	niente.	* with *non*	'No one saw anything'
(3) a.	Senki	nem	látott	semmit.	* w/o *nem*	'No one saw anything'
(4) a.	Senki sem		látott	semmit sem.	* with *nem*	'No one saw anything'
(1) b.	Marija	ne	videla	nichego.	* w/o *ne*	'M didn't see anything'
(2) b.	Maria	non	ha visto	niente.	* w/o *non*	'M didn't see anything'
(3) b.	Mari	nem	látott	semmit.	* w/o *nem*	'M didn't see anything'
(4) b.	Mari	nem	látott	semmit sem.	* w/o *nem*	'M didn't see anything'

As Surányi points out, *sem* cannot be simply the same thing as *nem*. *Nem* only occurs preverbally, but *sem* may accompany n-words in postverbal position as well.

The two kinds of Hungarian NC items peacefully co-exist within one sentence, as expected based on (3)–(4). To underscore this, I add a third n-word in (5). All postverbal combinations are possible: *sehol semmit*, *sehol sem semmit sem*, *sehol semmit sem*, *sehol sem semmit*.

(5) a.	*Sen-ki*	*nem*	*látott*	*se-hol*	*(sem)*	*sem-mi-t*	*(sem).*
	N-one	not	saw	N-place	nor	N-thing-ACC	nor
	'No one saw anything anywhere'						
b.	*Mari*	*nem*	*látott*	*se-hol*	*(sem)*	*sem-mi-t*	*(sem).*
	Mari	not	saw	N-place	nor	N-thing-ACC	nor
	'Mari didn't see anything anywhere'						
c.	*Sen-ki*	*sem*	*látott*	*se-hol*	*(sem)*	*sem-mi-t*	*(sem).*
	N-one	nor	saw	N-place	nor	N-thing-ACC	nor
	'No one saw anything anywhere'						

These facts raise the following questions, to be refined below:

(6)   How do the strict and non-strict NC systems combine in one language?

(7)   Why is *senki* a strict NC item, and *senki sem* a non-strict NC item?

Surányi proposed a system with multiple ambiguities: "N-words in Hungarian can be semantically negative or non-negative, and both types are lexically ambiguous between a universally quantified and a non-quantificational interpretation" (2006: 272).

My goal is to steer clear of ambiguities. In this short paper I am not able to consider all the issues that Surányi did, but I hope that the key questions are adequately addressed. In many respects I follow Zeijlstra and Chierchia. It should be immediately noted that Surányi did not refer to these authors; his work had largely or completely preceded theirs.

2   The Gist of the Proposal

Zeijlstra (2004, 2008) treats n-words in both strict and non-strict NC languages as carriers of the uninterpretable [uNeg] feature. This is something I adopt:

(8)   Following Zeijlstra, both *senki* and *senki sem* must be within the immediate scope of negation; syntactically, they carry the feature [uNeg].

On the other hand, Zeijlstra does not treat the sentential negation markers uniformly. In making the strict/non-strict distinction, he analyses Italian *non* as having an interpretable [iNeg] feature and expressing semantic negation ¬, but Czech (Russian) *ne* as having uninterpretable [uNeg]. The status of *ne* is similar to that of *nikto*. Both are licensed by a phonetically null operator Op with a ¬ semantics.

Zeijlstra's divergent analyses of the sentential negation markers predict that strict and non-strict NC do not coexist in one language. But the hybrid situation exists in Hungarian, so the sentential negation marker *nem* requires a unitary analysis. If [iNeg]¬ versus [uNeg] are the only options, the former is the more straightforward choice (see also Puskás 2012):

(9)   Hungarian *nem* has an interpretable [iNeg] feature and expresses semantic negation ¬, like Italian *non*.

This revision will also solve a major problem in Zeijlstra's account of strict NC. Since Zeijlstra's *ne* has just [uNeg], it remains unexplained why its presence is obligatory in all negated sentences. Zeijlstra suggests that it is part of the verbal morphology. This may well be true for Czech, but Russian *ne* is merely a syntactic clitic, and Hungarian *nem* is not even a clitic. On my proposal, Hungarian *nem* plays a useful role in supplying semantic negation ¬ and, where needed, the licensing feature [iNeg].

Let us turn to the contrast between *senki* (strict NCI) and *senki sem* (non-strict NCI). My account of non-strict negative concord will rely directly on Chierchia (2013). Chierchia explicitly follows Zeijlstra in many respects, but he revises both the semantics and the syntax. At this point it suffices to point out the following syntactic difference. For Zeijlstra, negation, ¬ is the meaning of the peripheral null operator Op that carries the [iNeg] feature that licenses [uNeg] *nessuno*. In contrast, Chierchia separates the syntactic licensor and negation. He introduces a null head NEG that (i) needs an agreeing *nessuno* in its specifier and, (ii) requires abstract negation, ¬, to scope right above its projection.[1] On Chierchia's account, ¬ is

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[1] Chierchia's [[n-D]] feature corresponds to Zeijlstra's [uNeg] (Chierchia 2013: 233). [[n-D]] is checked by the exhaustifier O_{ALT}, whereas the negation within the scope of O_{ALT} is needed for semantic coherence; see a brief explanation of Chierchia's semantics in Sect. 3.

entirely abstract, it has no syntactic carrier, while NEG is a vanilla null head in the syntax.

(10) a. Nessuno ha telefonato.
 'No one called'
 b. $\quad$ Op$_{[iNeg]}$:¬ nessuno$_{[uNeg]}$ $\qquad$ ha telefonato $\qquad$ Zeijlstra
 c. O$_{ALT}$ $\qquad$ ¬ [nessuno$_{[[+n-D]]}$ NEG$_{[[+n-D]]}$ ha telefonato] $\quad$ Chierchia

I will argue that Hungarian preverbal *sem* can be seen as an overt counterpart of Chierchia's NEG with the n-word *senki* in its specifier:

(11) $\quad$ O$_{ALT}$ $\qquad$ ¬ [$_{SemP}$ senki$_{[[+n-D]]}$ **sem**$_{[[+n-D]]}$ telefonált] $\qquad$ Szabolcsi

More generally, *sem* spells out *is* 'too, even' in the immediate scope of negation. It is a focus-associating head that must have a stressed element in its specifier. It accommodates a variety of different stressed elements, including lexical expressions and quantifiers.

I take *nem* to be the head of NegP and, as stated in (9), to be interpreted as ¬. Neg does not require a specifier, but *senki* can occur there and be licensed by Neg:

(12) $\quad$ O$_{ALT}$ $\qquad$ [$_{NegP}$ senki$_{[uNeg]}$ **nem**$_{[iNeg]}$:¬ telefonált] $\qquad$ Szabolcsi

Details are laid out below. Section 3 introduces and compares the relevant aspects of Zeijlstra's and Chierchia's theories. Turning to Hungarian, Sect. 4 spells out the core analysis of strict negative concord, and Sect. 5 of non-strict negative concord. Given limitations of space, I can only briefly point out that the unsurprising existential semantics for *senki* is plausibly matched by a somewhat surprising disjunctive semantics for *sem* in Sect. 6.

3 Background: Zeijlstra (2004, 2008) and Chierchia (2013)

This paper aims to contribute to the understanding of negative concord by analyzing the Hungarian hybrid, embedded within Zeijlstra's and Chierchia's theories. It is therefore important for the reader to be aware of those theories and their slightly different assumptions.

(13) exhibits Zeijlstra's syntactic features and semantic interpretations. I write "N" for his "Neg" to reduce clutter.

(13)   *Not NC*   *Non-strict NC*   *Strict NC*
        Dutch (Standard English)   Italian   Czech (Russian)

        niet   ¬   non   [iN]:¬   ne   [uN]
        niemand   ¬∃   nessuno   [uN]:∃   nikdo   [uN]:∃
                                 Op   [iN]:¬   Op   [iN]:¬

(13) reflects an amendment by Penka (2011, 2012). While Zeijlstra proposed that *nessuno*, *rien*, and *nikdo* were variables, Penka argued that they need to be indefinites. Hence the ∃ quantifier.

Below are Zeijlstra's representations for some simple examples. Start with Italian:

(14)   Gianni non[iN]:¬ ha telefonato.   'G didn't call'
(15)   Gianni non[iN]:¬ ha telefonato a nessuno[uN].   'G didn't call anyone'
(16) Op[iN]:¬ nessuno[uN]   ha telefonato.   'No one called'
(17) Op[iN]:¬ nessuno[uN]   ha telefonato a nessuno[uN].   'No one called anyone'

(18) Chi ha telefonato?   Op[iN]:¬ Nessuno[uN].   'Who called? No one'

While Italian has an overt sentential negation marker *non* with the same [iN] feature and ¬ semantics as Op, Czech and Russian do not. I illustrate strict NC with Russian.

(19) Op[iN]:¬ Marija   ne[uN] pozvonila.   'M didn't call'
(20) Op[iN]:¬ Marija nikomu[uN]   ne[uN] pozvonila.   'M didn't call anyone'
(21) Op[iN]:¬ nikto[uN]   ne[uN] pozvonil.   'No one called'
(22) Op[iN]:¬ nikto[uN] nikomu[uN]   ne[uN] pozvonil.   'No one called anyone'

(23) Kto pozvonil?   Op[iN]:¬ Nikto[uN].   'Who called? No one'

N-words are [uN]:∃ in both types of languages, and the preverbal ones are uniformly licensed by Op[iN]:¬. Zeijlstra supports the claim that the preverbal n-words in Russian are not licensed by *ne* but, rather, by a higher licensor, with the observation that regular NPIs fall within the scope of negation when preverbal. Analogous strings do not carry analogous interpretations in Italian. Again, I illustrate with Russian:

(24) Op[iN]:¬ mne   **mnogo**NPI   ne[uN] nuzhno.   'I don't need much'
(25) Op[iN]:¬ nikomu[uN]   **mnogo**NPI   ne[uN] nuzhno.   'Nobody needs much'

The licensing of regular NPIs (*anyone*, *much*) is purely semantic, not a matter of feature-checking. They must fall within the scope of a decreasing operator.

Why must negative polarity items, negative concord items among them, be within the immediate scope of an (appropriate) monotonically decreasing operator? With this question we turn to Chierchia (2013).

At the heart of Chierchia's theory is the idea that NPIs in general are distinguished by the fact that they come with obligatorily active (grammaticized) alternatives. Active alternatives must be factored into meaning by alternative-sensitive operators. One such operator is the silent and non-presuppositional counterpart of the exhaustifier *only*, which he and the associated literature dub O. O_{DA} is specialized for subdomain alternatives, and works as follows.

(26)   # There are any cookies left.
       Assertion: $\exists x \in D$ [cookies(x) & left(x)]
       Alternatives: $\{\exists x \in D'$ [cookies(x) & left(x)] $: D' \subseteq D\}$
       Exhaustified: $O_{DA} \{\exists x \in D'$ [cookies(x) & left(x)] $: D' \subseteq D\}$ contradicts assertion

(27)   There aren't any cookies left.
       Assertion: $\neg \exists x \in D$ [cookies(x) & left(x)]
       Alternatives: $\{\neg \exists x \in D'$ [cookies(x) & left(x)] $: D' \subseteq D\}$
       Exhaustified: $O_{DA} \{\neg \exists x \in D'$ [cookies(x) & left(x)] $: D' \subseteq D\}$ no contradiction

O_{DA} negates those alternatives that are not entailed by the assertion. In a monotone increasing context like (26), this leads to a contradiction. "There are cookies left" does not entail the subdomain alternative "There are cookies left on the table", so the latter is negated by O_{DA}. But systematically negating all such alternatives leaves no chance for "There are cookies left" to be true. In contrast, in a monotone decreasing environment like (27), the subdomain alternatives are all entailed by the assertion: "There aren't cookies left" entails "There aren't cookies left on the table", and so on. O_{DA} does not negate entailed alternatives. This is the reason why NPIs are acceptable in a decreasing environment.

Skipping some details, n-words (NCI) are a subspecies of strong negative polarity items. They must be exhaustified with respect to both subdomain and scalar alternatives in one breath. The inseparable combination of O_{DA} and $O_{\sigma A}$ is notated as O_{ALT}. NCIs carry a [[n-D]] feature that must be checked by O_{ALT} (and become [[+n-D]]). [[n-D]] corresponds to an unchecked [uN] feature. Compare (10b, c) above. Contradictions caused by O_{ALT} can only be averted if the alternatives come with an end-of-scale decreasing operator such as negation; they are not averted by *few*, for example. See Chierchia (2013: 221).

In this theory, the peculiarity of NCIs is that they can support a phonetically null NEG head by occurring in its specifier and agreeing with it with respect to [[n-D]]. To repeat,

(28) $O_{ALT} \neg$ [Nessuno$_{[[+n-D]]}$ NEG$_{[[+n-D]]}$ ha telefonato]

Both *nessuno* and NEG acquire the + value on their [[n-D]] feature from O_{ALT}. The abstract negation ¬ serves to maintain semantic coherence in the presence of O_{ALT}.

Note that while Chierchia's NEG needs the NCI, the NCI does not need NEG. It needs O_{ALT} and, consequently, a negation. When an NCI is postverbal, that negation is either contributed by *non* (29) or invoked by NEG, with another NCI in its specifier (30).

(29) O_{ALT} [Gianni non   ha telefonato a **nessuno**$_{[[+n-D]]}$]
(30) O_{ALT} ¬ [Nessuno$_{[[+n-D]]}$ NEG$_{[[+n-D]]}$ ha telefonato a **nessuno**$_{[[+n-D]]}$]

Chierchia (2013: 239) tentatively treats *ne* in strict-NC languages as an overt variant of NEG that relies on a distinct abstract ¬ operator. But that cannot be quite right. NEG requires an n-word in its specifier, but *ne* occurs on its own (only when the meaning is negative).

This may be the appropriate point to comment on the abstractness of the negation ¬ invoked by NEG. Is it legitimate to postulate semantic operators without syntactic carriers? I believe it is. Szabolcsi (2015) appealed to join (∪) and meet (∩) operators that are abstract in exactly the same way, called them "disembodied", and suggested that disembodiment may be the norm for logical semantic actors.

Note that disembodied operators do not show up haphazardly. Szabolcsi (2015) proposed that disembodied join (∪) and meet (∩) may come into play in two ways. They either satisfy presuppositions triggered by overt particles, or appear by default elsewhere. For defaults, think of the routinely invoked existential closure operation (∪), and of the conjunctive interpretation of stringing sentences together in a text (∩). In Chierchia (2013), the ¬ operator resolves the contradiction arising from certain instances of exhaustification by O_{ALT}. (In Zeijlstra's theory, the null Op interpreted as ¬ is syntactic, not disembodied.) Presupposition satisfaction, default interpretation, and contradiction resolution seem like reasonable ways to invoke disembodied operators. An explicit theory of disembodiment is called for, but it cannot be attempted here.

4   Strict Negative Concord in Hungarian

This section offers an analysis of strict negative concord, with some modifications of the theories just reviewed. I start with a bit of a background for the analysis.

Pre-Zeijlstra, strict NC had often been analyzed as involving universals scoping directly above sentential negation. See Szabolcsi (1981: 528–535) and Surányi (2006) for Hungarian; Giannakidou (2000, 2007), though not Giannakidou (1997), for Modern Greek, and Shimoyama (2011) for Japanese. The arguments in these works were language-specific, but they had a common thread. N-words should fall under the same generalizations concerning linear order and prosody that apply to

other quantifiers in the given language. The authors found that the position and stress of n-words suggested that they were scoping right above sentential negation in their languages. If so, they had to be universals; they could not be existentials within the scope of negation.

For example, Szabolcsi (1981) argued, in agreement with É. Kiss (1981) and Hunyadi (1981), that Hungarian supports the following descriptive generalizations (setting contrastive topics aside). The generalizations were based on the behavior of universals, indefinites, modified numerals, and all manner of other quantificational expressions.

(31) In the preverbal field, left-to-right order maps to c-command and thus to scopal order.

(32) A stressed operator outscopes a de-stressed one.

NC items may either precede or follow sentential negation *nem*; in both cases, the NC item can be stressed (the received view at that time was that it has to be stressed).

(33) a.   SENKI   nem   szólt.   'No one spoke'
             n-one   not   spoke
       b.   Nem   szólt   SENKI.   'No one spoke'

On the other hand, universals formed with *minden* are barred from scoping immediately above negation, however emphatic a denial might be:

(34) a.*   MINDEN-KI nem   szólt.   intended, * $\forall > \neg$
             every-one   not   spoke
       b.*   Nem   szólt   MINDENKI.   intended, * $\forall > \neg$
       c.   NEM   szólt   mindenki.   'Not everyone spoke'

It seemed natural to conclude that *senki*, *semmi* serve to express $\forall > \neg$ and fill the gap left by *minden*.

The $\forall > \neg$ analysis of negative concord encounters various difficulties with further data; these are detailed in Surányi (2006). One of the striking observations that Surányi makes parallels Zeijlstra's argument involving *mnogo* 'much' in (24)–(25). *Egy szó* is a minimizer.

(35) Egy   SZÓ-T   nem   szólt-am.
       one   word-ACC   not   spoke-1sg
       'I didn't say a word'

(36) SENKI   egy   SZÓ-T   nem   szólt.
       N-one   one   word-ACC   not   spoke
       'No one said a word'

These examples flatly refute the assumption that all stressed operators preceding *nem* scope over *nem*. *Egy szót* clearly scopes under *nem*. But then SENKI in (36) can do so, too. We have seen, though, that Surányi ended up with a multiple-ambiguities analysis.[2]

Here is how I propose to solve the problem of Hungarian strict NC. First, as was anticipated in (9), I propose, deviating from both Zeijlstra and Chierchia, that Hungarian *nem* expresses semantic negation ¬ just like Dutch *niet*, English *not*, and Italian *non*, and is as independent of NC-items as those are.

The generalization that linear precedence maps to c-command in the preverbal field has been cashed out in terms of a cartographic analysis in the intervening decades; see among many others Szabolcsi (1997), É. Kiss (2002), and Brody and Szabolcsi (2003). For example, the universal in (34a) would be sitting in the specifier of the Dist(ributive) head, as in (37).

(37) # [$_{\text{DistP}}$ minden-ki [$_{\text{Dist'}}$ **Dist** [$_{\text{NegP}}$ **nem** ∃e szólt (**e**) ...]]]
         every-one   not   spoke

In line with standard assumptions of event semantics, Beghelli and Stowell (1997) propose that Dist must scope directly over an existential quantifier over events (∃e), its distributed share. But negation inescapably scopes above the event quantifier, and so Dist is deprived of its distributed share. Therefore (37), which would yield *every > not*, is unacceptable.[3]

In contrast, 'six children' occupies the specifier of the Ref(erential) head, which does not need a distributed share ∃e. It happily scopes directly above negation and, indeed, *six > not* is the only possible interpretation in (38).

(38) [$_{\text{RefP}}$ Hat gyerek [$_{\text{Ref'}}$ Ref [$_{\text{NegP}}$ sen-ki-nek **nem** ∃e szólt (e) ...]]]
          six   child   N-one-DAT not   spoke
       'Six children didn't speak to anyone'

---

[2]A new argument in Surányi (2006) for the universal interpretation of some n-words is that in pre-focus position, they must be specific. But pre-focus existential-based NPIs that are licensed by extra-clausal negation must likewise be specific, and they cannot be construed as universals. Therefore, the specificity requirement in pre-focus position probably has to be captured in some different way.

(i) Nem hisz-em, hogy {vala-ki   is / $^{??}$vala-hány   lány is } ZOLI-T   választotta.
     not think-1sg that some-one too   some-number girl too   Zoli-ACC chose
     `I don't think that anyone (from a known group)/any number of girls chose ZOLI'

[3]Such an explanation of the scope restriction will also prevent universal *senki* from filling in for *mindenki*. But I am abandoning that 1981 assumption anyway.

In the spirit of Zeijlstra and Chierchia, we now need an analysis for (36) where *senki* and *egy szót* precede *nem* but scope under, not over, *nem*.[4] They cannot be in the specifier of a functional head above NegP. But they can be in the specifier of Neg itself. When such matters are discussed explicitly, an indefinite or set-denoting expression in the specifier of an operator head is assumed to be within the scope of that head (e.g. Beghelli and Stowell (1997), Brody and Szabolcsi (2003)). In our case, *senki* and *egy szót* are possibly remnant-moved there, which even gives them an extra reason to be taking low scope: remnant movement must reconstruct. The distinction between quantifiers that take scope above versus below negation when they precede negation can be made thanks to the fact that syntactic theory offers more analytical options today than it did in 1981. Roughly, the structure is this, assuming V-to-T for simplicity:

(39)

Strict NC
nem, ¬
senki, existential, NCI
egy szó, existential, minimizer
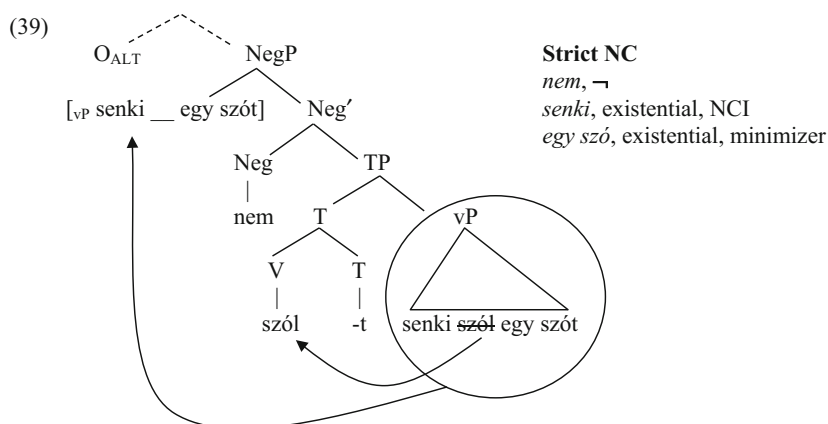
The fact that the minimizer can occur in the specifier of *nem* and thus within the scope of the negation that *nem* expresses makes it unnecessary to appeal to a higher Op:¬ for the sentential negation marker in Hungarian, voiding Zeijlstra's argument based on NPIs, cf. (24)–(25).[5]

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[4] I maintain that the requirement is in terms of scope, not c-command, in agreement with Hoeksema (2000: 123): "It is argued that triggering is sensitive to the scope of negation and negative operators, but that a syntactic treatment in terms of c-command is problematic, because semantic scope and syntactic c-command, no matter how we define the latter, and at which level we check it, do not see eye to eye on all the relevant cases." The reason why it may seem that decreasing operators must c-command polarity-sensitive items at spell-out is that such operators do not take inverse scope and polarity-sensitive items do not automatically lower into their scope.

[5] Two issues are left for further research. (i) The fact that the counterparts of (24)–(25) are not available in Italian would be easily predicted if *non*, in contrast to *nem*, were a specifier and not a head in NegP. But *non* is standardly viewed as a head, so the explanation of the cross-linguistic contrast must lie elsewhere. (ii) The fact that *Ki szólt?—Senki.* serve as canonical question-answer pairs (cf. 'Who spoke?—No one') may require the assumption of an elided *nem* in the fragment answer, cf. Giannakidou (2000: 486) for Modern Greek.

What about the stress generalization? Experimental work in recent years (e.g. Surányi and Turi 2017) has shown that the correlation between higher stress and wider scope is not as clear-cut as it had been thought. I do not claim to have a full understanding of the stress facts, but they do not appear to constitute a strong reason to reject the proposed analysis.

5   Non-strict Negative Concord in Hungarian

Let us now turn to non-strict NC. The status of *nem* is no longer an obstacle to the unified analysis of the two types of NC: *nem* expresses ¬ in all its occurrences.

As was anticipated in (11), the *sem* of preverbal *senki sem* can be seen as an overt version of Italian NEG in Chierchia's (2013): both are heads in the same region of the clausal spine, and both are capable of activating a disembodied ¬ right above their maximal projections:

(40) O_{ALT} ¬ [nessuno$_{[[+n-D]]}$ NEG$_{[[+n-D]]}$ ha telefonato]
(41) O_{ALT} ¬ [senki$_{[[+n-D]]}$ sem$_{[[+n-D]]}$ telefonált]

However, unlike NEG, *sem* does not specifically require an n-word in its specifier. *Sem* spells out the focus-associating particle *is* 'too, even' under negation. What it needs in its specifier is some XP with focus accent. E.g.,

(42) Egy SZÓT sem szóltam.   'I didn't say a word'
(43) MARINAK sem szóltam.   'I didn't speak to Mari, either'
(44) * Sem szóltam.

Sem will be discussed a bit further in Sect. 6, but this short paper concentrates on NC.

(45)

Non-strict NC
Abstract ¬ right above SemP-above-TP
sem needs a focus-accented XP in its spec,
     and to be in the immediate scope of negation
senki, existential, NCI

The Hungarian surface scope data show that the abstract (disembodied) ¬ scopes right at the edge of the preverbal SemP, supporting Chierchia's assumptions about NEG. Linearly preceding quantifiers and indefinites happily scope over the negation that licenses the NC item. They are sitting in the specifier of the functional head Ref above SemP. Notice that (46), with *sem* in the place of *nem*, exhibits the same unambiguous *six > not* scope relation as (38).

(46) [$_{RefP}$ Hat gyerek [$_{Ref'}$ Ref O$_{ALT}$ ¬ [$_{SemP}$ sen-ki-nek **sem** szólt]]]]
            six   child   N-one-DAT   nor   spoke
      'Six children didn't speak to anyone'

Now recall from (5) that the string *senki sem* occurs both preverbally and postverbally. That is fully compatible with the SemP analysis but confirms that, for independent reasons, *sem* is not an exact replica of Chierchia's NEG.

Szabolcsi (1997), Brody and Szabolcsi (2003), and Bernardi and Szabolcsi (2008) argue that almost the same functional sequence of operator heads (fseq) that occurs above T (Agr in those papers) and forms the preverbal operator field reiterates itself between T (Agr) and V.

(47) [C fseq [T fseq [Asp fseq ... [V ...]]]]

Therefore, postverbal *senki* may reside in the SemP of a lower fseq. In that case, too, *sem* and its specifier *senki* must be in the immediate scope of clause-mate negation. That negation will be supplied by *nem*, as in (5a, b), or by the ¬ invoked by a preverbal *sem*, as in (5c), repeated as (48):

(48) a. Senki   nem látott sehol (sem) semmit (sem).   'No one saw anything anywhere'
      b. Mari   nem látott sehol (sem) semmit (sem).   'M didn't see anything anywhere'
      c. ¬ Senki sem látott sehol (sem) semmit (sem).   'No one saw anything anywhere'

On this proposal, both NEG and *sem* are clausal heads that need specifiers, must be in the immediate scope of clause-mate negation, and are capable of invoking an abstract ¬ at the edge of their projections when they are in the appropriate region of the clausal spine. The fact that Italian has only one NEG per clause and it occurs in such a region gives the impression that invoking ¬ is a necessary, not just a possible, part of the package. But there is no principled reason why that should be the case. *Sem* differs from NEG due to the fact that Hungarian reiterates fseq, and *sem* can occur in any of the iterations.

Why can ¬ only be invoked in the highest fseq? The one major difference between the fseq above T and the ones below T is that only the first comes with Neg (overt *nem*). See especially Bernardi and Szabolcsi (2008: Sects. 6, 8). Based on Zanuttini (1997), it appears that languages choose the position of their negations in particular ways; Cinque (1990) does not even include Neg in his invariant

sequence. It is plausible that abstract ¬ is restricted to the same region where Neg resides in the given language. But this may not be the full answer.

We have not yet considered constituent negation in this context. Kenesei (2009) offers a cornucopia of examples where an NCI occurs within the scope of a constituent-negated expression and the sentence is ungrammatical. For example,

(49) * Nem minden-ki dicsért sen-ki-t.
        not every-one praised N-one-ACC
        Intended, unavailable 'Not everyone praised anyone'

(50) * Nem Anná-t   dicsérte sen-ki.
        not Anna-ACC   praised   N-one
        Intended, unavailable 'It was not Anna whom anyone praised'

I attribute the unacceptability of these examples to the fact that a universal quantifier or exhaustive focus intervenes between negation and the NCI. Like negative polarity items in general, NCI must be within the immediate scope of negation, meaning that at most plain existential quantifiers may intervene (e.g. Chierchia 2013: Chap. 7). Compare:

(51) # Not everyone praised anyone.

6 *Sem*: A Disjunction-Based Particle Under Negation

Historically, *sem* combines *is* 'too, even' and *nem* 'not'. Present-day *sem* forms NCIs that occur only with clause-mate negation (overt or abstract). Modern Greek *oute* has the same etymology (Classical Greek *ou* 'not' + *te* 'and, both') and similar properties (Giannakidou 2007). É. Kiss (2015) discusses Jespersen-cycle style changes in the form and strength of Hungarian negation.

Senki 'n-one' and *valaki* 'someone' form a NCI-PPI pair. Both are existentials. *Senki* must, and *valaki* must not, occur within the immediate scope of clause-mate negation. What about *sem* and *is*? They also form a NCI-PPI pair: *sem* must, and *is* must not, occur within the immediate scope of clause-mate negation. It would make sense to attribute a parallel, existential/disjunctive semantics to *sem* and *is*.

English *too* being an additive particle, its usual analysis is conjunctive. Szabolcsi (2017) proposes to derive that through the exhaustification of a set (disjunction) of focus alternatives, following Bowler (2014) and Singh et al. (2016), among others; they have analyzed seemingly conjunctive particles as underlying disjunctions that are strengthened in a positive context. The proposal extends to Hungarian *is*. But Szabolcsi (2017) argues that *is* requires a more abstract analysis, because it also productively builds NPIs. She proposes that *is* in general grabs a set of alternatives induced by its specifier (focus-alternatives or subdomain-alternatives) and activates

them. That is, it forces those alternatives to be exhaustified by some other operator, along the lines of Chierchia (2013) and the literature just cited.

In this spirit, I put forth the following descriptive generalizations:

(52)   *Senki* `n-one' and *valaki* `someone' are quantifier words with existential particles

existential with active alternatives

sem + indeterminate pronoun
        in the immediate scope of clause-mate negation, so a
                                negative concord item, NCI.

vala + indeterminate pronoun
        elsewhere, so a positive polarity item, PPI.
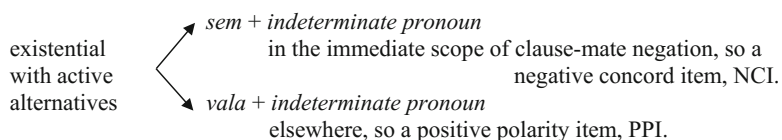
(53)   *Sem* `nor' and *is* `too' are clausal heads with alternative-inducing specifiers

disjunction of active alternatives

X sem   in the immediate scope of clause-mate negation.
           Therefore, *X sem* is a negative concord item, NCI.

X is   elsewhere.
           Therefore, *X is* is a positive polarity item, PPI
                and *X is* can be a negative polarity item, NPI.
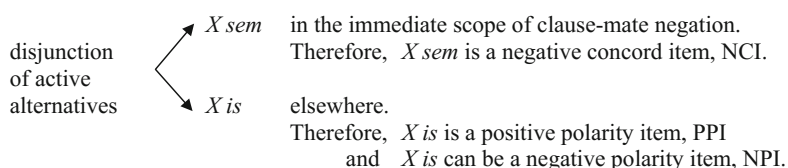
Compare *egy szót **sem*** and *semmit **sem***, which are NCIs, with *egy szót **is*** and *valamit **is***, which are PPIs and weak NPIs at the same time:

(54)   Nem szólt-am   {egy szó-t   sem / sem-mi-t   sem}.
        not spoke-1sg   one word-ACC   **sem** / N-thing-ACC   **sem**
        'I didn't say even one word / anything'

(55)   Kevés gyerek szólt {egy szó-t   is   / vala-mi-t   is}.
        few   child spoke one word-ACC   **is** / some-thing-ACC **is**
        'Few children said even one word / anything'

The above correspondences are very natural in view of Progovac (1992), Krifka (1995), Lahiri (1998), Szabolcsi (2002, 2004) and Chierchia (2013). The roles of *sem* in (52) and (53) are further studied in Szabolcsi (2018).

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Focus in Focus

Balázs Surányi

Abstract *Pars pro toto* (PPT) focus movements pose an apparent challenge to algorithms that map specific syntactic positions to particular information structural functions. PPT focus movements bring a phrase into a syntactic configuration that is canonically associated with focus interpretation, yet a distinct constituent, one that properly contains the fronted phrase in the original structure, is assigned focus interpretation. The present paper demonstrates that this mismatch is only apparent in Hungarian, a language that is generally considered discourse configurational with respect to focus. In particular, it is argued that *pars pro toto* focus fronting in Hungarian concurrently involves both broad focus on a constituent that originally contains the fronted phrase and narrow focus associated with the phrase undergoing movement. The proposed nested focus analysis thus upholds the viability of syntactic configuration based approaches to information structure in discourse-configurational languages. It is also shown based on a careful examination of the interpretation of the construction that the exhaustivity of focus and the existential inference associated with its background, two interpretive properties that are often taken to go hand in hand, are in fact dissociable from each other.

Keywords Focus projection · Nested focus · Information structure Exhaustivity · Non-decomposable idiom · Hungarian

1 Introduction

Information Structure (IS) is known to have systematic correlates both across and within languages at different levels of core grammar, including phonology, morphology and syntax. Configurational approaches to IS posit that if a constituent appears in a certain syntactic configuration, then it must receive a specific IS role

B. Surányi (✉)
Research Institute for Linguistics, Hungarian Academy of Sciences & Pázmány Péter Catholic University, Budapest, Hungary
e-mail: suranyi.balazs@nytud.mta.hu; suranyi.balazs@btk.ppke.hu

(or if the mapping is not deterministic, one of several specific IS roles). In this vein it may be suggested, for instance, that if a phrase appears in a CP projection, then it must be assigned either topic or focus status; or more characteristically of cartographic accounts: if it appears in FocP then it must be interpreted as a focus. Some configurational analyses assume such implications without also subscribing to their inverse counterparts (call these weakly configurational; Fanselow 2002; Chomsky 2004; Neeleman and Koot 2008; Cruschina 2012). Other configurational approaches, including most cartographic analyses, hypothesize the relevant implications in both directions, strengthening them to biconditionals (call these strongly configurational, e.g. Brody 1995; Vallduví and Vilkuna 1998; Rizzi 1997; Lopez 2009).

Pars pro toto (PPT) focus movements pose an apparent challenge to any algorithms that map specific syntactic configurations to particular information structural functions, hence both to strongly and to weakly configurational approaches.[1] In PPT-focusing an XP is brought into a configuration that is canonically associated with focus interpretation, yet a different constituent YP is assigned focus interpretation.[2] Such a case is represented by examples of VP-focus in Hungarian on the one hand, and in German and Czech, on the other, discussed extensively in Kenesei (1998) and Fanselow and Lenertová (2011), respectively.[3] In (1a, b) below, XP = object, YP = VP.

(1) a. A   Hamletet   olvasta   fel   Marinak.
         the   Hamlet.ACC   read.PAST.3SG   PRT   Mary.to
         'He read out Hamlet to Mary.'
     b. Einen   Hasen   habe ich   gefangen.
         an.ACC rabbit.ACC have I   caught
         'I have caught a rabbit.'

Sentences like (1a, b) can serve as answers not only to an argument *wh*-question like (2a), but also to a VP-question like (2b). Assuming a requirement of question–answer congruence, this shows that internal argument fronting in such sentences is compatible with a broad VP-focus reading.

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[1] The term *pars pro toto* focus movement is introduced in Fanselow (2003).

[2] The notion of focus is employed in this paper to refer to any prominent element whose interpretation necessarily involves a relevant set of alternatives, called focus-alternatives (Rooth 1985; for an overview, see Krifka 2008). These alternatives, being of the same denotational type as the focused element, contribute to compositionally generating a set of alternative propositions associated with the proposition expressed by the sentence. 'Information focus' is understood as that focused part of the sentence, irrespective of its contrastivity and exhaustivity, which provides information required by a salient Question Under Discussion (QUD, Roberts 1996), following the principles of question–answer congruence. When a term focus provides a complete answer to the QUD, in Hungarian it is fronted by default to an immediately pre-verbal position. This focus position has been associated with an exclusive (exhaustive) interpretation semantically (Szabolcsi 1981, 1994; Kenesei 1984, 1986; É. Kiss 1998; Horváth 2000, 2007; Bende-Farkas 2006) or pragmatically (Wedgwood 2005).

[3] For early observations and discussion of this sentence type in Hungarian, see Szabolcsi (1981) and Kenesei (1984, 1986, 1989), and in German, see Jacobs (1991: 9), Krifka (1994: 45–46), Gärtner (1996: 93). For other languages, see the references cited in Fanselow and Lenertová (2011).

(2) a.   What did he read out to Mary? / What did you catch?
     b.   What did he do? / What did you do?

The same apparent mismatch systematically occurs in broad focus sentences involving sentence-wide focus (Zsámboki 1995). The focus-marked constituent may be associated with the focus particle *csak* 'only' or *is* 'also; even'. The claims made this paper, *mutatis mutandis*, apply to each of these varieties of the PPT-construction.

As Fanselow and Lenertová (2011) note, syntax–IS mismatches exemplified by the VP-focus interpretation of sentences like (1a, b) are a major hurdle for configurational narrow syntactic accounts of the relation between IS-related displacements and IS interpretation. In particular, such mismatches suggest that there is no direct mapping from the syntactic configuration targeted by fronting to the IS role at issue. This conclusion is not as radical as it may seem for languages like German and Czech, given that in these languages the targeted position in the 'prefeld' is known not to be associated with any IS effect in a well-defined range of other cases either (Fanselow 2002; Frey 2005). One could maintain that the left-peripheral position at issue is simply not one that participates in the syntax-to-IS mapping (for instance, it may be FinP, see Frey 2006). However, this type of solution is not feasible for discourse-configurational languages in which constituents in the position targeted by the fronting are generally taken to be associated with a focus interpretation without exception, as in Hungarian (É. Kiss 2002, and references therein; call such languages focus-configurational). If PPT-focus turns out to be attested even in focus-configurational languages, that would be a major blow to configurational approaches to IS in general.[4]

In this paper I show that while in German and Czech, as Fanselow and Lenertová (2011) have argued, there appears to be a complete mismatch in PPT-focusing between the left peripheral constituent and the constituent to which the interpretive properties of focus are assigned, in Hungarian the mismatch is only partial. In particular, the syntactically focus-marked phrase and the VP or sentence that it originates in *both* act as foci. In consequence, the proposal to be made here is that the PPT-focus construction involves a nested focus structure in Hungarian. This has a direct bearing on the viability of configurational approaches to focus interpretation in Hungarian: the mapping from the dedicated syntactic position to the focus IS-role is remains uncompromised in PPT-focus sentences. Further, it will be argued that the broad focus and the syntactically marked narrow focus differ both with regard to exhaustivity and with regard to existential presuppositionality. As I discuss, this

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[4]That is not to say that *no* configurational syntax-to-IS mapping principle could be maintained for discourse configurational languages in the face of such a result. Drawing on Chomsky's (2004) Internal Merge (re-merge) theory of movement, one could state the amended mapping principle as in (i). (i), however, would rid common configurational accounts of their key appeal, namely, the syntactically transparent nature of their mapping to IS.

(i)   If a constituent C appears in the appropriate syntactic configuration (e.g., Spec,FocP), then
        the constituent interpreted as focus (reflexively) *contains* an *occurrence* of C.

result has repercussions for the treatment of the relation between these two inter-pretive properties, which regularly co-occur in a variety of focus constructions cross-linguistically.

The paper is structured as follows. Section 2 reviews evidence suggesting that in PPT-focus constructions like (1a, b), instead of the fronted phrase it is the VP or the whole sentence that is interpreted as the focus. Section 3 shows that an approach that treats Hungarian PPT-focus as involving mere VP- or sentence-wide broad focus faces both conceptual and empirical difficulties. Section 4 then presents arguments that the pre-verbal phrase functions as a focus, and proposes a nested focus analysis. Section 5 concludes with a brief summary, and spells out several direct implications of the account.

2   Establishing the Mismatch

In this section I review some basic evidence, mostly based on Szabolcsi (1981), Kenesei (1998) and Fanselow and Lenertová (2011), that appears to converge with the facts of question–answer congruence illustrated in (1–2) in firmly establishing the conclusion that the constituent marked by fronting is not necessarily interpreted as the information focus of the sentence.

That internal argument fronting is compatible with a broad focus interpretation is confirmed by the congruence of contrasted clauses like (3).[5] In (3) a contrast is explicitly made between the two (structurally and semantically non-parallel) VPs, rather than between the two fronted pre-verbal constituents.

(3)   Nem   a   lomot   vitte le   a   pincébe, hanem úszni   ment.
      not   the junk.ACC   took   down the   cellar.into but   swim.INF went.3SG
      'He didn't take the junk down to the cellar, but went swimming.'

The prosodic realization of PPT-focus sentences in Hungarian also corroborates that they are interpreted as involving broad focus. Narrow focus sentences are characteristically realized with post-focal pitch range compression, reducing the phonetic prominence of post-verbal content words, such as the goal argument in (4a). Crucially, the same reduction of the prosodic prominence of the post-verbal noun remains unavailable on a PPT-focus reading of the same sentence: the latter

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[5]Contrasting the focus of a sentence with the focus of another sentence is congruent if the two sentences have the same presupposition skeleton (see Jackendoff 1972, Rooth 1985), a notion that corresponds for our present purposes to the background.

interpretation can only be realized as (4b) but not as (4a) (see Kenesei 1998).[6] Thus, while (4a) can answer the Question Under Discussion 'Who did she introduce to the audience?', (4b) can only answer 'What did she do?' or 'What was her job during the show?'.

(4) a.   A 'vendégeket   mutatta   be   a   közönségnek.   (object focus)
          the guests.ACC   introduced PRT   the   audience.to
          'She introduced the guests to the audience.'
     b.   A 'vendégeket   mutatta   be   a   'közönségnek.   (VP-focus)
          the guests.ACC   introduced PRT   the   audience.to

Assuming that it is elements of the background of a narrow information focus that may undergo post-focal compression, the obligatoriness of the prosodic pattern in (4b) testifies that in (4b) the post-verbal argument is understood as not being part of the background, but being part of the (broad) focus.

A further telling piece of evidence, to my knowledge not hitherto noted in the literature, is that when used as a polarity question, a sentence with PPT-fronting may not be answered by just the fronted phrase. Thus, if (5a) is interpreted as a PPT-construction, (5b) is an incongruent answer. That is revealing because polar questions containing a focus can generally be answered in the affirmative by repeating just their focus.

(5) a.   Mit   csinált János? A   'lomot   vitte le   a   'pincébe?
          what.ACC did   John   the junk.ACC took down the cellar.into
          'What did John do? Did he take down the junk to the cellar?'
     b.   #Igen, a lomot.   (incongruent if (5a) is interpreted as VP-focus)
          'Yes, he did.'

This difference from ordinary narrow focus provides an argument that the focus structure of the PPT-focus construction differs from that of narrow focus sentences.

The same conclusion is strongly suggested by the presuppositionality properties of PPT-focus sentences. Information focus has been assumed to give rise to an existential presupposition associated with the background (Chomsky 1972; Atlas and Levinson 1981), an assumption that has been subject to much controversy

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[6]The ' mark stands for prominence realized as an unreduced falling pitch accent, and its lack represents smaller phonetic prominence than that of a full accent: a phonetically compressed accent, or the lack of an accent (viz. deaccenting). The obligatory accentedness of post-verbal constituents in PPT-focus sentences was first noted in Kenesei (1986, 1989: 115; other accent patterns, not discussed here, are also possible modulo givenness). This property is stipulated indirectly as a language-specific parameter of Kenesei's (1998) adaptation of the Selkirkian rule of focus-feature percolation.

(for criticism, see a.o. Rooth 1999, Jäger 2004; for a defense, see Geurts and van der Sandt 2004). To be sure, the existential presupposition related to information focus behaves differently from some of the classic presuppositions (like those triggered by definite descriptions and the additive particle *too*). It seems clear, however, that the behaviour of projective meanings classically identified as presuppositions is far from uniform (which also holds of projective meanings more generally, Tonhauser et al. 2013). At least two types of presupposition triggers, termed 'soft' and 'hard' triggers, need to be distinguished (Simons 2001; Abbott 2006; Abusch 2002, 2010). Unlike the presuppositions of 'hard' triggers, those of 'soft' triggers are relatively easy to suspend: they are not necessarily projected when the trigger is embedded under a presupposition hole, like an interrogative, conditional or modal operator. For instance, they are not triggered in contexts that explicitly express ignorance regarding the truth of the presupposition. As Abusch (2010) argues, information focus belongs to the class of 'soft' presupposition triggers: in particular, it gives rise to an existential presupposition by default, but this presupposition is defeasible and context-dependent (for a similar suggestion, see Gawron 2004; compare Geurts and van der Sandt 2004: 3, 37).

Indeed, the ordinary narrow focus sentence (4a) gives rise to the inference that there is somebody who she introduced to the audience. While information focus is generally a 'soft' trigger of an existential presupposition, some focus constructions seem to be special in behaving as 'hard' existential presupposition triggers. English *it*-clefts are a paradigm example (see Rooth 1999), and pre-verbal focus in Hungarian has also been argued to be a case in point (Kenesei 1984, 1986; Szabolcsi 1994; Bende-Farkas 2006).

Crucially, as opposed to ordinary narrow focus, PPT-focus does not give rise to an existential presupposition associated with the fronted constituent (as first recognized in Hungarian by Szabolcsi 1981). In other words, the PPT-focus sentence in (4b) does not trigger the existential presupposition that obtains with (4a). Crucially, no existential commitment arises even as a defeasible default inference. This suggests that the fronted constituent in the PPT-construction is not an information focus. What has not received adequate attention, however, is whether the broad focus in PPT-focus sentences acts as an information focus in triggering a 'soft' existential presupposition, as it is predicted. Consider (6), in which the fronted constituent is scoped over by negation.

(6) János nem a   'Hamletet   olvasta   fel   'Marinak.
     John not the Hamlet.ACC   read.PAST.3SG PRT   Mary.to
     'John did not read out Hamlet to Mary.'

Analogously to (4b), the example does not presuppose that John read out something to Mary. What it does give rise to the 'soft' presupposition, however, is that John did something relevant, confirming that the broad focus in PPT-focus sentences acts as an information focus.[7]

A final argument that in PPT-focus constructions the fronted phrase does not function as information focus comes from idioms. Kenesei (1998) and Fanselow and Lenertová (2011) argue that if the left-peripheral position itself was associated with focus interpretation, then it could not be occupied by an idiom chunk. Fronting would thus be expected to destroy the idiomatic reading. If idiom chunks may in fact undergo fronting without making the idiomatic reading inaccessible, as they do in examples like (7) from German, it can be concluded that the fronted phrase is not itself interpreted as a focus (see Fanselow and Lenertová 2011: 179).[8]

(7) [Die   Flinte]   hat   er   ____   ins   Korn   geworfen.
     the.ACC gun.ACC   has   he   into.the   grain   thrown
     'He has given up.'

Having demonstrated the problem, I argue in the following sections that syntactic approaches that embrace the conclusion that Hungarian PPT-focusing is simply a case of broad focus, involving a mismatch between focus interpretation and syntactic marking, face both conceptual and empirical difficulties.

3   A Previous Account

Fanselow and Lenertová (2011) put forward a non-configurational approach to PPT-focusing, developed in most detail for German and Czech. On their account, the left-peripheral syntactic configuration is not linked in any way to a specific IS status. Adopting an interface approach, the focus status of constituents is derived from accentuation instead, much like in the case of in situ focus, therefore without any reference to the fronting operation taking place. Accordingly, if other relevant restrictions are duly observed, the broad focus interpretation of the sentence is undisturbed by the presence of movement to the left periphery, and therefore remains available.

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[7]This presupposition also does not correspond to what would be expected if PPT-focus sentences were instantiations of pair-focus, as Koopman and Szabolcsi (2000: 199) contend (see Szabolcsi 1996 for the same claim). Correspondingly, an elliptical affirmative sentence with just the two purported foci as remnants is unavailable as an answer to a PPT-focus polar question, whereas it can function as an answer to a pair-focus polar question; see the discussion of (5) above.

[8]For similar Hungarian examples and the same conclusion, see Kenesei (1998), esp. his (48a, b). For a comment on these, see footnote 20 below.

Importantly, on Fanselow and Lenertová's account of German and Czech the fronting operation itself is triggered narrow syntactically, but independently of focus. Namely, it is set in motion in these languages by the formal property of CP that requires Spec, CP to be filled (i.e., the [EPP] feature on C). The same formal trait also characterizes neutral sentences, in which Spec, CP is typically occupied by the subject or a high adverbial. This formal property is absent from the syntax of Hungarian, however. In Hungarian the left-peripheral focus position is commonly assumed to be projected and filled only in the presence of a narrow focus in the sentence (Brody 1995; É. Kiss 2002; Horváth 2000, 2007). It remains an open question, then, what triggers focus fronting in PPT-focusing in Hungarian.

Kenesei (1998) provides a resourceful answer to this question, based on an essentially Selkirkian mechanism of focus-feature projection.[9] His syntactic account of the PPT-focus construction capitalizes on the fact that prior to its fronting the constituent undergoing movement is properly contained in the constituent that gets interpreted as the focus. From the perspective of syntactic focus-marking, the fronted constituent stands proxy for the larger focus constituent it is contained in. As far as prosodic focus-marking is concerned, this latter type of scenario is not the exception but the rule. In particular, the lexical item LI functioning as the prosodic exponent of focus, marked in stress–accent languages by the main stress of the sentence, is generally (reflexively) contained in the constituent semantically inter-preted as the focus (=the Stress–Focus Correspondence Principle, Chomsky 1971; Jackendoff 1972; Selkirk 1984). On Selkirk's (1984, 1995) approach, this LI bears a focus feature (Jackendoff 1972), which may percolate up to higher nodes containing LI by the process of *focus-projection*. The topmost node bearing a percolated focus feature gets interpreted as the semantic focus.

On Kenesei's insightful account, what is directly involved in triggering the fronting operation in the syntax of PPT-focus sentences is a non-topmost [focus]-feature.[10] Modifying Selkirk's account, Kenesei suggests that in Hungarian the [focus]-feature of a VP percolates down to the verbal head as well as to (the head of) each internal argument and referential adjunct contained in the VP. When the VP is semantically focused, any internal argument or referential adjunct of the V, bearing a [focus]-feature, can be raised to the dedicated pre-verbal focus position.[11]

This technical solution crucially assumes that Selkirkian focus features on non-topmost nodes in the percolation line play an active role within narrow syntax

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[9]Although the idea is fleshed out in less detail, the construction is also viewed as a case of Selkirkian focus projection in Zsámboki (1995).

[10]For a similar analysis of German, see Fanselow (2004). Revising his earlier analysis, Fanselow (2006) dispenses with [focus]-features, and reformulates his account in terms of the attraction of accents to CP.

[11]Accordingly, the following alternative to (1a), in which the beneficiary, rather than the theme, is raised to the pre-verbal position, can also receive a VP-focus reading:

(i)   'Marinak olvasta   fel   a 'Hamletet.
        Mary.to read.PAST.3SG PRT   the Hamlet.ACC
        'He read out Hamlet to Mary.'

(unlike for Selkirk). The main conceptual problem with such a syntactic [focus]-feature, as it has been noted in the literature since, is that its status and behaviour are unlike that of other, well-established syntactic features. First, it is not a lexical property of a Lexical Item, which is in violation of the principle of Inclusiveness (Chomsky 1995), a basic tenet of a restrictive minimalist framework (as pointed out a.o. by Zubizarreta 1998; Szendrői 2003; Fanselow 2006).[12] In the case of regular focus-fronting this conceptual concern may be evaded by positing a phonologically null [focus]-feature bearing LI as the sister of the fronted focus phrase. This covert focus-particle may then associate with the semantic focus, as usual, via sisterhood or c-command. That solution, available in the general case, is inapplicable in the case of PPT-focus, however. This is precisely because in PPT-focus sentences the [focus]-feature of the fronted phrase is not actually interpreted as associated with the semantic focus status of the fronted constituent itself.

Second, as pointed out by Horváth (2000, 2007), the [focus]-feature that is assumed to be involved in triggering fronting spreads vertically across nodes in constituent structure indefinitely. In particular, it is passed on without compliance with general syntactic constraints on the percolation of movement-triggering features that are familiar from pied-piping.[13]

There is also an empirical issue with Kenesei's (1998) proposal, arising from the very fact that it divorces focus interpretation from focus configuration. On his account, focus interpretation is linked to [focus]-features, rather than a particular syntactic configuration: following Selkirk, the largest constituent bearing [focus] is interpreted as the semantic focus. In this sense the movement of a proper part of the semantic focus to the syntactic focus position is semantically vacuous. But if that were the case, we would expect that if there happen to be two distinct focus positions available in the sentence instead of one, then two subparts of VP could be raised to these two focus positions without destroying the VP-focus interpretation. This expectation, however, is not borne out. The VP-focus question in (8a.A) cannot be answered by a sentence, such as (8a.B), in which both the main clause focus position and the infinitival complement clause focus position are filled by some element of the VP that serves as the information focus. This latter word order is well-formed, but it must be interpreted with the two syntactically focus-marked phrases as two independent foci. Thus (8a.B) answers a question like (8b). The VP-focus question in (8a.A) is answered congruently by bringing just one element of the VP-focus in front of the finite verb (8a.B′).[14]

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[12]This problem persists even if we reverse the direction of focus feature percolation (from downward to upward, as originally proposed by Selkrik), while preserving all other aspects of the analysis.

[13]But see Kenesei (1993) and Szendrői (2001, 2003) for a different view of the empirical landscape of focus pied-piping.

[14]For another potential empirical challenge to Kenesei's (1998) account, see Szendrői (2003: 59). The challenge is not specific to Kenesei's account but is part of a broader problem related to the Selkirkian *syntactic* definition of those configurations in which focus feature percolation takes place (as pointed out by Schwarzschild 1999, and Büring 1996, 2006).

(8)   a.   A: What would you like to do?

B: # A 'lomot   szeretném   a   'pincébe   pakolni   be.
      the junk.ACC would.like.1SG the   cellar.into load.INF   PRT
      Can only mean:
      'It's the junk that (is such that) it's the cellar that I'd like to load it into.'

B′: A 'lomot   szeretném   'bepakolni   a   'pincébe.
      the junk.ACC   would.like.1SG PRT.load.INF the   cellar.into
      'I'd like to load the junk into the cellar.'

b.   What is it that it's the cellar that you'd like to load it into?

Finally, Hungarian PPT-focus poses an empirical challenge to any account that takes it to be merely a case of broad focus, exhibiting a genuine mismatch between semantic focus interpretation and syntactic focus-marking.[15] Specifically, a range of empirical observations indicates that the fronted phrase itself functions as a semantic focus. The remainder of the paper presents evidence supporting this conclusion and explores its implications.

4   PPT-Focus as Nested Focus

As reviewed in the preceding sections, it is a broad focus, rather than the fronted phrase, that is ordinarily assumed to function as the information focus in PPT-focusing. In this section I argue that on closer inspection the mismatch between the left peripheral constituent and the constituent to which the interpretive properties of focus are assigned is only partial in Hungarian. While some interpretive properties linked with information focus are indeed associated with the VP or the sentence, some other interpretive properties generally associated with pre-verbal focus in Hungarian are in fact assigned to the fronted phrase. Thus, although their additional interpretive properties are not identical, both the left-peripheral phrase and the VP or the sentence are interpreted as (Roothian) foci.

To see that wide focus on a VP or sentence does not preclude the presence of a focused argument that is part of it, consider (9) (modified from Krifka 1992: 22). In (9) the focus particle *even* is associated with the focused VP (contrasting with the VP of the preceding context), which in turn contains a focused object. A similar example in (10), without an overt focus operator, is modified from Neeleman and Szendrői (2004: 149). In both (9) and (10), the asserted VP has alternatives that differ in what fills the object function (such as drinking beer, drinking wine, etc. in (9)).

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[15]For another narrow syntactic treatment that shares the contention that PPT-focus is simply broad focus, see Alberti and Medve (2000). These authors resolve the mismatch by proposing a remnant VP movement analysis of *pars pro toto* VP-focus, an account that Koopman and Szabolcsi (2000: 200) also contemplate as a possibility. Szendrői (2003) notes that the apparent mismatch in PPT-focus is unproblematic for her non-configurational interface approach to Hungarian focus, which takes focus-fronting to be prosodically, rather than syntactically or semantically driven.

(9) John, who is quite notorious as a party guest, did not only [VP behave well] at yesterday's party, he even [drank [water]F2]F1.

(10) You know how I think our son should read decent books. Well, when I came home, rather than [VP doing his homework], he was [reading [Superman]F2 to some kid]F1.

The focus-within-focus information structure, to be termed 'nested focus' in what follows, is thus independently attested.[16] In the remaining part of this section I substantiate the claim that Hungarian PPT-focusing examples like (1a) in fact involve a nested focus structure: even though the VP is the information focus, the fronted constituent, originally part of the VP, is also interpreted as a focus nevertheless.

(i) Recall from Sect. 3 that, as opposed to German, the syntactic focus position is only projected in Hungarian when it is targeted by a focused element. If the fronted constituent is interpreted as a focus, then we gain an understanding of the otherwise curious fact that such sentences involve fronting to the focus position to begin with.

(ii) Let us assume for the sake of the argument that PPT-focus movement in Hungarian is not associated with a focus interpretation of the fronted phrase, but instead it is a semantically vacuous fronting operation to an A-bar position (a type of 'stylistic fronting', as argued by Fanselow 2003 *et seq*. for German). That PPT-focusing in Hungarian is indeed A-bar movement is corroborated by the fact that, just like ordinary focus-fronting in the language, it can be long-distance:

(11) A: What would you like me to do?
       B: A   'szobádat   szeretném,   hogy 'kitakarítsd   ___.
            the   room.POSS.2SG.ACC would.like.1SG that PRT.clean.SUBJ.2SG
            'I would like you to clean your room.'

Crucially, long PPT-fronting resembles genuine long focus-fronting in the language (see É. Kiss 2002) also in that it incurs a Weak Crossover (WCO) violation; see (12) (an example of sentence-wide PPT-focus).

(12) A: What's this noise outside the boxing arena where Klitschko and his challenger will be fighting tonight? B: Nothing special, ...
    ??? (csak) az 'ellenfelekkel   szeretnék   a   'rajongóik, hogy 'találkozhassanak.
        only   the opponents.with would.like.3PL the fan.POSS.PL that meet.can.SUBJ.3PL
        '(It's only that) their fans would like to be able to meet the opponents.'

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[16]The term 'nested focus' is used here in the sense of Féry and Samek-Lodovici (2006).

WCO violations are a hallmark of quantificational A-bar movement (as opposed to non-quantificational A-bar movement, see Lasnik and Stowell 1991; Rizzi 1997). If PPT-fronting is *quantificational* A-bar movement, then that is difficult to bring into line with the assumption that it is semantically vacuous. The attested WCO effect suggests that, in the same way as in the case of genuine focus movement, the fronted phrase itself enters a quantificational A-bar dependency in the PPT-construction.[17]

(iii) If the fronted constituent functions as a focus, then different choices of the fronted element should yield different focus interpretations in Hungarian. In some instances (for example, when (1a) and the example in footnote 11 are compared) the difference in meaning is subtle. In many cases, however, it is easily detectable. Consider, for instance, the two variants of a sentence-wide PPT-focus (13a–b) in a context where Mary, the director, was supposed to sign a letter of approval of John's written request, but this did not happen. (13a) is about whose fault this was (Mary's or John's), whereas (13b) is about which document, required for the completion of the formal procedure, was lacking (the letter of request, or the letter of approval).

(13) a. Nem 'Mari nem írta alá az 'engedélyt,   hanem 'János nem vitte fel a 'kérelmet.
          not Mary not signed PRT the permit.ACC   but John not took up the request.ACC
      b. Nem az 'engedélyt nem írta alá 'Mari,   hanem a 'kérelmet nem vitte fel 'János
          not the permit.ACC not signed PRT Mary   but the request.ACC not took up John
          Both: 'It's not the case that Mary didn't sign the permit; John didn't take upstairs
              the letter of request.'

The differences in assignable interpretations can make certain choices of the constituent to be fronted in PPT-focus pragmatically deviant. For instance, while (14a) is a fine answer to the preceding question, (14b) is decidedly odd. The reason is that while it may be newsworthy that what the crime committed by the minister involved is a top secret, the fact that this crime involved a man is difficult to interpret in the given context as worth highlighting.

(14) Why was the minister arrested?
      a.   Egy 'államtitkot   árult el   egy 'férfinek.
           a   state.secret.ACC gave away a   man.to
           'He disclosed a state secret to a man.'
      b.   #Egy 'férfinek   árult el   egy 'államtitkot.

It is beyond the scope of this paper to present a formal semantic/pragmatic account of the interpretation of nested focus (for relevant discussion, see

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[17]PPT-focus fronting also licenses parasitic gaps, an observation I cannot illustrate for reasons of space.

Krifka 2006). Nonetheless it may be worth giving the general outline of how it can be described in an approach based on Roothian focus alternatives (Rooth 1985; see footnote 2). For the sake of simplicity, let us consider the case of sentence-wide focus in a declarative sentence, such as (13a) above, containing a non-intensional verb. Assume for concreteness that sentences denote propositions and non-intensional verbs take individuals as arguments, and that VPs without the external argument of the verb denote properties. Then, in a sentence-wide PPT-focus construction like (13a) with the external argument fronted to the pre-verbal focus position, focus interpretation proceeds as follows. As the sentence as a whole (excluding the negation scoping over it) is a focus, it is presupposed that the proposition it asserts belongs to a set of relevant propositional alternatives. In addition, since the fronted argument is also interpreted as a focus, the proposition expressed by the sentence is at the same time a member of a different set of relevant focus alternatives, which differ from each other in the choice of the external argument.

Crucially, the shared part of this latter set of alternative propositions (i.e. the property expressed by the background) does not necessarily correspond to the literal sense of the background part of the asserted sentence; it may be a property inferred from the meaning of the background. The phenomenon is illustrated by Lakoff's (1971: 333) famous example, given in (15a). Here the relevant (contrasted) focus alternatives in the second sentence are pairs of individuals, and 'x insulted y' can function as the background because we can infer that on the speaker's assumptions, 'x called y a Republican' entails 'x insulted y'. (15b) is a slightly modified example, with both coordinated clauses containing a pair of individuals as their focus. Here neither background property entails the other; instead, both properties entail a more general property (paraphrasable as 'x hit y'), which is construed as the background.

(15) a. John called Mary a Republican. Then 'she insulted 'him.
      b. (Jim and John had a fight.) First 'John smacked 'Jim, then 'he punched 'him.

The interpretation of PPT-focus is analogous to such cases. For instance, each of the conjoined clauses of (13a) above can be interpreted as having a background roughly amounting to "x made a mistake that prevented the request to be officially permitted." In cases in which two contrasted broad focus clauses share the same background, their fronted narrow foci may be interpreted contrastively, as is the case in (13a, b).

The inferred background of any two contrasted PPT-focus clauses (and hence the respective sets of alternatives associated with them) need not be the same, since they are contrasted at the level of their broad focus. This lack of parallelism was illustrated in (3) above with contrasted VPs that have non-parallel VP-internal focus structures.

The inferred background of the narrow focus need not be salient in the context. This is because, as argued above, in the PPT-construction the pre-verbal focus is not information focus. Accordingly, there need not be a contextually salient Question Under Discussion (whose background part) the sentence is anaphoric to. This is similar to the situation exemplified by English nested focus examples like (10). The VP in the last clause of (10) is not anaphoric to a background of the form 'read x to some kid'. Both the narrow focus 'Frankenstein' and its background 'read x to some kid' are contextually new.[18]

(iv) The pre-verbal focus position in Hungarian has been linked with an exclusive, or exhaustive, interpretation (see footnote 2). That the pre-verbal constituent is interpreted as an exhaustive focus in the PPT-focus construction too is corroborated by tests of exhaustivity, of which two are employed here.[19]

The first one is a modified form of a test attributed by É. Kiss (1998: 251) to Donka Farkas. It is based on continuations in which the background turns out to hold of a relevant alternative to the previously focused element. Such continuations are unavailable if the focus is to be interpreted exhaustively. As illustrated by the deviance of (16c) as a continuation of (16b), itself a reply to (16a), this test reveals that the pre-verbal constituent in a PPT-focus sentence functions as an exclusive focus. In comparison, the broad focus, which has been shown to function as an information focus, is not necessarily

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[18]The non-given status of the background is a prominent feature of Prince's (1978) informative presupposition *it*-clefts and Hedberg's (1990) comment-clause clefts. It also characterizes examples involving focus-fronting like (i.b), recently discussed by É. Kiss (2012) and Gécseg (2013). On É. Kiss's account, such sentences, serving as answers to what she terms 'quiz questions' such as (i.a), involve narrow focus. The accent patterns permitted by this sentence type (see footnote 6), however, makes them similar to PPT-focus. That they are PPT-focus sentences is corroborated by clausal coordinations such as (ii). If (i.b) were merely a narrow focus sentence, then the contrast between the two clauses in (ii) should be incongruent, contrary to fact.

(i) a. What is Saint Helena Island famous for?
   b. 'Ott   élt   'Napóleon 'száműzetésben.
      there lived Napoleon   exile.in
      'That is where that Napoleon lived in exile.'
(ii) [OK] Vagy 'ott élt 'Napóleon 'száműzetésben, vagy egy 'híres 'maffiavezér rejtette 'oda a 'családját.
      either there lived Napoleon exile.in   or   the famous mafia.chief hid there the family.his.ACC
      'Either Napoleon lived there, or a leader of the mafia hid his family there.'

[19]The exhaustivity of the pre-verbal constituent is upheld in Szabolcsi's (1981) analysis, and it is also suggested by Gyuris's (2012: 165) remark, according to which in PPT-focus sentences too "the property expressed by the rest of the sentence should not apply for any relevant alternatives of the constituent in the focus position." I thank Beáta Gyuris for a pointer to the latter work.

exclusive, as demonstrated by the fact that (16a) can be continued by (16c), another broad focus sentence responding to the same question (16a).

(16) a. Did the mountain climber suffer any injuries due to his fall?
  b. Igen, megsérült. A 'bal 'kulcscsontja törött 'ketté, …
    yes PRT.got.injured the left collarbone.his broke into.two
    'Yes, he got injured. His left collarbone broke into two, …'
  c. # … és 'kettétörött a 'jobb kulcscsontja is.
     and into.two.broke the right collarbone.his too
    '…and his right collarbone also broke into two.'
  d. ^{OK} …és 'megrepedt az 'egyik 'lapockája.
     and PRT.cracked the one.of shoulder.blade.his
    '…and one of his shoulder blades got cracked.'

The second test derives from Szabolcsi's (1981: 148–149) observation that an assertion containing the conjunction of two definite nominals in the pre-verbal focus position and a minimally different assertion with one of the conjoined members in the same position each license the inference that the other assertion is false. This too holds of PPT-focus sentences, confirming that their pre-verbal phrase functions as an exhaustive focus. To illustrate, given the same context question as in (16a) above, it is inferred from (17a) that (17b) is false, and conversely, if (17b) holds, then (17a) does not.

(17) a. A 'kulcscsontja és a 'lapockája   törtek 'ketté.
    the collarbone.his and the shoulder.blade.his broke into.two
    'His collarbone and his shoulder blade broke into two.'
  b. A 'kulcscsontja törött 'ketté.
    the collarbone.his broke into.two
    'His collarbone broke into two.'

(v) As illustrated in (7) above, the idiomatic reading of VP-idioms is preserved by PPT-focusing in German.[20] This is an argument that the fronted constituent is not a narrow focus in German because narrowly focusing an idiom chunk normally destroys the idiomatic reading, at least in the case of non-decomposable idioms whose chunks cannot be assigned meanings of their own (see Nunberg et al. 1994). As indicated by the hash-marks, the idiomatic reading of the examples below is inaccessible, providing a

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[20]Kenesei (1998) considers other examples of PPT-focus idioms that have no idiomatic reading, but he does not acknowledge them as representative of idiom-chunk fronting in Hungarian and explains them away on grounds independent of the narrow focus status of the fronted constituent. Kenesei (1998) and Fanselow and Lenertová (2011) both point out Hungarian PPT-focus idioms that retain their idiomatic reading, which is what they take to be the general case. Their examples, however, are confounded in that they either feature decomposable idioms or, in some of the Hungarian cases, they do not involve *focus*-fronting.

compelling argument that the pre-verbal phrase in Hungarian PPT-focus sentences functions as a focus.

(18) a. #János a   'garatra   öntött 'fel.
         John   the gorge.onto poured up
         intended: 'John drank a lot (and became drunk).'
     b. #Péter a   'hámból   rúgott 'ki.
         Peter   the harness.out.of kicked out
         intended: 'Peter went on a bender.'
     c. #Mari a   'banánt   unja.
         Mary   the banana.ACC   is.bored.with
         intended: 'Mary is fed up.'

(vi) The final piece of evidence comes from the distribution of elements that generally cannot function as a narrow focus in the pre-verbal focus position, while otherwise being accentable. One class of items that fall within this group are existential indefinite pronouns like 'something, somebody', while another is represented by universally quantified pronouns like 'everything, everybody' (Kenesei 1986; É. Kiss 1998). Further examples include unfocusable adverbs like epistemic 'probably' or 'perhaps', as well as subject-oriented 'cleverly'. As (18) illustrates, these are all unable to occur in the pre-verbal position of the PPT-focus construction.

(18) a. * 'Valakinek   / * 'Mindenkinek   olvassa fel   a   'Hamletet.
           somebody.DAT   / everybody.DAT   reads   PRT the Hamlet.ACC
     b. * 'Valószínűleg   olvassa fel   a   'Hamletet   'Marinak.
           probably   reads   PRT the Hamlet.ACC   Mary.to
     c. * 'Okosan   olvassa fel   a   'Hamletet   'Marinak.
           cleverly   reads   PRT the Hamlet.ACC   Mary.to

If in PPT-focus the pre-verbal position is not associated with focus interpretation, then these facts remain wholly unexpected.

5   Summary and Implications

In this paper I argued that the Hungarian PPT-construction illustrated in (1a) has a double nature: it simultaneously involves a broad and a narrow focus. The VP, or in other cases, the sentence, is the syntactically largest category with a focus status, and it functions as the information focus. As such, it gives rise to a defeasible existential inference, and it does not receive an exclusive/exhaustive interpretation. At the same time, the fronted constituent also functions as a focus. As is the case for pre-verbal focus more generally in Hungarian, the focused phrase is raised to its pre-verbal position by quantificational A-bar movement, and it is assigned an exclusive/exhaustive interpretation. Elements that are barred from the pre-verbal focus position in narrow focus sentences are also prohibited from appearing before

the verb in the PPT-focus construction. Unlike the background of ordinary narrow pre-verbal focus, however, the background of the pre-verbal focus in the PPT-construction is not associated with an existential inference.

I will conclude by pointing out some immediate implications of this analysis.

First, while the analysis does not provide an argument in favour of configurational approaches to the syntax–IS mapping at large, it upholds the viability of configurational approaches to this interface in discourse-configurational languages like Hungarian, with particular regard to exhaustive focus.

Second, the proposed nested focus analysis demonstrates that exhaustivity and existential presuppositionality, two key interpretive features linked to certain syntactically marked focus constructions that are often taken to go hand in hand, are in fact dissociable from each other. In particular, the fact that the fronted phrase is interpreted exhaustively but, crucially, without leading to an existential inference, calls into question accounts of exclusiveness/exhaustivity that tie it specifically to an identificational interpretation. The latter approach has been the gold standard in the analysis of structural focus in Hungarian (Kenesei 1986; Szabolcsi 1994; É. Kiss 1998 a.m.o.).

Third, the present analysis casts doubt on the conjecture that cross-linguistically only 'identificational' focus can be systematically marked by the syntactic movement of the focus phrase (É. Kiss 1995, 1998). What unifies ordinary focus fronting and PPT-focus fronting in Hungarian is not identificationality, but the exclusive/ exhaustive interpretation of the fronted element. Assuming that the exhaustivity of pre-verbal focus is semantic in nature (see footnote 2), that points to the need for an analysis of exhaustivity based on a *non-identificational* exhaustivity operator (for two different types of non-identificational exhaustivity operators, see Groenendijk and Stokhof 1984; Fox 2007).[21]

Finally, Hungarian PPT-focus contrasts with PPT-focus in languages like German and Czech, where, according to Fanselow and Lenertová's (2011) conclusions, the fronted constituent is not interpreted as a focus on its own. This difference stems from the nature of the targeted left-peripheral position in these two languages, as opposed to Hungarian. Whereas in German and Czech the position targeted in PPT-fronting is projected independently of focus and needs to be filled, the pre-verbal focus position is only projected in Hungarian if there is a narrow focus in the sentence. There is a need then to distinguish along these lines between two types of PPT focus fronting across languages. It remains to be explored how the interpretive predictions of this simple binary typology extends to further languages that exhibit the phenomenon of PPT-focus.

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[21]For slightly different notions of identificational focus, see Kenesei (1986), É. Kiss (1995, 1998). For proposals of identificational focus operators, see Szabolcsi (1994) and Horváth (2000, 2007).

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The Case of Competing Back-Referencing Pronoun Variants with Information Structural Functions in Hungarian

Gábor Alberti and Judit Farkas

Abstract This paper aims to reveal the entire system of profiles of pronominal distribution (PPD) in sentence-internal back-referencing to singular entities in Hungarian. In this language the following three types of pronoun are in competition: the distal demonstrative pronoun *az* 'that', the third person personal pronoun *ő* '(s)he', and a pronoun which can be regarded as the weak variant of the latter. Although the basic division of labor among the three forms is that the demonstrative pronoun refers to an entity with a [–HUMAN] feature and the two versions of the personal pronoun to a [+HUMAN] entity, the opposite ways of back-referencing are not excluded either (Pléh and Radics, Általános Nyelvészeti Tanulmányok XI:261–277, 1976; Pléh, Hungarian linguistics. Linguistic and literary studies in Eastern Europe 4. John Benjamins, Amsterdam, 1982; Kenesei, The syntactic structure of Hungarian. Syntax and semantics 27. Academic Press, San Diego-New York, 1994:329). We discuss the following factors deciding PPD with respect to acceptability in complex-sentence-internal back-referencing: (i) the oblique *versus* non-oblique case marking of the pronoun, (ii) the [±HUMAN] character of the antecedent, (iii–iv) the information structural function of the antecedent and that of the pronoun (including topics, foci, *also*-quantifiers and postverbal non-operators), and (v) the specificity of the antecedent. It will be demonstrated that quantifiers behave radically differently from the other three information-structural functions. An exact rule system exhaustively deciding the PPD's will also be provided.

Keywords Profiles of pronominal distribution · Hungarian · *also*-quantifier

G. Alberti (✉) · J. Farkas
University of Pécs, Pécs, Hungary
e-mail: alberti.gabor@pte.hu

J. Farkas
e-mail: farkas.judit2@pte.hu

1 Introduction

This paper aims to reveal the entire system of profiles of pronominal distribution (PPD) in sentence-internal back-referencing to singular entities in Hungarian. In this language gender plays no role in the pronominal system but the following three types of pronoun are in competition: the distal demonstrative pronoun *az* 'that', the third person personal pronoun *ő* '(s)he', and a pronoun which can be regarded as the weak variant of the latter. Although the basic division of labor among the three forms is that the demonstrative pronoun refers to an entity with a [–HUMAN] feature and the two versions of the personal pronoun to a [+HUMAN] entity, the opposite ways of back-referencing are not excluded either, as was observed by Pléh and Radics (1976), Pléh (1982) and Kenesei (1994:329). Farkas and Alberti (2018, subsection 1.1.1.3.5) generalized their observations in a way that both the back-referencing pronouns and the corresponding antecedents were systematically considered within complex sentences as topics, foci and postverbal non-operators. In the current paper, just like in Farkas (2018), even *also*-quantifiers are taken into account (in Sect. 3)—extending the system of 3 × 3 of PPD's (sketched in Sect. 2) into a system of 4 × 4, within which quantifiers will prove to behave (with respect to pronominal distribution) radically differently from the other three information-structural functions. Then (in Sect. 4) we provide an exact rule system exhaustively deciding the PPD's which can be observed in the system of 4 × 4.

2 Five Factors Deciding Profiles of Pronominal Distribution with Respect to Acceptability in Complex-Sentence-Internal Back-Referencing

Farkas and Alberti's (2018, subsection 1.1.1.3.5) relevant observations are summarized in this section, starting with the one that the oblique *versus* non-oblique case marking of the pronoun counts in the sense that, at least in emphatic positions, there are three competing oblique-case-marked pronominal variants (1b") while only two in the Nominative (1b) and in the Accusative (1b'). They also point out that the grammatical function of the antecedent is only negligibly relevant (see pp. 35–38).

(1) • Antecedent: [+HUMAN], proper name, Focus ← Focus
   a. Csak *Pétert* érdekli a mondattan,
      only *Péter.ACC* intrest.3SG the syntax
      'Only *PÉTER* is interested in syntax...'

   b. ...mégis éppen *az /ˇ*ő* bukott meg.
      still just   *that* / *(s)he* fail.PST.3SG PERF
      '...still, it was *HIM* who failed.'

   b'. mégis éppen *az-t /ˇ*ő-t* buktatták meg.
      still just   *that-ACC* / *(s)he-ACC* fail.PST.3PL PERF
      '...still, it was *HIM* who failed.'

   b". végül   mégis éppen *ab-ban /ˇ*benn-e* /ˇ*ő-benn-e* csalódtunk.
      in_the_end still   just   *that-INE* / *INE-3SG* /*(s)he-INE-3SG* be_disappointed.PST.1PL
      '...but finally it was *HIM* that we were disappointed with.'

The second factor influencing PPD is the human or non-human character of the antecedent. As illustrated in (2b-b"), the acceptability of the competing (2+3) pronominal variants, relative to the profile of acceptability presented in (1b-b"), is in complementary distribution, realizing what was claimed in the Introduction to be the "basic division of labor" (i.e., (1–2)).

(2) • Antecedent: [–HUMAN], proper name, Focus ← Focus
  a. Csak [*a Raid*] űzi   el   ezeket   a szúnyogokat, ...
     only   *the Raid* repel.3SG away this.PL.ACC the mosquito.PL.ACC
     'Only *RAID* repels these mosquitoes, ...'

  b. ...viszont pont *az* / *ő*   vált   ki allergiás rohamot   nálam.
       but   just *that* / *(s)he* trigger.3SG out allergic   seizure.ACC ADE.1SG
     '...but it is just *THAT* that gives me an allergic reaction.'

  b'. ...viszont pont *az-t* / *ő-t*   utálják   a   gyerekek leginkább.
        but   just *that-ACC* / *(s)he-ACC* hate.3PL the child.PL   most
      '...but it is just *THAT* that children hate most.'

  b". ...de pont *at-tól* / *től-e* / *ő-től-e*   lettünk   rosszul.
        but   just *that-ABL* / *ABL-3SG* / *(s)he-ABL-3SG* become.PST.1PL bad
      '...but it was just *THAT* that made us sick.'

However, as pointed out by Pléh and Radics (1976) and Pléh (1982), it is allowed under certain circumstances to refer back to a human antecedent with the demonstrative pronoun (3b-b'). The crucial difference between (3) and (1) (in back-referencing to human antecedents) can be attributed to the different selection of the information structural function of the antecedent (Factor 3) and that of the pronoun (Factor 4): while the Focus ← Focus transition follows the "basic division of labor", the postverbal ← Topic transition triggers a somewhat different PPD.

(3) • Antecedent: [+HUMAN], proper name, postverbal ← Topic
  a. A kéthetes   karibi útra   meghívták *Pétert*, ...
     the two_week.ADJ Caribbean journey.SUB invite.PST.3PL *Péter.ACC*
     'As for the two-week-long Caribbean journey, *Péter* has been invited, ...'

  b. ...de *az* / *ő*   sajnos   csak a   karrierjét   hajtja.
       but   *that* / *(s)he* unfortunately only the career.POSS.3SG.ACC chase.3SG
     '...but unfortunately *he* is only chasing after his career.'

  b'. ...de *az-t* / *ő-t*   sajnos   csak a   karrierje   érdekli.
        but   *that-ACC* / *(s)he-ACC* unfortunately only the career.POSS.3SG interest.3SG
      '...but unfortunately *he* is only interested in his career.'

  b". ...de *?an-nál* / *´nál-a* / *?ő-nál-a*   sajnos   nincs   sikere
        but   *that-ADE* / *ADE-3SG* / *(s)he-ADE-3SG* unfortunately not_be.3SG success.POSS.3SG
      az   ilyen ötleteknek.
      the   such   idea.PL.DAT
      '...but unfortunately such ideas prove unsuccessful with *him*.'

The demonstrative pronoun even more readily refers back to a human antecedent if it is referred to by a noun phrase less specific than a proper name (Table 1). Specificity (of the antecedent) is thus the fifth factor influencing PPD.

It is also allowed under certain circumstances to refer back to a non-human antecedent with the personal pronoun, at least with its oblique-case-marked weak version (4b"). Farkas and Alberti's (2018) analyses in this area are based on Kenesei's (1992:648, 1994:329) observations on the special case when the human pronoun is used to refer to a propositional (and hence abstract, so not human) entity. For the sake of uniformity, this paper basically uses their examples, in which non-abstract non-human antecedents are referred back to; see the series of examples in (4). For the sake of completeness, however, in all relevant dimensions we have completed their data with a list of grammaticality judgments concerning the alternative cases with non-proper-name antecedents in Table 2. It is important to mention at this point that we had to modify even their data containing two potential human antecedents, following Farkas (2018), decided, at least in this particular project, to focus on examples where only one potential antecedent is available. It is possible only in this way to reveal what the core system is, given that competition between the antecedents obviously blurs the picture, since sentences like *Peter shot John because he was sad*, typically used in the psycholinguistic literature, are potentially ambiguous (the pronoun *he* can pick either of the two potential

Table 1 Grammaticality judgments concerning the sentence variants presented in (3a + b-b") and their alternatives produced by replacing the proper-name antecedents with such less specific ones as other kinds of definite noun phrases and indefinite noun phrases

a.	Pétert ← Péter.ACC 'Péter'	a szomszéd srácot ← the next_door boy.ACC 'the boy next door'	egy új kollégát ← a new colleague.ACC 'a new colleague'
b.	*az / ő*	*az / ⁽ʔ⁾ő*	*az / ʔő*
b'.	*az-t / ⁽ʔ⁾ő-t*	*az-t / ⁽ʔ⁾ő-t*	*az-t / ʔő-t*
b".	*⁎ʔan-nál /ˊnál-a / ʔő-nál-a*	*ʔʔan-nál / ⁽ʔ⁾nál-a / ʔʔő-nál-a*	*⁽ʔ⁾an-nál / ʔnál-a / ⁎ʔő-nál-a*

Table 2 Grammaticality judgments concerning the sentence variants presented in (4a + b-b") and their alternatives produced by replacing the proper-name antecedents with such less specific ones as other kinds of definite noun phrases and indefinite noun phrases

a.	a Raid ← the Raid 'Raid'	az új szúnyogriasztó ← the new mosquito_repellent 'the new mosquito repellent'	egy új szúnyogriasztó ← a new mosquito_repellent 'a new mosquito repellent'
b.	*⁎ʔaz /ˊ— / ⁎ő*	*⁎ʔaz /ˊ— / ⁎ő*	*⁎ʔaz / ⁽ʔ⁾— / ⁎ő*
b'.	*ʔʔaz-t /ˊ— / ⁎ő-t*	*ʔʔaz-t /ˊ— / ⁎ő-t*	*ʔʔaz-t / ⁽ʔ⁾— / ⁎ő-t*
b".	*ʔan-nál /ˊnál-a / ⁎ő-nál-a*	*ʔan-nál /ˊnál-a / ⁎ő-nál-a*	*ʔan-nál / ʔnál-a / ⁎ő-nál-a*

antecedents in the matrix clause). Thus, as a first step, the core system should be revealed, and then another project should be devoted to the comparison of the system of PPDs that such sentences with competing antecedents produce to the core system of PPDs.

(4) • Antecedent: [–HUMAN], proper name, Topic ← postverbal

    a. *A   Raid* elűzi   ezeket   a   szúnyogokat, ...
        the Raid repel.3SG this.PL.ACC the mosquito.PL.ACC
        '*Raid* repels away these mosquitoes, ...'

    b. ...de sajnos   most nem kapható $^{*?}$*az* /$^\checkmark$— /*ő* .
        but unfortunately now   not   available   *that* /   — / *(s)he*
        '...but unfortunately *it* is not available now.'

    b'. ...de sajnos   most nem lehet   kapni $^{??}$*az-t*   /$^\checkmark$— /*ő-t*.
        but unfortunately now   not   be.MOD.3SG get.INF *that-ACC* /   — / *(s)he-ACC*
        '...but unfortunately *it* is not available now.'

    b". ...de sajnos   most hiány van $^{?}$*ab-ból* /$^\checkmark$*belől-e* /*ő-belől-e*.
        but unfortunately now   shortage be.3SG *that-ELA* / ELA-3SG / *(s)he-ELA-3SG*
        '...but unfortunately *it* is in short supply now.'

Note that in cases in which the pronouns under investigation are postverbal non-operators (cf. (4) and (1–3)), not only oblique-case-marked competitors are three (see the (b")-examples) but also the nominative and accusative case-marked ones (4b-b'), due to *pro*-drop in non-oblique cases in Hungarian.

The relevance in PPD of the five factors enumerated in this section is pointed out in Farkas (2018, section 2) on the basis of Farkas and Alberti (2018, subsection 1.1.1.3.5.4) by providing grammaticality judgments concerning complex sentences with 2 times 3 types of antecedent (human/non-human, proper name/definite NP headed by a common noun/indefinite NP) fulfilling 4 information structural functions (topic, focus, *also*-quantifier, postverbal non-operator) and pronoun variants case-marked in 3 ways (nominative, accusative, oblique) also fulfilling the same 4 information structural functions. Due to space limitations, of the 288 Hungarian sentences judged by the authors (4 × 4 × 3 × 3 × 2), only a few could be presented here, but the table in the appendix gives all relevant grammaticality judgments on the basis of Farkas's aforementioned section. As for the following section, it focuses on the cases of back-reference with pronouns and antecedents serving as *also*-quantifiers in their clauses, still not discussed in Farkas and Alberti (2018, subsection 1.1.1.3.5.4), with the immediate purpose of proving that quantifiers pattern with neither topics or foci nor non-operators in pronominal distribution in complex-sentence-internal back-referencing to singular entities. The ultimate purpose is to characterize the entire system of PPDs in such meaningful terms as sensitivity to animacy/"operatorness"/specificity (Sect. 4).

3   Back-Referencing to/by Quantifiers

According to the extended version of Farkas and Alberti's (2018, subsection 1.1.1.3.5.4) testing protocol sketched in Sect. 2, provided in detail in Farkas (2018, section 2), there are four cases where quantifiers refer back to antecedents fulfilling different information structural functions (5–10), and four cases when quantifiers are referred back to by pronouns fulfilling different information structural functions (11–12).

(5) • Antecedent: [+HUMAN], proper name, Focus ← *is*-quantifier
    a. Csak *Pétert*   érdekli   a mondattan, ...
       only *Péter.ACC* interest.3SG the syntax
       'Only *PÉTER* is interested in syntax, ...'

    b. ...de sajnos   **az /ˇő   is*   távol lesz   pénteken.
       but unfortunately *that / (s)he also* far   will_be.3SG Friday.SUP
       '...but unfortunately *he* will *also* be away on Friday.'

    b'. ...de sajnos   **az-t   /ˇő-t   is* nélkülöznünk   kell   pénteken.
       but unfortunately *that-ACC / (s)he-ACC also* do_without.INF.1PL must.3SG Friday.SUP
       '...but unfortunately we must do without *him, too,* on Friday.'

    b''. ...de sajnos   **an-nál /⁽⁾nál-a /ˇő-nál-a   is* vannak hiányosságok.
       but unfortunately *that-ADE / ADE-3SG / (s)he-ADE-3SG also* be.3PL deficiency.PL
       '...but unfortunately *he* has *also* deficiencies.'

(6) • Antecedent: [–HUMAN], proper name, Focus ← *is*-quantifier
    a. Csak *a Raid* űzi   el   ezeket   a   szúnyogokat, ...
       only *the Raid* repel.3SG away this.PL.ACC the mosquito. PL.ACC
       'Only *RAID* repels these mosquitoes, ...'

    b. ...de sajnos   *az /*ő   is*   otthon   maradt.
       but unfortunately *that / (s)he also* at_home remain.PST.3SG
       '...but unfortunately *it* has *also* remained at home.'

    b'. ...de sajnos   *az-t   /*ő-t   is*   otthon felejtettem.
       but unfortunately *that-ACC/ (s)he-ACC also* at_home forget.PST.1SG
       '...but unfortunately I have *also* forgotten *it* at home.'

    b''. ...de sajnos   *az-zal /*vel-e /*ő-vel-e   is*   takarékoskodnunk kell.
       but unfortunately *that-INS / INS-3SG / (s)he- INS-3SG also* save.INF.1PL   must.3SG
       '...but unfortunately we should save *it, too.*'

As shown in (5–6), the transition type F ← Q can basically be characterized by the "basic division of labor" among competing pronominal forms presented in (1–2), with a slight increase in readiness to refer back to human entities with demonstrative pronouns in the case of non-proper-name antecedents (Table 3) and some decrease in readiness to refer back to non-human entities in any way (as shown in Table 4, for instance, even using the most acceptable back-referencing pronoun provides marked sentence variants if the antecedent is an indefinite NP).

The series of examples in (7–8) illustrate the p ← Q transition, which, given the common element of referring back to a postverbal non-operator, is worth comparing to transition p ← T, presented in (3), which is the famous case of topic change (Pléh

Table 3 Grammaticality judgments concerning the sentence variants presented in (5a + b-b")
and their alternatives containing non-proper-name antecedents

a.	Pétert ← Péter.ACC 'Péter'	az új diákot ← the new student.ACC 'the new student'	egy új diákot ← a new student.ACC 'a new student'
b.	*az / ˊő	??az / ˊő	?az / (?)ő
b'.	*az-t / ˊő-t	*az-t / ˊő-t	*?az-t / (?)ő-t
b".	*an-nál / (?)nál-a / ˊő-nál-a	*?an-nál / ˊnál-a / ˊő-nál-a	?an-nál / ˊnál-a / (?)ő-nál-a

1982), in the course of which the demonstrative pronoun fairly readily refers back
to human antecedents. Transition p ← Q, however, rather patterns with the PPD
based on the "basic division of labor" among competing pronominal forms.

(7) • Antecedent: [+HUMAN], proper name, postverbal ← *is*-quantifier
     a.   A kéthetes   karibi útra   meghívták   *Pétert,...*
        the two_week.ADJ Caribbean journey.SUB invite.PST.3PL *Péter.ACC*
        'As for the two-week-long Caribbean journey, *Péter* has been invited, ...'
     b.   ...de sajnos   **az* / ˊő*   *is* kivette már   az összes szabadságát.
        but unfortunately *that / (s)he* also take.3SG already the all   leave.POSS.3SG.ACC
        '...but unfortunately *he* has *also* already taken all leave.'
     b'.   ...de sajnos   **az-t* / ˊő-t*   *is* benn tartotta a főnöke.
        but unfortunately *that-ACC / (s)he-ACC* also inside keep.3SG the boss.POSS.3SG
        '...but unfortunately his boss *has* also kept *him* at work.'
     b".   ...de sajnos   **an-nál* / (?)nál-a / ˊő-nál-a*   *is* problémák jelentkeztek.
        but unfortunately *that-ADE / ADE-3SG / (s)he-ADE-3SG* also problem.PL   occur.3PL
        '...but unfortunately problems have risen *with him, too*.'

(8) • Antecedent: [–HUMAN], proper name, postverbal ← *is*-quantifier
     a.   A fiam   gyakran ócsárolja *a Raidet*, ...
        the son.POSS.1SG often   scold.3SG *the Raid.ACC*
        'My son often criticizes *Raid*, ...'
     b.   ...pedig *az* / ** ő*   *is* jól bevált   a szúnyogok ellen.
        but   *that / (s)he* also well prove_efficient.PST.3SG the mosquito.PL against
        '...although *it* has *also* proved so efficient against mosquitoes.'
     b'.   ...pedig *az-t* / **ő-t*   *is* annyira ajánlotta   a szomszéd.
        but   *that-ACC / (s)he-ACC* also so_much recommend.PST.3SG the neighbor
        '...although *it* was *also* highly recommended by the neighbor.'
     b".   ...pedig (?)*ar-ra* / **rá* / **ő-rá*   *is* annyira esküszik a szomszéd.
        but   *that-SUB / SUB.3SG/(s)he-SUB.3SG* also so_much swear.3SG the neighbor
        '...although the neighbor swears by *it*, *too*, so much.'

As shown by the data in (9–10) below with the grammaticality judgments given
in the appendix, the four types of ∂ ← Q transition (where ∂ = F, p, T, Q) behave
essentially uniformly with very slight differences in PPD's.

Table 4 Grammaticality judgments concerning the sentence variants presented in (6a + b-b")
and their alternatives containing non-proper-name antecedents

a.	a Raid ← the Raid 'Raid'	az új szúnyogriasztó ← the new mosquito_repellent 'the new mosquito repellent'	egy új szúnyogriasztó ← a new mosquito_repellent 'a new mosquito repellent'
b.	ˇ*az* / *ˇő*	ˇ*az* / *ˇő*	?*az* / *ˇő*
b'.	ˇ*az-t* / *ő-t*	ˇ*az-t* / *ő-t*	?*az-t* / *ő-t*
b".	ˇ*an-nál* / *nál-a* / *ő-nál-a*	ˇ*an-nál* / *nál-a* / *ő-nál-a*	?*an-nál* / *nál-a* / *ő-nál-a*

(9) • Antecedent: [+HUMAN], proper name, Topic ← *is*-quantifier

    a. *Péter* nagyon   érdeklődik   a   nyelvészet iránt, ...
       Péter very.much be_interested.3SG the linguistics   towards
       '*Péter* is very much interested in linguistics, ...'

    b. ...de sajnos   végül *az*/ ˇ*ő* *is* más specializációt   választott.
       but unfortunately finally *that* / *(s)he* also other specialization.ACC choose.PST.3SG
       '...but unfortunately *he* has finally *also* chosen another specialization.'

    b'. ...de sajnos   végül *az-t* / ˇ*ő-t*   *is* megbűvölte   a pszichológia.
       but unfortunately finally *that-ACC*/ *(s)he-ACC* also mesmerize.PST.3SG the psychology
       '...but unfortunately he has finally *also* been mesmerized by psychology.'

    b". ...de végül *an-nak*/ ˇ*nek-i* /(?)*ő-nek-i* *is* csak a pszichológiát engedélyezték.
       but finally *that-DAT* / *DAT-3SG*/*(s)he-DAT-3SG* also only the psychology.ACC permit.PST.3PL
       '...but only psychology has finally been permitted *to him, too*.'

(10) • Antecedent: [–HUMAN], proper name, Topic ← *is*-quantifier

    a. *A Raid* hatékonynak tartják a   szúnyogok ellen, ...
       the Raid effective.DAT hold.3PL the mosquito.PL against
       '*Raid* is held to be effective against mosquitoes, ...'

    b. ...de most sajnos   *az* /*ő* *is* hiánycikk.
       but now   unfortunately *that* / *(s)he* also shortfall
       '...but unfortunately now *it* is not available *either*.'

    b'. ...de most sajnos   *az-t* /*ő-t* *is* kivonták   a forgalomból.
       but now   unfortunately *that-ACC*/ *(s)he-ACC* also withdraw.PST.3PL the market.ELA
       '...but unfortunately *it* has *also* been withdrawn from the market.'

    b". ...de most sajnos   *ab-ból* /*belől-e*/*ő-belől-e is*   hiány van.
       but now   unfortunately *that-ELA*/ *ELA-3SG* / *(s)he-ELA-3SG* also shortage be.3SG
       '...but unfortunately *it* is *also* in short supply now.'

    In (11), our quantifier-containing "input clauses" are provided (i.e., the parts of
complex test sentences which contain antecedents serving as quantifiers there),
which can then be paired with the clauses provided in (12), in which the corre-
sponding pronouns serve as foci (Q ← F), and the clauses provided in Farkas (2018,
subsection 2.2.4), in which the corresponding pronouns serve as topics,
non-operators, quantifiers, and non-human foci.

(11) • Antecedent: [±HUMAN], *is*-quantifier ←

    a. *Péter /[az /egy új diák] is*   nagyon érdeklődik   a nyelvészet iránt,...
       Péter / the / a   new student also   very.much be_interested.3SG the linguistics   towards
       '*Péter / [The/A new student]* is *also* very much interested in linguistics, ...'

    b. *[A Raid] /[Az/Egy új szúnyogriasztó] is* hatékony a   szúnyogok ellen, ...
       the Raid / the / a   new mosquito_repellent also effective   the mosquito.PL   against
       '*Raid / [The/A new mosquito repellent]* is effective against mosquitoes, ...'

(12) • Antecedent: [+HUMAN], *is*-quantifier ← Focus

    b. ...de sajnos   csak *az / ő* venné   fel a nyelvészet specializációt.
       but unfortunately only   that / (s)he take.COND.3SG up the linguistics   specialization.ACC
       '...but unfortunately *he* is the only one who would take the specialization in ling's.'

    b'. ...de sajnos   csak *az-t / ő-t*   vehetnénk   fel a spec-ra.
       but   unfortunately only   that-ACC / (s)he-ACC take.MOD.COND.1PL up the spec-SUB
       '...but unfortunately *he* is the only one whom we could admit to the specialization.'

    b''. ...de sajnos   csak *an-nak/nek-i / ő-nek-i*   engedélyezhetnénk a spec-t.
       but unfortunately only   that-DAT/ DAT-3SG/ (s)he-DAT-3SG permit.MOD.COND.1PL the spec-ACC
       '...but unfortunately *he* is the only one to whom we could permit the specialization.'

Only transition Q ← p (see (11) and the grammaticality judgments in the appendix) shows a profile different from the usual one based on the "basic division of labor": the dominance of weak pronominal forms is typical of this profile.

It is high time we turned to an analysis of the huge set of grammaticality judgments which promises a contrastive characterization of the sixteen transition types that is really to the point. We essentially follow Farkas and Alberti (2018) in exploiting the scalar character of two factors: the grammaticality judgments with their scale of six degrees (which Farkas and Alberti (2018) "inherited" from the Dutch Comprehensive Grammar Resource of Broekhuis et al. (2012))[1] and the plausible ordering of the competing three pronominal forms in a way that the weak personal pronoun is considered to be on the half-way (50%) between the distal demonstrative pronoun (100%) and the full form of the personal pronoun (0%).

Let us consider the basic definitions. Suppose $\gamma = \langle \gamma_{PN}, \gamma_{DEF}, \gamma_{IND} \rangle$ is a triplet of *quantified* grammaticality judgments in the table in the appendix concerning, respectively, a case in which a proper name is referred back to, and a case in which this proper name is replaced with a definite noun phrase headed by a common noun, and a case in which the proper name is replaced with an indefinite noun phrase. It is called a *human triplet* if the proper name refers to a person, and a *non-human triplet* if it refers to an object. The method of *quantification* of a triplet of grammaticality judgments concerning a test sentence is as follows. As a first step, the distal demonstrative pronoun *az* 'that', including its case-marked variants, is assigned the numeral value 100 (%), the personal pronoun *ő* '(s)he', including its case-marked variants (in which the personal pronoun remains explicit), is assigned 0, and the

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[1] The six-degree scale of grammaticality judgments is as follows: *: unacceptable, *?: relatively acceptable compared to *; ??: intermediate or unclear status; ?: marked: not completely unacceptable or disfavored form; (?): slightly marked, but probably acceptable.

Table 5 The quantified version of grammaticality judgments presented in Table 1

a. p←T	Pétert ← Péter.ACC 'Péter'	a szomszéd srácot ← the next_door boy.ACC 'the boy next door'	egy új kollégát ← a new colleague.ACC 'a new colleague'
b/b'.	✓/✓: $\frac{1}{2} \cdot 100 + \frac{1}{2} \cdot 0 = 50$	✓/(?): $\frac{2}{3} \cdot 100 + \frac{1}{3} \cdot 0 = 67$	✓/?: $\frac{4}{5} \cdot 100 + \frac{1}{5} \cdot 0 = 80$
b".	*?/✓/?: $\frac{4}{5} \cdot 50 + \frac{1}{5} \cdot 0 = 40$	??/(?)/??: $\frac{1}{6} \cdot 100 + \frac{4}{6} \cdot 50 + \frac{1}{6} \cdot 0 = 50$	(?)/?/*?:✓/?: $\frac{8}{13} \cdot 100 + \frac{4}{13} \cdot 50 + \frac{1}{13} \cdot 0 = 77$
Σ	$\frac{1}{3} \cdot 50 + \frac{1}{3} \cdot 50 + \frac{1}{3} \cdot 40 = 47$	$\frac{1}{3} \cdot 67 + \frac{1}{3} \cdot 67 + \frac{1}{3} \cdot 50 = 61$	$\frac{1}{3} \cdot 80 + \frac{1}{3} \cdot 80 + \frac{1}{3} \cdot 77 = 79$

empty *pro* version of the latter, including its case-marked variants (which consist of a case morpheme and an agreement suffix) is assigned 50. Then a weighted means of these three values is calculated on the basis of the following method of weighting with (i) as the leading rule and three complementary rules to handle special cases: (i) if there is an n degree difference in acceptability between two judgments, the more acceptable one should be considered by a weight 2^n times as great as the weight belonging to the other judgment; (ii) at most four degrees of acceptability next to each other are considered relative to the highest acceptability; (iii) the highest degree of acceptability should be at least '?' and (iv) the lowest degree of acceptability should be at least '*?'. Table 5 serves as an illustration of the method of calculation, and the table in the appendix contains the numerical conversions of all relevant triplets of grammaticality judgments.

In order to characterize the sixteen transitions, it is worth, first of all, capturing them by their pronominal "output" and antecedental "input" (0–0''), and then assigning them linguistically relevant profiles (i–iii'). So, with these purposes in mind, we say that

(0) a triplet is a ←∂-*triplet*, where the value of ∂ is T, Q, F or p, if the back-referencing pronoun serves as the topic/quantifier/focus/a postverbal non-operator of the clause containing it;

(0′) a triplet is a ∂←-*triplet*, where the value of ∂ is T, Q, F or p, if the antecedent which is referred back to serves as the topic/quantifier/focus/a postverbal non-operator of the clause containing it;

(0″) a triplet is a ∂-*triplet*, where the value of ∂ is T, Q, F or p, if it is a ←∂-triplet or a ∂←-triplet;

(i) a human triplet has a +*H(uman) profile* if each of its three members is between 0 and 50 and at least two of its members are strictly less than 50;

(i′) a non-human triplet has a –*H profile* if each of its 3 members is between 50 and 100 and at least two of its members are strictly greater than 50;

(ii) a human triplet has a +*O(perator) profile* if each of its 3 members is between 0 and 33 and at least two of its members are strictly less than 25;

(ii′) a non-human triplet has a +*O profile* if each of its 3 members is between 75 and 100;

Table 6 The profiles of the sixteen transitions presented in the table in the appendix

←∂ / ∂←	T		Q		F		p		+H	–H
	+H	–H	+H	–H	+H	–H	+H	–H		
T	+H	–H	+H	–H	+H	–H	+H	–H	2'. +H	2. –H
	+O	+O	+O	+O	–	+O	–O	–O		
	–	–	–	–	S+	–	–	S	7. –	
Q	+H	–H	+H	–H	+H	–H	+H	–H	2'. +H	2. –H
	+O	+O	+O	+O	+O	+O	–O	–O		
	–	–	S	–	S	–	–	S	5. ~S+; 8. S	
F	–	–H	+H	–H	–	–H	+H	–H	3. –	2. –H
	–	+O	+O	+O	–	+O	–O	–	0. (S+⇒) –	
	S+	–	S	–	S+	–	–	S+	6. S+	
p	–	–H	+H	–H	–	–H	+H	–H	3. –	2. –H
	–	+O	+O	+O	–	+O	–O	–O	0. (S+⇒) –	
	S+	–	S	–	S+	–	–	S		
H	3. –	2. –H	2'.+H	2. –H	3. –	2. –H	2'. +H	2. –H	0'.	0'.
O	0. (~±H ⇒) ~±O 9'. +O		9'. +O		0. (~±H ⇒) ~±O 9'. +O		9. –O		0&0'.	0&0'.
S	7. –	1'. –	5. ~S+ 8. S	1'. –	6. S+	1'. –	1. –	4. S	0.	0.

(iii) a human triplet has a *–O profile* if each of its 3 members is between 16 and 50 and at least two of its members are between 25 and 50;[2]

(iii') a non-human triplet has a *–O profile* if each of its 3 members is between 50 and 75;

(iv) a triplet has an *S (specificity-marking) profile* if $\gamma_{PN} \le \gamma_{DEF} \le \gamma_{IND}$ and $\gamma_{PN} + 10 < \gamma_{IND}$;

(iv') a triplet with an S profile has a *strong S profile* (an S+ profile) if $\gamma_{PN} + 25 < \gamma_{IND}$.

The immediate benefit of the evaluation of the sixteen transitions according to the profiles defined in (i–iv') above, summarized in Table 6, is that now we are already in a position to declare on the basis of quantified calculations that the

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[2]The definitions of the +O and the –O profiles of human triplets in points ii and iii are defined with reference to overlapping lower and upper two thirds of the [0, 50] interval because certain triplets strike as operatorlike on the basis of two of its members. This overlap, however, does not result in such an unwanted possibility that a triplet should be qualified as showing sensitivity to both operatorness and its opposite anti-operatorness, exactly due to the reference to the two members just mentioned.

system of ←Q-triplets and that of Q←-triplets are significantly different from their appropriate counterparts. It holds with no exceptions, for instance, only for Q-triplets, in contrast to T-triplets, F-triplets, and p-triplets, that (i) the human (+H or –H) profile is expressed, (ii) the operator (+O or –O) profile is expressed, but (iii) specificity is not expressed strongly (S^+).

Before turning to Sect. 4, devoted to the demonstration of a rule system that exhaustively defines the distribution of profiles given in Table 6 and provides a coherent contrastive characterization of all four information structural functions, (i) let us emphasize again that the grammaticality judgements are those of the authors and (ii) let us render it explicit that the numerical threshold values of the sensitivity clusters to operatorness and specificity (in definitions ii–iv') are somewhat arbitrary, as well as (iii) placing the weak personal pronoun *exactly* on the half-way (50%) between the distal demonstrative pronoun (100%) and the full form of the personal pronoun (0%). Section 5 will return to these three questions.

4 How Does the System of Profiles of Transitions Show the Information Structural Function of the Output and/or the Input and the Animacy Character and the Specificity of the Antecedent?

First of all, we provide two general rules (0–0') concerning the relationship among operator, animacy and specificity profiles in Table 6, which presents a clustering of the quantified PPD's collected in the table in the appendix, and then comes a series of ordered *otherwise*-rules (1–9'). The reader can check that this rule system exhaustively defines the profile system given in Table 6 by filling in the concerned squares appropriately, of the 16, from rule to rule (taking into account the *otherwise* character in the way that in the course of the realization of the instruction formulated by the nth rule, the squares filled in on the basis of earlier rules cannot be enriched with conflicting information).

The following two pairs of statements are thus generally in the given logical relation in the case of any triplet, capturing the observation that strong sensitivity to the specificity degree of antecedents manifests itself in a PPD with diverging grammaticality judgments, which is a character opposite to that of PPD's expressing the animacy and/or operator character with extreme values (around 0 and 100):

0.[it has neither +O nor –O profile] ⇔ [it has an S$^+$ profile],
0′.[it has neither +H nor –H profile] ⇒ [it has neither +O nor –O profile].

Let us now consider the system of ordered *otherwise*-rules:

1.A ←p-triplet can have an S profile only if it is a non-human profile.
1′.A ←∂-triplet where ∂ is an operator can have an S profile only if it is a human profile.
2.If γ is a non-human triplet, then it has a –H profile.
2′.If γ is a human triplet, then
[if it is a ←Q-, ←p-, Q←- or T←-triplet, then it has a +H profile].
3.(Otherwise,...) a triplet has no +H profile (so 0′. it has neither +O nor –O profile).
4.If γ is a ←p-triplet, it has an S profile.
5.If γ is a Q-triplet, it has no S$^+$ profile.
6.If γ is a F-triplet, it has an S$^+$ profile.
7.If γ is a T-triplet, it has no S profile.
8.If γ is a Q-triplet, it has an S profile.
9.If γ is a ←p-triplet, it has a –O profile.
9′.If γ is a ←T-, ←Q- or ←F-triplet, it has a +O profile.

Note that Table 6 in Sect. 3 is furnished with an extra row and and extra column in which it is presented which rule pertains to which transition type

5   Conclusion

It can be learned from the rule system defining the distribution of profiles in Table 6 (and ultimately that of the grammaticality judgments in the table in the appendix) that although every information structural function *ab ovo* "wants to vindicate" a certain character in back-referencing, there are at least two factors resulting in the suppression of its manifestation. One is the strength of the expression of the specificity degree of antecedents, somewhat depending on their animacy character (see rules 0–3 in Sect. 4). The other is that back-referencing concerns two information structural functions (an input and an output one), and if their characters are in conflict, one character will inevitably be suppressed by the other.

Nevertheless, the distribution of data expressing the "competition" of pronominal forms in complex-sentence-internal back-referencing to singular entities does provide a valuable double characterization of information structural functions in Hungarian through the content and the order of rules 4–8 in Sect. 4. The non-operator status, for instance, manifests itself in ←p-triplets dominantly by its uniform (non-strong) sensitivity to specificity (rule 4). As for specificity, quantifier and focus show partly opposite behavior towards this feature: while focus strives for expressing it strongly, quantifier definitely rejects to do so but rather expresses it weakly (cf. rules 5, 6, 8). The fact that the rule concerning topic (rule 7) is ranked low and expresses a negative statement may seem to be a fairly uninteresting technical one, at least at first glance. It is just their neutral and recessive character,

however, that makes ←T-triplets an excellent marker of such highly important discursive processes as topic retainment or change, which were our point of departure in the Introduction: topic pronouns quite transparently let the information structural functions of their antecedents show themselves. Finally, rules 9–9' express that both operators and non-operators strive for expressing their such character as much as possible, where the conflicting interest pertains to the expression of the specificity of antecedents.

We are aware of the fact that demonstrating this solid and rigorous system is only the first step towards the revelation of the complex system of relations between pronominal systems and such pragmasemantic factors as operator types, specificity, and animacy. Several questions are left to future research. I. How does the type of competition between antecedents mentioned in Sect. 2 blur the picture? II. What system of PPDs do plural antecedents produce? III. The rigorous system shown in Sect. 4 belongs to the authors' competition. Although each speaker of Hungarian would fill in the table in the appendix in their own idiosyncratic way, our conjecture is that the rule system resulting would be the same in the case of many speakers (i.e., our method of clustering would neutralize the unavoidable variation in grammaticality judgments, that is, the "noise") while other speakers' dialects could be defined by means of permuting the order of the same rules. IV. Both the numerical threshold values of the sensitivity clusters to operatorness and specificity (in definitions ii–iv' in Sect. 3) and placing the weak personal pronoun *exactly* on the half-way (50%) between the distal demonstrative pronoun (100%) and the full form of the personal pronoun (0%) are based on somewhat arbitrary choices. The least elegant element of the system is the asymmetry between human and non-human triplets with respect to sensitivity to operatorness: while the clusters of non-human triplets could be defined (in definitions ii' and iii') by referring exclusively to the two halves of the [50, 100] interval (which is the most plausible approach), those of the human triplets have been defined by referring to not only the two halves but also the (overlapping) lower and upper two thirds of the [0, 50] interval (in definitions ii and iii). Future research will decide whether converting our linguistic intuitions into other numerical threshold values would yield significantly different picture on the complex system of relations between the pronominal system and such pragmasemantic factors as operator types, specificity and animacy, or not, and, in the latter case, whether it is possible to obtain a more elegant rule system by opting for another system of threshold values. V. How can our method based on "competing pronouns" be generalized to other languages?

Appendix

Profiles of pronominal distribution, partly on the basis of data presented by Farkas and Alberti (2018, subsection 1.1.1.3.5): grammaticality judgments and their quantified evaluations, visualized by shades in proportion with weighted averages of the quantified evaluations:

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Control and the Left Periphery: The Scope and Information Structure Properties of Hungarian Infinitival Complements with Nominative, Dative, and Covert Subjects

Krisztina Szécsényi

Abstract The paper discusses Hungarian infinitival complement clauses containing covert, dative and nominative subjects and argues that the similar patterns in these different types of infinitives are the result of scope and information structure considerations. Sentences with infinitives with overt nominative subjects, therefore, cannot be described either as simply following from Long Distance Agreement as proposed in Szabolcsi (Organizing grammar, 2005, Approaches to Hungarian 11: Papers from the 2007 New York conference, 2009a, NYU working papers in linguistics, 2009b) or as clear instances of backward control but rather as instances of control interacting with left peripheral processes. Following Bartos (KB 120 A titkos kötet. Nyelvészeti tanulmányok Bánréti Zoltán és Komlósy András tiszteletére. MTA Nyelvtudományi Intézet, 2006) but working on an extended set of data I propose a copy theory of movement based analysis where the emergence of the nominative subject within the infinitival clause can be argued to be the result of LF-driven spellout leading to the pronunciation of the lower copy when information structure considerations so require. Complementing the copy theory of movement with a mechanism for doubling a DP can also account for those cases when the subject is spelled out both in the matrix and the infinitival clause, and the existence of patterns when one and the same clause contains more than one realization of the same DP in potentially different forms and discourse functions is also rightly predicted.

Keywords Overt infinitival subjects · Hungarian · Backward control Scope · Information structure

K. Szécsényi (✉)
Department of English Linguistics, SEAS, Eötvös Loránd University, Budapest 1088, Hungary
e-mail: kszecsenyi@gmail.com

1   Introduction[1]

There are several criteria based on which Hungarian infinitival constructions can be identified as belonging to different groups. The present paper focuses on the different types of subject that can appear within the infinitival clause. In that respect Hungarian infinitival constructions have two main types. One is the cross-linguistically widely attested pattern of *akar* 'want'-type verbs: they take infinitival embedded clauses as shown in (1), where the infinitive has a covert subject traditionally identified as PRO controlled by the subject of the matrix clause. Having a controlled subject in the infinitival clause goes together with no person or number marking appearing on the infinitive. It is the finite verb that, apart from being marked for tense, also carries person and number features. The subject of the finite clause, as expected, surfaces in nominative case.

(1)   a.   *Mari$_i$ nem   akar*   [PRO$_i$ *úsz-ni*].
           Mary-NOM   not   want.3SG   swim-INF
           'Mary does not want to swim.'

      b.   [DP$_{NOM}$ T$_{+fin}$ [PRO/t T$_{-fin}$]]
                         $+\varphi$ $-\varphi$

In the case of *kell* 'have to'-type verbs taking infinitival complements, the sentence has a dative subject, which has been argued to originate in the infinitival clause (Tóth 2000) leading to the following pattern: the infinitive contains person and number marking (argued to be the source of dative case)[2] with the finite verb only specified for tense. Since the dative subjects very often function as the topic of the sentence they often surface in clause-initial position, leaving a trace in their base position (2).

(2)   a. *Mari-nak$_i$ nem   kell*   [t$_i$ *úsz-ni(-a)*]
          Mary-DAT   not   have.to   swim-INF-3SG
          'Mary does not have to swim.'

      b.   [DP$_{DAT}$ T$_{+fin}$ [t T$_{-fin}$]]
                         $-\varphi$ $+\varphi$

Szabolcsi (2005, 2009a, b) discusses a third pattern, where a nominative subject appears within the infinitive. Based on a number of diagnostics, among others the

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[2]The presence of the inflection on the infinitive is optional when it has an overt subject. The inflection triggers the pro-drop of neutral pronominals, as expected. When neither an overt subject nor a visible inflection is present, the sentence receives an arbitrary interpretation.

restriction on the position of *csak* 'only'-phrases in Hungarian, Szabolcsi concludes that the nominative subject must be the subject of the infinitive: *only*-phrases occupy a focus position in the left periphery of the clause and while postverbal focus exists in Hungarian, it is restricted to cases when there is also a preverbal focus present in the clause. In sentence (3) such a preverbal focus is not present, so the *only*-DP must indeed appear in the left periphery of the infinitive.

(3) *Nem   akar   [**csak ő**   men-ni   busz-szal]*
     not   want.3SG   only he/she.NOM   go-INF   bus-with
     'He/She doesn't want to be the only one to take the bus.'

Szabolcsi's further arguments for analysing the *only*-DP as the subject of the infinitive come from patterns like (4) where the matrix clause contains a subject of its own and the observation that the subject of the infinitive has to be a pronoun. In order to account for the data, Szabolcsi proposes a Multiple Agree analysis with Long Distance Agreement (LDA).

(4) a. *Senki   nem   akar-t   [csak ő   le-ül-ni]*
         Nobody   not   want-ed   only he/she.NOM   down-sit-INF
         'Nobody wanted it to be the case that only he/she takes a seat.'

     b. *A fiúk$_i$ nem akar-nak   [csak ők$_i$ büntetés-t   kap-ni]*
         The boys-NOM not   want-3PL   only they.NOM punishment-ACC get-INF
         'The boys don't want it to be the case that only they get punished.'

Bartos (2006) offers a backward control analysis of these data. He argues that Szabolcsi (2005) discards the backward control analysis somewhat hastily showing that Szabolcsi's arguments are often inconclusive, and proposes a movement based account following Hornstein (1999), according to which movement boils down to creating multiple copies, of which the highest one is pronounced in standard cases. In control constructions the subject DP of the infinitive is copied onto the matrix clause to be associated with the θ-role determined by the matrix predicate. The present paper also pursues this path not least because to date it is only the Movement Theory of Control (MTC) that has a straightforward way of dealing with what is often described as backward control.

The different ways Szabolcsi and Bartos account for (3) are presented in (5). Bartos assumes multiple copies together with the pronunciation of the lower copy due to the presence of focus in the embedded clause (5a), leading to a deviation from the standard case when it is the highest copy that is pronounced. Szabolcsi proposes LDA between the finite T head and the nominative infinitival subject (5b). According to her the T head enters into multiple Agree relations, so the subject of the matrix clause is either an unpronounced *pro* (3) or a visible, potentially lexical DP (4b).

(5) a. *ő nem   akar   [csak ő   menni busszal]*
        not   want-3SG   only he/she-NOM   go-INF bus-with

     b. pro/DP   *Nem akar   [csak ő   menni busszal]*
                   └─── Agree ───┘ └─── Agree ───┘

This paper presents additional data indicating that the movement based approach, in spite of the problems that it faces, is more successful in accounting for the facts.

In what follows, first some problems for both proposals are pointed out in Sect. 2. Section 3 introduces further data: parallels between infinitival clauses with nominative and base generated dative subjects are discussed with an emphasis on the role information structure considerations play in both construction types. Details of a uniform analysis are given in Sect. 4, also accounting for multiple occurences of the same DP.

2 Problems for the Proposals

2.1 Backward Control as Movement

While noting that overt DPs in the finite clause are sometimes marginally acceptable, Bartos (2006) has no obvious way of accounting for multiple occurrences of the same DP. How to account for sentences like (4) is far from obvious. The proposal, even in its present form, is not inherently incompatible with multiply pronounced DPs. However, the fact that under certain conditions the controller can also be pronounced in these Hungarian sentences makes the construction very different from standard control cases, which are characterized by an absolute ban on the pronunciation of the controllee, or, in the case of backward control, the controller.

2.2 Long Distance Agreement

While sentences can have overt or covert subjects in both the finite and the embedded infinitival clause of the sentence according to the Szabolcsi account, one specific pattern should never arise, contrary to fact: as pointed out in footnote 6 in Szabolcsi (2009a, b) as well, there is a group of speakers (including the author of the present paper) for whom sentences like (6), which contain a lexical DP in the infinitival clause, are also well-formed. This variation is neither predicted, nor

accounted for in Szabolcsi's works.[3] Actually, such data induce a binding condition C violation due to the presence of a *pro* in the finite clause in Szabolcsi's analysis.[4] The way to express these meanings is with the help of the multiple-DP pattern of (4b), the only way for a group of speakers.

(6) a. *Nem   akar-nak   [csak a fiúk   büntetés-t   kap-ni]*
         Not   want-3PL   only the boys.NOM punishment-ACC   get-INF
         'The boys do not want it to be the case that only they are punished.'
     b. *Szeretné-nek   [a   barátaim   is   felszáll-ni   a buszra]*
         would.like-3PL   the   my.friends   also   get.on-INF   the bus-SUBL
         'My friends would like it to be the case that they also get on the bus.'

Accounting for the data in (6) is of course not problematic for Bartos: the lexical DP can be the lower pronounced copy in the sentence. This is a point where the predictions of the two accounts diverge and the empirical facts support Bartos's analysis: the properties of the constructions in question can be explained under the copy theory of movement making it superior to the LDA proposal. The rest of the paper discusses some further problems with the LDA approach and presents an alternative account in terms of a movement based approach to control. What Bartos cannot account for is the data-type in (4), where there are overt subjects in both the finite and the infinitival clauses. In the present paper I am making an attempt at complementing Bartos's analysis with a scope and information structure sensitive component that can account for those facts as well.

In this paper we reconsider the Szabolcsi-data from a wider perspective capitalizing on the observation that infinitives with datives show the same pattern as the Szabolcsi sentences. While the presence of a dative subject in the infinitival clause in (7) is not surprising under the assumption that the source of dative case is the infinitival clause based on Tóth (2000), the parallels in the interpretation of the

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[3]A lot of these sentences need a context and sound unnatural without it. The situation very often improves if we add the framesetting modifier *Szerintem* 'in my opinion' to the beginning of the sentence.

[4]In Hungarian, focus does not lift binding violations (cf. Tancredi 1992):

(i) *János az-t hiszi, hogy csak János nyer-het.
    János that-ACC thinks that only János win-POT
    'János thinks that only János can win.'

Also, if the lexical DP is pronounced in the finite clause, the *only*-DP in the infinitival clause has to be a pronoun. The version with another lexical DP is ungrammatical (in other words, copy-control is unattested in Hungarian):

(ii) *A fiúk   nem akarnak   csak a fiúk   büntetés-t   kap-ni.
      The boys-NOM   not want   only the boys.NOM punishment-ACC   get-INF
      'The boys don't want it to be the case that only they get punished.'

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sentences in (6a) and (7) deserve a closer look. While the facts are duly noted, Szabolcsi's accounts fail to capture an important aspect of the constructions: the relevant constituents appearing in the finite or the infinitival clause depending on interpretation all target the left-peripheral positions of the clause (besides *only*-phrases (3), *too*-phrases (6b) and simple *only*-less lexical DPs with obligatory focus stress can also surface as nominative subjects of infinitives), which should not be left an unexplained, accidental property of the constructions in question. The present paper is an attempt at not simply showing that the construction is primarily contingent on scope and information structure considerations but also offering an account that captures this property.

(7)   *Nem kell   csak a fiúk-nak   büntetés-t   kap-ni(-uk).*
        Not   have.to   only the boys-DAT   punishment-ACC get-INF-3PL
        'It does not have to be the case that only the boys get punished.'

Taking a cross-linguistic perspective, it is often observed that similar constructions can be found in languages that have been argued to allow backward control, such as Malagasy, Greek, or Romanian, where the variation between forward and backward control probably reflects different topic-focus articulations (for references and more data see Landau 2013: 102). Landau, based on Monahan (2003), also points out that the properties of certain Korean obligatory control constructions are very similar to the Hungarian sentences in (3): long-distance reflexives have an exhaustive focus interpretation bound by a local controller in OC contexts (8).

(8)   Korean (Landau 2013:118(209a))

        *Inho$_i$-ka   Jwuhi$_j$-eykey PRO$_{j/*i}$ / **caki$_{j/*i}$-ka** cip-ey   ka-la-ko   mal-ha-yess-la.*
        Inho-nom Jwuhi-dat   self-nom   home-loc go-imp-c tell-do-pst-dc
        'Inho told Jwuhi to go home.'

The shared property of these constructions relevant for our present purposes is that control interacts with typical left peripheral processes; these cases are not clear instances of backward control, but rather control cases interacting with scope and/or information structure.

3   Further Data: Nominative and Dative Parallels in Hungarian

Hungarian is known as one of the languages that "wear their LFs on their sleeve". The sentence pairs in (9) and (10) show this at work, irrespective of the source of case in the sentences: in the (a) sentences the *only*-DPs are in the scope of negation,

hence appearing in the left periphery of the infinitive, whereas in the (b) sentences *only*-DPs take scope over negation which necessitates a pre-negator position in the sentence. Notice the optional person and number agreement on the infinitive suggesting that the source of dative case is the infinitival clause.[5]

(9) a.=(6a) *Nem akar-nak   csak a fiúk   büntetés-t   kap-ni.*
           not   want -3PL only the boys.NOM punishment-ACC get-INF
           ' The boys do not want it to be the case that only they are punished.'
    b.   *Csak a fiúk   nem akar-nak   büntetés-t   kap-ni.*
           only the boys.NOM   not   want -3PL   punishment-ACC get-INF
           ' It is only the boys who do not want to be punished.'

(10) a.=(7)   *Nem kell   csak a fiúknak   büntetés-t   kap-ni(-uk).*
           not have.to only the boys-DAT punishment-ACC get-INF-3SG
           'It is not the case that only the boys have to be punished.'
    b.   *Csak a fiúknak   nem kell   büntetés-t   kap-ni(-uk).*
           only the boys-DAT not have.to   punishment-ACC get-INF-3SG
           'It is only the boys who do not have to be punished.'

In order to account for (9a) we need to be able to combine control and focusing. The important background information on Hungarian focus is that it has a designated position directly preceding the verb, a FocP, where *csak* 'only'-phrases obligatorily have to move.[6] As for control, there are different accounts on the market. Let us consider two of the mainstream approaches in line with Minimalist assumptions: one is in terms of a PRO constituent controlled by a matrix argument as the empty subject of the infinitival clause (e.g. Landau 2004); the other, the movement theory of control, assumes a trace left after theta-driven movement creating a chain with two theta-roles (Boeckx et al. 2010; Hornstein 1999). While identifying the conditions for when and especially how to pronounce a PRO c-commanding its controller is not without serious problems, the movement theory of control offers a more straightforward answer to the problem raised by the need to pronounce a DP in the lower clause. Under the movement theory of control, lower DPs can also be pronounced if the need arises. Following Bartos (2006) I assume this to be the case in the constructions under discussion triggered by information structure considerations. The difference between Bartos (2006) and the present proposal is my emphasis on the need to distinguish clear cases of control and

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[5]The optionality of the inflection on the infinitive is the result of the obligatory overtness of the subject due to focusing, see fn. 2 as well.

[6]Though the movement of *is* 'also'-phrases to the left periphery is optional, and, as a result, these DPs could also be in a postverbal position in the matrix clause, Szabolcsi's tests including the interpretation of the DPs suggest an infinitival position. For this reason we are going to treat *only*-DPs and *also*-DPs in a uniform fashion in these sentences.

control interacting with the left periphery (which backward control often turns out to be). Bartos's analysis can be extended to cover a number of constructions not discussed or marked as marginal in his paper including sentences where the matrix clause contains an overt subject of its own. Bartos's proposal complemented by a mechanism accounting for the doubling of constituents targeting different positions in the left periphery leads to a more explanatory account of these special types of backward control phenomena both for Hungarian and cross-linguistically. In Hungarian the trigger for spelling out the lower copy is the scope rigid property of the language. Hence, following Bartos, I adopt the structure in (11) to account for the construction in question.

(11)   ~~Mari~~ nem   akar-ø   [csak Mari   úsz-ni].
                   not   want-3SG   only Mary.NOM   swim-INF
         'Mary does not want it to be the case that only she swims.'

The movement theory of control offers a natural way of accounting for the sentences containing dative and nominative DPs in a parallel fashion: in both of the cases we have DPs pronounced in different positions contingent on LF properties. The difference lies in the nominative construction containing theta-driven movement from the infinitive to the higher clause.

In order to provide independent support for the proposed structure in (11) let us consider other related constructions. Sentence (12b), suggested by den Dikken (p. c), contains a dative DP that is not associated with the infinitival clause as shown by the ungrammaticality of inflected infinitival forms.[7] Importantly, this sentence is uniformly regarded as grammatical by native speakers, there is no variation in grammaticality judgements. Again, what we find is that different word orders can be used to reflect the by now expected differences in scope interpretation and of course we would like to account for the data in a similar vein. Again, the movement theory of control offers the possibility for an explanation, where which DP gets spelled out is contingent on the scope interpretation of the sentence on one condition: it has to be demonstrated that the DP can move out of the infinitival clause into the dative case position (Marcel den Dikken, p.c.).[8] Notice that dative case cannot be licensed by the matrix T either; the possessive noun marked for the person and number features and the dative DP agreeing with it are not in a c-command relationship in (12b). It is also possible to have pronounced subjects in both of the clauses with a dative focused pronoun in the infinitival clause, where the higher DP functions as the topic of the sentence, and the lower DP is the focus of the infinitival clause (12c). This leads to the conclusion that the phenomenon is not contingent on Agree

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[7]Dative case comes from the possessive environment in the matrix clause as indicated in the glosses.

[8]In attempting to show that this is indeed the case we can follow Kornfilt (2007) who defines finiteness for both nominal and verbal domains. In Hungarian, dative subjects surface both in possessive DPs and inflected infinitival clauses, the source always being agreement.

with matrix T, and, as a result, the LDA account does not cover all the relevant cases.

(12) a. *Csak nekem   nem áll szándék-om-ban   bus-szal   men-ni/*-nem.*
          only I.DAT   not stand intention-my-in   bus-with   go-INF/INF1SG
          'It is only me who does not intend to go by bus.'
      b. *Nem áll szándékomban csak nekem busszal men-ni/*nem.*
          not stand intention-my-in only I.DAT bus-with go-INF/INF1SG
          'I do not intend to be the only person who goes by bus.'
      c. *Péter-nek nem áll szándékában csak neki   busszal men-ni/*-e.*
          Peter-DAT not stand intention-his-in only he.DAT bus-with go-INF/INF3SG
          'Peter does not intend to be the only person who goes by bus.'

The pattern in (12c) can be observed in the nominative constructions as well, such as sentence (13) introduced earlier as (4b). The lexical DP here is also understood as the topic of the sentence, with the *only*-DP functioning as the focus of the infinitival clause in the scope of negation.

(13)=(4b) *A fiúk   nem akarnak csak ők   büntetés-t   kap-ni.*
           The boys-NOM not want   only they.NOM punishment-ACC   get-INF
           'The boys don't want it to be the case that only they get punished.'

4   Details of the Proposal

In order to account for the data presented above, we need the following ingredients in our analysis: (i) a scope-sensitive component, and (ii) a way to account for how one DP can appear in two positions. In line with this, I argue for an account following Bobaljik and Wurmbrand's (2012) LF-first approach claiming that a Scope Transparency Principle determines word order in the languages of the world, where scope rigidity depends on whether a language allows (scope-driven) scrambling. Importantly, LF is claimed to be sensitive to both scope and information structure properties. LF-driven ordering often generates cases when a DP is spelled out more than once in different roles, either in different clauses, like in some of our infinitival constructions, or potentially even within one and the same clause (see later in (18)). The proposal has important implications for restructucturing as well, as discussed in Szécsényi (2017b).

4.1   Control and the Left Periphery

In the constructions in question a biclausal structure needs to be projected with the infinitive also projecting a left periphery, which has been argued for on independent

grounds for Hungarian infinitival clauses (Komlósy 1992; Dalmi 2005; Szécsényi 2009a, b).[9] After the projection of this biclausal structure, the subject of the infinitive moves to the matrix clause if necessary. The trigger for this movement can have different sources depending on the construction in question. (i) When the subject DP is nominative, according to the Movement Theory of Control the infinitival clause does not contain a big PRO. It is the lexical DP that is base-generated there, which undergoes θ-driven A-movement to the higher clause where the predicate can assign its theta-role to it.[10] This way the moved DP is also assigned nominative case by a φ-complete T head. (ii) When the DP is assigned (dative) case in the infinitival clause it potentially undergoes (A-bar)-movement to the left periphery of the infinitival or the matrix clause for information structure considerations. What follows this is scope and information structure driven spell-out. In both cases, when the *only*-DP is in the scope of negation, it is spelled out in the infinitival clause; when it takes scope over negation it is pronounced in the left periphery of the finite clause. This process is the same for all the sentence types introduced irrespective of the source of case.

Now let us consider the different construction-types one by one with the respective examples. The template in (14) shows the different dative patterns: the DP is assigned case and theta-role in the infinitival clause and then moves to the left periphery of the infinitive if it is required (e.g. it is the part of an *only*-DP). If movement stops here, the sentence has a lexical DP subject in dative case as the focus in the infinitival clause (14'a). Further A-bar movement is needed if the DP takes scope over the matrix negation (14'b) or functions as a topic. If there is both a matrix topic and an infinitival focus in the sentence, both of them are spelled out (14'c). While Agree does have a role in case assignment, it is not what determines which of the copies of the subject DP gets spelled out.

Infinitives with dative only-subject DPs:

(14) $[_{\text{TopP}} \text{DP}_{\text{DAT}} [\text{Foc/Neg} [\underset{-\varphi}{T_{+fin}} [_{\text{CP}} \text{only DP}_{\text{DAT}} [_{\text{TP}} \text{DP}_{\text{DAT}} \underset{+\varphi}{T_{-fin}}]]$

                                                           |_____| |_____|
                                                              A-bar chain   Agree

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[9] The general observation concerning the peripheries of finite and infinitival clauses is that even constituents of the infinitival clause have a more natural position in the left periphery of their selecting clauses (i). We tend to find left peripheral elements in infinitival clauses when something (such as scope considerations) forces the appearance of a constituent there.

(i)   Péter HOLNAP szeretne   találkozni Mari-val
         Peter tomorrow would.like meet-INF Mary-INS
         'Peter would like to meet Mary TOMORROW.'

[10] For an extensive discussion of theta-driven movement see Boeckx et al. (2010).

14)   a.   *Nem kell   csak a fiúk-nak   büntetés-t   kap-ni(-uk).*
              not   have.to   only the boys-DAT   punishment-ACC   get-INF-3SG
              'It is not the case that only the boys have to be punished.'

      b.   *Csak a fiúknak   nem kell   büntetést   kap-ni(-uk).*
              only the boys-DAT not   have.to   punishment get-INF-3SG
              'It is only the boys who do not have to be punished.'

      c.   *A fiúk-nak   nem kell   csak nekik   büntetés-t   kap-ni(-uk).*
              The boys-DAT not   have.to   only they.DAT punishment-ACC   get-INF-3SG
              'It is not the case that only the boys have to be punished.'

Infinitives with nominative subjects can have two types subject to speaker-variation. In one variety nominative infinitival *only*-phrases can only be pronouns (15), in the other case lexical DPs are also allowed (16). The pronoun-only version is given in (15). Under this scenario the DP is only assigned a theta-role in the (uninflected) infinitival clause. Movement to the finite clause is driven by theta-role considerations, but this is also the environment where the DP can be assigned case. In a well-behaved sentence such as (15'a) the DP can be pronounced in the finite clause as a focus with scope over the negation in the sentence. Since Hungarian is a pro-drop language, a non-focussed pronominal subject can be an unpronounced *pro*. The interesting case is the one where the *only*-phrase is in the scope of matrix negation, when the DP is pronounced in the focus position of the infinitive (15'b). The source of nominative case is still the finite T resulting from the Agree relation between T and the DP in its specifier, but this time it is a lower DP in the chain that is pronounced. The restriction on the pronominal form in the infinitival clause is due to the presence of a *pro* in the matrix clause: it follows from simple binding considerations.[11]

Infinitives with nominative only-subject DPs:

(15)   *Version with pronouns (Lexical DP/pro in higher clause):*
      [$_{TopP}$ DP$_{NOM}$/*pro* [Foc/Neg [DP$_{NOM}$ T$_{+fin}$ [$_{CP}$ only pron [$_{TP}$ DP$_{NOM}$ T$_{-fin}$]]]
                                └──────┘ +φ   └──────────────┘   −φ
                               Agree   A-bar chain

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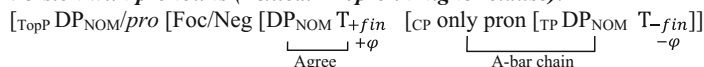
[11]As Bartos (2006) notes, (16) and (17) potentially involve what could be identified as a case of improper movement: moving a constituent to an A-bar position first in the left periphery of the infinitival clause, then to an A-position in the matrix clause. However, as discussed in Bartos, improper movement was defined within Government and Binding Theory under assumptions completely different from the Minimalist approach Hornstein's Movement Theory of Control is based on. It is far from obvious how the restrictions on movement carry over under the minimalist assumptions concerning movement (i.e. the copy theory of movement), if at all. Actually, as pointed out by Bartos as well, the ban on what is called improper movement could already be questioned on empirical grounds in the GB era. Brody (1993) claims that *easy to please* constructions actually involve this kind of movement.

(15') a.   *Csak a fiúk*   *nem akar-nak*   *büntetés-t*   *kap-ni.*
         only the boys   not want -3PL   punishment –ACC   get-INF
         ' It is only the boys who do not want to be punished.'

       b.   (*A fiúk*)   *nem akarnak csak ők*   *büntetés-t*   *kap-ni.*
         The boys-NOM   not want   only they.NOM punishment-ACC   get-INF
         'The boys don't want it to be the case that only they get punished.'

(16)   **Version with lexical DPs (no lexical DP or pro in higher clause):**
Neg [DP$_{NOM}$ T$_{+fin}$ [$_{CP}$ only DP$_{NOM}$ [$_{TP}$ DP$_{NOM}$ T$_{-fin}$]]
      |_____|+φ |_____| −φ
        Agree   A-bar chain

(16') =(6a) *Nem akar-nak*   *csak a fiúk*   *büntetés-t*   *kap-ni.*
           not want -3PL   only the boys punishment-ACC   get-INF
           'The boys do not want it to be the case that only they are punished.'

    The question regarding the different grammars that account for this variation is particularly interesting from a cross-linguistic perspective. The version in (15) with the infinitival control subject being restricted to a pronominal form is widely attested among the null-subject languages, while a lexical DP in the same position is ruled out. Barbosa (forthcoming) discusses European Portuguese (EP) data and derives the restriction on pronouns from the postverbal position of the DPs in the constructions in question, a property shared by a number of Romance null-subject languages. Concerning the Hungarian data she states that the only difference between the Romance null-subject languages and Hungarian is in the obligatory movement to the preverbal focus position that *only*-phrases have to occupy in Hungarian, but the conclusions actually carry over. Even if Barbosa's proposal turns out to account for the Hungarian data with the same restriction on pronouns, it is clear that we need a different account for the cases with lexical DP subjects in the infinitival clause. My assumption is that the obligatory movement to the FocP in the left periphery actually makes a difference. For Barbosa the exhaustivity interpretation of the postverbal DP follows from the predicative nature of the postverbal subject enforced by the presence of D in T proposed for the consistent null-subject languages. In Hungarian it is the FocP, which is identified to actually be a PredP in É. Kiss (2006), that leads to the exhaustive reading of constituents that are not restricted to the subject. Importantly, our *only*-DP subjects also end up in this position above T. I assume that it is this movement to the left periphery that can lead to different grammars, one leading to the restriction on pronouns, the other allowing for lexical DPs. Following a suggestion made by an anonymous reviewer I propose to exploit the articulated left periphery of Hungarian infinitival clauses hosting projections including TopPs. While in the typical case the lower copy

checks a focus feature within the infinitival, and a topic (or a different) feature in the matrix left periphery, for some speakers both the topic and the focus can be pronounced in the infinitival clause (potentially in the form of one single DP) leading to the pronunciation of the full copy in the constructions under investigation here.[12] Working out whether the proposal is on the right track is a challenge I will gladly undertake in the future.

4.2 Spelling Out Multiple DPs

In order to account for why DPs can be pronounced in multiple positions in the same sentence I argue again that information structure considerations are involved. Under the MTC the presence of DPs boils down to which DP or DPs get to be pronounced. This is subject to cross-linguistic variation: when there is more than one copy pronounced we seem to need different restrictions on how to pronounce them; in some languages (San Lucas Quiaviní Zapotec, Hmong) control is copy-control, elsewhere only (different types of) pronouns are allowed subject to a number of conditions, and in the majority of languages the copy in the infinitival clause cannot be pronounced at all. What the copy theory of movement needs is an account of how and when to pronounce multiple copies.

A potential way of implementing multiple copy spellout is discussed in Livitz (2013),[13] where it is proposed that in typical control constructions "the minimal content of a referentially dependent pronoun will ensure its silence because it is a defective goal relative to any φ-probe" since it contains only the subset of the features of its controller. To account for the type of data that are discussed in the present paper as well, the following claim is made: "where a silent referentially dependent pronoun alternates with an overt one, a functional head with its own formal features takes the minimal pronoun as a complement. It is this larger phrase that will serve as the goal for a φ-probe, and in this Agree relation the larger phrase will not be a defective goal" (Livitz 2013: xi). However, in order to cover all the relevant cases Livitz has to assume the same Agree-based process in the case of adjunct control (Livitz 2013: 60), a claim I find rather hard to justify, among other reasons because of the fact that the pattern discussed in the present paper is confined to complement clauses. Also, we have seen how sentences like (12), which lack the structural condition of c-command between the constituents that are supposed to agree, challenge the central role Agree plays in the model. Szécsényi (2017a) proposes an alternative analysis with a potentially shared component: when the pronoun in the infinitival clause has features sufficiently different from the subject

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[12]Such an analysis would also account for the ameliorating effect of frame setting modifiers (cf. footnote 3).

[13]I am grateful to one of my anonymous reviewers for drawing Livitz (2013) to my attention.

of the finite clause, it is spelled out *provided that it can be* in the given domain[14] (the infinitival clause in the case of control) in the language in question. For Hungarian this means the following: since infinitival clauses are CPs, foci can appear in their left periphery, where a focus feature (as opposed to having different theta-roles and Case) renders the DP in question sufficiently different from its controller. It is identifying what exactly it means to be sufficiently different for members of a movement chain that can be based on the approach of Livitz (2013). More than one member of a chain can be pronounced on condition that they have different information structure roles[15] (both topic and focus either in one and the same clause or in different clauses), in which case only the first DP can be lexical in line with Principle C of Binding Theory. The point where my proposal diverges from Livitz (2013) is in the role Agree is supposed to play.

The sentence pair in (17) also indicates that something along the proposal in Livitz (2013) is on the right track, and Szabolcsi's analysis is in need of at least further refinements. If the LDA-based analysis were sufficient, we would expect neutral pronouns without *csak* 'only' to be possible elsewhere within the infinitival clause, but this is not what we find (Balázs Surányi, p.c.). We find the same restriction even in the dative cases in spite of the fact that the subject argument comes from within the infinitival clause itself: the dative pronoun is also restricted to the focus position.

(17) a. *A fiúk   nem akarnak   [büntetés-t   ők   kap-ni]
         The boys-NOM not want   punishment-ACC   they.NOM get-INF
         'The boys don't want it to be the case that only they get punished.'

      b. *A fiúknak   nem   kell   büntetést   kapni(-uk)   nekik.
         the boys-DAT   not   have.to   punishment   get-INF-3PL   they.DAT

In these sentences the pronouns in the embedded clause are not in positions where they can be associated with extra features, and, as a result, spelling them out is not licensed. While Szabolcsi (2009a, b) is right in pointing out that it is hard to tell postverbal matrix constituents apart from the ones appearing in the left periphery of the infinitival clause, indirect evidence, such as the ungrammaticality

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[14]Such a claim takes us back to the licensing conditions of lexical DPs in the infinitive discussed in the previous section concerning (16). Besides Barbosa's (forthcoming) account of the restriction on postverbal position, the lack of lexical DPs can also be the result of the lack of a TopP in the left periphery of infinitival constructions in the languages where they are excluded.

[15]Importantly, having different theta-roles is not sufficient.

of the pattern in (17) indicates that LF features indeed have a central role in making the construction grammatical.[16]

4.3 A Prediction of the Proposal

One of the central claims of the analysis proposed here is that left peripheral constituents typically surface in the infinitival clause if there is a good reason for it, such as being in the scope of an operator that blocks their movement to the left periphery of the matrix clause. As pointed out in footnote 9, the most natural position for a left peripheral phrase is in the finite clause, even when it belongs to the infinitive. One prediction this scope-based proposal makes is that, in the absence of negation or a focussed constituent associated with the finite clause, the *only*-DP of the infinitive can surface in the focus position of the higher clause potentially leading to ambiguity with respect to whether the focused DP is interpreted in the higher clause or the lower one. Sentence (18) shows that this prediction is actually borne out (Balázs Surányi, p.c). Notice also that in this case the matrix clause contains both the topic and the focus constituent with the same referent.

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[16]Based on Reinhart (1983), which advocates the view that principle C is a pragmatic constraint that can be violated, one of the anonymous reviewers asks whether it is possible to have two full DPs in these sentences along the lines shown in (i). If it is the case, this would argue in favor of the movement approach. This is clearly impossible, but I assume that it is due to a number of independent interacting constraints.

(i)   Peter (top) doesn't want only Peter punishment-INF get

I do not have an account of the (lack of the) data, but two observations may turn out to be a good starting point: (a) the Hungarian verb *akar* 'want' can take a finite or an infinitival complement; (b) when *akar* takes an infinitival complement, we are dealing with obligatory control with an obligatory *de se* interpretation. If such a construction can be grammatical at all, this excludes the infinitival version of *want*-sentences. Marginally it may be possible to have a finite version of (i). There certainly are native speakers for whom (iia) is grammatical, as opposed to (iib), which is never acceptable. (iia) can be accepted under highly restricted pragmatic conditions: the speaker actually has to be Peter himself. Such an utterance results in some kind of a distancing effect (something similar to what we find in the English sentence *If nobody else does, I will send me a Valentine's day card*), which can be argued to be different from (though not necessarily incompatible with) the *de se* requirement of the infinitival version.

(ii)   a.   %Péteri nem akarja, hogy csak Péteri kapjon büntetést.
                       Peter not want   that only Peter get-SBJV punishment-ACC
                       'Peter does not want it to be the case that only Peter gets punished.'
         b.   *Péter nem akar csak Péter büntetést kap-ni.
                       Peter not want only Peter-NOM punishment-ACC get-INF

.

(18) *A*   *fiúk$_i$*   *csak ők$_i$*   *akarnak*   *este*   *buliz-ni.*
      The   boys   only they.NOM   want   in.the.evening   party-INF
      'It is only the boys who want to party in the evening.'
      OR
       'The boys want it to be the case that only they party in the evening.'

Finally, another argument of Szabolcsi's (2009a, b) for the independence of the nominative infinitival subject should also be addressed. Szabolcsi claims that sentences like (4) (repeated here as (19)) support the proposal about the independence of the nominative subject. It has to be pointed out that the interpretation of the nominative infinitival subject is a bound variable interpretation, the same interpretation we have without an overt subject in ordinary control environments, this time combined with a focus interpretation. Our proposal according to which the two subjects are the doubly spelled-out variants of one nominative DP as required by the interpretation of the sentence can thus be maintained.

(19) = (4)   *Senki*   *nem*   *akart*   *csak ő*   *le-ül-ni.*
             Nobody   not   wanted   only he/she.NOM   down-sit-INF
              ' Nobody wanted it to be the case that only he/she takes a seat.'

Based on these observations we can conclude that a movement based analysis seems to be superior to the LDA proposal once it is complemented by conditions on spelling out multiple copies of the DP.

5   Conclusion

This paper has discussed infinitival clauses with nominative, dative and zero subjects arguing that infinitival clauses with nominative subjects can be treated in a parallel fashion with the more standard cases under the assumption that the construction is not a clear instance of backward control but the result of information structure considerations. Assuming the copy theory of movement and LF-driven spell-out, the differences in overtness can be accounted for in a straightforward manner resulting in a uniform analysis of the different patterns containing nominative or dative subjects. What seems to lie at the heart of multiple spell-out is the difference in the LF features of the DPs in the different positions of potentially, but not necessarily different clauses: when the embedded DP ends up as containing features other than the featural subset of the controller DP, it can be spelled out if the language in question has the resources to do so. The differences between Romance null subject languages and Hungarian has been proposed to result from the different restrictions on the position of the infinitival subject in these languages: postverbal versus left peripheral.

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Part IV
Morphosyntax and Phonology

Sounds Are Not Equal, but Nor is All Silence

Jaklin Kornfilt

Abstract This paper has three aims: 1. To show that two types of silent elements, small *pro* and *PRO*, have different syntactic properties (at least in certain languages, exemplified here by Turkish); 2. Where in a given syntactic context either an anaphoric or a pronominal element could potentially show up, the anaphoric element is preferred, irrespective of whether these elements are phonologically realized or not. The second point has also been made for English and French by Bouchard (1983) and (1985), under the label "Elsewhere Principle (EP). Bouchard's proposal, based on the notion of "related construction" for the application of the EP, will be reduced to "identical construction", at least for Turkish. Partee's (1975) "only-test" will be used to support a characterization of PRO as a silent element whose features are different from those of (straightforward) pronouns, in being anaphoric. 3. A rather functionalistic principle of laziness, dubbed "Avoid Pronoun" in Chomsky (1981), which imposes the choice of PRO over an overt pronoun when either element is possible in a given syntactic context, also plays a role in determining certain instances of ill-formedness, especially where the EP has nothing to say.

Keywords Avoid pronoun · Elsewhere principle · Anaphor
Pronoun · PRO · Pro

Abbreviations

3.PL	Third person plural
3.SG	Third person singular
ABL	Ablative
ACC	Accusative
DAT	Dative
FUT.IND	Future indicative

J. Kornfilt (✉)
Department of Languages, Literatures and Linguistics, Syracuse University,
305 HB Crouse Hall, Syracuse, NY 13244, USA
e-mail: kornfilt@syr.edu

GEN	Genitive
IND	Indicative
INF	Infinitive
PASS	Passive
PL	Plural
PROG	Progressive (when not combined with any tense, used as present progressive)
SG	Singular
SUBJNCT	Subjunctive

1 Introduction

This paper has three aims: 1. To show that two types of silent elements, small *pro* and *PRO*, have different syntactic properties (at least in certain languages, exemplified here by Turkish); 2. Where in a given syntactic context either an anaphoric or a pronominal element could potentially show up, the anaphoric element is preferred. This is true irrespective of whether the elements in question are phonologically realized or not. The second point has also been made for English and French by Bouchard (1983) and (1985), under the label "Elsewhere Principle (EP)"; here, the validity of this generalization is confirmed by Turkish, following Bouchard in his attempt to motivate this version of the EP by deriving it from its phonological precursor, as proposed originally in Kiparsky (1982) and (1983). Bouchard's proposal, based on the notion of "related construction" for the application of the EP, will be reduced to "identical construction", at least for Turkish. In addition, Partee's (1975) "only-test" will be used to support a characterization of PRO as a silent element whose features are different from those of (straightforward) pronouns, in being anaphoric.[1] 3. A "soft", rather functionalistic principle of laziness, dubbed "Avoid Pronoun" in Chomsky (1981), which imposes the choice of PRO (more about this later) over an overt pronoun when either element is possible in a given syntactic context, also plays a role in determining certain instances of ill-formedness, especially where the EP has nothing to say.

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[1]One of the anonymous referees criticizes the use of Partee's test in this study, given how old Partee's article is, and also based on the fact that it was also used in Kornfilt (1987). Nonetheless, the continued use of of this test with correct attribution is important: The test is not as widely known as it deserves, and even work such as Bouchard's which has similar ideas and also uses this test does not give due credit to Partee.

2   The APP and the EP

An untypically informal, or even functionalistic, proposal in the literature in formal syntax which refers to (the absence of) phonological features is Chomsky's (1981) "**Avoid Pronoun Principle**" (**APP**), whose formulation is essentially, "Avoid pronoun". This statement is to be understood as imposing "a choice of *PRO* over an overt pronoun where possible". Chomsky (1981: 65), and a pair of examples illustrating how the APP would apply is as follows:

(1)   a. John_i would much prefer [PRO_i going to the movie].
         b. John_i would much prefer [his_{*i/j} going to the movie].

Note that the version of (1b) without co-indexation between the overt pronoun in the embedded clause and the matrix subject is well-formed. Thus, the APP dictates a choice of a silent subject in the embedded clause over the choice of an overt pronoun *only* for the coreferential reading: given that *PRO* in (1a) is coreferential with *John*, that same coreferential reading is excluded for (1b), via the APP. In other words, the APP is not a principle that governs *absolute* well- or ill-formedness, but instead is viewed as a principle which dictates the *best* expression of a particular semantics, namely that of coreference.

The APP, then, is a principle of laziness, which teIls us to avoid pronouncing a pronominal element, if the language has available a "silent" pronominal element in the same context. In other words, the nomenclature "Avoid Pronoun" is somewhat misleading; what is avoided is not just *any* pronoun, but an *overt* pronoun.

Note that in the GB model of 1981, the silent subjects of *finite* clauses in Null-Subject languages were characterized as *PRO* rather than *pro*, i.e. rather than the silent *pure* pronominal as posited in later developments in syntactic theory. For those instances of a silent subject pronoun in non-infinitival clauses, the formulation of the APP above might be rephrased today as "a choice of *PRO* or *pro* over an overt pronoun where possible". Although Chomsky (1981)'s APP did focus on PRO as we still know it, i.e. as a silent subject which undergoes Control in some way, instances of a silent subject pronominal in a finite clause were not excluded. In Kornfilt (1984) and in later work, I extended the application of the APP to such instances of *pro* explicitly.

Bouchard (1983, 1985) offers some conceptual reservations against the APP as sketched above under its interpretation as a *syntactic* constraint referring to *phonological* features. Those reservations are mainly based on general considerations about keeping the components of the grammatical model independent from each other (and thus not basing, as far as possible, the explanation of syntactic phenomena on non-syntactic properties, such as phonological rather than syntactic features), and more specific considerations, such as motivating the existence of empty categories in syntax via their *syntactic* properties, which, in the best case, are the same properties as those of their phonologically overt counterparts. For example, attributing different properties to silent and overt pronouns would run counter to such reasoning—and this is exactly what the APP does.

While these points are well taken, the model of grammar has changed over the years; we now have entire areas of research which aim at an understanding of interface phenomena, and some of those concern exactly the interplay between syntax and phonology.

What is, in my view, more interesting about Bouchard's work criticizing the APP is the fact that it also points out empirical problems for the APP, via examples where either *PRO* or an overt pronoun can show up in identical constructions and where the overt pronoun can co-refer with a non-local antecedent, just as *PRO* can:

(2)   a. [PRO_i /his_i going to the movies] always relaxes $John_i$.
        b. $John_i$ thinks [that [PRO_i /his_i going to the movies every week] would be
            fun]. (Bouchard 1985: 474, examples (17a) and (17b).)

If the APP is given up. however, the task remains to account for the facts in (1). For that purpose, Bouchard proposes a so-called Elsewhere Principle, which "can be seen as a corollary of an Elsewhere Principle in the spirit of Kiparsky (1982)"". (Bouchard 1983, p. 128; Bouchard 1985 refers to a similar notion, this time in Kiparsky 1983):

(3) **Elsewhere Principle (EP)**: In two closely related constructions, do not put a pronoun in a position in one construction where an anaphor is possible in the same position in the other closely related construction, that is, in a position where the pronoun will be interpreted as coreferential with an NP that can Bind that position (…) in the other construction." (Bouchard 1985: 475).

Kiparsky's Elsewhere Principle imposes a particular ordering of rules, such that the narrower, more specific rule precedes the application of a more general rule; I will return to this point later. For Bouchard, the interpretation of an anaphor, being restricted to co-referentiality, is narrower and more specific than the interpretation of a pronoun, which (potentially) can be understood as co-referential with an antecedent, but could also be free in its reference. Thus, the choice of an anaphor in a given syntactic context should precede the choice of a pronoun which is co-referential with the same antecedent, in an identical or, according to Bouchard, a "related" syntactic context. (I will return to the notion of "related context" or "related construction". So far, we have only seen pairs of examples with identical syntactic contexts.)[2]

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[2]At first glance, the well-formedness of the examples in (2) with overt pronominal subjects appears to constitute a problem for Bouchard's EP, i.e. not just for Chomsky's APP. However, for Bouchard, *PRO* is not an anaphor in the examples in (2); this, then, takes care of this particular problem. I characterize Bouchard's version of Binding Theory (which is supposed to subsume Control) with respect to PRO as follows: *PRO* is Bound by its antecedent if it is locally controlled, i.e. if the controller c-commands *PRO* and is located in the immediately higher clause. Neither condition is met in (2), but both are met in (1a). Hence, *PRO* in (2) is not an anaphor for Bouchard, and the EP thus doesn't rule out a co-referential index on the pronoun in (2b). Because both of the

Based on Turkish data, I hope to show in this paper that one needs both of these "principles", i.e. each one is necessary, but neither is sufficient by itself. The APP can be shown to correctly distinguish between free instances of *pro* versus bound instances of overt pronouns, the latter unable to co-refer with a potential antecedent —contrasts easily captured by the APP where the EP has nothing to say. On the other hand, there are instances where the EP makes the correct distinction, and where the APP has nothing to say, e.g. where *PRO* (i.e. an empty category which is an anaphor) trumps *pro* (i.e. an empty category with exclusively pronominal features), in addition to straightforward instances where an *overt anaphor* seems to be non-locally bound (in apparent violation of Binding Principle A), while an *overt pronominal* in the same position is disjoint from a potential antecedent.

For both principles, it will be crucial to propose at least a working definition of "similar" or "related, corresponding" constructions; as part of the proposal, the relationship between agreement and binding will be investigated. What I will aim at will be an understanding of "related construction" which is as close as possible to "identical construction".

Thus, the aims of this study are as follows:

1. Finding further evidence in favor of the EP, for instances where the APP (i.e. the phonological realization of either a pronoun or an anaphor) is irrelevant, as well as finding instances of disjoint reference for which the EP is irrelevant, but where the APP offers some insight;
2. Discussing points of refinement and/or parameterizaton of the notion "related construction" (and reducing it, as much as possible, to the notion of "identical construction", as just mentioned), thus evading problems which would otherwise be damaging to the EP;
3. Show that the two types of silent subjects, widely represented as *pro* (a pronominal subject in fully finite, tensed clauses) and *PRO* (a silent subject of infinitival and, in some languages such as English, of gerundive clauses) differ in their syntactic behavior.

3   The EP in French, and the Notion of "Related Construction"

If the contrast in (1), and, specifically, the ill-formedness of (1b) under a co-referential reading is to be explained via Bouchard's EP (whereby *PRO* in (1a) is an anaphor, given that it is "bound" for Bouchard as explained above, and for more traditional analyses, given that it is Controlled) rather than the APP, we might say that the notion "related construction" can be viewed as "identical construction": in

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conditions apply in (1a), the *PRO* is an anaphor there; hence, the EP does apply, ruling out a coreferential indexation in (1b).

both (1a) and (1b), the embedded clause that hosts the relevant subject, i.e. an anaphor versus a pronominal, is a gerundive clause.

However, the EP has been called upon to account for contrasts involving non-identical embedded clauses, as well[3]:

(3)   a. *Je veux [que [j'aille   au   concert].
            I   want that   I+go (SUBJNCT)   to+the concert
            '*I want that I go to the concert.'
       b. je veux [PRO aller   au   concert].
            I   want PRO go (INF) to+the concert
            'I want to go to the concert.' (Bouchard 1985: 475, examples (19a) and (19b).)

For the EP to be able to account for this contrast, the infinitival clause in (3b) and the subjunctive clause in (3a) have to qualify as "related constructions". Whether the APP, as originally conceived, would also be able to account for this contrast is unclear; it might be able to do so, if the infinitival clause is viewed as a version of the subjunctive clause.

That criteria related to mood must be involved can be seen, when examples such as (4), where the embedded clause is indicative, are considered, as well:

(4)   Je sais [que [**j'**irai   au   concert]].
        I   know that I+go (IND) to+the   concert
        'I know that I will go to the concert.'

For the EP to be able to account for all three examples, it is important that while (3a) and (3b) qualify as "related constructions", (3b) and (4) do not, given that in (4), the pronominal subject of the embedded clause does not give rise to ill-formedness, despite the availability of the anaphoric subject in (3b), while a similarly pronominal subject in (3a) does cause ill-formedness. Bouchard motivates the "close related-ness" of subjunctives and infinitives by referring to their closely related "temporal interpretation in that both express 'unrealized tenses' (cf. Bresnan 1972)" (Bouchard 1983: 130). A similar view is also adopted by Stowell (1982) and Martin (2001), where the event time of Control infinitivals is said to be, in some sense, unrealized or future with respect to that of the matrix. Based on this point of view, I assume that indicatives, having "realized tenses", would not constitute constructions that are closely related to infinitives (nor to subjunctives). Note that similar considerations can apply to the APP, which could thus account for the contrast between (3a) versus (3b), without being challenged by the well-formedness of (4).

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[3]The translations of these examples are mine, because the author did not give any. I changed the existing glosses somewhat, so as to show the verbs' status as subjunctive versus infinitive.

We are now ready to turn to Turkish, so as to see whether corresponding examples can contribute to an understanding of the notion of "related construction", as well as to issues relating to contrastive behavior between anaphoric versus pronominal embedded subjects, and to the phonological realization of such subjects. In order to establish the EP as a necessary (if insufficient) principle, we will first look at instances where the APP as generally conceived is irrelevant, i.e. where an anaphoric subject is chosen over a pronominal subject, but where the phonological features of those subjects are the same: they are either both overtly realized, or are both lacking phonological features. I start with a discussion of the latter.

4   Two Kinds of Empty Categories in Turkish, and the EP

4.1   Pro *Versus* PRO, *and Complete, Partial, and no Overt Agreement*

In Turkish, too, infinitival clauses have been viewed as a subset of subjunctive clauses, with good reason: they have similar semantics with respect to irrealis modality, and thus fit the characterizations by Bresnan, Stowell, and Martin, referred to above. In addition, the matrix verbs that select for infinitival clauses are a subset of verbs which select for subjunctive embedded clauses. Thus, it is reasonable to view subjunctive and infinitival clauses as related constructions in the sense of Bouchard. Therefore, I start with describing and illustrating nominalized subjunctive as well as infinitival clauses in Turkish, with the intermediate aim of characterizing these two embedded clause types as merely two realizations of one and the same structure, thus reducing the notion of "related construction" to that of "identical construction". As a matter of fact, this is how I have viewed nominalized clauses with the nominalizer *-mA*[4] on the predicate (i.e. nominalized subjunctive clauses) in Turkish, referred to as non-factive in Lees (1963) and (1965), claiming that the infinitival clause on *-mAK* is a subset of such subjunctives (cf., for example, Kornfilt 1987).

I start with a description of infinitival embedded clauses in Turkish.

Turkish has embedded clauses whose predicate is traditionally called an infinitive; their subject position is empty, and the predicate does not carry any agreement morphology. The matrix verbs that can take such infinitival clauses are generally verbs which are Control verbs cross-linguistically; (5) has an embedded infinitival clause (without any agreement on the embedded predicate), while the examples in (6) have embedded subjunctive gerundive clauses, with agreement morphology on the embedded predicate:

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[4]I follow general Turkological as well as generative practices when citing specific morphemes, by offering shapes of morphemes with capital symbols for underspecified sounds; if those sounds are vowels, the unspecified features will be filled in by vowel harmony; if they are consonants, their voicing will be determined by voicing assimilation.

(5)   Öğretmen-ler$_i$ [PRO$_i$ yarışma-yı   kaybet-mek]-ten   kork-uyor (-lar)
        teacher -PL PRO competition-ACC lose   -INF-ABL   fear-PROG (-3.PL)
        'The teachers are afraid of losing the competition.'

(6) a. Öğretmen-ler [öğrenci-ler-in yarışma   -yı   kaybet -me   -lerin]-den
        teacher-PL   student-PL-GEN competition-ACC lose   -SUBJNCT-3.PL-ABL
                         kork-uyor (-lar)
                         fear-PROG (-3.PL)
        'The teachers are afraid of the students' losing the competition.'

    b. Öğretmen-ler [öğrenci-ler-in yarışma   -yı   kaybet -me   -sin]-den
        teacher-PL   student-PL-GEN competition-ACC lose -SUBJNCT-3.SG-ABL
                         kork-uyor (-lar)
                         fear-PROG (-3.PL)
        Same translation as for (6a).

   Note that in (5), the infinitival clause has no subject agreement morphology on
the infinitival predicate (I shall return to this detail), while both (6a) and (6b) do
have such agreement morphology on the subjunctive nominalized embedded
clause. What is interesting about the pair of examples in (6) is that the plural
component of the third person plural agreement morphology, -lAr, is optional; that
component is present in (6a), and absent in (6b). The choice between the two forms
is up to the speaker's preference; in general, there seems to be a stronger preference
for the plural-less form as illustrated in (6b). Note further that this optionality is not
limited to nominalized embedded clauses; as illustrated by the root predicates of the
same examples, the plural component, also -lAr, of the third person plural subject
agreement morphology of non-nominalized, i.e. fully verbal clauses can also be
optionally omitted. The agreement morphology for first and second person plural
subjects does not allow such optionality, i.e. both the person and number compo-
nents of subject agreement are obligatory for both verbal and nominal agreement
morphemes when a first or second person plural subject is present.
   Let us now turn to examples corresponding to those in (6), i.e. with embedded
nominalized subjunctive clauses, but with silent subjects[5]:

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[5]The grammaticality judgments in the English translations are the ones in the Turkish examples
and may also fit English intuitions, but do not have to do so. Note also that not all Turkish native
speakers get the obligatory disjoint reference marked in (7a); some permissive speakers do allow a
coreferential reading in (7a) between the matrix subject and the subject of the embedded sentence;
however, even those permissive speakers state that the disjoint reading is the primary
interpretation.

(7) a. Öğretmen-ler_i [pro_{*i/j} yarışma   -yı   kaybet -me   -lerin]-den
      teacher-PL   pro   competition-ACC lose   -SUBJNCT-3.PL-ABL
                  kork-uyor (-lar)
                  fear-PROG (-3.PL)
    'The teachers_i are afraid of their_{*i/j} losing the competition.'

   b. Öğretmen-ler_i [pro_{*i/j[sg]} yarışma   -yı   kaybet -me   -sin]-den
      teacher-PL   pro   competition-ACC lose -SUBJNCT-3.SG-ABL
                  kork-uyor (-lar)
                  fear-PROG (-3.PL)
    'The teachers are afraid of his/her/*their losing the competition.'

Based on these examples, we arrive at two generalizations:

1. "Silent subjects" do not behave in identical ways syntactically: The silent subject in (5), analyzed as *PRO*, can only be interpreted as co-referential with the matrix subject; in other words, we have here an example of Subject Control, just as in similar constructions with embedded infinitival clauses in better-studied languages such as English, as we can see in the translation; on the other hand, the silent subject in (7a) is interpreted as disjoint in reference from the matrix subject, at least by speakers who are not permissive in this respect; even permissive speakers, however, prefer a disjoint reference reading over a co-referential reading between root and embedded subject in (7a). In other words, the silent subject which agrees fully with the overt agreement morphology on its local predicate, and which one would thus analyze as small *pro*, behaves as a corresponding *overt* subject in a language such as English.

2. Although the plural component of the third person plural agreement morpheme is optional in general when the local subject is overt, as we saw earlier in (6a) versus (6b), that component has to be present when the local subject is *pro*, as we see in (7a) versus (7b); in (7b), where the agreement marker on the embedded subjunctive predicate expresses only person, but not number, the silent subject of the embedded clause can only be interpreted as a third person *singular* subject; the third person *plural* interpretation is not available at all, irrespective of whether the subject might be interpreted as co-referential with or disjoint from the matrix subject. Why should an otherwise perfectly possible, and sometimes even preferred, instance of morphological optionality become completely unavailable when a silent subject is present? The answer is obvious: when that silent subject is *pro* and thus has to be licensed and identified with respect to both its person and number features. On the other hand, where the clause can have no agreement at all, it makes sense to identify the silent subject as *PRO*; however, we will look for additional evidence for the contrast between *pro* and *PRO* later on.

The discussion under 2 addresses the contrast between (7a) and (7b). What about the discussion under 1, and the contrast between (5) and (7a)? The answer, I suggest, is the EP: Where an anaphor (in Bouchard's sense), or an element with anaphoric features (in Chomsky's sense) is available in the same position as a

pronominal in two corresponding constructions, the anaphor trumps the pronominal. (I will return to the question of these constructions' qualification as related or corresponding ones, and will claim that they are essentially identical.) As far as "silent" anaphoric (i.e. *PRO*) versus pronominal subjects (i.e. *pro*) is concerned, this seems to be a "soft" condition, leading to preferential rather than strict judgments for permissive speakers of Turkish, while it is a "hard" condition for non-permissive speakers in this respect.

We will see later in this paper that similar contrasts can also be observed for overt anaphors versus pronominals in Turkish. Let us stay with silent subjects for the time being, and see if we can find some additional syntactic evidence for the two different silent subjects, i.e. contrasts between *PRO* and *pro*.

4.2 Partee's "Bound Variable" Facts and **PRO** Versus Pronouns

Partee (1975) notes that in constructions involving the item *only* and embedded clauses with pronouns, there is a systematic ambiguity, as described below:

(8)   Only John expected [that he would win].

The following two readings are available:

a. No one except for John expected himself to win. Partee terms this a "bound variable" reading.
b. No one except for John expected John to win. Partee terms this a "co-referential" reading.

Importantly, Partee notes that the corresponding Control structure where the embedded infinitival clause has PRO as its subject lacks the co-referential reading:

(9)   Only John expected [PRO to win].

Here, only the bound variable reading referred to under a. above is available. Thus, we should be able to use examples like (9) and their interpretation as diagnostics for PRO.

Let us see if this diagnostic carries over to Turkish:

(10)   Sırf/sadece Oya [PRO yarışma-yı   kaybet-mek]-ten kork-uyor-du.
        Only/only Oya PRO   competition-ACC lose   -INF −ABL fear-PROG-PAST
        'Only Oya was afraid of losing the competition.'

Just like in the corresponding English example, only the bound variable reading is available; in other words, the only possible reading is that Oya was the only person who was afraid of losing the competition *herself* or *himself*; the co-referential reading, under which Oya would be the only person afraid of *Oya*'s losing the competition is not available. Thus, I conclude that the diagnostic for *PRO*

as the subject in an embedded "sırf"or "sadece" (i.e. 'only') construction does work for Turkish.

Let us now look at embedded clauses with *pro*-subjects, i.e. constructions with embedded clauses having full agreement morphology:

(11) Sırf/sadece Oya$_i$ [pro$_{i/j}$ yarışma   -yı kaybed-eceğ-in]-den
      Only/only   Oya   pro   competition-ACC lose –FUT.IND-3.SG–ABL
                   kork-uyor-du.
                   fear-PROG-PAST
      'Only Oya$_i$ was afraid that she$_{i/j}$ was going to lose the competition.'

Again, just like in the corresponding English example, both the bound variable and the co-referential reading are possible: Oya might have been the only person who was afraid of losing the competition *herself* or *himself*, or else Oya might have been the only person afraid of *Oya*'s losing the competition. We see that from the point of view of Partee's observations, the Turkish small *pro* subject behaves just like the *overt* pronominal subject in English. With respect to silent subjects in Turkish, we thus draw the conclusion that there are at least two types: *PRO* (corresponding to English *PRO*, with similar syntactic-semantic behavior, and having anaphoric properties), and *pro* (corresponding to English overt pronouns, with similar syntactic-semantic behavior, and having purely pronominal properties). *PRO* in Turkish is limited to clauses without overt agreement on the predicate; *pro*, in contrast, requires overt agreement to the fullest degree.[6]

While investigating the syntactic-semantic properties of *pro*-subjects in this context, one has to be careful to avoid examples which might be misleading, because their properties would be due to at least one of the principles this paper aims at investigating; thus, note the interpretation of the *pro*-subject in the following example:

(12) Sırf/sadece Oya$_i$ [pro$_{*i/j}$ yarışma   -yı kaybet-me   -sin]-den
      Only/only   Oya   pro   competition-ACC lose –SUBJNCT-3.SG–ABL
                   kork-uyor-du.
                   fear-PROG-PAST
      'Only Oya$_i$ was afraid that she$_{*i/j}$ would/might lose the competition.'

Here, neither the bound variable nor the co-referential interpretation is available, because the *pro*-subject of the embedded subjunctive clause has to be disjoint in reference from the matrix subject. This is not surprising; we had seen earlier that in

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[6]There is additional evidence that these two types of silent subjects are syntactically distinct in Turkish; e.g. Strong Crossover facts show clearly that the silent subjects characterized as *pro* here behave just like their overt pronominal counterparts in non-Null Subject languages. Space considerations preclude a discussion of such examples.

"related constructions", i.e. in constructions that reflect the same mood category (here, the subjunctive, which would include the infinitive—I will return to this point, suggesting that the infinitival and the subjunctive clauses are actually not just related, but identical structures), the EP dictates that the anaphor (or else, the element with anaphoric features) should trump the (pure) pronoun. Given that both (10), with its *PRO* subject, and (12), with its *pro*-subject, have subjunctive embedded clauses, they are "related constructions", and (10) thus allows or rather dictates co-reference (under Control) for *PRO*, and (12) precludes co-referentiality for *pro*. Note that this pair of examples, i.e. (10) and (12), is similar to the pair (5) and (7a), discussed earlier. From the point of view of the EP, the triplet (10), (11), and (12) is also parallel to the French triplet (3a), (3b), and (4), where the "silent anaphor", i.e. *PRO*, trumps the (overt) pronoun in the related, i.e. subjunctive, construction, but not in the non-related, i.e. indicative, construction. (While drawing attention to these parallels between Turkish and French, we have to bear in mind that, similar to English, French is not a Null Subject language, while Turkish is.)

In summary, we have seen so far that with respect to silent subjects in Turkish, the anaphoric silent subject trumps the pronominal silent subject, as determined by the EP (with the proviso that at least in some instances, and for some speakers, the EP is a "soft" constraint). In order to establish this point, we also discussed some independent evidence, based on Partee's bound variable versus co-referential interpretations, to show that in Turkish, the silent subject in agreement-less clauses is *PRO*, while the silent subject in clauses with full agreement is a pure pronominal, i.e. *pro*, which behaves syntactically like overt pronouns in non-Null Subject languages such as English. Given that both *PRO* and *pro* are phonologically unrealized, the APP cannot predict their differences in interpretation.

I now turn to evidence in favor of the relevance of the EP in Turkish for instances where both the anaphoric and the pronominal items are overt.

5   The Elsewhere Principle in Turkish with Respect to Overt Pronouns and Anaphors, and Its Interaction with the APP

In Turkish, certain anaphors can occupy the subject position of an embedded clause and be bound from outside the clause, in apparent violation of Binding Condition A:

(13)a. Öğrenci-ler$_i$ [birbirlerin-in$_i$ haps –e   at   -ıl -acağ   -ın]-dan
         student-PL   each other-GEN   jail-DAT   throw-PASS-FUT.INDIC-3.SG-A
                               kork-uyor(-lar).
                               fear-PROG-3.PL
'The students are afraid of each other's getting thrown into jail.'

(14)a. Öğrenci-ler$_i$ [onlar-ın$_{*i/j}$ haps –e   at   -ıl -acağ   -ın]-dan
         student-PL   they-GEN jail-DAT   throw-PASS-FUT.INDIC-3.SG-ABL
                               kork-uyor(-lar).
                               fear-PROG-3.PL
       'The students$_i$ are afraid of their$_{*i/j}$ getting thrown into jail.'

   The embedded clauses in these examples are identical, up to the respective
subjects: The mood is indicative in both, and the agreement on the embedded
predicate is weak, or incomplete, or defective: We saw earlier that the plural
component of the third person plural agreement marker has the option of being left
out. This is the option realized in both examples. Thus, it is obvious that these
examples qualify as "related constructions" in Bouchard's sense, and that the EP
should be applicable to them. As we see, the EP makes the correct prediction: an
anaphor bound by an antecedent is possible, while a pronoun in the same position in
a related construction can only be disjoint in reference from the same potential
antecedent. We conclude that the EP is operative in Turkish, not only for phono-
logically unrealized anaphoric versus pronominal elements, but also for their overt
counterparts.[7] Note also that given that both the anaphor and the pronominal in
(13a) and (14a) respectively are overt, the APP (understood as a phonology-based
principle) has nothing to say about the ill-formedness of (14a) under the relevant
co-referential interpretation.
   What about the APP? Given that Turkish is a Null Subject language, and that
small *pro* is possible when full agreement is present, let us compare a couple of
relevant examples:

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[7]Henk van Riemsdijk (personal communication) points out that the reciprocal has a component of
meaning which is special, and is different from the meaning of pronominals. Therefore, the
example with the reciprocal embedded subject and the example with the overt pronominal
embedded clause might be viewed as non-related. Van Riemsdijk suggests comparing (14a) with
an example corresponding to (13a), but with a reflexive as the contrasting anaphor, instead of a
reciprocal. However, reflexives are stricter than reciprocals with respect to being bound from
outside their clause: while reciprocals can be successfully bound in an apparently long-distance
fashion, when the agreement borne by the embedded clause is weak or incomplete, as is the case in
(13a), reflexives cannot be bound in this somewhat long-distance fashion, even when the agree-
ment they are associated with is weak or incomplete. However, future research will show if there
are permissive speakers who allow such examples, and, if so, to what extent the EP is operative for
such speakers, with respect to contrasts concerning overt pronominal versus reflexive embedded
subjects.

(15)a.   Öğrenci-ler_i [pro_{*i/j[sg]} haps –e   at   -ıl -acağ   -ın] -dan
         student-PL   they-GEN jail-DAT   throw-PASS-FUT.IND-3.SG-ABL
                                        kork-uyor(-lar).
                                        fear-PROG-3.PL
         'The students are afraid of *their/his getting thrown into jail.'

As we saw earlier, the optional plural component of the third person plural agreement becomes obligatory, when the related subject is a small *pro*. The *pro*-subject can only be interpreted as a third person singular pronoun. Thus, (13a) and (14a) on the one hand, and (15a) on the other hand do not qualify as "related constructions"; let us therefore turn to the second option of third person plural morphology, i.e. a realization of both the person and the number features:

(13)b.   *Öğrenci-ler_i [birbirlerin-in-_i haps –e   at   -ıl -acak   -ların]-dan
         student-PL   each other-GEN jail-DAT   throw-PASS-FUT.IND -3.PL-ABL
                                        kork-uyor(-lar).
                                        fear-PROG-3.PL

(14)b.   Öğrenci-ler_i [onlar-ın_{*i/j} haps –e   at   -ıl -acak   -ların]-dan
         student-PL   they-GEN jail-DAT   throw-PASS-FUT.IND -3.PL-ABL
                                        kork-uyor(-lar).
                                        fear-PROG-3.PL

(15)b.   Öğrenci-ler_i [pro_{i/j}   haps –e   at   -ıl -acak   -ların]-dan
         student-PL   they-GEN jail-DAT   throw-PASS - FUT.IND -3.PL -ABL
                                        kork-uyor(-lar).
                                        fear-PROG-3.PL
         'The students_i are afraid of their_{i/j} getting thrown into jail.'

(13b) is ill-formed; given that the only difference between the well-formed (13a) and the ill-formed (13b) is the full, or strong, agreement on the embedded clause in the latter example, I conclude that we see here the effect of Binding Condition A: The full, or strong, overt agreement heads a binding domain within which the anaphor is not bound, leading to a violation of Condition A. In (13a), due to incomplete, or weak, agreement, the embedded clause does not qualify as a binding domain, and as a consequence, the anaphoric subject can be successfully bound from outside the embedded clause, without violating Binding Condition A.

Given that (13b) with its anaphoric embedded subject is ill-formed for reasons independent from the EP, the ill-formedness of (14b) under the co-referential reading of the embedded pronominal overt subject cannot be due to a

Bouchard-type EP. Instead, I propose that the reason is the APP, i.e. the availability of (15b) under the desired interpretation: (14b) and (15b) qualify as related constructions: they are both marked for indicative mood, and they both carry third person plural agreement. Given that small *pro* is available as the subject of the embedded clause, it can be interpreted as co-referential with the matrix subject as the antecedent. Under the APP, the availability of this interpretation blocks a similar interpretation in (14b), with its overt pronoun in the same position of the *same*, hence "related", construction.

6 Some Elaborations and Speculations About the Notion of "Related Construction"

We have seen that for Bouchard, subjunctive and infinitival clauses are viewed as "related constructions" in French. In Turkish, too, I mentioned that infinitival clauses should be viewed as a subset of subjunctive clauses, based on semantic and selectional reasons.

Here, I would like to arrive at an even stronger characterization of the relationship between nominalized subjunctive clauses and infinitival clauses, namely to say that they are not only *related* constructions, but actually are *identical* syntactically. By this, I mean that with respect to phrase structure and especially with respect to functional projections, they are the same. In order to be able to do so, I propose to analyze the infinitival marker *-mAK* as a bimorphemic sequence: *-mA*, the subjunctive infinitive, and *-K*, an anti-agreement morpheme, which appears in the slot of the subject agreement suffixes in the nominalized subjunctive predicate. This boils down to saying that the nominalized subjunctive predicate is nothing else but an inflected infinitive, i.e. a (Control) infinitive which is inflected for person and number. The traditional infinitive, in this view, is also inflected: it consists of the infinitival suffix properly speaking, i.e. *-mA*, which encodes the subjunctive mood, and the suffix *-K*, which occupies the agreement slot and expresses the explicit lack of any person and number agreement. As a consequence, we get automatically the other obvious difference between these two types of clauses: where there is (positive) expression of person and number on the predicate, the subject is either overt (which it can be, given that the expression of agreement licenses the overt subject DP), or it is a silent pronominal, *pro*, whose person and number features must be identified by rich agreement. When we have *-K* in the slot for agreement, there is transparent, clear expression of the fact that agreement is not just defective or incomplete, but altogether missing. Instead, we have a morpheme which licenses a special kind of subject, *PRO*, whose Case is, I suggest, the Null Case proposed by

Chomsky and Lasnik (1993) (henceforth C&L), who further propose that the only Case that *PRO* can have is the Null Case.[8]

What about the difference between nominalized subjunctive clauses (i.e. what we are now calling infinitiveal clauses inflected for agreement plus the traditional infinitival clauses which are inflected for anti-agreement) on the one hand, and nominalized indicative clauses, on the other? We saw that those are not related enough to cause a problem with respect to the Elsewhere Condition in Bouchard's sense, and that the availability of an infinitival clause with its *PRO*-subject does not block the availability of an indicative clause with its pronominal subject.

I would like to propose here that the contrast with respect to subjunctive versus indicative mood translates straightforwardly into somewhat different phrasal architecture. Kornfilt and Whitman (2011) propose a structure for nominalized clauses which does have T, but whose T is defective, given that not all tense and aspect-related distinctions made in fully finite clauses are expressed; in indicative nominalized clauses, the predicate's morphology distinguishes future and non-future, but not more than that. In nominalized subjunctives, i.e. in both *Agr*-inflected and *Anti-Agr*-inflected infinitival clauses, not even that distinction is made; the tense and aspect of such clauses are read off the matrix clause. Thus, I propose that the functional projection architecture of infinitival clauses (of both types) lacks a T-projection altogether—a projection which nominalized indicative clauses do have, despite the defective T-head.[9]

Thus, for the purposes of this paper, we can reduce the notion of *related* construction to *identical* construction. This makes the application of the Elsewhere Principle straightforward.[10]

Note also that this approach has the potential of divorcing the application of the EP from the debate on whether *PRO* is always an anaphor, or is an anaphor only sometimes (e.g. Bouchard 1983; 1985), or is an element which has both anaphoric

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[8]This proposal is challenged by at least two types of facts: 1. Icelandic, where the *PRO* can have a variety of Cases, and 2. English and similar languages, where infinitival clauses can host not only Control *PRO* subjects, but also other elements, such as DP-traces. Given the rich literature on Icelandic *PRO*, but also given the fact that this type of cased *PRO* is severely limited cross-linguistically, I will not address this challenge; at least in Turkish, it is clear that *PRO*, depending on one's theoretical model of syntax, either has no Case at all, or has the C&L-type of Null Case, and never any type of "quirky" lexical Case. As for the second type of challenge, Turkish conveniently does not have infinitival predicates in Raising-type of clauses, but rather tensed predicates (which typically lack agreement). This means that predicates that have the shape of the traditional infinitive indeed are linked to *PRO*-subjects and to no other kinds of subjects in Turkish. Thus, C&L's proposal can be maintained for Turkish without any changes. As for languages such as English, we can follow Martin (2001) with respect to his proposal that T in Control infinitivals checks Null Case, while T in raising infinitivals does not check Case.

[9]For observations and examples which further distinguish nominalized indicative and subjunctive clauses in Turkish, cf. Kornfilt (2003) and (2006).

[10]The morphological identity of *-mA* in "traditional" infinitivals and in nominalized subjunctives in Turkish makes this reduction of "related" to "identical" construction possible. It is much less clear whether such a reduction could be achieved in languages such as French, where such reduction cannot be morphologically based.

and pronominal features (Chomsky 1981). This is because one could use Kiparsky's EP the way it has become popular in phonology, i.e. as a principle which dictates application of a narrow, specific rule or principle before a more general, "elsewhere", counterpart. For example, this is how Levin and Preminger (2015) mention that instances of case competition principles might be treatable as a system of ordered rules without ordering statements: The Elsewhere Principle would be viewed as a principle that governs the licensing of case in the VP before any other principle that governs the licensing of case in general, without stating a particular syntactic domain.

Based on this discussion, and for our purposes, we could say that an infinitival clause with a constant, non-alternating anti-agreement morpheme such as -*K* is a special, specific instance of agreement; the regular instances of agreement range freely over a number of combinations of person and number values. Therefore, the regular infinitival clause with -*K* would be the special case and would need to be applied first, thus blocking an inflected infinitival with its phi-feature agreement and its overt *or* small *pro* subject.

Going this route, however, would preclude application of the EP to instances of overt subjects, and the choice of an overt anaphor over an overt pronominal in a similar (or related, or identical) syntactic environment, given that in those instances, the expressions of mood, the phrase-structural architecture including functional projections, and the type of agreement would all be identical. Thus, one would need to say, with Bouchard, that an anaphor is more special, more marked, more specific than a pronominal. Then, the application of the EP so as to choose an anaphor over a pronominal in an identical or related construction would follow, irrespective of the phonological realization of either the anaphor or the pronominal.

Note that the one way of interpreting the Elsewhere Principle, in a purely formal, structural way as I have just proposed, does not necessarily preclude the second way of interpreting it. The first way would still favor a *PRO* subject over either a small *pro* or an overt pronoun, irrespective of any features of *PRO*, and the second would then favor the choice of an overt anaphor over an overt pronominal. It appears that this would miss a generalization that seems to cut across phonologically overt versus non-overt pronouns and anaphors; additional cross-linguistic work would be necessary to establish more solidly whether this generalization is limited to Turkish (and perhaps related languages), or whether it can be maintained in a more general fashion.

7   Conclusions

This study has shown that both the APP, as a principle that motivates choice of a phonologically unrealized (pure) pronominal over an overt pronominal, and the EP, as a principle that motivates choice of an anaphor (or of an element with anaphoric features) over a pure pronominal are necessary for explaining a wide array of facts in Turkish, a Null Subject language which has instances of both *PRO*, a silent

subject which has anaphoric features (or, following Bouchard, which can be an anaphor in certain contexts), as well as a *pro*, a pure pronominal silent subject. Thus, while EP is blind with respect to phonological features, the APP makes crucial reference to such features. We saw that the determination of the two silent subject types, i.e. *PRO* versus *pro*, is directly related to the kind of overt agreement morphology borne by the related predicate: *PRO* rejects any type of agreement, and in fact requires an anti-*Agr* element, while *pro* requires full agreement. We also saw that with respect to Partee's "only-test", *PRO* in Turkish behaves just like the English *PRO*, while *pro* in Turkish behaves like an overt pronominal in English. When the overt subject is a third person plural pronoun, the agreement morphology can be complete (strong), or incomplete (weak). We further saw that in Turkish, reciprocal anaphoric subjects may be bound clause-externally, when such agreement is weak. The application of both the EP and the APP is based on the notion of "related construction", which I proposed reduces to "identical construction", at least for Turkish; that notion, in turn, is sensitive to mood (i.e. subjunctive versus indicative) and type of agreement (i.e. complete/strong versus incomplete/weak), resulting in somewhat different architecture of embedded clauses with respect to the functional projection of TP.

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Two Advantages of Precedence Syntax

Michael Brody

Abstract Precedence syntax assumes that dominance hierarchies are in fact precedence hierarchies, avoiding the necessity of having two very similar basic ordering primitives in grammar. On the one hand there are some possible neutral asymmetric orders before, but not after the head, that do not correspond to the order of the functional categories or to its mirror image. On the other hand under certain circumstances some of the orders corresponding to the order of functional categories are systematically missing before the head and are possible only after the head, in the mirror image version. Precedence syntax appears to have the potential to contribute to the explanation of these generalizations.

1 Precedence

A sentence on a very first approximation appears to be a string of words. But as introductory syntax classes invariably demonstrate, it has more structure than this. Some adjacent words are more tightly bound together than others, and some units of tightly bound word sequences are again more tightly bound together than others. Such observations can be captured in terms of a postulated hierarchical structure, for the existence of which much additional evidence has been provided.

A string of words (or of morphemes or of lexical bundles of features etc.) is a linear order of words and a hierarchical structure is equivalent to a partial order of containment or domination. Modern linguistics has assumed that both of these two types of orders are necessary to characterize sentences. Within the generative framework it has been realized quite early that a theory with two very similar core primitives is probably not optimal. Reinhart's (1976) characterization of the notion

M. Brody (✉)

Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest 1068, Hungary

e-mail: brody@nytud.hu; mbbrody@gmail.com

of c-command, which appeared to make reference to linear precedence unnecessary in syntax, made a modular approach possible. The solution has been to distinguish a syntactic component that uses only the orders provided by containment and a spellout component that translates the syntactic hierarchy into a linear sequence of words. Although this solution to the—at least implicitly recognized—problem of the two very similar primitives was generally accepted, it is less than optimal. In fact, one might wonder if it is a solution at all.

At about the same time there were discussions about whether movement relations should be assigned to the semantic component on the ground that such an approach would simplify syntax. This was immediately and rightly rejected. Such a reassignment would not by itself simplify grammar as whole—a simplification in one component is no achievement if it entails a corresponding complication in another.

It is easy to see, at least in retrospect, that the proposal to shift linear precedence relations from syntax into a spellout component suffers from the same basic problem: it simplifies syntax at the price of complicating another component. Hence it provides no simplification for the overall system, which continues to include two very similar primitives. Additionally, the original problem of the two similar primitives within one component of the grammar now resurfaces in the spellout component. This is because the spellout component needs to refer to both types of orderings, since it must relate the precedence order of words and the syntactic hierarchies, which constrain these precedence relations.

In the present context we can think of Kayne's (1994) antisymmetry hypothesis as an attempt at damage limitation. Under the antisymmetric approach, although both hierarchical and precedence orderings are retained, the latter ceases to be fully independent, as it is taken to rigidly express certain aspects of the hierarchy. The assumption that precedence is dependent on hierarchy, however, does not solve the problem of why we have two such similar ordering relations at the core of our theory. The idea that one of the two nearly identical ordering concepts simply translates aspects of the structure that is constructed in terms of the other one, if anything, makes the lack of elegance in using both concepts even more pronounced.

It is undesirable then, to use both precedence and dominance orderings in our theory of grammar. While it is unproblematic to define linear precedence in terms of the dominance hierarchy, an approach that completely dispenses with the notion of precedence would clearly be unable to achieve minimal observational adequacy. But there is no need to look too far for a concept that can usefully subsume linear precedence and dominance relations, since unlike dominance, precedence itself is quite up to the task. Nothing prevents understanding the syntactic partial linear order provided by domination relations *as* a partial linear ordering by precedence, thereby eliminating the concept of dominance using the apparently inevitable concept of precedence. This is the assumption I adopt here—that dominance hierarchies are in fact precedence hierarchies.

To project a single linear order (the spellout string), assume that the spellout string consists of all categories in the tree and not only of terminals. The syntactic precedence-tree provides a partial precedence order. In order to have a full linear

order for the spellout string, additionally also sister nodes need to be ordered with respect to each other. The minimal assumption is that the order of sisters is in principle free with respect to each other. (Hence while syntactic precedence entails spellout precedence, the converse does not hold.) The lack of a fully general universal ordering principle for sisters both in syntax and in spellout means that restrictions on the precedence relations in the spellout string between sisters are accounted for by, presumably parametrized, principles that have language- or construction-specific effects. In other words, unlike antisymmetric approaches that postulate a rigid spec-head-comp order and account for symmetries by modifying the antisymmetric structure that they take to be the basic one, I assume here that it is the breaking of symmetries and not the symmetries that are in need of an explanation.

While sister nodes may in principle be in either order with respect to each other in the spellout string, their ordering clearly must in general respect constituency relations. In other words, if A and B are sisters then A may precede or follow B, but in general A cannot interrupt B—that is A cannot intervene between constituents of B. It is interesting to note that it is in fact not necessary to refer to the notion of constituency to ensure that the spellout of sisters respects constituency. In precedence syntax we assume that if A precedes B in syntax then A precedes B in spellout. Given that syntax is a partial ordering we cannot assume in general that if A immediately precedes B in syntax then A must immediately precede B in spellout. This would rule out sister nodes where A immediately precedes both B and C in syntax—since A clearly cannot immediately precede both B and C in the linear order of the spellout string. But we may still adopt the stronger requirement of conserving immediate precedence by some category A with respect to categories not dominated by A. In other words we may require that if A immediately precedes B in syntax then X can intervene between A and B in spellout only if A precedes X (also) in syntax. As can be easily seen, such a restriction ensures that sister nodes cannot interrupt each other, and therefore that their spellout order must respect constituency relations. While this reformulation is not strictly relevant for the issues to be discussed below, it is important for one dimensional syntax. (One dimensional syntax is a stronger version of precedence syntax that eschews syntactic reference to constituency relations entirely and only generates strings that in the standard frameworks correspond to the paths from the initial symbol of the tree to each of the terminal elements. Brody 2015).

2   Symmetry

The order of the verbal or nominal functional categories is typically mirrored by the verbal and nominal suffix orders (Baker 1988). In mirror theory (Brody 1997, 2000) it was assumed that this symmetry is due to the syntactic and the morphological complement relation mirroring each other's linear order. In other words, in this approach morphology was taken to express syntactic functional category (sub-)

sequences in inverse, mirrored, order. Later work by Cinque (2005, 2009), Wurmbrand (2004), Abels and Neeleman (2012), Abels (2013), Neeleman (2015) and others suggests that this symmetry is part of a much wider phenomenon that encompasses also cases where apparently the same type of symmetry phenomena show up with phrasal categories. Mirror theory could capture some aspects of this larger generalization (see Brody and Szabolcsi 2003; Adger et al. 2009), but without major modifications it cannot straightforwardly capture all the phenomena the generalization covers.

Cinque (2005, 2009), who carefully discusses and analyzes a wide array of typological data related to Greenberg's universal 20, proposes that the underlying order of modifiers, like Demonstratives, Numerals and Adjectives, is fixed in the noun phrase. This is observably Dem-Num-A(-N) in cases where the noun follows these elements, corresponding to the order of the matching functional projections.

But the mirror symmetric order, N-A-Num-Dem, is also possible and is in fact a common one in natural languages. In fact, Dem, Num, and A each may be on either side of the noun when their relative order respects the Dem Num A N template order on the left or its mirror image on the right. So in the NP, spec's on the right stack up in the inverse of the basic order on the left:

(1) Det Num A N   <--> N A Num Det

We see the same mirror symmetry not only in suffixation but also in the verbal domain. The mirror symmetry of verbal clusters (e.g. Wurmbrand 2004; Brody 2004; Abels 2013) has been well-known for some time.

(2)   dass Hans schwimmen können müssen wird <-->

    'that John will have to be able to swim'

Sometimes the symmetry is observable even language internally. For example, as Neeleman (2015) points out, citing earlier observations, in non-root environments the preferred neutral order among postverbal PPs is the reverse of their neutral preverbal order:

(3)   PP1 PP2 PP3 V <--> V PP3 PP2 PP1

(4)   a. dat hij [[door een stuurfout]$_3$ [met een knal]$_2$ [op het hek]$_1$ strandde$_V$].

      that he by a steering-error with a bang on the fence got.stuck

      'that he got stuck on the fence with a bang because he made a steering error'

    b. dat hij [strandde$_V$ [op het hek]$_1$ [met een knal]$_2$ [door een stuurfout]$_3$]

      that he got.stuck on the fence with a bang by a steering-error

      (example from Neeleman 2015)

In antisymmetric approaches these mirror symmetries are most often treated in terms of a roll-up structure. Cinque, for example, takes the mirror image order

N-A-Num-Dem in the nominal domain to be derived by N moving to precede A, N +A moving to precede Num, and N+A+Num moving to precede Dem, resulting in the N-A-Num-Dem order. Unlike with roll-up head movement, there are no problems here with c-command, although under such analyses movement theory needs to be weakened in various non-desirable ways as Abels and Neeleman (2012) demonstrate.

The approach shares with head movement the curiosity of explaining symmetry using non-symmetric means. But again, it is not symmetry but the lack of it that requires explanation. In the concrete cases at hand, symmetry essentially comes for free if, as in precedence syntax, we do not stipulate the order of the specifier and the head and assume that their spellout ordering respects constituency, perhaps due to the immediate precedence conservation requirement discussed in the previous section.

We would need a constraint to eliminate this symmetry if it did not obtain (and we need one where it does not) and then such a constraint will be in need of an explanation. But it seems strange to have a theory that provides a mechanism that creates a non-symmetric structure in an effort to explain the lack of a complication—one that allows symmetry to be undisturbed.

3   Asymmetries

What is in need of an explanation is the fact that (a) there are some possible neutral asymmetric orders before, but not after the head, that do not correspond to the order of the functional categories or to its mirror image, and (b) as Neeleman (2015) argues convincingly, under certain circumstances, some of the orders corresponding to the order of functional categories are systematically missing before the head and are possible only after the head, in the mirror image version. Since the former type of asymmetry is in accordance with the well-known Greenberg universal and the second one seems to go against it, Neeleman refers to these as U20 and anti-U20 asymmetries, respectively.

Let us look at the U20 asymmetry first. As Abels and Neeleman point out in connection with Cinque's analysis of the NP, all possible functional sequence violating neutral orders and none of the apparently impossible ones in Cinque's catalogue can be derived on the twin assumptions that neutral orders can only be changed non-symmetrically into another neutral order by an operation that moves some constituent including the noun, and that all movement is to the left. If we took the functional category sequence internal movement (movement of a constituent dominated by lower category of a functional category sequence to a higher category of the same sequence) to be free in principle, and movement that involves more than a single functional category sequence to require a (non-neutral) triggering feature, then it will follow that in the NP only movement of a category including the noun will result in a neutral order. (To deal with verbal clusters in a parallel fashion some notion of extended functional sequence will be necessary. Note also that we

will need a parametrized set of constraints, perhaps along the lines of Starke (2010) appropriately adapted to the present framework, on when these free functional category sequence internal movement operations will actually obtain.)

The requirement that movement is to the left clearly misses a generalization in the context of the requirement that movement must be to a structurally more prominent (dominating) position. The problem arises independently of whether the leftness requirement on movement is taken to be a syntactic or a processing condition. As noted earlier in the context of the one-dimensional framework of Brody 2015, the apparent missed generalization can be avoided in a precedence syntax. We take "x 'c-precedes' y" to mean that the category immediately preceding x (the 'address' of x) precedes y (or perhaps the address of y). The c-precede requirement will ensure both that the antecedent must c-precede the 'trace' in the tree (i.e. in standard terms it must be higher) and that it must c-precede it in the spellout string, hence that it must precede linearly. So for example in a tree like (5),
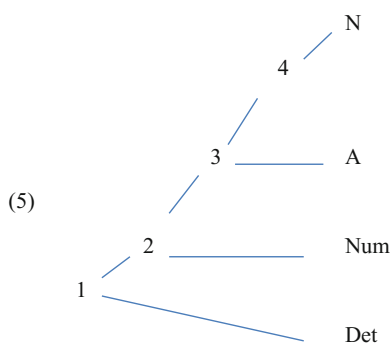
if N 'moves', it must reattach to a node that precedes it; here of these nodes 1, 2, 3 and 4 are shown. This corresponds to the standard c-command requirement. Specifiers may then in principle occur in the spellout string either on the left or on the right of the head N in the most embedded position in (5)—a 'trace' if movement occurred. But unlike Det, Num and A the reattached N, the antecedent in its chain, cannot make use of this freedom since the requirement that the address, the category immediately preceding the antecedent, precede the anaphoric element would then be violated in the spellout string. Whether or not this version of the constraint ultimately proves correct, this suffices to indicate that precedence syntax provides the means to capture the generalization that is otherwise elusive in a symmetric framework over precedence and c-command.

Let us turn to the other type of asymmetry, where orders corresponding to the order of functional projections are systematically missing before the head and are possible only after the head, in the mirror image version. As Neeleman (2015) observes "OV languages in which adverbs precede the verb systematically allow both Adv-O-V order and O-Adv-V order. This alternation can be observed in

Afrikaans, Armenian, Assamese, Basque, Bengali, Dutch, Frisian, German, Georgian, Hindi, Japanese, Kannada, Kiowa, Korean, Lezgian, Malayalam, Pashto, Persian, Quechua, Sakha, Tatar, Tsez, Turkish, Uyghur and Uzbek." The general availability of this alternation leads him to the assumption that argumental and adverbial functional heads are ordered separately and have no fixed order with respect to each other. If so, then we expect not only preceding but also following the verb both (mirror image) orders V-Adv-O and V-O-Adv. This expectation is not fulfilled: "There is considerable variation in VO languages, but typically only V-O-Adv order is permitted when one controls for factors that may independently lead to separation of verb and object. The main complication in ascertaining that VO order correlates with absence of adverbial intervention is that verbs may move leftward, away from the object and across adverbials." (Neeleman 2015).

To account for this asymmetry, Neeleman proposes his "*Case-First Constraint*" version of the Case Adjacency requirement that disallows any category linearly intervening between the Case-assigning head and the Case-marked DP but only if that intervener precedes the DP. This proposal, however, leaves the problem of asymmetry unsolved: why is it that only preceding interveners (rather than all interveners or only following ones) matter? Neither antisymmetry nor Neeleman's (2015) symmetrical approach explains why Case assignment adjacency is asymmetrical and why it prefers the 'right side'.

Precedence syntax again provides an immediate explanation. Suppose that the V-O(bject)P order is forced by the Case adjacency requirement, a condition that entails V (or its trace) and OP have to be adjacent in the spellout string. In the syntactic precedence tree, (6a) the category F' that immediately precedes the OP also immediately precedes the sister of OP, a category F that precedes the verb, as in (6b). (This assumes that the object is the daughter of some functional element F' and is not the sister of the verb.)

(6)a.   F'
```
         F — V
        /
   F'
        \
         O
```
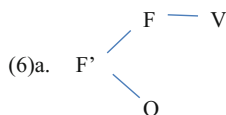
b.   F' > O(P),   F' > F(P), F > V

In principle the sisters OP and FP may be taken to be in either order for the spellout string. But if V and OP have to be adjacent, then FP must precede OP, since if OP precedes FP, then F (which precedes V) will necessarily intervene between OP and V preventing the required adjacency.

(7) a.   F' > OP > F > V (*, F intervenes between OP and V) or

b.   F' > F > V > OP

Notice that the order F' > F > OP > V is not a possible alternative to (7a) since it does not respect constituency relations. As discussed in Sect. 1 above, syntactic

sisters can be in either order with respect to each other in the spellout string, but they cannot interrupt each other. If A and B are syntactic sisters A cannot intervene between constituents of B.

(This will in fact need to be systematically weakened by adopting an appropriate version of relativized minimality once we include, as seems natural, an account of suffixation-adjacency along similar lines. The necessity of such a weakening appears to provide evidence for the statement of the relevant restriction proposed in Sect. 1 in terms of interveners rather than in terms of constituency.)

Hence in precedence syntax it follows from natural and largely uncontroversial assumptions that in languages where the Case adjacency requirement holds, the object will always follow the verb.

In sum, precedence syntax appears to have the potential to explain the two major asymmetries that arise in approaches that do not redundantly attempt to account for symmetry phenomena.

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Dissecting Adpositional Particle Constructions: Remarks from Ellipsis

Anikó Lipták

Abstract This paper contributes to the study of inflected reduplicating adpositional particle constructions by investigating their behavior under ellipsis. It will be shown that just like any separable particle, inflected reduplicating adpositional particles can be severed from the rest of the clause via the phenomenon of particle stranding and this phenomenon has properties that bear on the analysis of these constructions. The novel observations in the domain of ellipsis are predicted by some but not all approaches to inflected adpositional particle constructions, particularly they motivate rethinking some aspects of the syntactic approaches currently available.

Keywords Adpositional particles · Ellipsis · Chain reduction Morphological reanalysis · Ellipsis identity · Syntax—PF interface

1 Introduction: Inflected Reduplicated Adpositional Particle Constructions

Inflected reduplicating adpositional particles, also called the "H-class" of particles (the term originates from Surányi 2009b), are inflected case suffixes that function as preverbal particles. Such particles express directional or stative locative relations or form a fully idiomatic combination with the verb. The full list of particles that appear in this way are: *bele* 'into', *benne* 'in', *érte* 'for', *hozzá* 'to', *neki* 'to/against', *rá* 'onto', *rajta* 'on' (Laczkó and Rákosi 2011). Constructions with inflected reduplicating particles constitute a relatively well-researched area of Hungarian syntax, having been studied in (at least) Ackerman and Webelhuth (1993), É. Kiss (1998, 2002), Surányi (2009a, b), Rákosi and Laczkó (2011), Laczkó and Rákosi (2013), Rákosi (2014) and Hegedűs (2016).

A. Lipták (✉)
Leiden University Centre for Linguistics, Van Wijkplaats 2,
2311 BX Leiden, The Netherlands
e-mail: A.Liptak@hum.leidenuniv.nl

1.1 Core Data and Empirical Generalizations

As the above works have shown, inflected reduplicated adpositional particle constructions alternate between two different syntactic expressions for the same thematic relation: the particle (showing up in 3SG form) can be followed by a lexical adpositional associate, in what will be referred to as the *complex strategy* in this paper (cf. 1). In the *simplex strategy*, on the other hand, the same case-marked argument appears as a verbal modifier before the verb (cf. 2a). In case the argument is pronominal in nature, only the simplex strategy is available in neutral clauses—the particle appears before the verb fully inflected for the person and number specifications of the pronominal complement, cf. (2b).[1] As Surányi (2009b) shows, the choice between the two strategies has to do with factors that regulate the formation of complex predicates.

(1) Peti **rá**   nézett   { Zsuzsi-**ra**   / a lányok-**ra**}.
     P.   ONTO.3SG   looked.3SG   Zsuzsi-ONTO   the girl.PL-ONTO
     'Peti looked at Zsuzsi / the girls.'
(2) a. Peti { Zsuzsi-**ra**   / a   lányok-**ra** }   nézett.
        P.   Zsuzsi-ONTO   / the girl.PL-ONTO   looked.3SG
        'Peti looked at Zsuzsi / at the girls.'
     b. Peti **rám**   nézett   (*rám).
        P.   ONTO.1SG   looked.3SG   ONTO.1SG
        'Peti looked at me.'

In the complex strategy, the verb has a lexical noun argument marked with the same case as the particle, i.e. the case marker appears twice in the clause: once in the particle and once inside the PP associate, giving rise to the impression that the case marker is reduplicated, in the descriptive sense of the word.

Inflected adpositional particles assume the form they take when complemented by a pronominal (treating case markers as adpositional heads), while the same case suffixes show up in the non-inflected, bare, form if they take a lexical noun phrase complement (cf. Table 1). Since Marácz (1986) it is known that these forms exhibit possessive agreement morphology, due to the fact that case suffixes in the history of Hungarian developed from possessed nouns and postpositions, possessed by and agreeing with their pronominal complement (see also Hegedűs 2014).

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[1] Note also that it is not the case that all particle−verb combinations are fully convertible between the complex and the simplex strategy, e.g. nominal complements with a definite determiner sometimes fare poorly in the preverbal position (ib):

(i) a. Peti hozzá szólt   a   vitához.   b. * Peti a vitához   szólt.
        Peti TO.3SG said.3SG the   argument.TO   Peti the argument.TO said.3SG
        'Peti contributed to the argument by commenting.'

Table 1 Possessive agreement with agreeing case suffixes

	Singular	Plural
1 person	(én)-rám I-onto.POSS.1SG	(mi)-ránk we-onto.POSS.1PL
2 person	(te)-rád you-onto.POSS.2SG	(ti)-rátok you-onto.POSS.2PL
3 person	(ő)-rá 3sg-onto.POSS.3SG	(ő)-rájuk 3sg-onto.POSS.3PL

There is one difference, however, between case marked pronouns and H-class particles: H-class particles in the complex strategy cannot contain overt pronouns (Surányi 2009a, b):

(3) Peti   (*ő)-rá   nézett   Zsuzsi-ra.
    Peti   3sg-ONTO.3SG   looked.3SG   Zsuzsi-ONTO
    'Peti looked at Zsuzsi.'

As another speciality of these constructions, all speakers accept H-class particles agreeing only in person but not in number with the associate in the complex strategy (i.e. not inflecting for plurality). Fully inflecting particles, however, are only accepted by some but not all speakers. See Rákosi (2014) for a detailed overview concerning this variation.

(4) Peti   { rá   / % rájuk   } nézett   a   lány-ok-ra.
    P.   ONTO.3SG   ONTO.3PL   looked.3SG   the girl-PL-ONTO
    'Peti looked at the girls.'

1.2 Approaches to Inflected Adpositional Particle Constructions

All research on these constructions agrees that H-class particles occupy the immediately preverbal position in neutral clauses (see more on this in Sect. 2) and that they have an aspectual role (they mostly telicize the verb). There are two types of approaches that can be distinguished on the basis of where they place particle-verb combinations in the grammar:

(a) *lexicalist* approaches (Ackerman and Webelhuth 1993; É. Kiss 1998) treat particle-verb combinations as lexical units in some sense (see also the LFG approaches in Rákosi and Laczkó 2011; Laczkó 2013)
(b) *syntactic* approaches (É. Kiss 2002, Surányi 2009a, b) assume that particle and verb form a complex unit only in the syntax

These two strands of approaches have distinct views on the following two questions (among others):

Q1   What is the relation between the particle and the predicate-internal associate in the complex strategy?

Q2   Are the complex and the simplex strategy different in their syntax? Is there a structural difference between the inflected particle in the complex strategy (*rá nézett Zsuzsira*) and the inflected particle in the simplex strategy (*rám/rád/rá/ ránk/rátok/rájuk*)?

In lexicalist approaches, Q1 receives the answer that there is no direct syntactic relation between the preverbal particle and the postverbal associate. Instead, the particle is a derivational element (Ackerman and Webelhuth 1993) or an adverbial particle with an obsolete agreement form (É. Kiss 1998), not syntactically related to the associated lexical phrase.

Syntactic approaches come in two types when considering this issue. According to É. Kiss (2002), the particle is the argument proper of the verb (with a full pronoun in it) and the associate is an adjunct in 'specifying' appositive relation with the particle (thus only present when it has lexical content), as in (5), with category labels given as in É. Kiss (2002).

(5)   Peti   [$_{ArgP}$ *pro*-rá]$_i$ nézett   [t_i [$_{KP}$ Mari-ra]]
      P.   pro-ONTO.3SG   look.3SG   Mari.ONTO

Surányi (2009a, b) on the other hand argues that there is a direct syntactic relation, namely the particle and the associate form two links of a single syntactic movement dependency. The two links are realized in PF differently due to the operation of partial deletion, followed by morphosyntactic reanalysis by which the higher member of the chain is fused together with the verb, in turn rendering the higher copy invisible for the Linear Correspondence Axiom and thus allowing the pronunciation of both high and low copies (see Sect. 2 for details). The main motivation for a direct dependency account comes from the associate's transparent behavior when it comes to extraction. Extraction out of argumental associates is well-formed (Surányi 2009a, b):

(6)   Melyik politikussal$_i$ akarsz   bele   kezdeni egy hosszabb   interjúba t_i ?
      which politician.WITH want.2SG INTO.3SG start.INF a   longer   interview.IN
      'Which politician do you want to start a long interview with?'

The possibility of extraction argues against an adjunction-based approach, like É. Kiss (2002), in which the predicate-internal associate is an adjunct (see 5 above). If the associate were a true adjunct, we expect that it should constitute an island for extraction, contrary to the observation in (6). Note in passing that lexical

approaches also make this prediction as they treat the postverbal associate as full argument of the verb.

Concerning Q2, lexicalist approaches postulate that the simplex and complex strategies are not uniform in structure. Both Ackerman and Webelhuth (1993) and É. Kiss (1998) treat the preverb in the complex strategy uninflected, while the one in the simplex simplex strategy inflected and complemented by a pronoun. This insight has been further supported by Rákosi (2014), who claims that the inflected particle in the complex strategy cannot contain a full pronoun (unlike the one in the simplex strategy) as it does not show pronominal behavior according to binding theory. Note that (7) does not show a binding theory violation, which is strange if the particle contains a pronoun (as indicated here).

(7) A   gyerekek   pro-rá   néztek   egymásra.
     the   children   onto.3SG   looked.3PL   each.other.ONTO
     'The children looked at each other.'

Syntactic approaches (both the indirect (adjunction-based) and the direct dependency approach) share the same answer to Q2: they assume that the simple and the complex strategy both contain the same type of particle: one with a silent *pro* in it. In the direct dependency account, the simplex strategy is also derived via the formation of a single chain in much the same way as the complex strategy, with the exception that in the simplex strategy it is only the highest link that is spelled out in PF.

The responses of the various approaches to issues Q1 and Q2, as well as the possibility of extraction out of the postverbal associate are summarized in Table 2.

As this overview reveals, the syntactic direct dependency (Surányi 2009a, b) is the most successful account in that it captures the lexical reduplication effect (that PRT and the adposition on the associate are identical) in a straightforward manner and it also predicts extraction possibilities.

The modest goal of this paper is to comment on some aspects of the analyses in Table 2 in the light of data involving clausal ellipsis in inflected reduplicating particle constructions. There will be two (unrelated) claims made on the basis of elliptical data. The first of these will be specific to the syntactic direct dependency approach: it will be shown that ellipsis questions the role of morphosyntactic

Table 2 Aspects of approaches to reduplicated adpositional particle strategies

	Syntactic relation PRT and associate	PRT in simplex versus complex strategy	Extraction from associate
Lexical approaches (e.g. Ackerman and Webelhuth 1993; É. Kiss 1998)	No syntactic dependency	Different	Predicted
Syntactic indirect dependency approach (É. Kiss 2002)	Associate modifies PRT	Identical	Not predicted
Syntactic direct dependency approach (Surányi 2009a, b)	Two links of a chain	Identical	Predicted

reanalysis in the proposed mechanism of chain realization in the complex strategy. The second claim will reflect on Question 2, whether the particle in the simplex and the complex strategy are the same or not. The conclusion here will be that the complex and the simplex strategy are arguably non-identical in nature.

The paper is structured as follows. After an exposition of the direct dependency account to the core data in Sect. 2, Sect. 3 will introduce the elliptical phenomenon necessary for the argument to be made in Sect. 4 about the timing of ellipsis and morphosyntactic reanalysis. Section 5 will introduce elliptical data pertaining to particle (mis)matches and their relevance for the analyses of particle constructions. Section 6 sums up the results.

2 The Direct Dependency Analysis of Adpositional Particle Constructions (Surányi 2009a, b)

The analysis in Surányi (2009a, b) for particle and associate in terms of direct syntactic dependency forms integral part of Surányi's pioneering works on particle constructions (Surányi 2009a, b, c), arguing for a non-lexicalist approach to these. These works subscribe to the view that particles are syntactically independent phrasal units (in line with Koopman and Szabolcsi 2000; Olsvay 2004; É. Kiss 1994, 2002, 2006 among others), which originate inside the VP, as predicates of small clauses, complements or adjuncts. In Surányi's approach, particles of all types undergo a (minimally) 2-step movement from the VP across PredP to the specifier position of the phrase whose head contains the overt verb, identified as TP in Kenesei (1998), É. Kiss (2008), Surányi (2009a), PredP in Surányi (2009b) or AspP in É. Kiss (1998) among others. For the purposes of this paper, we follow the first of these accounts in assuming the final position of particles to be Sp, TP, see (8). The derivation contains movement to the intermediate Sp, PredP position, necessitated by the need for the particle and the verb to undergo semantic incorporation in this position (see Surányi 2009a for further discussion).

(8)   *predicative particle and verb movement, adopted from Surányi (2009a)*
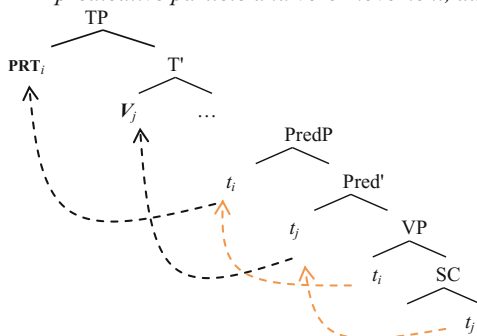
For complex inflected adpositional particle constructions (cf. 1a, b), Surányi's masterful analysis is built on the observation that in the complex strategy, it is the associate that represents the real adjunct or argument of the predicate, and occupies a predicate-internal position accordingly (see the discussion of 6 above).[2] The particle represents the exact same element, by forming a movement dependency with the associate: they form a single chain, in which the particle corresponds to the spell-out of the highest copy of the moving PP, and the associate corresponds to the lowest one.

(9)   Peti   [$_{TP}$[$_{PP}$ pro-rá]$_i$ nézett   […   [$_{PP}$ a lányok-ra]$_i$]].

      P.   ONTO.3SG   looked.3SG   the girl.PL-ONTO
      'Peti looked at the girls.'

In the simplex strategy, we also find a single chain, in which the higher PP copy is spelled out and the lower copy is silent.

(10) Peti   [$_{PP}$ pro-rám]$_i$ nézett   [$_{PP}$ ~~pro-rám~~].

      P.   ONTO.1SG   looked.3SG   ONTO.1SG
      'Peti looked at me.'

To start with the derivation of the simplex strategy in (9), elimination of the lower copy is completely standard and is in line with the proposal of Nunes (2004) according to which *Chain Reduction* (a PF operation that deletes certain copies or parts of them) is required to make chains linearizable for the LCA (Linear Correspondence Axiom), the latter taken to be a PF constraint.[3] Deletion of the higher copy, and retention of the lower one, would not be allowed for the independent reason that the Sp,TP position must be filled in Hungarian neutral clauses (T has an EPP property).

The formation of the chain in (10) needs more comments. Surányi, following and building on Nunes (2004), proposes that there are two operations applying to the single chain in PF: a step of Chain Reduction deleting certain copies in the chain, followed by the step of *morphosyntactic reanalysis*. Chain Reduction in the case of the complex strategy involves the mechanism of partial (or scattered)

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[2]Next to the H-class of inflecting particles, Surányi also designs a very similar analysis for inflecting U-class particles, in which the associate shows up in dative case, shown in (i). In this paper we put the U-class aside for reasons of space, yet many points to be made also carry over to U-particles as well.

(ii)   Peti   utána   futott   Zsuzsinak.
       P.   after.3SG ran.3SG   Zsuzsi.DAT
       'Peti ran after Zsuzsi.'

[3]The LCA is a well-formedness condition defined on linearization statements (Chomsky 1995), which maps asymmetric c-command relations to linear structure. In the works cited here, multiple identical overt chain links are unlinearizable, as they provide conflicting linearization statements, as each copy both precedes and follows the other.

deletion, deleting different subparts of the various copies: deletion targets the nominal complement in the higher copy and the case suffix in the lower one.

In the higher copy, Chain Reduction deletes parts of the lexical complement of the preposition, namely the lexical and phonological content of the noun and its plural feature, leaving behind a subset of its phi-features, namely the 3person feature only. Representing the deleted and undeleted parts/features in (11) (illustration mine), the higher copy is left with a 3person feature which spells out in the morphological component (in PF, in the used model of Distributed Morphology) as a necessarily silent *pro* next to a case suffix with 3person inflection.

(11) *syntactic structure*: [PP [DP {3P} {PL} ~~a lányok~~]-ra]i   …   [PP [DP a lányok-**ra**]]i
      spell-out   *pro*-rá   …   *a lányokra*

In the lower copy, partial deletion does in principle apply to the case suffix (and only that, since deletion of the lexical complement is barred by recoverability), but a morphological repair mechanism forces the appearance of the case suffix nevertheless, as nominals cannot surface 'bare', without case marking in Hungarian (Kenesei 2000).

In the second step in the PF-derivation of (9), following Chain Reduction, the multiple copies become formally distinct in a step of morphosyntactic reanalysis in which the higher phrasal copy gets reanalyzed as a head-level element. Morphosyntactic reanalysis makes the higher copy not count for the calculation of the LCA and as a result both copies can be exceptionally pronounced.

In this step of morphosyntactic reanalysis, the particle *pro-rá* in Sp,TP fuses with the verbal head adjacent to it, and loses its phrasal status. The step of morphosyntactic reanalysis is left somewhat vague by the author, who allows for it to be either a cliticization step of the verb to the particle as in Brody (2000) or of the particle to the verb as in É. Kiss (2002). In the following illustration, I choose the latter mechanism for ease of exposition:

(12) *morphosyntactic reanalysis of particles as part of the verb (adapting É. Kiss 2002)*
      structure before reanalysis   *structure after reanalysis*

Under either of the above mentioned options, morphosyntactic reanalysis should yield a particle–verb complex that functions as a single head element. This assumption is crucial to explain why morphosyntactic reanalysis can only apply if the higher copy corresponds to a single morphological word, and is blocked otherwise. If the higher copy is a multi-word entity (like *a lányokra*), reanalysis cannot take place and the complex strategy, involving a reduplicating case affix, does not surface. Instead, the simplex strategy is used (cf. 1b).

To sum up the gist of this account, the formation of the final output in case of the complex strategy proceeds in the following steps: the movement of the lexical PP in the syntax undergoes partial deletion in PF, followed by a step of morphological reanalysis, which in turn allows for the double pronunciation of the case marker. Schematically the order of operations is represented in (13). Note that Vocabulary Insertion arguably takes place between partial deletion and morphosyntactic reanalysis in this model.

(13)

Syntactic component	PF component		
movement of PP $\rightarrow$	partial deletion	$\rightarrow$ morphological reanalysis $\rightarrow$	reduplication of case suffix

A key assumption in this model is that morphosyntactic reanalysis is a *pre-requisite* for the derivation of the complex strategy. As the next two sections will show, data from ellipsis call this assumption in question. Section 3 introduces the ellipsis phenomenon in question and Sect. 4 details the relevance of this for inflected adpositional constructions.

3 Particle Stranding Ellipsis: General Properties

Particle constructions in Hungarian can undergo ellipsis that severs the particle from the rest of the clause, in positive answers to yes/no questions (É. Kiss 2006; Surányi 2009c), consider the example in (14) with an ordinary, uninflected particle.

(14) Q: Fel   hívtad   a szomszédokat?   A: Fel.
           PRT   call.2SG   the neighbors.ACC   PRT
           'Did you call the neighbors?'   'I did.'

Stranded particles are fragments left behind by forward ellipsis that elides a single syntactic constituent containing the verb and its dependents, akin to the formation of fragments via clausal ellipsis (see Merchant 2004 for elliptical fragments in general and Lipták 2012 for specific arguments for Hungarian particle stranding).

Following Lipták (2013), I take the elliptical domain to correspond to *v*P and assume that the particle comes to occupy its positions in Sp, TP outside the elided *v*P by movement to this position, just like in ordinary clauses (see the structure in 8 above). Ellipsis of the *v*P is licensed by the (covert) affirmative polarity head that builds on top of TP:

(15) [$_{PolP}$ Pol$_{aff}$ [$_{TP}$ fel$_j$ [$_{vP}$ ~~hívtam a szomszédokat~~ t_j-]]]   *particle stranding vP ellipsis*

Even though ordinarily the verb also moves out of the vP into T, this head movement is bled in the cases of particle stranding (Surányi 2009c; Lipták 2012).[4]

The fact that ellipsis can leave behind the particle as the sole fragment in an instance of forward ellipsis provides evidence for the phrasal nature of particles and attests to their syntactic autonomy at the same time. Clearly, the particle cannot form a single lexical head together with the verb at the point when vP ellipsis applies, as in this case ellipsis would not be able to sever the particle from the verb, for two reasons. First, ellipsis would not target a single syntactic constituent, but rather would have to eliminate a syntactic constituent (vP), plus a sub-head (the verb in the particle-verb complex), which normally appear to be distinct types of reduction processes (see below). Second, breaking up the complex head—under the assumption that this complex head constitutes a single lexical vocabulary item— would violate the *Lexical Integrity* condition (Selkirk 1982; Booij 1985) that rules out manipulation of the internal structure of lexical items.

It is important at this point that the assumption that the complex head constitutes a single lexical vocabulary item is not made in syntactic approaches to inflected adpositional particles (É. Kiss 2002; Surányi 2009a, b), so the availability of particle stranding is predicted by syntactic approaches to particles in general. The availability of particle stranding is also predicted by what we termed lexical accounts in Sect. 1 (e.g. Ackerman and Webelhuth 1993; É. Kiss 1998), as both acknowledge the syntactic independence of preverb and verb, assuming they correspond to a lexical representation that is expressed by multiple morphological elements in the syntax. These proposals are thus also in principle compatible with the existence of preverb stranding.

Before closing this section, we must provide arguments that the ellipsis operating in (14) should be taken to be standard clausal ellipsis that elides a single syntactic constituent and is subject to the same recoverability conditions as fragment formation, where ellipsis is made possible by the fact that the elliptical remnant is manipulated by the syntax and comes to occupy a position outside the elided constituent. That syntactic manipulation of the particle out of the ellipsis site is necessary for the derivation of particle stranding is also evidenced by the observation made in Hegedűs and Dékány (2017) that particle stranding cannot take place with inseparable particles (cf. 16a), which do not show syntactically

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[4]Ellipsis *bleeding* verb movement has also been found in matrix sluicing in English: verb movement to C does not take place when the TP is elided. See for explanations Lasnik (1999), Merchant (2001), and for other constructions involving bleeding, van Craenenbroeck and Lipták (2008):

(i) A: Max has invited someone.

    B: Who (*has)? = [$_{CP}$ Who [$_{C'}$ C° [$_{TP}$ ~~Max~~ [$_{T'}$ ~~has invited~~]]]]?

An alternative possibility to derive the lack of verb movement out of the ellipsis site in particle stranding would be to say that the verb does move to C as in non-elliptical clauses, and ellipsis deletes the C' constituent.

autonomous behavior in other contexts (they do not undergo inversion under negation or focus, cf. 16b, they always stand next to their verb):

(16) a. Q: Felvételiztél   az   egyetemre?   A: * Fel.
                 PRT.exam.took.2SG   the   university.ONTO   PRT
                 'Did you take an entrance exam?'   'I did.'
      b. * Peti   nem   vételizett   fel   az   egyetemre.
                 Peti   not   exam.took.2SG   PRT   the   university.ONTO
                 'Peti did not take an entrance exam.'

As Hegedűs and Dékány (2017) show, the verb that occurs with inseparable particles does not form a constituent to the exclusion of the particle, as the structure of the verb is [[[[[fel-vétel]-i]-z]-t]-él]. Accordingly, the fact that particle stranding is ungrammatical in this case can be put down to the fact that particle stranding ellipsis eliminates a syntactic constituent necessarily.

Note that particle stranding does differ in this respect from so-called word-part ellipsis (aka conjunction reduction) that can eliminate part of a (compound) word or phrase, and can apply to the verb to the exclusion of its particle, cf. (17) (Kiefer 2000; Bánréti 2007):

(17) Mari be   festette   vagy   át   festette   a haját.
       Mari in   painted.3SG   or   across   painted.3SG a hair.POSS3SG.ACC
       'Mari painted or re-painted her hair.'
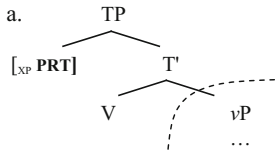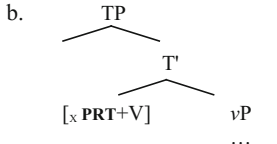
Crucially, the conditions on this type of ellipsis are different from particle stranding. Word-part ellipsis is only possible inside coordination, applies in a backward manner and does not observe syntactic constituency: the elided material need not correspond to a syntactic constituent (indicated by brackets in 18) (Kenesei 2008):

(18) [[Be-fest] és] re   vagy   át-fest-és-re   gondolt.
         in paint-NOM-ONTO or   across-paint-NOM-ONTO   thought
         'She thought of painting or re-painting.'

Since particle stranding takes place in a forward manner, in syntactic contexts other than coordination and seems to observes syntactic constituency, it is clearly a different elliptical process from word-part ellipsis.

The argumentation about examples (14) and (16) shows that syntactic autonomy of the preverb is a prerequisite for preverb stranding to be well-formed, i.e. particle and verb do not form a single syntactic constituent at the point when ellipsis occurs. For this reason, we also have to conclude that in case Hungarian particles do indeed

undergo morphosyntactic reanalysis and become part of the verb as suggested by É. Kiss (2002) and assumed (in one version or another) by Surányi (2009b), the ellipsis process yielding particle stranding *must precede* the step of morphosyntactic reanalysis in the PF component, because only in that stage does the verb form part of a syntactic constituent to the exclusion of its particle.[5]

(19)   a.   TP   *ellipsis configuration yielding preverb stranding*

     [$_{XP}$ **PRT]**   T'

          V vP

            …

     b.   TP   *configuration after morphosyntactic reanalysis: preverb stranding is impossible*

            T'

    [$_X$ **PRT**+V] vP

            …

4   Particle Stranding Ellipsis in Inflecting Adpositional Particle Constructions

With the above introduction to particle stranding in place, we are now in position to evaluate the direct dependency account of inflecting adpositional particles in the light of the existence of particle stranding ellipsis.

The most crucial observation pertaining to inflected reduplicated adpositional particle constructions is that just like any separable particle, they can undergo particle stranding in both strategies. Stranding in the complex strategy is illustrated in (20, 21), stranding in the simplex one is shown in (22, 23).

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[5]The conclusion that ellipsis in particle stranding must take place before morphosyntactic reanalysis is compatible with various views on the timing of this ellipsis process. It would be compatible with the view that ellipsis happens in PF (Merchant 2001), necessarily before morphosyntactic reanalysis, or that ellipsis is implemented already in the syntactic component (Aelbrecht 2010; Baltin 2012). Alternatively, it is also compatible with the view that ellipsis blocks vocabulary insertion (Bartos 2001): if the verb does not receive an exponent via vocabulary insertion, morphosyntactic reanalysis between the particle and the verb cannot obtain.

(20) Q: Rád   nézett   valaki?   A: Rám.
         ONTO.2SG   looked.3SG   someone   ONTO.1SG
         'Did someone look at you?'   'Someone did.

(21) Q: Nektek   ment   valaki?   A: Nekünk.
         DAT.2SG   went.3SG   someone   DAT.1PL
         'Did someone look bump into you?'   'Someone did.

(22) Q: Rá   nézett   a lányokra   valaki?   A: Rá.
         ONTO.3SG   looked.3SG   the girls.ONTO someone   ONTO.3SG
         'Did someone look at the girls?'   'Someone did.'

(23) Q: Neki   mentél   a kerítésnek?   A: Neki.
         DAT.3SG   went.2SG   the fence.DAT   DAT.3SG
         'Did you bump into the fence?'   'I did.'

Following the argumentation in Sect. 3, the application of ellipsis must necessarily happen before the point in which morphosyntactic reanalysis takes place in the PF component, and this has repercussions for the direct dependency approach posited in Surányi (2009b).

Recall that in this account morphosyntactic reanalysis is a *prerequisite* for the derivation of the complex strategy (see the schema in 13 again). This predicts that if ellipsis blocks application of morphosyntactic reanalysis, double pronunciation of the case marker should be blocked as well, i.e. the complex strategy with two case markers should never surface. This prediction, however, is not borne out: it is possible to construct examples in which next to the stranded particle, we also see the associate in the same clause, i.e. in left dislocated position preceding the particle ($\sqrt{}$ indicates the fall-rise intonation characteristically associated with left dislocated topics):

(24) Q: Rá   nézett   valaki   a lányokra?
         ONTO.3SG   looked.3SG   someone   the girl.PL.ONTO
         'Did someone look at the girls?'
     A: √ Marira   rá.
         Mari.ONTO   ONTO.3SG
         'As far as Mari is concerned, someone did (about others, something else might hold).'

(25) Q: Neki   mentél   ezeknek   a   dolgoknak?
         DAT.3SG   went.2SG   this.PL.DAT the   thing.PL.DAT
         'Did you bump into these things?'
     A: √ A kerítésnek   neki.
         the fence.DAT   DAT.3SG
         'As far as the fence is concerned, I did (about other things, something else might hold).'

As Den Dikken and Surányi (2017) furthermore argue, the dislocated constituent and the particle are both in the same clause (contra bi-clausal accounts like Ott 2014). Given that these sentences are monoclausal constructions in which left

dislocated constituents get to the left periphery by movement (see Molnár 1998; Gécseg 2001), these examples should be derived from an underlying complex strategy in which the associate PP extracts out of the ellipsis site, in turn evidencing that double pronunciation of the case marker is possible under ellipsis of the verb.

(26)   A: Mari**ra**$_i$ **rá**   [$_{vP}$ ~~nézett~~   ~~valaki~~   ~~t$_i$–~~]
              Mari.ONTO   ONTO.3SG   looked.3SG someone Mari.ONTO

These data therefore indicate that particle and associate can also surface in single clauses in which particle stranding ellipsis takes place, applying *before* morphosyntactic reanalysis. This disproves the assumption that morphosyntactic reanalysis should be the step that allows pronunciation of multiple chain links in the complex strategy. These facts therefore necessitate a direct dependency account in which pronunciation of multiple links is allowed already at the point when partial deletion applies in the chain. This would result in a simpler derivational scheme of the direct dependency approach, summed up in (27).[6]

(27)

Syntactic component	PF component		
movement of PP →	partial deletion	→	reduplication of case suffix

Note that in constructions like (24–25), the distinct information structural status of the two copies blocks silencing of both copies also for the reason that the higher copy is a topic while the lower one assumes focal emphasis, i.e. both copies need to be spelled out overtly. In precisely these contexts multiple copy spell-out via partial deletion can apply, as was shown by Fanselow and Cavar (2002), see also Landau (2006).[7]

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[6]The simplified approach presented in (27) would nevertheless bring up the question why partial deletion is allowed to begin with. As Nunes (2004) states, partial deletion, operating with more steps of deletion than full copy deletion, is only allowed as a form of Chain Reduction if full copy deletion would violate additional requirements. Since full copy deletion is in principle allowed in derivations like (i), the account in (27) would have to state that partial deletion must be freely available as an option next to full copy deletion — possibly because the two strategies do not compete in this sense as they differ in subtle aspects of meaning or information structure.

(i)   Peti   [$_{PP}$ a   lányokra]$_i$ nézett   [$_{PP}$ ~~a lányokra~~].
       P.   the girl.PL.ONTO looked.3SG   the girl.PL.ONTO
       'Peti looked at the girls.'

[7]It is an interesting question in what precise way ellipsis interacts with the formation of the multiple copy chain and whether the step of morphosyntactic reanalysis is not missing due to the ellipsis process itself. As an anonymous reviewer remarks, if ellipsis applies before linearization in (26), it can potentially remove the postverbal copy in the same chain, thus saving the particle-copy from any linearization-related effect that can be detrimental to its surfacing overtly. If this is possible, multiple copy formation should be possible without morphosyntactic reanalysis taking place, and this would not interfere with the formation of the chain headed by the dislocated topic (which can be taken to head its own chain). I leave the viability of this approach for future research, noting only that under this scenario, it is not clear why ordinary particle-stranding, unaccompanied by topics, cf. (20–22), always features a partially deleted copy to begin with. If the

It is important to note that the ellipsis facts reviewed in this section would also be derivable in lexical accounts, as well as the syntactic account that does not argue for a direct dependency between the particle and the associate (É. Kiss 2002), as this do not posit any derivational dependency between double pronunciation of the case suffix and fused/non-fused nature of the particle with respect to the verb.

5   Particle Stranding Ellipsis and Lexical Identity

The second set of elliptical data that have repercussions for the analysis of inflecting adpositional particle constructions have to do with the puzzling property of particle stranding that it obeys the *lexical identity condition* (LIC, aka *verbal identity restriction*).

This condition requires that the lexical content of the stranded element needs to be identical to that of its antecedent, and has been identified as a restriction on stranding-type ellipsis that strands an entire verb in non-focal contexts (see Goldberg 2005; McCloskey 2010; Schoorlemmer and Temmerman 2012; for data and analysis). Due to this condition, the stranded verb cannot be lexically distinct from its antecedent, even if that is fully identical or near-identical to it in meaning. Irish, for example, has two cognates for the verb *miss*, but in cases of verb-stranding, the lexical items have to match up between the elliptical clause and its antecedent (McCloskey 2005).

(28) Q: Ar   mhiss-eáil tú   é?   A: * Chrothnaigh.
           COMP.INTER   missed   you   him   miss.past
           'Did you miss him?'   'I did.'

The LIC poses a challenge for theoretical approaches because it is far from obvious why verbal material extracted out of ellipsis sites should show lexical identity, when A- and A-bar-type extraction do not show a similar restriction under ellipsis (cf. *Bill bought a house, and John did, too* allows extraction of the non-identical subject *John* out of the *v*P).

While the explanation of the LIC is unsettled in the theoretical literature at present, existing proposals try to explain this effect by arguing that the stranded verb must be part of the ellipsis site in LF, either because head movement only happens in PF (Schoorlemmer and Temmerman 2012, see Lipták 2012 for criticism) or because there is obligatory reconstruction of these items into their initial position in LF (Goldberg 2005). Since semantic identity is required for material that is inside the ellipsis site, if the stranded item is part of the ellipsis site in LF, its lexical semantic content cannot differ from that of its antecedent.

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lower copy is fully removed via ellipsis, the need for partial deletion disappears and we would expect a full copy in the preverbal slot, such as (i) in fn. 6.

To be precise, identity of the ellipsis site boils down to two conditions, one semantic and one lexical. The semantic one, originating from Merchant (2001), is that *e-GIVEN* constituents can be elided, which boils down to a mutual entailment relation between the elided category and its antecedent.[8]. The lexical condition is that elided material must comply with Chung's (2006) "*no new words*" condition. This requires that every lexical item in the numeration of the elided constituent must be identical to an item in the numeration of the antecedent constituent. With these two conditions jointly operating in the identity requirements of elliptical material, the LIC can be captured, provided we take the stranded material to be in the ellipsis site in LF.

The important point for the present paper is that particle stranding also complies with the LIC restriction in Hungarian (Lipták 2012). Consider the following example in which mismatch between *be* versus *bele* (near-identical in meaning) is not allowed. Note that ungrammaticality would also obtain if the antecedent contained *bele* and the answer *be*.

(29) Q: Bele fért az autóba az összes csomag?
     in$_1$.3SG fit. 3SG the car.IN the all luggage
     'Did all the luggage fit into the car?'
   A: Bele. / * Be.
     in$_1$ in$_2$

Clearly, the restriction is not total morphological identity: inflectional endings on stranded material can vary with respect to the antecedent (the same is true for verb stranding), as we have seen above in (20), repeated here as (30). The simplex strategy of inflected particle constructions does allow for inflectional mismatches on the particles (cf. also 21):

(30) Q: Rá**d** nézett valaki? A: Rá**m**.
     ONTO.2SG looked.3SG someone ONTO.1SG
     'Did someone look at you?' 'Someone did.

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[8]The precise definition of e-givenness is as follows:

(a) A constituent α can be deleted only if α is e-given.
(b) An expression E counts as e-given iff E has a salient antecedent A and, modulo ∃-type shifting, (i) A entails the F-closure of E and (ii) E entails the F(ocus)-closure of A.
(c) The F-closure of α is the result of replacing F-marked parts of α with ∃-bound variables of the appropriate type (modulo ∃-type shifting).
(d) ∃-type shifting is a type-shifting operation that raises expressions to type $< t >$ and existentially binds unfilled arguments.

The key pieces of data in this respect are those in which the complex strategy antecedes the simplex strategy in the elliptical clause—see the following data—the answers in (A) fail to be grammatical, despite the fact that antecedent particle and stranded particle are *formally* both inflected forms of one and the same case suffix (note that *Rá /Neki* are possible answers).[9]

(31) Q: Rá   nézett   a lányokra   valaki?   A: * Rájuk.
        ONTO.3SG   looked.3SG   the girls.ONTO someone   ONTO.3PL
        'Did someone look at the girls?'   'Someone did.'

(32) Q: Neki   mentél   ezeknek a   dolgoknak? A: * Nekik.
        DAT.3SG   went.2SG   these.DAT the   thing.PL.DAT   DAT.3PL
        'Did you bump into these things?'   'I did.'

If both *rá* and *rájuk* in the first pair and *neki* and *nekik* in the second are referential inflected case-marked pronominals, they should be interpreted in the same way in LF and should count as inflectional variants of the same lexical items: pronouns. Since both contain the same lexical case marker, the case suffix *-ra*, the case suffix cannot be the source of the LIC violation. Neither can distinct agreement features be the source, since agreement mismatches are allowed in other contexts, as shown by (30).

The mismatch that causes a violation of the LIC therefore must be that the inflected particles are not interpreted in the same way semantically in the two cases, or do not count as the same lexical item—for example, because the particle in the complex strategy is structurally different from the particle in the simplex strategy.

Approaches in which the particle in the complex strategy, unlike the one in the simplex strategy, is not a full pronoun, such as Ackerman and Webelhuth (1993), É. Kiss (1998), and in a similar vain, Rákosi and Laczkó (2011), Rákosi (2014) have no problem explaining this mismatch and in fact predict the LIC violation to rear its head in the above contexts: *rá* and *rájuk* in these analyses differ from each other in that the former has no complement, while the latter does. In line with this, *rá* is not interpreted as a referential pronoun, while *rájuk* is, leading to a difference in semantic interpretation. This difference can arguably also be captured with reference to these items being distinct lexical items. We can treat the two forms as intransitive versus transitive variants of the same suffix.

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[9]The opposite situation in which a simplex strategy antecedes a complex one is similarly ill-formed:

(i) Q: Rájuk   nézett   valaki?   A: * A lányokra   rá   (~~nézett   valaki~~).
        ONTO.2PL   looked.3SG   someone   the girls.ONTO ONTO.3SG   looked.3SG
        'Did anyone look at them?'   'When it comes to the girls, someone did.'

(33)   intransitive particle in complex strategy   transitive particle in simplex strategy
                        [rá]   [[pro]-rá]

The data in (31/32), however, pose a puzzle for syntactic approaches to adpo-
sitional particles, which treat both types of particles as pronominal, such as É. Kiss
(2002), or Surányi (2009b).

For Surányi (2009b) the problem is not immediately evident, as in this account
the particle in the complex strategy is only spelled out as *pro-rá*, but is underlyingly
a PP with a lexical noun complement with the lexical noun and some features
deleted in it, see (11) above. As the interpretive component interprets the PP with
the lexical noun in it, and not the (late inserted) spell-out form *pro-rá* (as proposed
for the model of the grammar in Halle and Marantz 1993), in LF the compared
items will be *a lányokra* and the *pro-rá* form. The former containing a lexical noun,
the latter a pronoun, their non-identical nature seems to be evident. What casts
doubt on this solution to the problem, however, is the well-known fact that in LF
conversion between an R-expression and a pronoun is exceptionally attested inside
ellipsis sites: non-pronominals can be equivalent to pronominals provided they have
the same reference. In fact in many contexts they have to be—observe the phe-
nomenon called *vehicle change* (Dalrymple et al. 1991; Fiengo and May 1994) in
an English and a Hungarian example:

(34) They arrested Alex$_i$, though he$_i$ thought they wouldn't { ~~arrest him$_i$~~ / * ~~Alex$_i$~~ }.
(35) Én   várok   majd   a   lányokra, bár   ők   még nem tudják,
      I   wait.1SG   later   the   girl.ONTO though they   yet not know.3PL
      hogy   én   fogok   { ~~várni   rájuk~~   / * ~~a   lányokra~~ }.
      that   I   FUT.1SG wait.INF   onto.3PL   the   girl.ONTO
      lit. 'I will be waiting for the girls, even though they don't yet know I will.'

On the basis of (34/35), we expect that vehicle change should be available inside
the particle that is interpreted in LF as part of the ellipsis site in particle stranding as
well—i.e. the conversion of *a lányokra* into *rájuk* should be allowed. The existence
of vehicle change also shows that (late inserted) pronouns escape Chung's *no new
word* condition in vehicle change contexts and do not count as novel lexical items
under ellipsis.

Turning now to the syntactic account in É. Kiss (2002), this approach can easily
be remedied such that it can provide explanation for (31/32). What we would need
to say in this approach is that *rá* and *rájuk* differ in the *type* of pronoun they contain:
if *rá* contains a non-referential pronoun and *rájuk* contains a fully referential pro-
noun, semantic interpretation in the two cases would be distinct. Formally, the two
PPs would also be distinct when it comes to lexical content: if the pronoun in *rá* is a
lexical item such as an NP-*pro* and the pronoun in *rájuk* is a DP-*pro* (see Déchaine
and Wiltschko 2002 for lexical distinctions of this type and see Dékány 2015 for the

Table 3 Aspects of approaches to reduplicated adpositional particle strategies, elliptical phenomena included

	Syntactic relation PRT and associate	PRT in simplex versus complex strategies	Extraction from associate	PRT stranding	Lexical identity mismatches
Lexical approaches (e.g. Ackerman and Webelhuth 1993; É. Kiss 1998)	No syntactic dependency	Different	Predicted	Predicted	Predicted
Syntactic indirect dependency approach (É. Kiss 2002)	Associate modifies PRT	Identical	Not predicted	Predicted	Predicted if modified
Syntactic direct dependency approach (Surányi 2009a, b)	Two links of a chain	Identical	Predicted	Predicted if modified	Not predicted

claim that Hungarian possesses different types or "sizes" of *pro* elements), the LIC facts above will follow. An assumption along these lines would enable the adjunction-based syntactic approach to account for the mismatches above with reference to distinct interpretation and lexical content of two types of covert pronouns.

6 Summary of Findings and Conclusions

This paper introduced novel data featuring inflecting adpositional particle constructions in the domain of particle stranding ellipsis and the lexical identity condition operating on stranded particles. The novel data were checked against the predictions of the existing accounts and it was found that particle stranding is compatible with lexical approaches, as well as the syntactic indirect approach to adpositional particles, and forces slight modification of the direct dependency account. Concerning the observations about lexical identity of the stranded material, these are predicted by lexical approaches or the syntactic indirect approach if the latter is modified, but are not predicted by the syntactic direct dependency approach. Table 3 summarizes these findings at a glance.

The net result is that the ellipsis facts are fully predicted by lexical approaches and motivate the modification of the syntactic ones in some way. On the whole, however, the empirical lie of the land does not single out any of the three types of account as the most accurate, which indicates that a comprehensive account of these constructions is not yet in sight.

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From Phonology to Syntax: Insights from Jangkat Malay

Timothy Mckinnon, Gabriella Hermon, Yanti and Peter Cole

Abstract Jangkat is a Malayic variety spoken in the Bukit Barisan Mountains, in the Malay homeland of Sumatra. It provides insight into the role of the phonology-syntax interface in the development of morphosyntactic agreement in Malay. To provide context, roots in nearly all Malayic languages exhibit a single form in all morpho-syntactic environments. However, in certain regions of Sumatra, especially in Kerinci, there exist 'root-alternating varieties', varieties wherein roots exhibit two (or more) forms with distinct morphosyntactic distributions. Kerinci exhibits agreement-like morphological object registration: most words in the language exhibit a special form marking the presence of a nominal syntactic complement. The phonological realization of object registration is highly complex due to layer-upon-layer of historical changes in Kerinci phonology. These changes have obscured the grammatical development of Kerinci historically, leaving linguists to puzzle over how a Malayic language could develop such an extensive system of morphosyntactic marking. Jangkat exhibits morphophonological root-shape alternations reminiscent of those described in Kerinci, but, unlike Kerinci, the phonology of the Jangkat alternation is relatively straightforward. We argue that Jangkat not only reveals the origins of Kerinci's morphosyntactic marking in phrase-level phonology, but it also illustrates the important role that the syntax-phonology interface plays in syntactic change.

G. Hermon (✉) · P. Cole
Department of Linguistics and Cognitive Science, University of Delaware,
125 E Main St, Newark, DE 19716, USA
e-mail: gaby@udel.edu

P. Cole
e-mail: pcole@udel.edu

T. Mckinnon
Engineering, Perfecta, 6506 Loisdale Rd, Springfield, VA 22150, USA

Yanti
Applied English Linguistics, Faculty of Education and Language, Atma Jaya Catholic
University of Indonesia, Jalan Jendral Sudirman, 51, Jakarta 12930, Indonesia
e-mail: regina.yanti@atmajaya.ac.id

1 Malayic Languages in Sumatra: Some Background[1]

This paper focuses on Jangkat, an undescribed Malayic variety spoken in the Bukit Barisan of Sumatra. Sumatra is home to numerous, grammatically diverse indigenous Malayic varieties, and has been described by some as the Malay Homeland (Tadmor 2002). The available grammatical descriptions of these varieties, though relatively few in number and quite sparse in geographic coverage, demonstrate that they share some core characteristics with Standard Malay/Indonesian. For instance, unlike colloquial varieties like Jakarta Indonesian, interior Sumatran Malayic varieties often retain a fully functional voice system (cf. Cole et al. 2008). Despite the existence of some similarities with the standard language, interior Sumatra Malayic varieties also differ substantially from Standard Malay/Indonesian in other aspects of their grammar.

Malayic in this region can be divided into two groups of languages based on morphological type. In the first group, represented by varieties like Jambi Malay (e.g. Yanti 2010), roots exhibit a single form in all morphological and syntactic environments. In the second group of languages, roots exhibit two (or more) forms with distinct morphological/syntactic distributions. This group, which we shall refer to as 'root alternating varieties,' are still relatively unknown. Most linguists studying Malayic languages are only familiar with one small group of root alternating varieties: the 'core' Kerinci varieties, which are spoken in western Jambi province (Steinhauer and Usman 1978; Prentice and Usman 1978; Mckinnon 2011; Mckinnon et al. 2011; *inter alia*). Core varieties of Kerinci exhibit so-called 'absolute' (primary) and 'oblique' (secondary) forms. These forms differ from one another with regard to the phonological shape of the root-final syllabic rime, and as glosses below indicate, alternate forms exhibit various morphological or morphosyntactic functions.

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[1]We use the general term 'Malayic' to refer to all varieties which are descendants of Proto-Malayic (Adelaar 1992). We choose not to use the more traditional term 'Malay' to refer to the rural varieties discussed in this paper, since we feel this term falsely implies that these varieties are dialectal variants of a single language 'Malay'. In our experience, many of the varieties spoken in the interior of Sumatra are not mutually intelligible, let alone intelligible to speakers of Malayic varieties spoken outside of the region. To be sure, our use of the term 'Malayic' should not be construed as implying anything about the internal historical classification of languages in the Malayic group.

(1) Primary form   Gloss   Secondary form   Gloss
     mpʷaᵑk   'grass'   mpʷiᵑk   'the/its grass'
     gɨ   'hold'   gʌŋ   'handle'
     gdɨ   'big'   gdʌŋ   'its size; to increase'
     mʷah   'house'   mʷɔoh   'the/his/her home'

What is most striking about Kerinci varieties is that the division between primary and secondary forms has been integrated into the language as a way of marking morphologically whether a head has a nominal complement. This, in turn, has implications for many aspects of the syntax of the language (as we show in detail in Mckinnon et al. 2011 and other works). The diachronic question that is raised by the seemingly un-Malay-like syntax of Kerinci is whether Kerinci is truly unique among Malayic varieties and, if so, how such radical departures from the Malayic norm could come to be in the language.

In most earlier work, Kerinci has been viewed as *sui generis*: a variety that bucks the trend toward morphological 'simplification', which is characteristic of Malayic languages spoken in the broader region. However, the work of our research group has revealed that Kerinci is only one of many varieties of Sumatran Malayic that exhibit root-shape alternations. Varieties belonging to this group of languages are spoken throughout a large geographic area of central Sumatra. Moreover, the grammatical principles underlying root-shape alternations found in these varieties differ in interesting ways. Thus, our goal is compare root-alternating varieties, and to use the comparison to assist us in understanding both the synchronic structure and the diachronic development of this unique group of languages.

Jangkat, the variety we focus on in this paper, is spoken in a remote part of the Barisan Range, south of Kerinci, near the border of Bengkulu Province (Fig. 1).
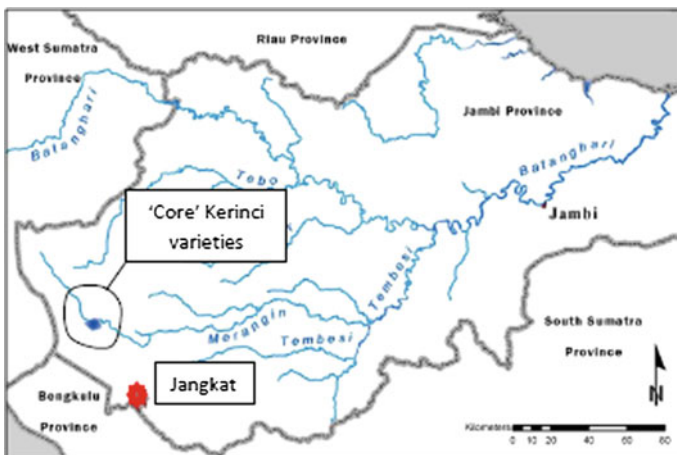
Fig. 1 Map of region

Jangkat is an especially interesting Malayic variety for two main reasons: First, Jangkat is situated in a large Malayic-speaking region where little linguistic work has been done. Secondly, Jangkat exhibits morphophonological root-shape alternations reminiscent of the root-shape alternations described in Kerinci. What is of special interest from our perspective is that these alternations differ from those found in Kerinci in that they are conditioned by grammatical factors that are different from those seen in the Kerinci alternation. Jangkat therefore offers a comparative basis that can help us to better understand the unique morphological developments in root alternation varieties.

2 Structure of the Paper

Since Jangkat has not been described in the literature and is in fact an endangered variety, one aim of this paper is to provide a description of Jangkat in some detail, focusing on its unique morphophonological properties. With this in mind, the remainder of this paper is divided into three sections.

The next section (Sect. 2) provides a preliminary description of the phonology and morphology of Jangkat Malayic based on data collected with the help of a native speaker from the village of Pulau Tengah. The description focuses on two morphophonological alternations in Jangkat, which, like the Kerinci alternation, are manifested in the root-final syllable rime. The first alternation, which we shall refer to as the 'word-level' alternation, is manifested via phonological changes in root-final syllable rimes, and is triggered in two specific environments: (i) with the 3rd person possessive pronoun *-ah*, e.g.: *badat* 'body' ≫ *badot-ah* 'his/her body', *matʋ* 'eye' ≫ *mato-ah* 'his/her eye', and *maŋᵍa* 'mango' ≫ *maŋᵍoʁ-ah* 'his/her mango'; and (ii) with post-root morphology, which includes phonologically reduced reflexes of three homophonous suffixes: the Proto-Malayic suffixes *-an*(1)/ *-an*(2) (cf. Adelaar 1992) and an applicative-type suffix *-an. These suffixes are manifested via the insertion of a glottal or nasal sound in final coda position (e.g. *pileyh* 'choose' ≫ *pilɪʔn* 'choice'; *paɲ̆ak* 'long' ≫ *paɲ̆oʔŋ* 'to lengthen'; *ʁobus* 'to boil' ≫ *ʁobutn* 'various boiled things').

The second alternation in Jangkat, which we discuss in Sect. 3, affects the phonological realization of root-final consonants and is conditioned by phrasal factors. In roots which historically ended with nasal stops (*-m, *-n, and *-ŋ), these final sounds are realized as oral stops in citation form and at certain phrase boundaries, whereas phrase-medially, they surface as nasal stops (e.g. *kacak* 'bean/ nut' vs. *kacaŋ paɲ̆ak* 't.o. green bean', *lit.* 'long bean'). Section 3 provides a description of the Jangkat phrase-level alternation focusing on the distribution of phrase-medial and phrase final forms.

Jangkat differs from previously described alternating varieties like Kerinci in that what constitutes a single alternation in Kerinci is manifested as two separate alternations in Jangkat. These facts suggest that some puzzles in the diachronic origin of the Kerinci alternation can best be solved by proposing that historically

two alternations existed in Kerinci as well. In Sect. 4, we briefly discuss why the Jangkat data suggest that the Kerinci alternation could have developed via a merger of phrase-level and word-level alternations.

2.1 Phonology of Jangkat

This section describes the phonology of Jangkat from a historical perspective, first by discussing the historical properties of Malayic spoken in the central region of Sumatra, and then by listing the phonological innovations evidenced in Jangkat. We specifically focus on root-final rimes, since it is in this position that nearly all phonological change took place historically in Jangkat. The inventory of root-final rimes established in this section serves as a basis for our description of the root-final rime alternation in the next section.

Phonemic inventory from a regional perspective Although we do not wish to argue for any specific subgrouping of Malayic in this paper, we do assume that Jangkat, like neighboring Malayic varieties such as Minangkabau, Kerinci and Jambi Malay, derives from a proto-language which exhibited a very basic vowel inventory (for a more in depth discussion of the historical phonology of these varieties, see Anderbeck 2008; Adelaar 1992; Steinhauer 2002). This vowel inventory is illustrated below (Fig. 2).

There are two differences between the proto-variety spoken in the Sumatran interior and Proro-Malayic (the variety from which the regional proto-variety is taken to be a direct descendant). Firstly, Adelaar (1992) claims that Proto-Malayic exhibited four contrastive vowels (*i, *u, *a and *ə). Internal evidence for a distinct phoneme *ə in root-final syllables is absent in the region (cf. Minangkabau Adelaar 1992; Jambi Malay Anderbeck 2008; Kerinci Steinhauer 2002).[2] Moreover, although root-penultimate syllables exhibit a surface contrast between schwa and other vowels in Jambi Malay (Anderbeck 2008; Yanti 2010; Kerinci Prentice and Usman 1978) and varieties of Minangkabau spoken in the Pesisir region of West Sumatra, the distribution of schwa is arguably predictable in both the proto-language and many of its descendants (c.f. McDonnell 2008). In light of this, there is no strong basis for the claim that schwa was historically phonemic. (Thus, schwa appears in brackets in Fig. 2). Secondly, PM *a in final open syllables is consistently reflected as o in Minangkabau and in nearly all upstream varieties of Jambi Malay. Likewise, in Kerinci, PM *a is reflected as o or a reflex of intermediate *o (from PM *a#) in final open syllables (cf. Mckinnon 2011). Based on this evidence, in the protolanguage(s) for these varieties PM *a was reflected as *o in open final syllables (likely via intermediate stage *a > *ə > *o, cf. Tadmor 2003).

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[2]These facts are consistent with either the hypothesis that PM *ə merged with *a in final syllables or the alternative hypothesis (suggested by Uri Tadmor, p.c.) that PM lacked the contrast *ə and *a (contra Adelaar 1992).

	Front		Back
High	i		u
Mid		(ə)	o (only in open final syllables)
Low			a

Fig. 2 Assumed proto vowels

	Labial	Alveolar	Palatal	Velar	Glottal
Stops					ʔ
-voice	p	t		k	
+voice	b	d		g	
+nasal	m	n	ɲ	ŋ	
Fricatives		s			h
Affricates					
-voice			c		
+voice			j		
Approximate		l		r	
Glides	w		y		

Fig. 3 Assumed proto consonants

Following Anderbeck (2008) *inter alia*, we assume the following proto-inventory for consonants. The 'boxed' sounds do not occur in root/word-final position in inherited words (Fig. 3).

Phonological inventory and innovations In Jangkat, several phonological changes affected the final rime of the root, whereas the rest of the root, with few exceptions, retains its historical form. This is not unexpected, since the root-final rime is most commonly the locus of phonological change in Sumatran Malayic varieties. As a corollary to the fact that root-final rime is the position where the most historical sound changes took place, much can be inferred about the phonological history of a given variety by examining the reflexes of its root-final rimes.

Let us take a closer look at the types of phonological innovations which occurred in root-final rimes in Jangkat. We shall begin by considering final rimes in the proto-language.

With the exception of sounds contained within the box in Table 1 (voiced obstruents, palatal consonants, the velar stop *k*), all of the consonants in the table were permitted in final coda position in the proto-language. The glides *y and *w only occur with the low vowel *a, not *i, *u or *o. As mentioned above, the vowel *o is a reflex of PM *a, which raised in open final syllables; thus, in this table, *o does not appear with any coda. Moreover, some words containing the open final rime *-aØ were borrowed into the language subsequent to the change *a > *o (e.g. Standard Malay *meja,* Jangkat *mija* 'table' from Portuguese; Malay

Table 1 Proto-rimes in root final syllable

o p e n		Oral Stops			Fricatives		Nasal stops			Approximates		Glides	
	Ø	*p	*t	*ʔ	*s	*h	*m	*n	*ŋ	*r	*l	*y	*w
*i	-i	-ip	-it	-iʔ	-is	-ih	-im	-in	-iŋ	-ir	-il		
*a	-a	-ap	-at	-aʔ	-as	-ah	-am	-an	-aŋ	-ar	-al	-ay	-aw
*u	-u	-up	-ut	-uʔ	-us	-uh	-um	-un	-uŋ	-ur	-ul		
*o	-o												

doʔã, Jangkat duʔã 'prayer' from Arabic). Thus this rime is listed in the table below. Table 1 displays the assumed inventory of root-final proto-rimes.

We shall first discuss the changes that took place in Jangkat root-final consonants before turning to changes which affected vowels in final syllables.

Four basic changes which affected final consonants occurred in Jangkat: (i) loss of *ʁ in word-final position; (ii) phrase-final oralization of final nasals (*-m, *-n, and *-ŋ > -p, -t, and -k); (iii) nasalization of root-final oral stops (*-p, *-t > mʔ, nʔ); (iv) debuccalization of root-final *s after *a.

Loss of *ʁ in word-final position The rhotic consonant in Jangkat is pronounced as a uvular approximate, with some frication. With few exceptions -ʁ does not appear in word-final position. This being said, rimes which historically contained final -ʁ retain this sound underlyingly. As the following examples illustrate, -ʁ surfaces when roots are followed by the pronominal suffix -ah.

(2)   Forms with final *-ʁ
       Absolute   Oblique
       pikɪ   *pikɪʁ(-ah)*
       cukʊ   *cukuʁ(-ah)*
       data   *datoʁ(-ah)*

Phrase-final oralization of final nasals The nasal stop series, *-m, *-n, and *-ŋ have become oral stops in root-final position, and are generally realized as -p, -t, and -k, respectively.[3]

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[3]Some borrowed roots ending with nasals represent exceptions to this generalization: e.g. *tlipon* 'telephone', *puhon* 'tree'.

(3)   *-VC
       *-*am*   *tajap*   'sharp'
       *-*im*   *malip*   'pious'
       *-*um*   *lup*   'not yet'

       *-*an*   *psat*   'order'
       *-*in*   *ʁajit*   'dilligent'
       *-*un*   *ʁacut*   'poison'

       *-*aŋ*   *kuʁak*   'less'
       *-*iŋ*   *gilik*   'grind'
       *-*uŋ*   *iduk*   'nose'

The forms in the examples above represent citation forms. In word-final position, -*p*, -*t,* and -*k* alternate with the nasal stops -*m*, -*n*, and -*ŋ*, respectively. Oral stops appear in phrase final position, whereas their nasal stop counterparts appear in phrase medial position. We will discuss the conditioning environment for this phrasal alternation in greater depth in Sect. 3.

(4)   *batak*   'stem'
       bataŋ kayu   'tree branch'
       malik   'steal'
       maliŋ kucik   'steal a cat'

Not all historical root-final nasals have become oral stops. When a nasal segment precedes the final nasal, and only non-consonantal sounds (vocoids, glottals) intervene between the medial and final nasal sound, the final nasal remains a nasal. These 'frozen' nasals do not alternate with oral stops.

(5)   *-NVC
       *-N*am*   *dmam* (not *dmap*)   'fever'
       *-N*um*   *minum* (not *minup*)   'drink'
       *-N*an*   *aman* (not *amat*)   'safe'
       *-N*in*   *diŋin* (not *diŋit*)   'cold'
       *-N*un*   *timun* (not *timut*)   'cucumber'
       *-N*aŋ*   *pinaŋ* (not *pinak*)   'areca nut'
       *-N*iŋ*   *pniŋ* (not *pnik*)   'dizzy'
       *-N*uŋ*   *gunɔng*(not *gunɔk*)   'mountain'

Nasalization of root-final oral stops The root-final oral stops *p and *t were prenasalized in root-final position, as has been observed in several Jambi Malay varieties (cf. Anderbeck 2008, Yanti 2010), as well as Kerinci (Mckinnon 2011). In descriptions of these other varieties, pre-nasalized stops are conventionally described as containing an oral stop immediately preceded by a homorganic nasal segment or secondary feature. In Jangkat, the nasal part of these sounds is very salient, and thus we have adopted the convention of transcribing the nasal portion of these sounds as a full nasal stop segment. Further phonetic/phonological investigation is needed to determine whether the reflexes of final *p/*t are most appropriately transcribed as *mp/nt* or *mʔ/nʔ*, since it is not clear from observations in the field whether the second phonetic element in these sounds is an oral or glottal

stop. We adopt the convention of transcribing the reflexes of *p and *t as *mʔ* and *nʔ*, respectively.

(6) *-VC
     *-ap   asamʔ   'smoke'
     *-ip   nasimʔ   'fortune' (Arabic borrowing)
     *-up   saŋᵍumʔ   'able'
     *-at   sihanʔ   'healthy'
     *-it   sakinʔ   'hurt/sick'
     *-ut   tuʁunʔ   'follow'

Unlike root-final oral stops derived from *-m, *-n, and *-ŋ (which, as we have shown, exhibit a phrasally conditioned alternation with nasal sounds in certain phrasal environments) the final prenasalized reflexes of *p and *t are realized in basically the same way in all phrasal environments.

Debuccalization of root-final *s after *a Unlike Minangkabau and Kerinci, *s in Jangkat is retained after the vowels *i and *u. After *a, *s is debuccalized (becoming h) the reflex of *a is ey.

(7) *-VC
     *-is   gadis 'girl/virgin'
            taŋis 'cry'
     *-as   tbeyh 'hack/chop down'
            tuneyh 'sprout/but'
     *-us   alus   'fine'
            apus   'erase'

Now let us turn to changes to vowels in word-final syllables. The proto-vowels *i, *a, *u and *o have been retained in most environments. However, high vowels *i and *u have become the diphthongs ey and ow in final rimes containing the glottal codas -h and -ʔ.

(8) *-VC
     *-iʔ   useyʔ   'play'
     *-ih   pileyh   'choose'
     *-uʔ   buʁowʔ   'ugly'
     *-uh   jaowh   'far'

High vowels are lowered in the reflexes of the following final rimes: *-iʁ, *-uʁ, *-uŋ, and *-ul.

(9) *-VC
     *-iʁ   ilɪ   'upstream'
            lahɪ   'be born'
     *-uʁ   tabʊ   'spread'
            cukʊ   'shave'
     *-ul   timᵇɔl   'surface/emerge'
            kumpɔl   'gather'
     *-uŋ   gunɔŋ   'mountain'
            ptɔk   'large bamboo'

Moreover, the reflex of *o# is the rounded high-mid back vowel ʊ.

Table 2 Reflexes of final rimes in Jangkat

	*i [+nas] #	*i [-nas] # phrase medial	*i [-nas] # phrase final	*a [+nas] #	*a [-nas] # phrase medial	*a [-nas] # phrase final	*u [+nas] #	*u [-nas] # phrase medial	*u [-nas] # phrase final	*o
*-∅	-i			(see *o)			-u			-ʊ
*-m	-im	-im	-ip	-am	-am	-ap	-um	-um	-up	
*-n	-in	-in	-it	-an	-an	-at	-un	-un	-ut	
*-ŋ	-iŋ	-iŋ	-ik	-aŋ	-aŋ	-ak	-ʊŋ	-ʊŋ	-ʊk	
*-p	-imʔ			-amʔ			-umʔ			
*-t	-inʔ			-anʔ			-unʔ			
*-s	-is			-eyh			-us			
*-ʔ	-eyʔ			-aʔ			-owʔ			
*-h	-eyh			-ah			-owh			
*-l	-il			-al			-ʊl			
*-ʁ	-ɪ			-a			-ʊ			
*-w				-aw						
*-y				-ay						

(10) *o (<PM*a#) > ʊ
      bacʊ   'read'
      biasʊ 'usual'
      limʊ   'five'

To summarize, phonological innovations in Jangkat occurred primarily in the final syllable rime of roots. These changes affected the place of articulation of final vowels (e.g., lowering of high vowels before certain sonorant codas; raising of final *o) and the nasality of final consonants. Jangkat exhibits some changes in the place of articulation of the coda (e.g. debuccalization of *s after *a; deletion of (surface) ʁ in final position); however, it is worth pointing out that root-final codas in Jangkat largely retain their place of articulation. Table 2 shows the inventory of final rimes.

As we noted in Sect. (1), there are two synchronic alternations which affect the phonological shape of Jangkat root final rimes. One of these alternations, which we briefly discussed in this section, involves the reflexes of the historical nasal series *m, *n, and *ŋ in root final syllables, which are reflected as oral stops in phrase-final position and nasal stops in phrase-medial position. The second morphophonological alternation occurs word-internally and is conditioned by

morphological material at the right edge of the root. In the next two subsections (Sects. 2.2 and 2.3) we describe the latter of these two morphophonological alternations. After this, in Sect. 3, we describe the basic phonological properties of the phrase-level alternation and its grammatical distribution.

2.2   Jangkat Word-Level Alternation: Secondary Forms with -ah

The term 'secondary form' refers to the form which a root takes when it is immediately followed by the third person pronoun -ah (a phonologically weak pronoun which is variably pronounced as -ăh or -əh). The secondary form differs from the primary form in the phonological properties of its final rime. Whereas the previous section outlined the basic properties of Jangkat phonology, focusing in particular on root-final rimes, the current section describes the derivation of the secondary form. This section is divided into the following subsections: (i) changes in the vowels of root-final syllable; (ii) changes in the codas of root-final syllables; and (iii) vowel-harmonic allomorphy of the pronoun -ah.

Changes in final vowels For most roots, the derivation of the secondary form involves a shift in the position of the vowel contained within the root-final syllable. There are five attested shifts in place of articulation: (a) raising and rounding of a to o; (b) raising and fronting of a to e; (c) lowering of the high/mid vowel ʊ to o; (d) lowering of the high/mid vowel ɪ to e; and (e) raising and monophthongization of the diphthongs ey/ow to ɪ/ʊ. The figure below displays these shifts in place of articulation (Fig. 4).
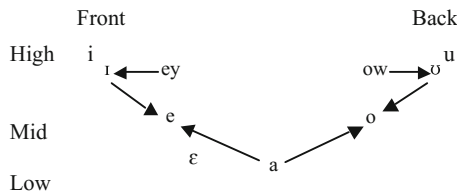
Fig. 4 Derivation of secondary form: shifts in final syllable vowels

(a) **Raising and rounding of *a* to *o*** For primary forms containing a rime -*aC*_[-pal] $-aC_{[-pal]}$ (where 'C' is any non-palatal coda with an oral place of articulation), the vowel in the final rime of the secondary form is realized as [*o*].

(11)   *-*aC*_[-pal]

*-VC	Primary	Secondary	Example	Root gloss
*-*ap*	-*am?*	-*o(?)m*	*asam?/aso(?)m-ah*	'sour'
*-*at*	-*an?*	-*o(?)n*	*adan?/ado(?)n-ah*	'customary law'
*-*am*	-*ap*	-*op*	*dalap/dalop-ah*	'within/deep'
*-*an*	-*at*	-*ot*	*bulat/bulot-ah*	'moon'
*-*aŋ*	-*ak*	-*ok*	*kdak/kdok-ah*	'large'
*-N*am*	-*am*	-*om*	*dmam/dmom-ah*	'fever'
*-N*an*	-*an*	-*on*	*kanan/kanon-ah*	'right side'
*-N*aŋ*	-*aŋ*	-*oŋ*	*bnaŋ/bnoŋ-ah*	'thread'
*-*al*	-*al*	-*ol*	*asal/asol-ah*	'origin'
*-*aw*	-*aw*	-*ow*	*danaw/danow-ah*	'lake'

(b) **Raising and fronting of *a* to *e*** For primary forms containing a rime -*ay*, the vowel in the final rime of the secondary form realized as [*e*].

(12)

*-VC	Primary	Secondary	Root gloss
*-*ay*	*suŋay*	*suŋey-ah*	'base'
	untay	*untey-ah*	'string'
	baday	*badey-ah*	'storm'

(c) **Lowering of the high/mid vowel *ʊ* to *o*** For primary forms containing a rime -*ʊ* the vowel in the final rime of the secondary form realized as [*o*]. However, it should be noted that this generalization does not apply to roots which underlyingly contain the coda -*ʁ* (see discussion of underlying final *ʁ* below).

(13)

*-VC	Primary	Secondary	Root gloss
*o	*tibʊ*	*tibo-ah*	'arrive'
*o	*bacʊ*	*baco-ah*	'read'
*o	*mudʊ*	*mudo-ah*	'young'

(d) **Lowering of the high/mid vowel *ɪ* to *e*** For a limited number of primary forms containing a rime -*ɪ* the corresponding rimes in the secondary form contains the rime -*eʁ* (see discussion of underlying final *ʁ* below).

(14)

*-VC	Primary	Secondary	Root gloss
*ay	*gawɪ*	*gaweʁ-ah*	'work/activity'
*ay	*ilɪ*	*ileʁ-ah*	'downstream'
*ay	*cabɪ*	*cabeʁ-ah*	'chili pepper'

(e) **Raising and monophthongization of the diphthongs *ey/ow* to *ɪ/ʊ*** For primary forms containing a rimes -*ey{?,h}* and -*ow{?,h}*, the corresponding rimes in the secondary form is realized as -*ɪ{?,h}* and -*ʊ{?,h}*, respectively.

(15)

*-VC	Primary	Secondary	Example	Root gloss
*-iʔ	-eyʔ	-ɪʔ	useyʔ/usɪʔ-ɪh	'play'
*-ih	-eyh	-ɪh	pileyh/pilɪh-ɪh	'choose'
*-uʔ	-owʔ	-ʊʔ	buʁowʔ/buʁoʔ-ʊh	'ugly'
*-uh	-owh	-ʊh	jaowh/jaʊh-ʊh	'far'
*-as	-eyh	-eh	tuneyh/tuneh-eh	'bud (of a flower)'

Changes in final codas In addition to the changes in vowels mentioned above, certain changes in the properties of final codas are observed in secondary forms. These changes include: (a) metathesis of nasal-glottal clusters; (b) emergence of underlying final coda ʁ.

(a) **Metathesis of nasal-glottal clusters** For primary forms in which the final coda position is occupied by one of the post-glottalized nasal stops *m*ʔ or *n*ʔ (i.e. the reflexes of the proto-sounds *p* and *t*), this segment is variably realized as plain or pregottalized nasal segment in the secondary form.

(16)

*-VC	Primary	Secondary	Example	Root gloss
*-ap	-amʔ	-o(ʔ)m	sɲamʔ/ sɲo(ʔ)m-ah	'silent'
*-at	-anʔ	-o(ʔ)n	padanʔ/pado(ʔ)n-ah	'dense'
*-ip	-imʔ	-i(ʔ)m	salimʔ/sali(ʔ)m-ah	'overtake, pass'
*-it	-inʔ	-i(ʔ)n	giginʔ/gigi(ʔ)n-ah	'bite'
*-up	-umʔ	-u(ʔ)m	cukumʔ/cuku(ʔ)m-ah	'enough'
*-ut	-unʔ	-u(ʔ)n	mulunʔ/mulu(ʔ)n-ah	'mouth'

(b) **Emergence of underlying final coda ʁ** As some of the examples above illustrate, the final coda of the alternating root in some cases differs between the primary and secondary form. In particular, three distinct phonological changes are observed. First, primary forms which end with -*a* (<*-ar* and borrowings ending with *-a*), -ɪ (<*-ir*), and -ʊ (<*-ur*) have corresponding secondary forms ending with -oʁ, -iʁ and -ʊʁ respectively.

(17)

*-VC	Primary	Secondary	Example	Root gloss
*-ar	-a	-oʁ	baka/bakoʁ-ah	'burn'
*-ir	-ɪ	-iʁ	lahɪ/lahɪʁ-ah	'be born'
*-ur	-ʊ	-ʊʁ	ancʊ/ancʊʁ-ah	'destroy'

Some roots which contain the rime -ɪ derived from *-ay* and also manifest ʁ in the secondary form.

(18)

*-VC	Primary	Secondary	Root gloss
*ay	gawɪ	gaweʁ-ah	'work/activity'
*ay	ilɪ	ileʁ-ah	'downstream'
*ay	cabɪ	cabeʁ-ah	'chili pepper'

We assume that these forms contain an underlying /ʁ/, which is deleted in word-final position, but may surface when it is (re)syllabified as the onset of the pronoun -ah. This rule must be ordered after Low Vowel Raising (LVR).

(19)   /bakaʁ -ah/   /bakaʁ/
        LVR   a → o / ___ C -3SG   bakoʁ -ah   N/A
        R-deletion   ʁ → Ø / ___ #   N/A   baka
                                              [bakoʁ-ah]   [baka]

Vowel harmonic allomorphy of the pronoun -ah The pronoun -ah exhibits the alternative forms -ɪh and -ʊh. These forms occur when a secondary vowel-harmony process occurs with roots containing final glottal sounds (but not roots containing other types of codas, as previous examples illustrate).

(20)   *-VC Primary   Secondary   Example   Root gloss
       *-iʔ   -eyʔ   -ɪʔ   useyʔ/usɪʔ-ɪh   'play'
       *-ih   -eyh   -ɪh   pileyh/pilɪh-ɪh   'choose
       *-uʔ   -owʔ   -ʊʔ   buʁowʔ/buʁʊʔ-ʊh   'ugly'
       *-uh   -owh   -ʊh   jaowh/jaʊh-ʊh   'far'
       *-as   -eyh   -eh   tuneyh/tuneh-eh   'bud (of a flower)'
       *-as   -eyh   -eh   baleyh/baleh-eh   'respond'

Superficially, this distribution suggests that the harmony process is blocked by consonants which are specified for place of articulation. There is, however, clear evidence against this hypothesis. The third person pronoun does not exhibit harmony when it attaches to roots ending with open syllables containing the high vowels *i* and *u*.

(21)   Primary   Secondary   Root gloss
       padi   padi-ah   (not *padi-ih)   'rice'
       batu   batu-ah   (not *batu-uh)   'stone'

Putting issues of hiatus and blocking aside, we can capture
the pattern described in the examples above descriptively with the following rule:

(22)   Place Harmony
       V → V[γplace] / V[γplace] {ʔ,h} [3SG ____

Non-alternating roots Notice also that roots ending with -*i* and -*u* do not change with the addition of the pronoun. Roots containing rime types not discussed thus far also do not exhibit a secondary form. These include rimes containing a high vowel along with any of the following codas: -*m, -n, -p, -t, -k, -l*. This group also contains primary forms with the final rime -*iŋ*.

In summary, the presence of the pronoun -*ah* triggers phonological changes in final rimes. The alternation paradigm is summarized below. The first and second columns indicate the phonological shapes of corresponding primary and secondary forms, respectively. The third column indicates the proto-rimes for the respective rime alternation pairs. The fourth column provides a root exemplifying the relevant rime alternation (Table 3).

Table 3 Root-shape alternation

Primary	Secondary	Proto	Example
-amʔ	*-o(ʔ)m*	**ap*	*ɲamʔ/ɲo(ʔ)m-ah* 'silent'
-anʔ	*-o(ʔ)n*	**at*	*adanʔ/ada(ʔ)n-ah* 'customary law'
-imʔ	*-i(ʔ)m*	**ip*	*salimʔ/sali(ʔ)m-ah* 'overtake, pass'
-inʔ	*-i(ʔ)n*	**it*	*giginʔ/gigi(ʔ)n-ah* 'bite'
-umʔ	*-u(ʔ)m*	**up*	*cukumʔ/cuku(ʔ)m-ah* 'enough'
-unʔ	*-u(ʔ)n*	**ut*	*mulunʔ/mulu(ʔ)n-ah* 'mouth'
-ap	*-op*	**[-nas]am*	*dalap/dalop-ah* 'within/deep'
-at	*-ot*	**[-nas]an*	*bulat/bulot-ah* 'moon'
-ak	*-ok*	**[-nas]aŋ*	*kdak/kdok-ah* 'large'
-am	*-om*	**[+nas]am*	*dmam/dmom-ah* 'fever'
-an	*-on*	**[+nas]an*	*kanan/kanon-ah* 'right side'
-aŋ	*-oŋ*	**[+nas]aŋ*	*bnaŋ/bnoŋ-ah* 'thread'
-ip	*-ip*	**[-nas]im*	*malip/malip-ah* 'devout'
-it	*-it*	**[-nas]in*	*ʁajit/ʁajit-ah* 'diligent'
-ik	*-ik*	**[-nas]iŋ*	*dagik/dagik-ah* 'meat'
(-im)	*(-im)*	**[+nas]im*	N/A
-in	*-in*	**[+nas]in*	*diɲin/diɲin-ah* 'cold'
-iŋ	*-iŋ*	**[+ nas]iŋ*	*kuniŋ/kuniŋ-ah* 'yellow'
-up	*-up*	**[-nas]um*	*ciup/ciup-ah* 'sniff/kiss'
-ut	*-ut*	**[-nas]un*	*dusut/dusut-ah* 'village'
-ʊk	*-ʊk*	**[-nas]uŋ*	*ptʊk/ptʊk-ah* 'large bamboo'
-um	*-um*	**[+nas]um*	*minum/minum-ah* 'drink'
-un	*-un*	**[+nas]un*	*timun/timun-ah* 'cucumber'
-ʊŋ	*-ʊŋ*	**[+nas]uŋ*	*gunʊŋ/gunʊŋ-ah* 'mountain'
-eyh	*-eh*	**as*	*tuneyh/tuneh-eh* 'bud/sprout'
-is	*-is*	**is*	*gadis/gadis-ah* 'girl/virgin'
-us	*-us*	**us*	*apus/apus-ah* 'erase'
-al	*-ol*	**al*	*akal/akol-ah* 'reason/rationale'
-il	*-il*	**il*	*tampil/tampil-ah* 'appearance'
-ʊl	*-ʊl*	**ul*	*kumpʊl/kumpʊl-ah* 'gather'
-a	*-oʁ*	**aʁ*	*ula/uloʁ-ah* 'snake'
-ɪ	*-iʁ*	**iʁ*	*bibɪ/bibɪʁ-ah* 'lips'
-ʊ	*-ʊʁ*	**uʁ*	*cukʊ/cukʊʁ-ah* 'shave'
-aʔ	*-aʔ*	**aʔ*	*tgaʔ/tgaʔ-ah* 'stand'
-ah	*-ah*	**ah*	*mutah/mutah-ah* 'vomit'
-eyʔ	*-ɪʔ*	**iʔ*	*useyʔ/usɪʔ-ɪh* 'play'
-eyh	*-ɪh*	**ih*	*pileyh/pilɪh-ɪh* 'choose'
-owʔ	*-ʊʔ*	**uʔ*	*buʁowʔ/buʁʊʔ-ʊh* 'ugly'
-owh	*-ʊh*	**uh*	*jaowh/jaʊh-ʊh* 'far'
-aw	*-ow*	**aw*	*danaw/danow-ah* 'lake'

(continued)

Table 3 (continued)

Primary	Secondary	Proto	Example
-ay	*-ey*	**ay*	*suŋay/suŋey-ah* 'river'
-ɪ	*-eʁ*	**ay*	*cabɪ/cabeʁ-ah* 'chili'
-ʊ	*-o*	**o*	*mudʊ/mudo-ah* 'young'
-a	*-oʁ*	**a* (borrowed)	*mija/mijoʁ-ah* 'table'
-i	*-i*	**i*	*nasi/nasi-ah* 'cooked rice'
-u	*-u*	**u*	*kayu/kayu-ah* 'wood'

Thus far, we have seen that the pronoun *-ah* triggers a morphophonological alternation in root-final rimes. In the next subsection, we shall see that affixes occurring at the right edge of the root also trigger the same alternation.

2.3 Jangkat Word-Level Alternation: Post-root Morphology (-ʔn)

In Sect. 2.2 we demonstrated that roots exhibit a secondary form which is conditioned by the 3rd person pronoun *-ah*. The secondary root form is also triggered by the presence of the suffix *-ʔn* and the circumfixes *k–ʔn, p(ʁ)–ʔn,* and *pN–ʔn*.[4] The post root *-ʔn* in all of these morphemes exhibits several phonologically conditioned allomorphs, which we will discuss below. Before discussing the phonological properties of *-ʔn*, let us first discuss briefly the functions and historical origin of these affixes:

Historical origin and function of -ʔn Based on its phonological form and morphosyntactic functions, this suffix is most likely derived, via phonological reduction, from the homophonous PM suffixes **-an* (plurality, diffuse subject, reciprocity), **-an/*-An* (nominalizer referring to goal, place, or result of action), which are reconstructed by Adelaar (1992). According to Adelaar's description, these suffixes exhibited various functions, many of which can be observed in Jangkat forms with the suffix *-ʔn*. The following is a non-exhaustive list illustrating many of the functions of *-ʔn* shared by reflexes of PM **-an* and **-an/*-An* in Malayic varieties described by Adelaar (1992: pp. 165–174). These include: (i) deverbal nominalizer referring to the place where the action denoted by the base occurs (e.g. *tmpuh* 'pass through' > *tmpuʔn* 'a place that is passed through'; cf. Standard Malay *tempuh*); (ii) deverbal abstract nominalizer, referring to the performance of an action denoted by the base (e.g. *ʁobowh* 'to collapse' > *ʁobuʔn* 'a collapse'; cf. Standard Malay *roboh/robohan*); (iii) marking reciprocity (e.g. *jaowh*

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[4]*N* in *pN–ʔn* is an underlyingly velar nasal which assimilates to the initial consonant of the circumfix base.

'far' > *jau?n* 'far from one another'; cf. Standard Malay *jauh/berjauhan*); deverbal nominalizer referring to the result/goal of the action denoted by a base (e.g. *psan* 'to order/instruct' > *psotn* 'an order/errand'; cf. Standard Malay *pesan/pesanan*); marking collectivity/variety (e.g. *ʁobus* 'boil' > *ʁobutn* 'many various boiled things'; cf. Standard Malay *rebus/rebusan*); (iv) adjectival comparative marker, expressing excess (e.g. *buʁowʔ* 'ugly' > *buʁuʔn* 'very/excessively ugly'; cf. Jakarta Indonesian *buruk* 'ugly'/*burukan* 'uglier'); (v) deverbal nominalizer referring to the object of the act denoted by the base (e.g. *minum* 'drink'/*minuʔm* 'a drink'; cf. Standard Malay *minum/minuman*).

In addition to the functions ascribed to *-an* and *-an/*-An*, the suffix *-ʔn* also functions as an applicative/causative marker (e.g. *dalap* 'deep'/*dalopm* 'make sth. deeper'; *abis* 'finished' > *abisn* 'to finish off'; *buŋkus* 'a wrapper' > *buŋkusn* 'to wrap up'; *taŋis* 'cry' > *taŋisn* 'cry over/about sth.'; *btul* 'correct' > *btuʔl* 'to correct'). A reasonable hypothesis is that *-ʔn* in these cases is a reflex of an earlier suffix *-an*, a cognate of the applicative/causative-type marker *-kan*, which is well attested in the same region. Verbs exhibiting the applicative/causative suffix *-ʔn* also often convey aspectual meaning such as distributivity, repetition and reciprocity (e.g. *kikis* 'scraped'/*kikisn* 'to scrape something all over'; *bʁaseyh* 'clean' > *bʁasiʔn* 'to clean something. again'; *baleyʔ* 'return' > *baliʔn* 'cause to return to each other (e.g. after a divorce)'; *cukil* 'to gouge' > *cukiʔl* 'to gouge all/ each of something.'; *hapal* 'memorize' > *hapoʔl* 'remember all/each of something.').

As mentioned above *-ʔn* also occurs in the circumfixes like *k–ʔn, p(ʁ)–ʔn,* and *pN–ʔn*, cognates of the Malay *ke–an, pe(r)–an, peN–an*. Thus far, we have only managed to collect a few words exhibiting these morphemes (e.g. *useyʔ* 'play'/ *pʁosiʔn* 'a game'; *jalat* 'walk/road' > *pjalotn* 'trip/journey'). Based on these limited data points, the circumfixes appear to exhibit the same functions in Jangkat as in other related varieties of Malayic.

Phonological manifestation of -ʔn As noted above, the suffix *-ʔn* (and its variant phonological forms) occurs with the secondary root form. Furthermore, *-ʔn* exhibits several allomorphs which are predictable based on the phonological properties of the base.

For bases in which the final sound is a vowel, the surface form of the suffix is *-ʔn*.

(23) -V# final bases
      Primary   Secondary w/-*ʔn*
      kaji   'recite'   *kajiʔn*   'recitation'
      antu   'ghost'   *antuʔn*   'have a ghost'
      bacʊ   'read'   *bacoʔn*   'reading'

For bases in which the final coda is a glottal sound (*ʔ, h*), *-ʔn* is inserted into the final coda position, replacing the glottal sound.

(24) Glottal final bases
      Primary   Secondary w/-*ʔn*
      ʁobowh   'to collapse'   *ʁobuʔn*   'a collapse'
      tpowʔ   'to slap'   *tpuʔn*   'a slap'

For bases ending with sonorant consonants (other than ʁ), the suffix, which is realized as -ʔ-, is inserted preceding the final consonant. This class includes -l or one of the plain nasal stops -m, -n, or -ŋ (i.e. the reflexes of final *-m,* -n, and *-ŋ in roots where the final segment is locally preceded by a nasal segment).

(25)   -Vl final syllables
           Prim.   Sec.   -ʔn
    *-Vl   -al   -ol   -oʔl   akal/akoʔl   'reason'/'to rationalize'
           -il   -il   -iʔl   tampil/tampiʔl   'appear'/'appearance'
           -ul   -ul   -uʔl   btul/btuʔl   'correct'/'to correct'

(26)   -C[+nas]VC[+nas] final syllables
           Prim.   Sec.   -ʔn
    *-Vm   -am   -om   -oʔm   dmam/dmoʔm   'fever'/'make feverish'
           -um   -um   -uʔm   minum/minuʔm   'to drink'/'a drink'

    *-Vn   -an   -on   -oʔn   aman/amoʔn   'safe'/'make safe'
           -in   -in   -iʔn   diŋin/diŋiʔn   'cold'/'make cold'
           -un   -un   -uʔn   timun/timuʔn   'cucumber'/'add cucumber'

    *-Vŋ   -aŋ   -oŋ   -oʔŋ   bnaŋ/bnoʔŋ   'thread'/'to thread'
           -iŋ   -iŋ   -iʔŋ   kuniŋ/kuniʔŋ   'yellow'/'make yellow'
           -ʊŋ   -uŋ   -uʔŋ

For bases in which the final coda of the secondary form is -(ʔ)m or -(ʔ)n (i.e. the final segment of the root is a reflex of *p or *t), the 'insertion' of the suffix has the effect that the glottal segment becomes obligatory.

(27)   -VC[-son] final rimes
           Primary   Secondary   w/-ʔn
    *-Vp   -amʔ   -o(ʔ)m   adamʔ/adoʔm   'facing'/'to face (sth.)'
           -imʔ   -i(ʔ)m   titimʔ/titiʔm (rare) 'entrust/entrust with'
           -umʔ   -u(ʔ)m   cukumʔ/cukuʔm   'enough'/'fill up'
    *-Vt   -anʔ   -o(ʔ)n   padanʔ/padoʔn   'dense'/'make dense'
           -inʔ   -i(ʔ)n   giginʔ/gigiʔn   'bite'/'bite up'

For bases exhibiting plain oral stops -p, -t, and -k in final position (e.g., reflexes of historical roots ending with *-m, *-n, or *-ŋ), the suffix appears as a plain nasal manifesting the same place of articulation as the final stop.

(28) *-C[-nas]VC[+nas] final syllables

	Prim.	Sec.	-ʔn		
*-Vm	-ap	-op	-opm	tajap/tajopm	'sharp'/'sharpen'
	-up	-up	-upm	kiʁup/kiʁupm	'send'/'sent parcel'
*-Vn	-at	-ot	-otn	psat/psotn	'to order'/'message'
	-it	-it	-itn	ʁajit/ʁajitn	'dilligent'/'dilligently do'
	-ut	-ut	-utn	dukut/dukutn	'shaman'/'act as sham'n'
*-Vŋ	-ak	-ok	-okŋ	lubak/lubokŋ	'hole'/'hollow out'
	-ik	-ik	-ikŋ	dagik/dagikŋ	'meat'/'cut meat off of'
	-uk	-uk	-ukŋ	payuk/payukŋ	'umbrella'/'to shade sth'

Similarly, for roots ending with -s, the suffix is realized as a homorganic nasal following s; however, in these forms, s is optionally realized as t.

(29) -Vs final rimes

	Prim.	Sec.	-ʔn		
*-Vs	-is	-is	-itn/-isn	iblis/iblitn/iblisn	'evil spirit'/'haunted'
	-us	-us	-utn/-usn	ʁobus/ʁobutn, ʁobusn	'boil'/'boil repeatedly'

The distribution of the allomorphs of -ʔn is summarized in the following table (Table 4).

To summarize, in this section we have sketched the general properties of the polyfunctional morpheme -ʔn, as well as the circumfixes k–ʔn, p(ʁ)–ʔn, and pN–ʔn (for which few data points are available). We have shown that these affixes, like the 3rd person pronoun -ah, consistently occur with secondary root form. We have demonstrated that the allomorphic variants of -ʔn are predictable based on the phonological properties of the final segment in the root.

In the next subsection, we describe the phrase-level alternation in Jangkat. Our description will focus on the phrasal environments where phrase-medial forms vs. phrase-final forms occur. Following this, in Sect. 4, we will summarize the distribution of both the word-level and phrase-level alternations in Jangkat.

Table 4 Allomorphy of -ʔn

Coda segment	Surface realization of -ʔn
∅ or Glottal	Coda replaced by -ʔn
Sonorant C	-ʔ- inserted before final C
Obstruent C	Homorganic nasal inserted after final C (s may be realized as t)

3   Jangkat Phrase-Level Alternation

In Sect. 2.1, we noted that the reflexes of *m, *n and *ŋ are realized as the oral
stops p, t, and k in citation forms and other phrase-final environments, while they
are reflected as nasal stops in specific phrase medial positions.

(30)   Phonologically conditioned phrase-medial and phrase-final forms in Jangkat
       *final-C   Phrase-final   Phrase-medial   Root gloss
       *m   gaʁap   gaʁam   'salt'
       *n   dukut   dukun   'shaman'
       *ŋ   kačak   kačaŋ   'nut'

Let us now consider the phrasal environments where phrase-medial versus
phrase final forms occur.

In Jangkat noun phrases, the head noun must appear in the medial form (i.e. with
a final nasal) when it is followed by a possessor, attributive adjective or a
demonstrative.

(31)   Noun in phrase-final position
       mᵇo   maliŋ   [kučik (*kučiŋ)]
       1SG   ACT.steal   cat
       'I stole a cat.'
(32)   Noun + Possessor
       mᵇo   maliŋ   [kučiŋ (*kučik) paʔ ali]
       1SG   ACT.steal   cat   Mr. Ali
       'I stole Mr. Ali's cat.'
(33)   Noun + Attributive Adjective
       mᵇo   ŋamᵇowʔ   [kačaŋ (*kačak) abak]
       1SG   ACT.eat   nut/bean   red
       'I'm eating red beans.'
(34)   Noun + Dem.
       mᵇo   ŋamᵇowʔ   [kačaŋ (*kačak) tu]
       1SG   ACT.eat   nut/bean   that
       'I am eating those nuts/beans.'

However, in Jangkat, other modifiers which follow the noun head do not trigger
the phrase medial form. When the noun is followed by a relative clause, an adjunct
prepositional phrase, or a numeral + classifier, it surfaces in the phrase-final (oral
consonant) form.

(35)   Noun + Relative Clause
       mᵇo   ŋamᵇowʔ   [kačak (?*kačaŋ)   [ᵣₑₗnaŋ   ali   beli   rah]]
       1SG   ACT.eat   nut/bean   that   Ali   buy   DEM
       'I am eating the nuts/beans that Ali bought.'

(36) Noun + PP
     *mᵇo   ŋamᵇowʔ   [kačak (?*kačaŋ)   [PPʁay   buŋo]]*
     1SG   ACT.eat   nut/bean   from   Bungo
     'I am eating the nuts/beans from Bungo.'

(37) Noun + [Numeral + Classifier]
     *mᵇo   ŋamᵇowʔ   [kačak (?*kačaŋ)   [NUM spulowh čieʔ]]*
     1SG   ACT.eat   nut/bean   ten   CLF
     'I ate ten nuts/beans.'

Numerals appear in the secondary form when they are followed by a classifier. In the following example, the numeral *smilat/smilan* 'nine' appears in phrase-medial form (nasal final consonant) when followed by a classifier.

 (38)   Numeral + Classifier
      *mᵇo   ŋamᵇowʔ   [kačak [NUM smilan (*smilat) čieʔ]]*
      1SG   ACT.eat   nut/bean   ten   CLF
      'I ate ten nuts/beans.'

(39)   Numeral in final position
      *ɲʊ   masowʔ   kamar   numor   smilat (*smilan)*
      3   enter   room   number   nine
      'He entered room number nine.'

Turning to the verbal domain, active transitive verbs appear in phrase-medial form when followed by an overt NP object.

(40)   Verb in Phrase final position
      *ʁaŋ   tu   paseyh   malik (*maliŋ)*
      person that   often   steal
      'That person often steals.'

 (41)   Verb + Object
       *ʁaŋ   tu   paseyh   maliŋ (*malik)kucik*
       person that   often   steal   cat
       'That person often steals cats.'

In contrast, when followed by an adjunct prepositional phrase, the verb surfaces in phrase-final form.

(42)   Verb + Preposition Phrase
      *ʁaŋ   tu   paseyh   malik (*maliŋ)   di   pasa*
      person that   often   steal   LOC   market
      'That person often steals in the market.'

Based on the pattern presented in this section, one might expect that roots would appear in the phrase-medial form when followed by a pronoun *-ah* or the suffix *-ʔn*; however, as we described in the previous two subsections, in roots ending oral stops, these final sounds remain oral (i.e. in their phrase-final form) when the root appears with *-ah* or *-ʔn*.

(43)	Primary	Secondary-*ah*	Secondary-*ʔn*	Root gloss
	tajap	*tajop-ah*	*tajop-m*	'sharp'
	kiʁup	*kiʁup-ah*	*kiʁup-m*	'send'
	psat	*psot-ah*	*psot-n*	'to order'
	ʁajit	*ʁajit-ah*	*ʁajit-n*	'dilligent'
	dukut	*dukut-ah*	*dukut-n*	'shaman'
	lubak	*lubak-ah*	*lubok-ŋ*	'hole'
	dagik-ah	*dagik-ah*	*dagik-ŋ*	'meat'
	payuk	*payuk-ah*	*payuk-ŋ*	'umbrella'

In this subsection, we described the distribution of phrase-medial and phrase-final forms in Jangkat. In Sect. 4, we summarize the distributional properties of the phrase-level and word-level alternation, and point out an interesting correlation with the distribution of the Kerinci alternation.

4   Conclusions

In this paper we have described the basic phonological and morphological properties of Jangkat, a previously undescribed Malayic variety spoken in rural Sumatra. Our description has focused on the properties of Jangkat root-shape alterations. Although a substantial number of Malayic varieties in the interior of Sumatra exhibit root-shape alternations, the previous literature has only dealt with the grammatical properties of word-shape alternations in 'core' dialects of Kerinci. What we observe in Jangkat is that two root shape alternations are found, one word internal, occurring when certain affixes/clitics are present, and the other phrasal in nature, determined by whether the word in question is phrase medial or phrase final. The distribution in Jangkat provides a model for the development of the much more phonologically opaque distribution found in Kerinci.

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Gateway to Language: The Perception of Prosody at Birth

Judit Gervain

Abstract The surprising ease and efficiency with which human infants, but not kittens or young chimps, acquire language has puzzled scholar for decades. We now have a relatively good empirical and theoretical description of the later stages of language acquisition. However, despite considerable research efforts, the initial stage, i.e. the division of labor between the biologically endowed abilities the infant brings to the task of language acquisition and the learning that takes place on the basis of experience, remains poorly understood. Here, I put forth the hypothesis that prosody might be infants' first gateway to language, ensuring the link between prenatal and postnatal language experience. I will review evidence suggesting that the prosody of the native language(s) experienced prenatally already shapes infants' speech perception abilities and their neural correlates. I will also show that prosody plays an important bootstrapping role later during the acquisition of syntax. I propose that these two facts are strongly related, and provide insight about the key role that prosody plays during the early stages of language acquisition.

Keywords Speech prosody · Speech perception · Newborn infants
Prenatal experience · Prosodic bootstrapping

1 Introduction

In the cognitive-nativist tradition of language acquisition research, it has long been argued that language learning is mostly a process of "learning by forgetting" (Chomsky et al. 2002; Mehler and Dupoux 1994). Infants are born with all the universally relevant linguistic categories, and during the first years of life, they zoom in on the ones relevant for their native language(s). Young infants are indeed able to discriminate almost all the phonological (phonemic, tonal etc.) contrasts that

J. Gervain (✉)
Laboratoire Psychologie de la Perception - UMR 8242, CNRS & Université Paris Descartes, 45 rue des Saints-Pères, 75006 Paris, France
e-mail: judit.gervain@parisdescartes.fr

exist in the world's languages, but by the second half of the first year of life, they lose the ability to discriminate non-native contrasts, while their discrimination of native ones is sharpened (Gervain and Mehler 2010; Kuhl 2004; Werker and Tees 1984). This attunement to the native language has been the focus of a large body of research in the last decades. Similar perceptual reorganization has also been observed in other domains, e.g. in face perception (the "other race effect": infants lose the ability to discriminate individual faces from animal species and human races that they don't frequent encounter, deHaan et al. 2002; Pascalis et al. 2002). At the neural level, this perceptual reorganization corresponds to the strengthening of frequently used neural connections and the gradual pruning of the inactive ones. Neural plasticity makes these changes reversible during the first years of life, but as plasticity decreases, the neural commitment to often experiences stimuli, such as the native language, becomes more difficult to change.

This view is still by and large accepted today. However, research on newborns' perceptual abilities in the last 10–15 years has brought to light a new and important piece to the puzzle of language acquisition: experience with the native language starts earlier than previously believed—before, and not after birth.

Hearing is operational from the 20–28th week of gestation, so fetuses perceive at least their mother's speech. This prenatal speech input is different from speech broadcast in the air, because it is filtered by maternal tissues and propagates through fluid. Animal models and computational simulations suggest that it is low-passed filtered at around 300–400 Hz (Gerhardt et al. 1992; Griffiths et al. 1994; Lecanuet and Granier-Deferre 1993), which mainly preserves the fundamental frequency, and thus the overall prosody (melody and rhythm) of the signal, but suppresses acoustic details necessary for phoneme discrimination.

It has indeed been known that fetuses respond to sound stimulation (DeCasper et al. 1994; Kisilevsky et al. 2003, 2009; Lecanuet et al. 1986; Lecanuet et al. 1992). But now an increasing body of research with newborns suggests that they also learn from this early experience, and speech heard in utero starts shaping infants' perceptual abilities and brain specialization for speech before birth.

It thus seems that the initial stage of language acquisition is earlier than previously believed: right when the auditory system becomes operational. Importantly, this discovery doesn't simply mark a shift in developmental schedule. It also means that at the outset the input to the system is different, implying that the learning mechanisms at work might also differ form those that operate later over the postnatal input signal. In other words, the prenatal signal, mainly consisting of prosodic information, might act as a true bootstrap to language acquisition: setting up the system to achieve its full functionality once the complex postnatal input comes in.

The current paper seeks to argue in favor of this hypothesis. It will first investigate newborns' speech perception abilities disentangling universal sensitivities from prenatal learning. It will then show how prosody acts as a cue in later language development, helping infants learn the lexicon and the grammar of their native language. It will argue that this bootstrapping role of prosody starts early, originating in prenatal experience.

2 Newborn Infants' Speech Perception Abilities

Newborn infants have sophisticated abilities to process speech. As discussed above, some of these abilities are broadly based and universal. Newborns thus prefer human speech to equally complex sine wave speech analogues (Vouloumanos and Werker 2007), although interestingly until 3 months of age, they show equal preference to speech and rhesus monkey calls over speech analogues (Vouloumanos et al. 2010). Rhesus monkeys have a vocal tract quite similar to that of humans, and as a result, their vocalizations have a harmonic structure similar to vowels in speech. This result thus suggests that the auditory system might initially be specialized to the broader category of (primate) vocalization with specific auditory features such as harmonics, and not just to speech.

Newborns can discriminate between languages based on speech rhythm. Indeed, they can tell apart two languages that they never heard before, if those are rhythmically different. French newborns thus readily differentiate between English and Japanese or between Dutch and Spanish, but not between Italian and Spanish (Mehler et al. 1988; Nazzi et al. 1998; Ramus et al. 2000). This discrimination ability is based on language rhythm, i.e. the temporal aspects of prosody, operationally defined as the relative proportion of vowels and consonants in the speech signal (Ramus et al. 1999). Importantly, however, it is not specific to speech, but is most likely a lower-level acoustic ability, as cotton-top tamarin monkeys are also able to discriminate rhythmically different languages (Ramus et al. 2000).

At the utterance level, newborns seem to use well-formed prosodic contours to identify relevant units. When word sequences consisting of four words were presented with list intonation, newborns readily detected a change in word order (e.g. switching the first and second words around), but when the same sequences were presented with a well-formed utterance-level prosodic contour, they no longer noticed the word order change (Benavides-Varela and Gervain 2014), suggesting that prosody is a stronger cue for newborns than serial order.

Newborn infants also have surprising abilities to process acoustic information pertaining to word forms. They can detect the acoustic cues that signal word boundaries (Christophe et al. 1994), discriminate words with different patterns of lexical stress (Sansavini et al. 1997) and distinguish between function words (articles, pronouns, prepositions, determiners etc.) and content words (nouns, verbs, adjectives, adverbs etc.) on the basis of their different acoustic characteristics (Shi et al. 1999). Interestingly, newborns can also discriminate words with the same number of phonemes, but different numbers of syllables (e.g. words with 6 phonemes organized into 2 vs. 3 syllables), but they cannot distinguish words with different numbers of phonemes, if those are organized into the same number of syllables (6 vs. 7 phonemes organized into 3 syllables). Furthermore, they show different brain responses to monosyllabic words in which the consonant cluster in the onset respects the sonority hierarchy as compared to those in which it doesn't (Gómez et al. 2014), suggesting that universal constraints about syllable structure might be biologically endowed.

At birth and soon after, infants can also discriminate almost all phonemes appearing in the world's languages, even if they don't appear in the infants' native language (Dehaene-Lambertz and Baillet 1998; Eimas et al. 1971).

Most of the above-cited abilities rely on tracking supra-segmental features of language. While the ability to discriminate single phoneme changes seems to contradict this generalization, it needs to be noted that single phoneme changes have always been tested embedded in full syllables (e.g. /ta/ vs. /da/). Thus to date it has not been established whether newborns are able to represent individual phonemes separately, and some of the above results (e.g. their inability to notice a change in the number of phonemes if the number of syllables remains the same) strongly suggest that the syllable (or possibly some other supra-segmental unit) is the privileged representational unit in very young infants. Indeed, this hypothesis has been proposed to account for newborn speech perception, and syllables have been shown to play an important role in mature language processing in adults (Bertoncini and Mehler 1981). The current proposal builds on this suggestion, and argues that this basic syllabic representation in newborns is not flat or unstructured, bur rather already organized into (at least some) prosodic units. In other words, this syllabic representation exists within a more general prosodic representation, with syllables and their vocalic nuclei being the smallest units carrying prosodically relevant acoustic information, e.g. pitch, duration or intensity contrasts, between strong and weak elements. The results mentioned above describing newborns' general, broadly based speech perception abilities mesh well with such an account.

Evidence is cumulating that besides these universal abilities, newborns start learning about their native language(s) already before birth. It has been known for some time that they distinguish and prefer the language spoken by their mothers during pregnancy over other languages (Mehler et al. 1988; Moon et al. 1993), even if their mothers are bilingual (Byers-Heinlein et al. 2010). They also show a preference for their mother's voice over other female voices (DeCasper and Fifer 1980). These preferences lay the foundations for the acquisition of the native language.

Similarly, prenatal experience also appears to shape the neural specialization for speech and language processing. A seminal study using near-infrared spectroscopy (NIRS) found that newborn infants' brain responses to speech were already left-lateralized involving the same regions as in adults, mainly the middle and superior temporal areas and the inferior frontal regions including Broca's area (Pena et al. 2003). This study used native language stimuli. Importantly, when comparing neonates' responses to their native language versus a non-native tongue, some studies reproduced the left hemisphere advantage for forward versus backward speech in the native language, but no hemispheric difference in a non-native language (Sato et al. 2012), while other studies found no hemispheric differences for either language, but a general, bilateral advantage for the native language over the non-native one (May et al. 2011). In the former study, natural speech was used in Japanese and English, while in the latter, English and Tagalog stimuli were low-pass filtered to mimic the attenuation of the speech signal by the womb. It is not clear whether the acoustic differences between the stimuli, the properties of the

languages tested or other methodological variations might account for the lateralization differences found. These differences notwithstanding, both studies have observed a differential response to the native language as compared to a non-native one at birth.

Recent evidence also suggests that newborns gain even more specific knowledge about their native language prenatally. Newborns respond differentially to the acoustic dimensions that carry phrasal level prosodic prominence in their native language (Abboub et al. 2016). Thus newborns exposed to French, where duration is the strongest cue to prosodic prominence (Nespor et al. 2008), detect violations of the well-formed short-long pattern typical of French prosody, but show no differential response to intensity (loud-soft vs. soft-loud) or pitch (high-low vs. low-high patterns) contrasts, whereas French-other language bilingual newborns, whose other language makes use of a pitch contrast, do detect the pitch contrast violation (low-high). This suggests that prenatal exposure, consisting mostly of prosody, sets up early knowledge about the prosodic contours typical of the native language. Even more striking evidence for this early prosodic knowledge comes from newborns' earliest productions. Their communicative cries already reflect the pitch contours characteristic of their native language (Mampe et al. 2009): French-exposed newborns have a prominence-final cry melody as do French declarative sentences, while German neonates exhibit initial prominence in their communicative cries, similarly to German sentential prosody.

Prenatal experience thus shapes infants' perceptual abilities and the neural substrates for speech and language processing. Since speech experienced in the womb is low-pass filtered, babies mainly learn about the prosodic properties of their future native language.

3 Prosody as a Bootstrapping Cue to the Lexicon and Grammar

At the core of the current proposal lies the idea that this prenatally experienced prosodic knowledge is an efficient bootstrapping cue for speech perception and language development postnatally. Prosody is the overarching principle guiding the organization of the acoustic signal of speech. Since for typically developing, hearing children, language is vehicled by this acoustic speech signal, knowledge about how it is organized will help infants break not only into the speech signal itself, but also into the underlying abstract linguistic code.

I propose that prosody might help infants in at least two ways. Initially, during the very beginning of language acquisition, it helps them identify the relevant sound patterns they need to pay attention to. Indeed, as discussed before, newborns prefer their native language and can discriminate it from other languages on the basis of rhythm, and show sensitivity to relevant suprasegmental features and contrasts at different levels of the prosodic hierarchy (from utterances to words and syllables).

After a few months of postnatal experience with language, prosody also helps infants learn more specifically about the lexicon and the grammar of their mother tongues. This is because prosody is aligned with morphosyntactic structure and important correlations exist between perceptually unavailable abstract linguistic properties and perceptually available prosodic cues (Morgan and Demuth 1996; Nespor et al. 2008). Exploiting these cues can help infants link up abstract innate linguistic categories and structures with the actual input they receive (Pinker 1984).

In the last two decades, evidence has gathered that infants do indeed use prosody to guide and constrain their lexical and morphosyntactic development. At 6 months, i.e. even before they have a considerable lexicon in their native language, infants expect words not to straddle prosodic boundaries and are only able to associate a word candidate with a referent if it falls within a prosodic contour rather than straddling two contours (Shukla et al. 2011).

Later, they start to use not only the prosodic boundaries, but also the specific prosodic features of their native language to segment the continuous speech stream. Languages systematically differ in whether, and if yes, how they implement lexical stress. Some languages don't have lexical stress, e.g. French; others have fixed stress, e.g. word-initial stress as in Hungarian; yet others have variable, lexically defined stress, e.g. in German, Spanish or English. Once infants know the typical lexical stress pattern(s) of their native language, they can use this to segment the continuous speech stream into words, thus the knowledge of lexical stress may be an important cue for word learning. Experimentally, it has been found that between 6–9 months of age, possibly even earlier, English-, German- and French-learning infants become familiar with the typical stress pattern of their native language and can use it to segment speech. Thus German- and English-learning infants show a preference for trochaic words, typical of most nouns in these languages (Höhle et al. 2009), and readily segment out words with this stress pattern (e.g. '**doc**tor, '**can**dle). This is specific to the trochaic word form, as infants do not simply seek for isolated stressed syllables (e.g. *dock*, *can*) and, even more tellingly, missegment words (e.g. *gui'***tar**) that show the opposite iambic pattern (Jusczyk 1997). French infants whose native language has no word-level stress, by contrast, show no preference for the trochaic or the iambic pattern at the age, and later even lose the ability to discriminate lexical stress patterns in general (Dupoux et al. 1997). After only a few months of experience with their native language, infants can thus use lexical stress as a powerful cue to extract word forms from their input.

Around the same age, infants also start to make use of phrasal level prosody. The position and the acoustic realization of phrase level prosodic prominence co-varies with word order (Gervain and Werker 2013; Nespor et al. 2008). Thus in Head-Complement or functor-initial languages, such as English or Italian, prosodic prominence in phonological phrases, which falls on the Complement, is phrase-final and is realized with a durational contrast, i.e. as the lengthening of the stressed vowel of the Complement (e.g. *in**Ro:**me*). By contrast, in Complement-Head or functor-final languages, such as Japanese, Turkish or Basque, the prominence is initial and is realized as increased pitch or intensity (e.g. Japanese: ^***To**kyo ni* < Tokyo to> 'to Tokyo). Infants as young as 8–9 months of age are familiar with the

typical prosodic pattern of their native language, expecting functors to be non-prominent and content words to be prominent (Bernard and Gervain 2012). Even more importantly, bilinguals exposed to a functor-initial and a functor-final language use the different prosodic realizations to select the relevant word order (Gervain and Werker 2013). Upon hearing a durational contrast, they select sequences with a functor-initial order, while when presented with a pitch contrast, they prefer functor-final sequences. This is strong evidence that infants start using prosody to bootstrap syntax even before they have a sizeable lexicon, suggesting that they set abstract syntactic parameters rather than memorize or rote learn lexical patterns or item-based expressions. Indeed, correlations between prosody and morphosyntax might allow infants to directly access abstract linguistic knowledge, which might then help them better parse the input and learn lexical items, rather than the other way around. For instance, an infant expecting a functor-content word order on the basis of prosody will be able to directly assign the correct lexical category to the novel words it encounters in an input sentence.

Indeed, toddlers have been found to rely on prosodic boundaries to assign the correct syntactic bracketing and thus the correct lexical category to words in sentences that are (momentarily) ambiguous between two different parses without prosody (Carvalho et al. 2016). Thus the sequence *la petite ferme* has two possible prosodic structures: [*La petite*] [*ferme…*] (French: the small.fem closes 'The little girl is closing…') or [*La petite ferme*] […] (the small.fem farm 'The small farm…'). French preschoolers are able to associate the first one with the image of a little girl closing a box, and the second with the picture of a farm. When the lexically ambiguous word *ferme* is replaced by a nonce word (e.g. *dase*), preschoolers learn this novel word as a noun in the first case and as a verb in the second case.

Taken together, these studies clearly demonstrate that prosody plays a crucial role in young learners' earliest acquisitions, allowing infants to segment and parse the input into syntactically and lexically relevant units.

4 Perspectives: Prosody as a Pre- and Postnatal Bootstrapping Cue

Above I have reviewed two important bodies of literature highlighting the role of prosody in early language acquisition. Here, I am suggesting that there is a strong connection between these two. Specifically, the knowledge infants gain about the prosody of their native language prenatally might play a key role in paving the way for subsequent language acquisition, guiding their attention to relevant sound patterns in their environment and providing a perceptually available organization that infants can use to break into the abstract linguistic structure of their native language.

The prosodic hierarchy (Nespor and Vogel 1986; Selkirk 1986), i.e. the organization of prosodic units from syllables through feet, words and clitic groups to

phonological and intonational phrases (Fig. 1), is aligned with morphosyntax in ways that are relevant for language acquisition. Existing research is consistent with this view. However, no systematic investigations have been undertaken to fully explore how infants perceive prosodic organization, and how it might scaffold the acquisition of the lexicon and the grammar of the native language. I suggest that it is important to systematically explore this link in future research to gain a better understanding of language acquisition.

This proposal is not without challenges. One important issue that has never been addressed in previous research is how infants manage to solve the 'inverse problem' of prosody. In the acoustic signal infants receive as speech input, prosodic patterns at different levels add up. Thus a syllable might be stressed because it carries lexical stress, lexical tone in tonal languages, phonological phrase prominence, utterance-level stress, focus, emotional emphasis or a combination of the above. How can a learner tease apart the effects of all these different levels? Mathematically, this is an inverse problem, such as EEG source localization is, and indeed automatic speech recognition and processing algorithms typically don't do well in this task. Yet, learners seem to be able to decrypt the prosodic hierarchy with ease. What mechanisms allow them to do this?

This remains an open question for future research. One potential solution might come from the underlying neural mechanisms of speech perception. Recently, it has been shown (Giraud et al. 2007) that the auditory cortex exhibits spontaneous, resting-state neural oscillations, independently of stimulation, at three specific frequency bands: low gamma (25–35 Hz), theta (4–8 Hz) and delta (1–3 Hz). It has been proposed (Giraud and Poeppel 2012) that spoken language might have evolved to exploit these spontaneous oscillations, having units whose frequencies match well with these oscillations frequencies. The low gamma (25–35 Hz) band would thus be responsible for (sub)phonemic processing, the theta (4–8 Hz) band for syllabic processing and delta (1–3 Hz) band for phrasal processing.
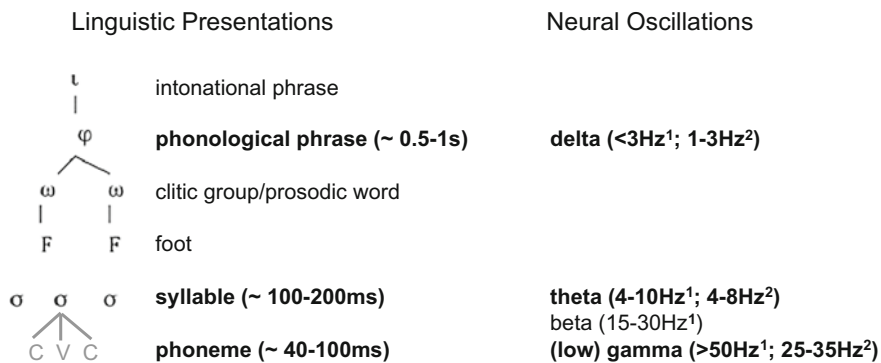
Fig. 1 The prosodic hierarchy (adapted from Nespor and Vogel 1986) and its relation to the embedded neural oscillations model (oscillations are defined according to [1]Ghitza 2011; [2]Giraud and Poeppel 2012)

Furthermore, these oscillations are nested, i.e. hierarchically organized, such that the slowest oscillations would entrain (amplified and/or reset the phase of) the faster oscillations. This hierarchical organization corresponds very closely to the exhaustively embedded nature of the prosodic hierarchy.

To date, this embedded oscillations model has not been tested developmentally. However, the current proposal suggests that it might hold the key to the problem of language acquisition. Specifically, I propose the following developmental scenario. Infants first encounter speech in the womb, as the fetus' hearing is operational from 24th–28th week of gestation. Maternal tissues act as low-pass filters, preserving prosody, but suppressing individual speech sounds. Infants' first experience with speech is thus prenatal and mainly consists of prosody. At birth, prosody is a privileged level of linguistic processing, already showing the impact of the native language(s) heard in utero. Neural oscillations corresponding to prosodic units, i.e. the delta and theta bands (Fig. 1), are enhanced and fine-tuned to the native language(s). After birth, infants encounter the full speech signal, complete with fast modulations corresponding to the segmental/phonemic level. After experience with this postnatal speech signal, phonemic representations will be strengthened, and the faster oscillation bands, beta and gamma, get tuned to the native language by entering into a hierarchical embedding relation with the slower bands. This nesting will then result in a structured, hierarchically organized representation of speech in the infant auditory cortex. Infants, therefore, represent language in the hierarchical, structured fashion that the nested oscillations afford, with prosody, the highest level, guiding speech perception and thus language acquisition.

The above-proposed scenario also raises questions about certain cases of atypical development. What if several languages are heard prenatally? How does the auditory system of bilingual newborns adapt to hearing different prosodies? We predict that bilingual prenatal exposure modulates the system to flexibly adapt to both language prosodies, if they are different. What happens if the unique sequence of prosodic prenatal and full-band postnatal experience is disrupted? Deaf infants miss upon prenatal auditory experience. The proposal predicts that deaf newborns will thus show different (weaker, less fine-tuned) theta and delta, i.e. slow oscillations at birth, than typical hearing infants. Highly premature infants similarly miss upon a lot of the critical prenatal experience, but gain "extra" experience with the full speech signal. The account proposed here predicts that highly preterm infants (28 weeks of gestation) will have specific delays in language development, pertaining to speech prosody due to imprecisely tuned slow oscillations and a compromised embedding relationship between frequency bands.

The proposal thus outlines a research agenda with the potential to uncover neural mechanisms specifically tuned to the speech input and thus playing a pivotal role in language development.

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The Morpho-Syntax-Phonology Interface in Complex Compounds

Irene Vogel

Abstract Although the interfaces of phonology with other components of grammar are usually examined as pairs (e.g., phonology–syntax or phonology–morphology interface), this paper considers cases where it is less obvious how the interfaces should be partitioned. Specifically, complex compounds that involve both morphological and syntactic structures (e.g., (*an*) *all you can eat restaurant*), are examined in English, and it is shown that despite their potentially considerable morphological and syntactic complexity, their phonology is relatively simple. The analysis is advanced within the framework of Prosodic Phonology, modified to allow certain constituent levels to be skipped in accordance with proposals to weaken the Strict Layer Hypothesis, but still excluding recursive structures. It is demonstrated that a prosodic constituent between the Phonological Word and Phonological Phrase, the Composite Group (e.g., Vogel 2009, forthcoming); is crucially required, and that it is this constituent that serves as the domain for compound structure and related phonological phenomena. Within the Composite Group, moreover, the potential morpho-syntactic complexity of compounds is mapped to relatively flat prosodic structures, where all that is required for the correct prominence patterns to emerge is a general prosodic template that accounts similarly for simple two-word compounds as well as for complex compounds.

Keywords Complex compounds · Composite group · Interface
Phonological word · Prosodic phonology · Stress

I. Vogel (✉)
University of Delaware, Newark, USA
e-mail: ivogel@udel.edu

1   Introduction

When considering interfaces between different components of language, the options are particularly plentiful for phonology, which may interface with phonetics, morphology, syntax, semantics and pragmatics. Usually, the interfaces are examined as pairs, for instance, the phonology–syntax or phonology–morphology interface, and this seems to be a fruitful way of accounting for many phenomena, in particular, those that apply towards the ends of the range of phonological phenomena: phonological and intonational phrasal phonology and lexical or word-internal phonology. The present paper considers cases where it is less obvious how the interfaces should be partitioned, as different types of interfaces appear to be interspersed.

"Extreme" compounds are recognized in many Germanic languages (e.g., German: *Rindfleischetikettierungsüberwachungsaufgabenübertragungsgesetz*[1] 'beef labeling regulation and delegation of supervision law'), and while they are often cited as something like oddities in a circus, they are nevertheless constructed by regular and productive processes of the language. The complications arise because the elements and operations involved in their construction are both morphological and syntactic, and they may be interspersed within a structure that functions as a single word. The present investigation focuses on similarly complex compounds in English, and shows that despite their considerable morphological and syntactic complexity, their phonology is relatively simple. The analysis is advanced within the framework of Prosodic Phonology, modified to allow certain constituent levels to be skipped in accordance with proposals to weaken the Strict Layer Hypothesis, but still excluding recursive structures. Crucially, a prosodic constituent is required between the Phonological Word and Phonological Phrase, the Composite Group (e.g., Vogel 2009, forthcoming), and it is this constituent that serves as the domain for compound structure, and related phonological phenomena. Within this constituent, moreover, the potential morpho-syntactic complexity of compounds is mapped to relatively flat prosodic structures, where all that is required for the correct prominence patterns to emerge is a general prosodic template that accounts similarly for simple two-word compounds as well as for complex compounds.

Section 2 provides an overview of English compound structures, in particular those exhibiting extreme complexity. Since the phonological phenomena considered here involve stress, in Sect. 3, the basic stress patterns associated with different types of structures are presented. Section 4 shows how the application of the basic stress patterns can account for the patterns observed in the complex compounds, making use of a templatic structure for the stress of both the compounds and their members. In Sect. 5, it is demonstrated that prosodic models that lack a distinct constituent between the Phonological Word and the Phonological Phrase, allowing only a recursive Phonological Word, encounter problems in predicting the observed

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[1]Retrieved from http://www.telegraph.co.uk/news/worldnews/europe/germany/10095976/Germany-drops-its-longest-word-Rindfleischeti….html.

stress patterns. By contrast, these patterns are straightforwardly addressed within a model that includes such a constituent: the Composite Group (e.g., Vogel 2009, forthcoming). Conclusions follow in Sect. 6.

2 English Compounds

2.1 *Complex Compound Structures*

Most research on compounds, whether theoretical or experimental (e.g., Fiorentino and Poeppel 2007, and references therein), investigates relatively short and simple structures, although it is known that in some languages compounds may be considerably longer, as in the German example above. Even when longer compounds are discussed, the structures often tend to be relatively simple, as in demonstrations that English can potentially add an unlimited number of words to create compounds, where the structure is usually uniformly (left) branching (e.g., *[[[[tuna] fish] salad] sandwich] platter]*).[2] Occasionally compounds that are not uniformly branching are also noted, such as *[[[tuna] fish] [[trawling] net]]*, where *tuna fish* and *trawling net* are both compounds. Compounds with more complex internal structure, specifically phrases, have received less attention (but see Bauer 1983; Lieber 1992; Meibauer 2007; Padrosa 2010 and discussion therein); and their phonology is rarely addressed (but see Gussenhoven 1991).

Before analyzing the phonological patterns of different types of compounds, we first consider how complexity can be productively introduced within English compounds. In simple compounds, two words combine as in (1a, b); similar structures have been proposed for phrases appearing within compounds, where these phrases are often idiomatic or lexicalized items, and thus may function as words, as in (1c, d).

(1) English Compounds
    a. (her) [[catamaran] [tale]]   b. (their) [[Cameroon] [tale]]
    c. (the) [[man overboard] [tale]]   d. (his) [[on the run] [tale]]

While some (e.g., Romance) languages do restrict phrasal members of compounds to lexicalized items (Padrosa 2010), (2) shows that novel phrases of different types, lengths, and internal complexity, even entire sentences, may be introduced as members of a compound in English. Such structures are referred to here as "complex compounds."

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[2]For simplicity, here and in some cases below, the left and right brackets are shown only for the innermost member of the compound (e.g., *[tuna]*), although each member would be similarly bracketed as a word.

(2) Phrases in English Compounds

    a. (his) [[on the roof top] [tale]]
    b. (her) [[on the roof in the middle of a snowstorm] [saga]]
    c. (the) [[finance and advertising] [department]]
    d. (the) [[finance and advertising department] [representative]]
    e. (their) [[Grandfather drove off the highway to look for mushrooms] [saga]]
    f. (his) [[Don't try that ever again] [look]]
    g. (her) [[Did you really do that] [expression]]

These are just illustrations, but with some imagination, essentially any type of structure can be incorporated into a compound.[3] The obvious questions that such structures raise are what operations must take place, and in what order, to create them, and from the perspective of phonology, what interface relationships with morphology and syntax are required in order to ensure that the relevant phonological rules apply appropriately.

2.2   Complex Compounds as Ordering Paradoxes

What makes the compounds under consideration especially interesting is not just that they involve both morphological and syntactic structures, but that the structures appear to be interspersed. Instead of a widely assumed progression from morphology (i.e., word formation) to syntax (i.e., phrase construction), and correspondingly, word-level phonology before phrasal phonology, the items in (2) seem to involve a loop: word formation > phrase formation > (compound) word formation[4]; the compounds then constitute the "lexical" heads of phrases (i.e., nouns in the NPs in (2)). A similar type of apparent back-tracking is well known in relation to word-level phonology, the so-called bracketing or ordering paradoxes (among others Spencer 1991). For example, in a word like $[un_2[[reli]abil_1]ity_1]$, first -able, which could be a level 1 (or 2) affix,[5] is attached to the root rely, followed by the attachment of the level 2 prefix un-. A problem arises, however, when the suffix -ity is added, since it is a level 1 suffix (i.e., shifts stress to the preceding syllable), and thus should not follow the attachment of a level 2 affix. Ordering paradoxes also arise when level 1 affixes are attached to compounds, or

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[3]The examples provided here and elsewhere are based on the author's intuitions, confirmed by at least one other native English speaker.

[4]A model of grammar with a morphological component is assumed here. If a different type of model is adopted, it must also be able to account for the phenomena under consideration.

[5]The terms "level 1" and "level 2" affixes follow the usage of Lexical Phonology; however, they are only used descriptively here to refer to affixes that cohere more or less with their root, respectively, not as an endorsement of Lexical Phonology per se. Note that while -able, and certain other affixes have been analyzed differently in different studies, their classification is not relevant to the general issue here.

possibly phrases, constructions that would be formed well beyond level 1. For example, -*ian* shifts stress to the previous syllable when attached to the compound *science líbrary* (→ *science librár-ian*), or the phrase (sometimes considered a compound, but lacking compound stress) *transformational grámmar* (→ *transformational grammárian*).[6] While the morpho-phonological ordering paradoxes might be problematic for phonological rule ordering, as long as the operations may all be viewed as morphological, they are not overly disruptive to the overall organization of the grammatical components. When the interleaving of different components of grammar is involved, however, the picture becomes more unsettling. This is precisely the focus of the present paper: how the phonology interacts with structures where syntactic phrase formation and operations appear to be interleaved with morphological (specifically compound) word formation. It will be shown that while the construction of such structures may be complex, their phonology is nevertheless quite straightforward.[7]

3 Stress in Compounds and Other Structures in English

Stress, since it is assigned differently to the various components of the English complex compounds—words, compounds and phrases—provides a particularly fertile area for examining the nature of the interfaces of phonology with morphology and syntax.

3.1 English Stress Basics

English word stress is recognized as being quite variable, either assigned by a complicated set of rules, or lexically specified. The mechanism is not relevant here, and will not be discussed; however, it is clear that compound and phrasal stress assignment apply differently, both from word stress assignment and from each other.

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[6]It should be borne in mind that despite certain drawbacks, including the paradoxes just seen, the ordering of operations in Lexical Phonology does capture generalizations that would be missed if words are constructed in a haphazard way.

[7]Such structures have not previously received much attention, although Gussenhoven (1991) discusses their prosody in the broader context of the English Rhythm Rule. Many of Gussenhoven's observations remain insightful, however, he does not address the problem of the ordering paradox created by introducing phrasal material into the morphological component. He simply constructs compounds at the second (of three) lexical phonological levels, along with "level 2" affixation (i.e., before level 3 inflection), regardless of the content of the compounds, by allowing apparently unlimited looping back and forth among levels.

The well-known Compound Stress Rule (CSR) perceptually enhances the stress of the first member of a compound, bolded in (3),[8] regardless of the number of words in the compound.[9]

(3) Basic English Compound Stress Rule
    a. **coffee** bean   b. **coffee** bean roasting
    c. **coffee** bean roasting machine   d. **coffee** bean roasting machine sale

If each time a word is added to form a longer compound, the level of stress on the first word is increased, the result is a potentially infinite number of stress levels. In fact, this problem was noted in SPE (Chomsky and Halle 1968), where it was argued that the maximum number of stress levels reliably perceptible to speakers is four; additional levels were eliminated. The number of levels is also kept to a minimum in more recent grid models of stress, where stress is commonly viewed as a relative phenomenon. In such models, there are no specific properties associated with a given grid level: "the absolute height of a grid column has no intrinsic significance" (Hayes 1995:29).[10]

3.2   Number of Stress Levels

Even if stress is a somewhat relative phenomenon, there is evidence that certain types of distinctions are relevant to speakers. In a language with secondary stress such as English, three levels of stress within words can consistently be distinguished: primary stress (´), secondary stress (`), and unstressed (no marking), as illustrated in (4a). Furthermore, the three word stress levels can still be distinguished in compounds and phrases as in (4b) and (4c), respectively, and it can be recognized that the first member of the compounds and the second member of the phrases (bolded) bear more stress than the other member.[11]

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[8]Although the CSR is commonly described as enhancing the first member of a compound, a practice followed here as well, this description reflects its perceptual effect. Acoustically, however, the effect is achieved by weakening the subsequent stresses (e.g., Horne 1990; Gussenhoven 1991).

[9]See Plag (2008) for a detailed discussion of additional compound stress patterns of English.

[10]See Wagner (2005) for a different grid approach, where it is still argued, however, that grid levels only represent relative (quantitative), as opposed to specific (qualitative) stress properties. Nevertheless, it is also claimed that the different rows in a grid correspond to particular boundary strengths.

[11]Note that it is not simply the schwa in *cantor* that cues the absence of stress on the second syllable; the same pattern can be observed with an unstressed tense vowel (e.g., *cándy*).

(4) English Stress Levels

a. Word stress:	i. cántòn	ii. cántor	iii. càntéen	iv. caréen
b. Compound Stress:	i. **cántòn** repórt		ii. **càntéen** repórt	
	iii. **cántor** repórt		iv. **maríne** repórt	
c. Phrasal Stress:	i. cáshmère **pyjámas**		ii. Chìnése **pyjámas**	
	iii. thérmal **pyjámas**		iv. maróon **pyjámas**	

While it might seem that only one stress level is needed beyond primary word stress, on the first element for compounds, or the final element for phrases, the items in (5) show that the two levels must be distinguished. The corresponding grids, starting here at the word level for simplicity, schematically represent the crucial relationships, with the head (main prominence) of each word, compound and phrase indicated by a grid mark.[12]

(5) Compound and Phrasal Stress

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Phrase                          x                           x
Compound          x           (x)                          (x)
Word            x   x           x          x    x           x
             a. [tie-dyed] umbrella    b. big white umbrella

Phrase                x                           x
Compound              x                      x         x
Word            x   x       x          x    x     x         x
             c. big [beach umbrella]   d. [tie-dyed] [beach umbrella]
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In (5a, b), phrasal stress is on *umbrella*, but while the first two elements are equally stressed in (5b), in (5a), the first is stronger than the second, as expected for compound stress. Note that an additional grid mark appears in parentheses on the "compound" grid level in *umbrella* in both items, although it is not the head of a compound. Without this (x) in (5a), if phrasal stress is simply assigned in the grid to the rightmost prominence at the level below, it would skip over *umbrella* and land on the higher grid mark of *tie*. In (5b), the phrasal stress would correctly fall on the rightmost word without the additional (x), and thus it could appear more economical to avoid the extra grid mark. In this case, however, the phrasal grid mark would appear at the lower, "compound", level suggesting that there is no difference between compound and phrasal stress, although they, in fact, exhibit different patterns. In (5c) and (5d), phrasal stress correctly falls on *beach*, the rightmost compound head, regardless of what precedes it.

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[12]As both reviewers commented, there are multiple ways of constructing metrical grids; see Gussenhoven's (1991) discussion. In many cases in this paper, the grid is just used as a descriptive tool to represent the prominence patterns of interest. To foreshadow the discussion below, however, the mechanism underlying the analysis advanced in this paper starts with a basic grid mark on each syllable, and then assigns additional grid marks in relation to (heads of) prosodic constituents.

As noted in (4), English also distinguishes lower stress levels, that is, primary versus secondary stress. In order to capture this distinction in the grid representation, an additional level must be included. Thus, the Foot level indicates any position (i.e., foot head) that bears stress, while primary stress is represented with the additional grid mark on the Word level, as illustrated in (6). There are again some grid marks on the third level in parentheses that appear even when there are no compounds; thus, for now, the level in question is just labeled as "constituent," an issue we return to below.

(6) Four Grid Levels

Phrase			x			x			x
Constituent	x		(x)	(x)		(x)	(x)	(x)	(x)
Word	x	x	x	x		x	x	x	x
Foot	x	x	x	x	x	x	x	x	x

a. tie-dyed umbrella   b. cashmere umbrella   c. big white umbrella

Even though the additional (x)s may appear uneconomical, they allow us to make predictions about the similarities and differences among the stresses, for example, that the stresses on *tie*, the first syllable of *cashmere*, *big* and *white* are essentially equivalent, regardless of other elements in their phrases. If stress is just considered a relative phenomenon, without the recognition of particular stress levels, we obscure the fact that there are substantive differences among the types of stress. These differences are captured, however, if specific values are associated with different levels of the grid. This does not mean that the difference is necessarily one of "amount" of stress; it may also involve the distribution and manifestation of the prominences at each level.

4   Complex Compound Stress and Structure

If only four distinct stress levels are motivated, it is necessary to determine what these levels are in complex structures, where there is potentially unlimited depth in their corresponding morphological and syntactic structures.

4.1   Stress Patterns in Complex Compounds

While a simple solution to the limitation of stress levels might be to just require that any particular type of stress be manifested on its own grid level (e.g., all word stresses are on level 2, phrase stresses on level 4), the ordering paradoxes seen in Complex Compounds introduce a challenge in this regard. That is, if a phrase appears as a member of a compound, where the highest stress level is 3, it is unclear

how the higher level 4 phrasal stress can be accommodated within the compound pattern. The issue is illustrated in (7).

(7) Grid Structure with Internal Phrase

Phrase	x		x		?
Constituent	(x)		(x)		(x)
Word	x	x	x	x	x
Foot	x	x	x	x	x

     a. (his) [[on the roof] story]   b. (his) [[on the roof] story] in the anthology

The relative prominences in (7a) seem intuitively correct; however, the process involved in arriving at this result is not immediately clear. In *on the roof*, phrasal stress is manifested by a grid mark on level 4, which also requires a grid mark on level 3, as shown; however, when the phrase is inserted as the first member of the compound, if the Compound Stress Rule applies, it would only provide a stress at level 3. Note that the end result is nevertheless correct here, since the stress for the entire phrase would also be assigned to *roof*. Some type of vacuous stress assignment process could be invoked in this case. In (7b), however, it is less clear how the final stress pattern is achieved. The first part of the structure is as in (7a), but the question is where and how the stress for the entire phrase is assigned. If phrase stress assignment enhances the rightmost level 3 stress in the grid representation, this would result in two phrasal stresses, one on *roof* and one on *anthology*; however, the two stresses do not seem to be equivalent. For example, when the phrase is placed in a sentence (*I read his on the roof story in the anthology*), the stress on *anthology* seems more prominent than that on *roof*.

As noted above, with imagination, essentially any type of structure, including an entire sentence, can constitute a member of a compound, as seen again in (8). In this case, there are multiple positions where phrasal stress could be expected to appear; however, it is the stress on **mush**rooms that is most prominent. The other phrasal grid marks are shaded.[13]

(8) Grid Structure with Sentence in Compound

Phrase		x		x		x		
Constituent	(x)	(x)	(x)	x	x	x		
Word	x	x	x	x	x	x		x
Foot	x	x	x	x	x	x	x	x

    (his) [[Jim's dad] [drove off the road] [to look for mushrooms]] saga]

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[13]In long strings, there may be additional (eu-)rhythmic adjustments (e.g., Liberman and Prince 1977; Hayes 1984, 1995; among others), but these are beyond the scope of the present discussion.

More generally, what is observed is that regardless of the complexity of the internal structure of a compound, the Compound Stress pattern emerges: the main stress of the first member is enhanced, while subsequent stresses are relatively weaker. That is, other prominences that would normally be present in a phrase are reduced when the phrase is functioning as a member of a compound, precisely to signal the compound structure of the string. In fact, since the typical members of compounds are Phonological Words, it follows that if a phrase is to be prosodically equivalent to a Phonological Word, it may have only one word level stress; any other internal stresses must be less prominent. Consequently, the stress pattern required for the compound *Jim's … mushroom saga* in (8) would be essentially the same as that for the simpler *(his) mushroom saga*.

It should be noted that the reduction of phrase internal stresses other than the main stress is also required for the correct application of the Compound Stress Rule, which enhances the leftmost word stress. That is, if all of the words in (8) retained their word level stresses, the CSR would incorrectly enhance the first word, *Jim's*, rather than *mushrooms*. Note that the same stress reduction and compound stress patterns are also observed in cases in which the main stress does not fall on the final word in a phrase. For example, if *I've got exams to grade*, with phrasal stress on *exams*, not *grade*, forms part of a complex compound, the compound stress would fall on *exams* (e.g., *(his) [[I've got exams to grade] expression]*); any others stresses would be reduced.

In sum, it has been seen that a phrase, functioning as a single word, may have only one word level prominence; all others must thus be demoted. Although it would be possible to formulate various rules to enhance and demote different stresses, these would seem to be ad hoc adjustments of grid marks just as needed. In the next section, an alternative is proposed that provides additional insight into the observed stress patterns.

4.2   Stress Assignment in Complex Compounds: A Template Approach

It was already noted that if a stress level is added each time a word is added to form a new compound, the result may include any number of stress levels. A similar problem arises if each phrase introduces a new stress level. Special mechanisms would thus be required, as in SPE, to reduce the overall number of stress levels.

Since it is the first word of a compound that is enhanced, even in long compounds (e.g., ***coffee** bean roasting machine sale*), the most direct way to account for this pattern is just to assign compound stress once—to the first (prosodic) word after the whole compound has been formed. That is, the CSR would only involve a single operation, the enhancement of the prosodic head (i.e., first Prosodic Word) of its constituent. It would not need to apply repeatedly in complex compounds, followed by stress reduction mechanisms to pare down the potentially infinite

number of stress levels. Moreover, the single application of the CSR to an entire compound is consistent with the prosodic model adopted here with flat, rather than binary branching, internal prosodic constituents (e.g., Nespor and Vogel 1986). A similar approach can be used for phrasal stress assignment: enhancement of the prosodic head of the relevant constituent (e.g., Phonological Phrase). In this case, the head would be the rightmost element bearing stress at the immediately lower, compound stress, level.

The situation in complex compounds is more problematic, however, since it was seen that some phrasal stresses do not appear as such, but rather must be reduced when included within a compound. That is, the richness of the phrasal prosody that would be observed if the string in question were actually functioning as a phrase is not fully manifested, but instead, appears as a relatively flattened contour. It is, nevertheless, crucial to know where the phrasal stress would have been if the string were produced as a phrase; this is the position that serves as the prosodic head for the purposes of compound stress assignment, as well as for subsequent enhancement at the phrasal level.

It is interesting to note that within compounds, it is not only the phrasal prominences that are reduced, but also potentially different intonation contours. In (9), each example includes a sentence that would have a different intonation pattern; however, when the strings are produced as compounds, their intonation patterns may become similar, with just a series of relatively weaker stresses leading up to the compound stress on *happen*.

(9) Different Sentence Types in Complex Compounds

     a. (his) [[I'm not sure what's going to **happen**] expression]
     b. (his) [[Don't you ever let that **happen**] expression]
     c. (his) [[Did that really **happen**] expression]

What the prosodic prominences in the different types of compounds show is that the crucial property in all cases is the manifestation of the basic Compound Stress pattern, which boils down to **word** + word…, where the main stress of the first word is the one that is (perceptually) enhanced. When phrases appear within compounds, in order to maintain the crucial phrasal prominence relations, the phrasal stress, being the strongest, serves as the primary stress for the purpose of enhancement; any other stresses must be weaker, but still distinguished from unstressed syllables, expressed by grid marks on the foot level.

As far as the interfaces among the different components of grammar are concerned, while the formation of complex compounds may involve the interspersing of morphological and syntactic operations, the stress patterns show that the phonological interactions with the various stages along the way are minimal. In fact, it seems that all that really matters for stress assignment is an outcome with an overall pattern of relative prominences arranged over four specific prosodic levels. As noted above, while this does not mean that there are absolute stress values, each

level is associated with specific characteristics (e.g., stress assignment mechanisms, phonetic properties).

Given the general nature of the stress requirements at each of the four levels, rather than invoking various operations of adding and/or removing grid marks, an alternative that involves general stress templates is proposed. Specifically, for each level, a basic stress template (i.e., overall prominence pattern) is established, with the properties indicated in (10) for English. Any material that forms a particular type of constituent must conform to the relevant template; if there are elements that do not fit, they are adapted or excluded.[14,15,16]

(10)   English Stress Template Requirements
      a. Word: one main (i.e., primary) stress
      b. "Constituent" (to be discussed in Section 5): one main stress, manifested on the leftmost word level prominence
      c. Phrase: one main stress, manifested on the rightmost "constituent" level prominence

Such a templatic approach is consistent with other types of prosodic templates, for instance, those that impose restrictions on syllable structure. For example, the syllable template of White Hmong only allows CV structures, and when words are introduced that do not conform to the template, adjustments are made. Thus, the coda consonant(s) in borrowings from English are commonly excluded (e.g., *cake* → [kʰê], Uffmann 2015).

In sum, the templatic approach provides a direct, positive characterization of the compound prominence patterns, as opposed to deriving them by a series of additions and deletions of grid marks. Thus, the compound in (8) above would only require the prominences shown by the *non*-shaded grid marks in (11)—analogous to *his mushroom saga.*

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[14]The requirements are for the typical prominence patterns at each level. Any alternative patterns (e.g., different compound stress patterns in names: **Fifth** *Street* vs. *Fifth* **Road**) would need to be specified more precisely for a given type of structure. See also Gussenhoven (1991).

[15]Compound formation may involve templates more generally, such as morphological requirements on one or another member. For example, in English compounds such as *dish washer,* the first member must be singular, even when the meaning clearly involves a plural; the machine (or person) does not wash just one dish. In Italian compounds, the corresponding element is typically plural, even if the meaning is singular, as in *segna libri* 'book mark,' where one book is marked at a time. In addition, a compound structure template has been proposed to ensure the appearance of a specific verb form (Vogel and Napoli 1995).

[16]Such templates might lend themselves well to a constraint-based analysis. It is beyond the scope of the present paper to assess such a possibility, as the focus here is on providing a clear description of the compound prosodic phenomena any model would need to account for.

(11) Grid Structure with Sentence in Compound

Phrase			x			x		x		
Constituent	(x)	(x)	(x)			x	x	x		
Word	x	x	x			x	x	x		x
Foot	x	x	x	x		x	x	x	x	x

(his) [[Jim's dad   drove off the road to look for mushrooms] [saga]]

There is no need to include and then remove the shaded grid marks[17]; the material is just accommodated within the compound in conformity with the requirements of the template.

5   Prosodic Structure of Complex Compounds

The nature of the various grid levels has been left somewhat vague up to this point; however, as domains of phonological phenomena, it is assumed that they correspond to prosodic constituents. In the model of prosodic phonology adopted here, essentially an updated version of Nespor and Vogel (1986), prosodic constituents represent the interface of phonology with different morphological and syntactic structures via their mapping rules. Most of the details of the mapping procedures are not relevant here; however, what is clear is that some mapping must result in Phonological Words (ωs), in which main stress is assigned or specified underlyingly, and represented on the Word level of the grids seen in the previous sections. The Foot level below this is considered a prosodic constituent, but not a morpho-syntactic interface constituent. Above the ω level, some mapping procedure must provide the constituent that is the domain for phrasal stress, presumably the Phonological Phrase (φ), represented on the fourth grid level. The question that remains is thus what prosodic constituent serves as the domain for Compound Stress Assignment, including in the complex compounds under investigation.

It is widely recognized that some type of prosodic structure is required to account for material that cannot be parsed within ωs, or form ωs on their own (e.g., "level 2" affixes, clitics, other function words). In Nespor and Vogel (1986), the Clitic Group (CG) accommodated such elements; it did not, however, include compounds.[18] While the CG is often explicitly excluded from more recent prosodic hierarchies, there is usually still some type of intermediate structure in essentially the same position and role, commonly referred to as a "Recursive" Prosodic Word (ω′). For example, in Itô and Mester's (2009, among others) Adjunction Approach, clitics and function words are included in the ω′, as are compounds. In Selkirk's

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[17]The higher grid marks correspond to plausible prosodic constituent heads; the mechanism for their assignment is not relevant for the present discussion.

[18]See Gussenhoven (1991) for discussion of this issue, including the subsequent analysis in Vogel (1989).

(2011) Match Theory, the ω′ corresponds to the highest X^o in a syntactic tree, and thus includes compounds, potentially providing a domain for Compound Stress; it does not, however, include clitics and other function words. Despite their differences, both approaches, and others that include a ω′, introduce another type of problem, that is, how the ω′ can be considered a type of ω, when both its morpho-syntactic and phonological properties are clearly distinct from those of ω. It is thus also unclear how the structures can be considered recursive, since they do not involve the embedding of a particular type of constituent within the same type of constituent (e.g., Vogel 2009, 2010, forthcoming).

Additional problems for a ω′ constituent arise when complex compounds are considered, since they require syntactic operations to take place prior to word formation. In the Adjunction Approach, clitics and other elements are parsed into a ω′ by sequential adjunction operations, and presumably the same is true for the members of a compound; it is unclear, however, how an entire phrase could be formed in the syntax and then adjoined to other material as a member of a compound, under a lower ω′ node. In Match Theory, the compound-internal phrasal structures could be constructed at some location in the syntactic tree, and then moved into the correct position under the upper $X°$ node. This would avoid the dilemma that arises if compounds are constructed by morphological word formation processes, which would need to follow syntactic operations in the case of complex compounds; however, the ω and ω′ constituents constructed by Match Theory cannot account for the full set of phonological phenomena under consideration. That is, the only structures that can be seen in relation to a compound are the entire compound, corresponding to ω′, and the string of (the lowest) ωs. Lexical stress could be assigned as needed to each of the ωs; however, there would be no way to account for compound stress since it was seen above that its location depends crucially on the prosodic structure and prominences internal to the members of a compound—structure that is expunged when the only prosodic constituents available are the lowest ωs and the highest ωs. It should be noted that the same problem arises in the Adjunction Approach, which also only recognizes the lowest ω and highest ω′ constituents.

In sum, attempts to avoid including a distinct prosodic constituent between the ω and the φ by invoking a recursive ω′ introduce a range of problems, and in the present case, offer no means of accounting for the stress patterns of complex compounds. When, instead, a distinct constituent is defined, specifically the Composite Group (κ), which replaces the CG (e.g., Vogel 2009, 2010, forthcoming), a straightforward account emerges for the structures and stress patterns of complex compounds, as well as other problems associated with the ω′.

As the constituent between the ω and φ, the κ comprises a range of items that cannot be appropriately parsed by either of the other constituents. These include such "stray" elements as level 2 affixes that are excluded from the ω, as well as clitics and other function words that do not constitute ωs on their own. In addition, the κ includes compounds, which consist of two or more ωs, but which have specific phonological properties that distinguish them from other sequences of ωs that are parsed at the φ level (e.g., Compound Stress: [**blue**berry]$_κ$ vs. Phrasal

Stress: [blue **berry**]$_\varphi$). Thus, we can situate the Compound Stress Rule in the κ domain, where it simply enhances the main stress of the first immediately lower ω constituent. Since the CSR only needs to identify the first ω in a κ, any following material is treated in the same way, whether it comprises a single ω in a two-word compound, or multiple ωs in a longer compound. The template approach to the prominence patterns of compounds provides the necessary ω for (perceptual) enhancement by the CSR in complex compounds. Note that if there is a single word in a given domain, it still induces the appropriate enhancement for its level; the level is not skipped. Thus, the simplified grid representation of (11) is shown in (12), where the stresses are assigned according to the templates for the different levels, corresponding to the prosodic constituents indicated in the bracketed representation of the item.

(12)   Grid Structure with Sentence in Compound - simplified

Phrase							x		
Comp.Group							x		
Word							x		x
Foot	x	x	x	x	x	x	x	x	x

[(his) [[Jim's dad drove off the road to look for mushrooms]$_\omega$ [saga]$_\omega$]$_\kappa$]$_\varphi$

The entire phrase that serves as the first member of this compound, since it is integrated as a ω, has a single grid mark at that level; this is paired with the ω of *saga*, which has a grid mark at the same level.[19] Stress is assigned at the κ level to the leftmost ω; phrasal stress is then assigned to this position as well, since it happens to also be the rightmost prominence within the φ.[20]

Finally, in further support of the crucial role of the κ constituent, we can observe that the prosodic distinctions it permits also provide insight into the application of another stress phenomenon, the Rhythm Rule, commonly characterized as a leftward shift of a word stress when it is followed by another (clashing) word stress in the same φ. If the words constitute a compound, the rule does not apply, as seen in (13).[21]

In the phrase in (13a), where *Kalamazoo* modifies the compound ***sto**ry session*, the clashing word stress shifts leftward to the first syllable of ***Ka**lamazoo*; and this syllable, in turn, is enhanced at the κ level, as its first, and only word. The first member of the compound *story session* also bears κ level stress, and thus is further enhanced at the phrase level, phrasal stress applying to the rightmost κ level stress.

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[19]There may be subtle differences in the sequence of Foot level stresses, possibly due to eurhythmy principles, but they are not linguistically meaningful, in the way that primary stress is, for example.

[20]"His" would actually also fall within the κ as a function word; however, this is not relevant here.

[21]As with the CSR, the enhancement of the stress on the "landing site" of the Rhythm Rule is a perceptual effect, not due to increased stress properties on that syllable, but a reduction of the originally stressed syllable (e.g., Vogel et al. 1995). See Gussenhoven (1991) for detailed discussion of the Rhythm Rule.

(13)   Grid Structures: Rhythm Rule with Compounds

Phrase			x				x	
Comp.Group	x		x				x	
Word	x ←	x	x	x			x	x
Foot	x	x	x	x	x	x	x

    a. [[[Kalamazoo]_ω]_κ [[story]_ω [session]_ω]_κ]_φ b. [[[Kalamazoo]_ω [story]_ω]_κ]_φ

In (13b), while the final stress of *Kalamazoo* is also adjacent to the initial stress of *story*, since the words form a compound, the Rhythm Rule does not apply; phrasal stress then applies to the rightmost, and only, κ level stress. Crucially, if no intermediate κ constituent is recognized, the distinction between the two stress patterns would not be predicted.

6 Conclusions

In considering complex compounds in English, in particular those containing phrasal material, it was seen that while their construction presents a type of ordering paradox in which phrasal operations must apply before morphological (compound) word formation operations, the interfaces of these components with phonology remain quite simple and straightforward. The phonological phenomena, in this case stress rules, that apply to different types of prosodic constituents apply in the complex compounds just as they would in simpler constructions. It was confirmed that English requires four distinct stress levels, along the lines of the original proposal of SPE, and that in order to account for such a distinction, four prosodic constituent levels are needed. Crucially, this requires the presence in the prosodic hierarchy of a constituent between the Phonological Word and the Phonological Phrase, the Composite Group, that includes compounds, as well as various "stray" elements excluded from Phonological Words (e.g., level 2 affixes, function words) (e.g., Vogel 2009, forthcoming). While stress is to some extent a relative phenomenon, each of the four constituents nevertheless exhibits its own stress properties, as expressed by different levels in a grid representation. As a result, when complex compounds are constructed, stringent prosodic restrictions apply, so that all types of compounds, whether they contain single words or phrasal material, share a property that requires each member to have *one* main (phonological) word stress. As seen, this requirement can be viewed as a type of template, so if any elements, in this case, stresses, do not conform to the template, they are accommodated as necessary. The leftmost word stress can then be enhanced by the Compound Stress Rule, shown as a Composite Group level grid mark, in simple two-word, as well as complex, compounds. Phrasal stress then applies to the rightmost Composite Group Stress, yielding the necessary stress patterns regardless of the complexity of the components. Finally, it was shown that the proposed

Composite Group analysis accounts for a difference in the application of the Rhythm Rule depending on whether the adjacent words are in a compound or a phrase, a distinction that is missed without the Composite Group.

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